



Food and Agriculture Organization  
of the United Nations

**Post-2015** and **SDGs**

# **Global Indicator Proposals**

## for the Sustainable Development Goals and the 2030 Agenda for Sustainable Development

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

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## 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 2030 Agenda on Sustainable Development Sustainable Development Goals (SDGs) define 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 sustainable development**. These areas include ending hunger, food insecurity and malnutrition; better managing natural resources; and ensuring more sustainable ecological processes for a healthier environment.

The 2030 Agenda for Sustainable Development was adopted at the UN Post-2015 Summit on September 25<sup>th</sup> 2015, and it includes 17 proposed SDGs and 169 targets. 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 reasonable 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), consisting of national statistical offices, and as observers the regional, international organizations and agencies, which is tasked to fully develop the indicator framework for the monitoring of the goals and targets of the post-2015 development agenda.

To better support this process, 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 and to thus help guide the way towards the attainment of sustainable development goals that are not only realistic and achievable, but also ambitious, transformative and universal.

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. 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 “core” indicators, which could be included in a core set of indicators for a globally relevant monitoring framework, or as “additional” indicators, which countries could use for specific national or regional monitoring needs.

Each indicator is described through a detailed factsheet presenting answers and comments to a number questions on the definition of the indicator, its exact relevance to the target, its reliability, potential coverage and comparability, whether the indicator already exists or is being developed, and whether there is a baseline value for 2015. Moreover, even if not always explicitly stated, we believe that – whenever possible and meaningful – all indicators should be disaggregated by age, sex, and rural/urban areas, not only for the indicators listed in this proposal but also for indicators used to monitor other proposed Goals.

The list of proposed indicators is organized according to the targets as defined in the 2030 Agenda for Sustainable Development. For some 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

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

## LIST OF PROPOSED INDICATORS BY TARGET

<b>Target 1.4</b>	<b>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</b>
Indicator 1.4.1	<a href="#">“a) Percentage of people with ownership or secure rights over agricultural land (out of total agricultural population), by sex and type of tenure; and (b) Share of women among owners or rights-bearers of agricultural land”, by type of tenure</a>
Indicator 1.4.2	Proportion of adult women/men agricultural holders, out of total agricultural holders
<b>Target 2.1:</b>	<b>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</b>
Indicator 2.1.1	Prevalence of population with moderate or severe food insecurity, based on the Food Insecurity Experience Scale (FIES)
Indicator 2.1.2	Prevalence of Undernourishment (PoU)
<b>Target 2.2:</b>	<b>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.</b>
Indicator 2.2.1	Women Dietary Diversity Score
<b>Target 2.3:</b>	<b>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</b>
Indicator 2.3.1	Value of production per labour unit (measured in constant USD), by classes of farming/pastoral/forestry enterprise size
<b>Target 2.4:</b>	<b>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</b>
Indicator 2.4.1	Percentage of agricultural area under sustainable agricultural practices
Indicator 2.4.2	Disaster damage and loss to agriculture
<b>Target 2.5:</b>	<b>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 promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed</b>
Indicator 2.5.1	Ex-situ crop collections enrichment index
Indicator 2.5.2	Number/percentage of local breeds classified as being at-risk, not-at-risk, and unknown-levels of risk of extinction
<b>Target 2.a</b>	<b>Increase investment, including through enhanced international cooperation, in rural</b>

	<b>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.</b>
Indicator 2.a.1	Agriculture Orientation Index for Government Expenditures
Target 2.c	<b>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</b>
Indicator 2.c.1	Indicator of (food) Price Anomalies (IPA)
Target 5.a	<b>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</b>
Indicator 5.a.1	The legal framework includes special measures to guarantee women’s equal rights to landownership and control
Indicator 1.4.2	<a href="#"><u>“a) Percentage of people with ownership or secure rights over agricultural land (out of total agricultural population), by sex and type of tenure; and (b) Share of women among owners or rights-bearers of agricultural land”, by type of tenure</u></a>
Target 6.4	<b>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</b>
Indicator 6.4.1	Percentage of total available water resources used, taking environmental water requirements into account (Level of Water Stress)
Indicator 6.4.2	Percentage of change in water use efficiency over time
Target 12.3	<b>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</b>
Indicator 12.3.1	Global Food Loss Index
Target 14.4	<b>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</b>
Indicator 14.4.1	Proportion of fish stocks within biologically sustainable levels
Target 14.6	<b>By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation</b>
Indicator 14.6	Progress by countries in [level/degree of] the implementation of international instruments aiming to combat IUU fishing
Target 14.7	<b>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</b>

Indicator 14.7.1	Productivity of aquaculture in utilizing natural resources (land, water and wild stock)
<b>Target 14.b</b>	<b>Provide access for small-scale artisanal fishers to marine resources and markets</b>
Indicator 14.b.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
Indicator 14.b.2	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
<b>Target 14.c</b>	<b>Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in UNCLOS, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of The Future We Want</b>
Indicator 14.c.1	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
<b>Target 15.1</b>	<b>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</b>
Indicator 15.1.1	Forest area as a percentage of total land area
<b>Target 15.2</b>	<b>By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally</b>
Indicator 15.2.1	Carbon stock in woody biomass
Indicator 15.2.2	Forest area under sustainable forest management
<b>Target 15.3</b>	<b>By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land-degradation-neutral world</b>
Indicator 15.3.1	Trends in Land Degradation
<b>Target 15.4</b>	<b>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</b>
Indicator 15.4.1	Mountain Green Cover Index
<b>Target 15.6</b>	<b>Ensure fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed</b>
Indicator 15.6.1	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

### 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**

#### **Indicator 1.4.1 (Core)**

a) Percentage of people with ownership or secure rights over agricultural land (out of total agricultural population), by sex and type of tenure; and (b) Share of women among owners or rights-bearers of agricultural land, by type of tenure

#### **1. Precise definition of the indicator**

##### Definition of indicator:

The indicator is divided in two parts: (a) measures the incidence of people with ownership or secure rights over agricultural land among the total agricultural population; while (b) focusses on the gender parity measuring the extent to which women are disadvantaged in ownership or rights over agricultural land. Part (a) and part (b) cannot be seen as two different indicators, they rather provide two complementary information. Plus, they can be computed using (almost) the same data, the main difference between the 2 parts being only the denominator.

We propose using the 'total agricultural population' as denominator of part (a), instead of the total population, because ownership or right-security over agricultural land is obviously relevant only for the people whose livelihood rely on agriculture.

Part (a)

$$\left( \frac{\text{People with ownership or secure rights over agricultural land}}{\text{Total agricultural population}} \right) \cdot 100$$

Part (b)

$$\left( \frac{\text{Women with ownership or rights over agricultural land}}{\text{Total owners or rights bearers over agricultural land}} \right) \cdot 100$$

##### Definition of ownership and rights over land:

*The landowner is the legal owner of the land. 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. Reported ownership may be more appropriate in countries where a formal registration system is not in place.*

*Additionally, in some countries, particularly where land private ownership is not applicable, it is more appropriate to investigate rights over land using proxies able to capture individuals' capability to control and take decisions over the land. Proxies of such "bundle of rights" may include the right to sell, to bequeath or the right to decide how to use the land.*

*Since the definition of ownership and land rights has to take into account what is more relevant in the country, the indicator will need to be complemented with metadata that specify what definition(s) of ownership or rights over land is/are employed.*

*Finally and most importantly, this indicator has to be disaggregated by type of tenure. Therefore, the data collection methodology should always include a question on land tenure. Land tenure refers to the arrangements or rights under which land is operated, and it is one of the key elements to tenure security. There are different formal and informal tenure systems around the world and the distinction between legal and non-legal tenure is often blurred. When available, the indicator shall also be disaggregated by documented tenure rights.*

*The FAO World Census of Agriculture encourages countries to use country-specific types of tenure whilst ensuring the possibility to classify ex-post under the following broad categories: 1) legal ownership or legal owner-like possession; 2) Non-legal ownership or non-legal owner-like possession; 3) Rented land from someone else; 4) Various other types of land tenure<sup>1</sup>.*

## **2. 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 and rights over land”** and it is particularly useful in terms of framing gender differences in land ownership and control whilst relating them specifically to the population of interest, namely the people who own land or with rights over land. As such it gives a clearer picture of gender and social inequalities in land ownership/control, than for instance looking at the incidence of female ownership/control over land in the entire population of a country. An increase in the percentage of women owning/controlling land indicates that, within the population of interest (i.e., the landowners/rights bearers), progress is made towards achieving equal rights over land among men and women.

Finally, the indicator focuses on **agricultural** land, because agricultural land is a productive resource, and focusing on agricultural landownership gives a clearer indication of empowerment and advancement towards poverty reduction, compared to lands used for other purposes that are not economically and livelihood-related. This is particularly true in developing countries where poverty reduction strategies are necessarily linked to agricultural development. Agriculture land includes land for crop, livestock and forestry use.

## **3. Does the indicator already exist and is it regularly reported?**

The indicator already exists. Until now, the indicator has been collected mainly through the LSMS-ISA surveys and to a smaller extent through DHS surveys in collaboration with National Institutes of Statistics. At the time of writing, the indicator is readily available for 11 countries. Additional, but yet unprocessed surveys (e.g., DHS, LSMS, national household income and expenditure surveys etc.) lead to a conservative estimate of an additional 10 countries for which the indicator could be derived. It cannot

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<sup>1</sup> <http://www.fao.org/economic/ess/ess-wca/wca-guidelines/en/>

be excluded that many other surveys not currently available to FAO would be potential sources as well, for countries not covered by LSMS or DHS.

Thanks to a fruitful cooperation with IFPRI-PIM, FAO is already disseminating the available data for through the Gender and Land Rights Database (GRLD). In the next future, the same data will be also disseminated through FAO's Rural Livelihood Monitoring (RLM) platform. The new World Programme for Agricultural Census (WCA 2020) has proposed the collection of land ownership data disaggregated by sex as a supplementary item. Furthermore, the FAO Statistics Division is starting a project called AGRIS (Agricultural Integrated Surveys) through which methodological guidelines will be provided to countries on how to conduct farm surveys (i.e. key indicators to collect, definitions, methods for data collection, periodicity, etc.), and effort will also be made to support countries in the actual implementation of the farm surveys. By doing so, the availability of this indicator will increase substantially in the future.

While comparability across countries (mainly due to differing definitions) and low current availability pose a challenge to this indicator, it is still fair to consider the indicator superior to the "share of female agricultural holders" – widely available through agricultural census data- because it provides intra-holding/household information and is usually made available in a shorter time span.

It also worth mentioning that the importance of a sex-disaggregated indicator on land is acknowledged in the *Minimum Set of Gender Indicators* approved by UNSC, where a place-holder indicator 'proportion of the (adult) population who own land, by sex' figures as one of the 52 indicators. Furthermore, the EDGE (Evidence and Data for Gender Equality) initiative<sup>2</sup> is conducting methodological work on standards for the collection of reliable sex disaggregated data on land ownership.

#### **4. Comment on the reliability, potential coverage, comparability across countries, and the possibility to compute the indicator at sub-national level.**

##### Reliability

The indicator is expected to be reliable because the identification of the plot owner(s)/individual with rights over land in household surveys is a feasible task. Household surveys are usually done on a sample basis and are statistically representative at national and subnational level.

##### Coverage

The indicator is nationally representative insofar the survey data is nationally representative. The indicator can be collected periodically (about every 2-4 years) which is a reasonable frequency to capture significant changes in land ownership.

##### Comparability across countries

Different country definitions of ownership and rights over land can be problematic. Also, the indicator is collected in different years, depending on when surveys are conducted in individual countries. This can negatively affect comparability across countries.

##### Sub-national estimates

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<sup>2</sup> A joint UNWOMEN and UNSD project with the aim of accelerating existing efforts to generate comparable gender indicators on health, education, employment, entrepreneurship and asset ownership.

It is possible to disaggregate the indicator by geographic areas if the surveys are representative for these areas. The level of disaggregation depends on the sample design of the surveys.

**5. Is there a baseline value for 2015?**

We do not expect this indicator to change rapidly. It is worth highlighting that the baseline and follow-up values will be different across countries. To ensure correct comparisons linear interpolation between the actual data points will be necessary.

### Indicator 1.4.1 (Additional)

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

#### 1. Precise definition of the indicator

Definition of the indicator:

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

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)<sup>3</sup>.*

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.

#### 2. How is the indicator linked to the specific TARGET as worded in the OWG Report?

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.

#### 3. Does the indicator already exist and is it regularly reported?

The indicator already exists. National Statistical Offices (and/or Ministries of Agriculture) conducting an Agricultural Census (AC) maintain this indicator by collecting the data item needed to generate it (i.e. the sex of the agricultural holder). Indeed, the sex of the agricultural holder is a core item that has been recurrently suggested under the FAO World Census of Agriculture (WCA) Programme. At the time of writing, the indicator is reported in the AC reports for 97 countries, in the WCA 2000 or 2010 rounds.

<sup>3</sup> Source: FAO, 2005, A system of integrated agricultural censuses and surveys - World Programme for the Census of Agriculture 2010 (<http://www.fao.org/docrep/009/a0135e/A0135E00.htm>).

At the end of each WCA Programme round, the **FAO Statistics Division** extracts this indicator from the National AC Reports and compile it into a cross-country comparison table (see: <http://www.fao.org/economic/ess/ess-wca/wca-2000/ess-wca2000-tables/en/> table 2.1). In addition, the **FAO's Gender and Land Rights Database (GLRD)**<sup>4</sup> team also complements this work by analysing the National AC Reports and disseminating the information on the GRLD webpage.

Until now, the majority of countries have only one data point (15 countries have two), and the reference year also varies across countries. National ACs are conducted approximately every 10 years, which means that the proposed indicator has the relatively low collection frequency.

However, the FAO Statistics Division has recently started the **AGRIS** project (Agricultural and Rural Integrated Surveys) through which methodological guidelines will be provided to countries on how to conduct farm surveys (i.e. key indicators to collect, definitions, methods for data collection, periodicity, etc.), and effort will also be made to support countries in the actual implementation of the farm surveys. The implementation of this project will increase the availability of proposed and other similar indicators by enhancing the frequency of data collection.

A few additional considerations on the indicator:

- The indicator is the most available amongst the gender and land indicators, with an already existing set-up for continued collection.
- As an indicator of management, the indicator is silent with regards to the ownership status of the holding, as well as the relative size or value of holdings managed by women. To capture this, a second, complementary indicator on ownership is also proposed for Target 1.4 (see: “percentage of female landowners out of total land owners”, also available in the GRLD).
- The indicator is measured at the holding level, and hence does not capture management of land or other properties within the holding. As such, it tends to underestimate the management role that individuals in the household other than the household head may have. An example is that of married women, who often hold some responsibility for the family farm; however, the husband is typically regarded the household head and by default considered the sole agricultural holder of the household. This leaves married women's shares of management responsibility underreported in this indicator. However, the new World Programme for the Census of Agriculture (WCA 2020) Guidelines will propose countries to collect data on land ownership within the holding as well, leading to increased availability of intra-holding data.

#### **4. Comment on the reliability, potential coverage, comparability across countries, and the possibility to compute the indicator at sub-national level.**

##### Reliability

The indicator is expected to be reliable because the identification of the holding's manager and sex are fairly straightforward data items to collect. Although ACs are supposed to reach all agricultural holdings in the country, in some countries ACs are done on sample basis. If the samples are statistical representative, it is possible to calculate statistical margin of errors.

##### Coverage

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<sup>4</sup> Please note that the link to the metadata is under construction as the GRLD is being revamped and re-launched in February 2015. This is an internal link to the new website where the metadata is available: <http://www-test.fao.org/glrd/data-map/statistics/en/>.

The indicator is nationally representative insofar the AC is nationally representative (see above). The indicator will be collected periodically (about every 10 years). While this collection frequency is relatively low, initiatives such as AGRIS (see above) could lead to more frequent collection. Furthermore, yearly collection of indicator is considered redundant, as it is unreasonable to expect the percentage of female agricultural holders to change significantly on annual basis.

#### Comparability across countries

Since ACs rely on the same set of definitions and methodologies, conceptual comparability is high across countries. Yet, the indicator is collected in different points in time (depending on when the AC is conducted). This can potentially affect comparability negatively across countries.

#### Sub-national estimates

In theory it is possible to disaggregate the indicator by geographic areas; however, most of the time this indicator is simply reported at national level in the National AC reports.

### **5. Is there already a baseline value for 2015?**

A *meaningful* and *credible* target would be a relative one rather than an absolute one. Indeed, the percentage of female agricultural holders varies considerably across the regions (see the table below, based on the most recent ACs). If we exclude Europe and North America (composed mainly by developed countries) the percentage of female agricultural holders varies from 4.3 percent the Near East to 18.9 percent in South America.

REGIONS	Percentage of female agricultural holders (out of total holders)	Number of countries
AFRICA	19,3	19
AMERICA, NORTH	20,5	2
AMERICA, CENTRAL AND SOUTH	18,9	17
NEAR EAST	4,3	8
ASIA	14,5	15
EUROPE	23,7	29
OCEANIA	15,7	6

Source: –Agricultural Censuses conducted during the WCA 2000 round, integrated with some ACs conducted in WCA 2015 whose data are already available.

We do not expect this indicator to change rapidly. It is worth highlighting that the baseline and follow-up values will be different across countries. To ensure correct comparisons linear interpolation between the actual data points will be necessary.

## 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 2.1.2) 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 is 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:*

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

*FAO is concerned that UNSD's priority list of May determined only one priority indicator for this target, down from two in its February list. Retaining the PoU while excluding the FIES undermines the effort to provide a more meaningful, comprehensive and timely metric for food access in the SDG era, essentially sticking to the already established MDG indicator. Furthermore, this choice undermines the universality ambition of the SDGs, by selecting an indicator that is primarily designed for developing countries (the PoU) rather than an indicator that is applicable to both developed and developing countries (the 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)”

### 1. Precise definition of the indicator

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.

### 2. How is the indicator linked to the specific TARGET as worded in the OWG Report?

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”.

### 3. Does the indicator already exist and is it regularly reported?

The indicators and the global reference standard necessary to ensure proper cross-country comparability of the measures are being developed and will be maintained by the FAO Statistics Division, “Voices of the Hungry” team.” Metadata are available at: <http://www.fao.org/economic/ess/ess-fs/voices/fiessscale/metadata/en/>.

### 4. Comment on the reliability, potential coverage, comparability across countries, and the possibility to compute the indicator at sub-national level.

#### Reliability

Reliability of an experience-based measure of food security could be compromised by issues related to (a) the choice and performance of the items used to form the scale and (b) limited sample sizes.

- (a) Choice and performance of the FIES items. Key results from the analysis of the data collected by FAO in 2014 in 145 countries through the GWP confirm the reliability of the FIES based measure of the prevalence of food security at different levels of severity even after relatively minor efforts of adaptation of the questions to local languages. Items’ performance has been tested through the *infit* statistics and only in one case only one of the items showed an *infit* value outside the range 0.7-1.3 that is considered appropriate to ensure sufficient reliability. This confirms the appropriateness of the items chosen (a result of decades of experience with development and application of experience-based food security scales in North and Latin America and throughout the world.)

- (b) Sample size: Samples of 1000 individuals, characteristic of the GWP,<sup>5</sup> have proven sufficient to ensure margins of errors lower than 2% for prevalence of moderate or severe food insecurity, and lower than 1% for prevalence of severe food insecurity at national level. Larger sample sizes might further reduce these margins of error.

#### Coverage

By leveraging on the GWP as a data collection vehicle, FAO can ensure global coverage (about 150 countries every year covering more than 95% of the world population) annually, for national level assessments.

#### Comparability across countries

The Voices of the Hungry project has successfully developed and tested the methodology to scale individual measures to a single global reference standard and to make estimates of the prevalence of food insecurity comparable across countries. The method is possible due to the reference to Item Response Theory for measurement and it inspired by existing practice in equating educational and psycho-attitudinal tests.

#### Possibility to compute the indicator at sub-national level

The indicators can be computed at any level of disaggregation. Reliability of the measure is of course conditioned by the available sample size and representativeness of the specific sample. FAO suggests that, for meaningful disaggregation at subnational level, the data should be collected with surveys that are designed to be representative of the target population.

### **5. Is there already a baseline value for 2015?**

While SDG target 2.1 calls for an eradication of hunger, meaningful targets that would reflect bringing food insecurity to minimal “physiological” levels and the eradication of hunger could be offset for moderate and severe food insecurity and for developed countries and some transition economies.

Credible, yet ambitious targets for other countries could be defined based on an analysis of the 2014 benchmark that will be available in the first quarter of 2015.

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<sup>5</sup> Larger samples were formed in India (N=3000) and China (N=5000).

## Indicator 2.1.2

### “Prevalence of Undernourishment” (PoU)

#### 1. Precise definition of the indicator

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 are 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 parameters<sup>6</sup>.

#### 2. How is the indicator linked to the specific TARGET as worded in the OWG Report?

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.

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<sup>6</sup> 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>).

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 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 cover 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.

### **3. Does the indicator already exist, and is it regularly reported?**

Yes, the indicator exists. FAO maintains the data and reports on it annually.

Metadata are available at the FAO Statistics website <http://www.fao.org/economic/ess/ess-fs/ess-fadata/it/#.VM89cGjF-VM> as Excel sheets associated with the data; and from the FAOSTAT website, at [http://faostat3.fao.org/download/D/\\*/E](http://faostat3.fao.org/download/D/*/E).

### **4. Comment on the reliability, potential coverage, comparability across countries, and the possibility to compute the indicator at sub-national level.**

#### Reliability

Reliability depends on the quality of the background data, specifically on Dietary Energy Supply, the distribution of habitual food consumption in the population – which is derived from household budget surveys whenever possible -- the population, its structure and height distribution. No statistical margin of error can be determined for the prevalence of undernourishment.

The ability of the indicator to approximate access to food depends upon the extent to which existing data allow characterizing effectively the probability distribution of habitual food consumption in the reference population. As mentioned, the FAO methodology combines available micro-data on food

consumption derived from surveys with macro-data from food balance sheets. Food balance sheets provide information on the amount of food that is available for consumption after taking into account all the possible alternative uses of the food items; hence, they provide approximate measures of per capita consumption, which are available for a large number of countries and are homogenous. The methodology adopted for computing these data is currently under revision, together with the estimates of waste parameters employed to derive the DEC, so the level of accuracy is expected to increase in the next few years. Survey data, where available and reliable, are employed in the FAO methodology to compute the variability (CV) and skewedness (SK) parameters that characterize the distribution of food consumption  $f(x)$ . It is therefore essential that surveys are improved to obtain more accurate measures of undernourishment. Such improvement will require promoting greater standardization across existing surveys, particularly household budget surveys, and conducting more refined surveys that capture food intake at the individual level.

### Coverage

Consistent time series for the indicator exist from 1990-92 for about 140 countries. The indicator is regularly reported in the annual State of Food Insecurity in the World Report published by FAO, IFAD and WFP since 1999 and in the Millennium Development Goal Report of the UN Statistics Division. Data on the indicators are published on the FAO Statistics website, at <http://www.fao.org/economic/ess/ess-fs/ess-fadata/it/#.VM89cGjF-VM> and updated every year. From year 2014 they are also available in FAOSTAT, at [http://faostat3.fao.org/download/D/\\*/E](http://faostat3.fao.org/download/D/*/E).

### Comparability across countries

Comparability across time and space is relatively strong. The only potential cause of lack of homogeneity is the quality of the background data. Not all countries monitored undertake regular and reliable surveys of food consumption. In countries where this information source is of poor quality or missing, the distribution of habitual food consumption is estimated indirectly, through an econometric exercise that relates the CV of food consumption to food prices, incomes and their distribution.

### Sub-national estimates

In principle the indicator could be defined at sub-national level. However, reliable information has to be available on the amount and distribution of habitual food consumption in the population of the sub-national areas of interest. In fact, this information is frequently available only for wide population sub-groups – such as rural and urban areas and some major geographical areas. The global monitoring exercise has therefore always relied only on the Prevalence of Undernourishment at national level, and never used the indicator at sub-national levels.

## **5. Is there already a baseline value for 2015?**

Yes. A target for 2030 can be identified in terms of a minimum level, allowing for the possibility that lack of food has become marginal in the reference population. The choice of the threshold should also reflect the ability of the indicator to be accurate at such level, and effectively capture changes in the level.

## 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

### Indicator 2.2.1 (Additional)

“Women Dietary Diversity Score”

#### 1. Precise definition of the indicator

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

#### 2. How is the indicator linked to the specific TARGET as worded in the OWG Report<sup>7</sup>?

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<sup>8</sup>. 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”.

#### 3. Does the indicator already exist and is it regularly reported?

This is a new indicator that has been developed and validated against high-quality quantitative dietary data (Arimond, Wiesmann, Becquey et al, 2010). It is not yet regularly reported although similar data on dietary diversity of women have been reported in the past.

Because the indicator was recently developed, there has been no routine data collection until very recently when several USAID programmes have incorporated it into their monitoring and evaluation framework (for Feed the Future and Title II programmes).

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<sup>7</sup> 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.

<sup>8</sup> This is the main conclusion of the Women's Dietary Diversity Project I and II (WDDP). The technical report of WDDP-II is about to be published by FAO. All available information can be found at: <http://www.fantaproject.org/research/womens-dietary-diversity-project>

Potential data sources include the DHS surveys and the UNICEF MICS. Representatives from agencies sponsoring these surveys have been engaged in larger stakeholder consultations on the MDD-W. DHS collected women's dietary diversity data using a previous version of the tool. Other potential sources are national nutrition and health surveys. All of these are conducted on an average of every five years, and global coverage is not attained, however the DHS covers over 90 countries, including most developing countries.

If prioritized and funded, inclusion in large scale surveys such as those mentioned above is feasible. It is a short module requiring no more than 15 minutes of interview time and calculation of the indicator is simple and straight forward. Upfront costs include a one-time questionnaire adaptation to include local foods and for translation into languages used for questionnaire administration. Therefore, marginal costs to including the module into an existing survey include the one time questionnaire preparation, and interview and enumerator training time.

#### **4. Comment on the reliability, potential coverage, comparability across countries, and the possibility to compute the indicator at sub-national level.**

##### Reliability

The precision of the calculated estimates depend on the sample size. With large-scale nationally representative studies, the estimates will reach a good level of precision.

##### Coverage

See the paragraph above on data sources.

##### Comparability across countries

While there is no global standard of reference, the concept of food group diversity is globally relevant. All national dietary guidelines stress the importance of varied diets for health and nutrition outcomes (Dwyer, 2012)<sup>9</sup>.

##### Sub-national estimates

Data are collected on individual women. Subnational estimates are possible as long as the survey is representative for specific population groups and/or geographical areas.

#### **5. Is there already a baseline value for 2015?**

In the absence of baseline data, it is difficult to set a meaningful target that is feasible to achieve over a 15 year time horizon.

In order to set meaningful targets for tracking progress, it would be desirable to bring together major stakeholders in nutrition and women's health to reach consensus on setting a meaningful and feasible target for the SDGs.

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<sup>9</sup> Dwyer, JT. (2012) Dietary standards and guidelines: Similarities and differences among countries. Chapter 65 in Present Knowledge in Nutrition, 10th ed., pp. 1110-1134, JW Erdman, IA MacDonald, and SH Zeisel, eds. Wiley-Blackwell.

Assembling stakeholders to engage in this process is possible because there is wide support for the inclusion of this indicator in the development goals, as evidenced by the recent policy brief from the Standing Committee on Nutrition available at:

[http://www.unscn.org/files/Publications/Policy\\_brief\\_Priority\\_Nutrition\\_Indicators\\_for\\_the\\_Post-2015\\_SDGs.pdf](http://www.unscn.org/files/Publications/Policy_brief_Priority_Nutrition_Indicators_for_the_Post-2015_SDGs.pdf). In the meantime the organizations, institutions and individuals involved in this area will begin a search for available data that may provide input into this process.

### 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 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”

#### 1. Precise definition of the indicator?

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

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

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

#### 3. Does the indicator already exist and is it regularly reported?

FAO has been working in producing the indicator for agriculture using household survey data, within its program of work in “*small scale 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.

FAO Statistics, in collaboration with IFAD and the World Bank, are working towards the establishment of a harmonized program of Agricultural and Rural Integrated Surveys (AGRIS) that could form the basis for the collection of data on this, as well as on several other SDG indicators for the agricultural sector. Through the AGRIS program, methodological guidelines will be provided to countries on how to conduct enterprise surveys in agriculture. A special effort will also be made to support countries in the actual implementation of the farm surveys. This project, as well as the partnership with IFAD, the World Bank and the countries themselves, could substantially increase the availability of data to inform this indicator in the future.

#### 4. Comment on the reliability, potential coverage, comparability across countries, and the possibility to compute the indicator at sub-national level.

##### Reliability

Reliability and accuracy of the estimates depend on sample size.

##### Coverage

Data collection or data sharing might be difficult in some countries (i.e. countries at war etc.). In general, due to the relatively high cost, a periodicity of 3-5 year is advisable.

### Sub-national estimates

As long as farm or household level data are available, the indicator can be computed for specific population groups and geographical areas. The granularity of data disaggregation depends on the sample design and sample size in each specific country, but, in general, data can be tabulated by size of the farm, gender and age of the enterprise manager, etc.

### Comparability

International comparability of the estimates depends on the adoption international standards. A crucial issue to be addressed concerns the appropriate definition of “small scale” producer based on the relevant concept of the economic size of the enterprise in each sector.

#### **5. Is there already a baseline value for 2015?**

A baseline value for 2015 can be established only for a limited number of countries. A global data collection initiative needs to be launched to ensure progressively broader country coverage of the indicator.

The target of doubling the productivity of small scale producers may be more difficult to achieve (or relevant) for developed countries, given that their productivity may already be relatively high.

Its achievement in developing countries depends on a number of factors (e.g. investment in irrigation, machineries and new farming practices) that may improve labour productivity of small scale enterprises. In addition good governance and appropriate policies to promote agriculture and rural development can increase the chances that the target is reached, including by creating employment opportunities in other sectors to absorb excess supply of labour in agriculture.

#### 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”**

*This target is complex and multidimensional and addresses two key challenges in agriculture: ensuring sustainability as well as resilience in agricultural production. To capture these two main dimensions, FAO proposes the following indicators:*

*For the sustainability dimension:*

*“Percentage of agricultural area under sustainable agricultural practices”*

*will measure the area on which are conducted practices contributing to environmental sustainability of agriculture.*

*For the resilience dimension:*

*“Disaster damage and loss to agriculture”*

*will track the monetary value of physical damages caused by disasters to agriculture.*

*FAO is glad to note that an agreement has been reached with UNISDR on jointly monitoring the proposed indicator for the resilience dimension. Discussions between the two agencies are ongoing with the aim of fleshing out the respective roles and responsibilities.*

## Indicator 2.4.1

### “Percentage of agricultural area under sustainable agricultural practices”

#### 1. What is the *precise* definition of the indicator?

The indicator is defined by the following formula:

$A = \frac{\text{area on which are conducted practices contributing to environmental sustainability of agriculture}}{\text{agricultural area}}$

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.

#### 2. How is the indicator linked to the specific TARGET as worded in the OWG Report?

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.

#### 3. Does the indicator already exist and is it regularly reported?

At global level, currently there is no data available. However many if not most of the countries record areas which are the object of practices contributing to environmental sustainability under various schemes, either of a regulatory nature, like protected areas for instance, or as part of a subsidies scheme or in a payment for environmental services scheme or as part of voluntary standards, public or private. Countries are also preparing, as part of national reports for the state of the world biodiversity for food and agriculture, statistics on practices contributing to biodiversity, most of which have a broader positive impact on the environment. Moreover, many countries are participating in internationally established strategic frameworks which promote the collection of data at country level. Hence, the data for computing the indicator should be collected through the records that are held in the process of the country participation to those schemes and strategies.

FAO is carrying on a consultation process to develop an indicator on “Area under sustainable land management”, to be developed by the end of 2015. The process will be within the framework of the “World Overview of Conservation Approaches and Technologies” (WOCAT) partnership and in the support of UNCCD implementation and will support countries to assess, map and monitor SLM as well as land degradation. The FAO process aims at providing support to policy makers in defining land use policies at national and sub-national levels as well, pursuing sustainable national development in line with Bonn Challenge, Aichi targets and other international agreements.

#### 4. Comment on the reliability, potential coverage, comparability across countries, and the possibility to compute the indicator at sub-national level.

Reliability

The denominator (Extent of agricultural area) is already estimated regularly by the FAO Member States and reported periodically within the FAOSTAT process, following agreed methods that are consistent across countries and over time. On the contrary, no international standards exist for the collection of data and information about the numerator (Area on which are conducted practices contributing to environmental sustainability of agriculture). Hence, the reliability of the indicator would vary across countries. However, FAO do have a basket of tools to be proposed to the countries to compute that part of the indicator. In particular, simple questionnaires can be used to collect the information needed for the compilation of the indicator, similar to those used by FAOSTAT and drawing from the LADA methodology and from the Guidelines for the preparation of the Country Reports for The State of the World's Biodiversity for Food and Agriculture. However, in order to increase the reliability and reproducibility of the indicator, countries will be required to produce metadata alongside to the actual data reported. The data and metadata will be subject to a review and harmonization process following the procedure generally applied in FAOSTAT.

### Coverage

Data collection or data sharing might be difficult in some countries, due to political or security reasons. In general however, it doesn't make sense to compute the indicator every year, due to the slow variability of the indicator itself. Given the 15 years' timeframe of the SDGs process, an indicator's value every two to three years will allow the creation of a time series that will indicate the trend in the achievement of the target.

### Comparability across countries

As the same methodologies are used throughout for all countries, the indicator would be directly and fully comparable. However, care has to be taken in providing countries with clear and concise guidelines, in order to limit the variability due to national interpretation of the various elements of information to be collected and to enable to understand the meaning of the data collected. The guidelines will outline the procedures for data collection and for the identification of sustainability measures in general terms, and will be tested in a collaboration with pilot countries. Specific care will be taken to reduce the risk of double counting of areas.

### Sub-national estimates

As long as farm level and/or georeferenced data are available, the indicator can be computed for specific geographical areas. This is subject to the sampling frame and implied statistical representation in each specific country.

## **5. Is there already a baseline value for 2015?**

There is yet no baseline value for 2015.

## Indicator 2.4.2

### “Disaster damage and loss to agriculture”

#### 1. What is the *precise* definition of the indicator?

It is proposed that this indicator will track the following damage and loss to agriculture caused by disasters:

Damage and losses to agriculture and consequent impact on food security: the quantification and monetary value of physical damages caused by disasters to crops, agricultural assets and infrastructure (such as irrigation, livestock shelters, fish farms, farm equipment and machinery, farm schools, veterinary clinics, and government infrastructure (Ministry of Agriculture), and the losses in terms of monetary flows (production losses and consequences along the value chain).

#### 2. How is the indicator linked to the specific TARGET as worded in the OWG Report?

This indicator is linked to 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”.

It is also related to targets 15.3, 1.5, 13.1, 11.5 and 14.2.

In spite of the high impact of disasters on agriculture (including crops, livestock, forestry and fisheries), the damage and loss at subnational, national, regional levels, is not systematically recorded or reported by governments, and it is not systematically collected within existing global databases on disaster losses.

FAO’s study on the impact of disasters on the agriculture sector over the past 2 decades (forthcoming publication 2015) found that on average the sector absorbs about 22% of the total damage and losses to all sectors. This percentage is estimated to be even higher if more data on drought was available. The findings of the study also reveal considerable losses caused by disasters, for example in agricultural production, and ultimately in reduced agricultural sector growth and national GDP, all of which negatively affect livelihoods and can contribute to temporary or chronic food insecurity.

The introduction of the proposed indicator would allow governments to better measure and monitor the impacts of extreme events and disasters on agriculture and food security, and hence to better design policy measures and investments in the sector that help strengthen adaptive capacities to cope with climate change, reduce the impacts of extreme events and disasters on livelihoods and food production systems, build resilience, and promote more sustainable agricultural and natural resource management practices that support the achievement of the SDGs.

#### 3. Does the indicator already exist and is it regularly reported?

The information gap on the impact of disasters on agriculture

When major disasters strike, governments usually assess the impact on agriculture and other sectors through Post-disaster needs assessments; for agriculture these are typically led by the Ministry of Agriculture and its departments. However, there are the following limitations:

- 1) The data is not recorded systematically in national databases, and it is not included in existing national disasters information systems;
- 2) The assessment of disaster impact on agriculture is limited to a few indicators and therefore reflects only a partial assessment of the full impact on the sector., e.g. the fisheries and forestry sub-sectors are typically under-reported, and assessments do not always include damage to agricultural infrastructure, or agricultural production losses.
- 3) Impacts of small scale or localized extreme events on agriculture that do not trigger requests for national or international assistance are in many countries not recorded at all.

To ensure the reporting and monitoring of the proposed indicator, it is necessary for governments / countries to develop information systems that can systematically collect and report data on damages and loss to agriculture caused by extreme events and disasters; while at the same time, improving the indicators used to assess damages and loss on the sector to ensure a more realistic and comprehensive assessment of damage.

Given that national data on the impact of disasters on agriculture is not being systematically recorded or reported by governments, this information is lacking also in existing global databases and information systems, such as in the EM-DAT CRED dbase on disasters which is widely used. . As a result, there is no clear quantification of the extent to which natural hazards and disasters impact the agriculture sector and sub-sectors in developing countries.

The Desinventar database is the only exception, yet it reports only 2 specific statistics on disaster impact on agriculture, namely 1) the hectares of crops damaged and 2) livestock units lost; it is therefore highly limited. Yet, the impact on agriculture is significantly greater, it includes physical damage to fisheries and forestry, to agricultural infrastructure, assets and services, as well as monetary losses in production with effects across the agricultural value chain, agriculture GDP and national economies, and food security; in addition, the dbase significantly under-reports on the sector.

#### The proposal to close the information gap

In order to compute the proposed indicator it is necessary to pursue a two-pronged approach:

- 1) At national level, the specific data on extreme events and disaster impact on agriculture needs to be collected and reported by governments (led by Ministry of Agriculture) in a more systematic manner. The collection of such data should follow standardized indicators, methods and reporting frameworks, which need to be developed, particularly to ensure they capture impacts in a comprehensive and standardized manner across countries, and that is sustainable at national level.

As a starting point, a set of pilot countries can be identified among those where disasters have a high impact on agriculture and livelihoods and where the governments have expressed interest to invest in such an information system. The involvement of the relevant government agencies is essential to effectively collect the information, and should be led by the Ministry of Agriculture.

2) At global level, national data reported should be consolidated in a global database and information system. The method of computation will be the summation of data from national disaster loss databases. Disaggregation and reporting at global level should be done by hazard type (for example, the impact of floods or droughts on agriculture), by region (e.g. Africa, Asia etc.), by year, and by sub-sector (livestock, fisheries, crops etc.).

Based on FAO's existing FAOSTAT information system FAO is well placed to support the establishment of a data base on damage and loss in agriculture (including Crops FI, LI and FO) with global coverage and produce a regular reports This would build on and enhance the initiative which is already underway within FAO, including a publication in September 2015 of a global study that reports the impact of disasters on agriculture over the past decade. See below for further information.

#### Who should collect the data

As noted earlier, governments typically assess the impact of disasters; in the case of damages to agriculture this is done under the leadership of the Ministry of Agriculture. For the development of the proposed national information systems/ databases on disaster impact on agriculture, the primary partners will be the Ministries of Agriculture, in collaboration with National Statistical Offices and the National Disaster Management Authorities.

The involvement of the relevant government agencies is essential and the initiative should be led by the Ministry of Agriculture in collaboration with national Departments of Statistics. To be sustainable, activities should ensure full participation and buy-in from national counterparts and consistency with ongoing statistical work within national and sub-national institutions. This will lead to the development of information systems that can be up-scaled and sustained through time.

As mentioned, a set of 10 pilot countries could be immediately mobilized to develop the required national capacities.

#### The FAO study and methodology that can be leveraged to design the methods and information system

FAO is currently finalizing a study that assesses the impact of medium to large scale disasters in developing countries on agriculture over the past 2 decades. More specifically the study, to be published in September 2015, will report the following:

- The impact of disasters on agriculture in Africa, Asia, Latin America, and Near East between 1990 and 2013 looking at damage and losses as reported by/in available PDNAs from 48 developing countries;
- The breadth and scope of disaster impact across the agriculture sector and sub-sectors (livestock, crops, fisheries, forestry) and broader economic effect in selected countries;
- Total losses since 1990 in crop and livestock production as a result of disasters, as well as changes in agricultural trade flows resulting from medium to large scale disasters in 67 developing and mid income level countries.
- The performance of other key indicators is also measured, including to assess disaster impacts on sector economic growth, national GDP, and on food and nutrition security.

- Resource flows to the agriculture sector, both humanitarian and official development assistance to assess the investments made over time in the sector and compare with the scale of disaster impact on agriculture and food security.

At the same time, based on the above study, FAO is currently developing a new methodology to better assess and monitor losses caused by extreme events and disasters on agriculture (with global coverage). These losses are calculated in terms of changes in economic flows arising from the disaster 1 to 2 years following disasters. Typical agricultural losses include the decline in production output in agriculture, livestock and fisheries, and the losses across the agricultural value chain such as manufacturing / industries dependent on agricultural inputs, and the losses in agricultural value added (% of GDP). It also includes an analysis of revenues from agricultural exports and of costs of agricultural and food imports, and the unexpected expenditures to meet the humanitarian and recovery needs of farmers and the sector.

Both, the FAO study and the methodology, will help inform the design of a common method and framework for developing national information systems. The objective will be to assist governments to report damage and losses to agriculture caused by disasters and hence to monitor progress in achieving a reduction in damage/loss to the sector.

FAO will institutionalize the new information system on damage and loss.

#### **4. Comment on the reliability, potential coverage, comparability across countries, and the possibility to compute the indicator at sub-national level.**

To improve national recording and reporting of disaster damages on agriculture the aim is to assist governments with 1) developing information systems that can collect the data in a systematic manner and be better integrated with national disaster loss databases; and 2) improve the indicators and methods used in order to capture the impact of disasters on the agriculture sector more comprehensively.

The indicators, methods used and information system can be developed using a common framework that can be applied and used in all countries to ensure compatibility and comparability across countries, and hence to facilitate global analysis and reporting.

The information system will be piloted in a small set of disaster-prone countries in the next two years, and then rolled out on a wider number of countries. Depending on available funds, pilot may start in 2016.

## 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 promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed”**

### **Indicator 2.5.1**

#### **Ex-Situ Crop Collections Enrichment index**

#### **1. Precise definition of the indicator**

The **Ex-situ Crop Collections Enrichment index** 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>).

#### **2. How is the indicator linked to the specific TARGET as worded in the OWG Report?**

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.

#### **3. Does the indicator already exist and is it regularly reported?**

The indicator has been calculated by FAO/AGPMG in 2008 and 2014. It will be calculated again in 2015 and then periodically every 2-3 years based on data reported by member countries to the Commission

of Genetic Resources of Food and Agriculture on the implementation of the Second Global Plan of Action for PGRFA, as agreed at CGRFA-15: <http://www.fao.org/3/a-mm181e.pdf>. The links to the BIP and CBD are provided above.

Country data are stored in WIEWS, the FAO PGRFA information system maintained by AGP (see <http://www.pgrfa.org/WIEWS/>). WIEWS responsible officer is currently Mr Stefano Diulgheroff ([wiew@fao.org](mailto:wiew@fao.org)).

Existing data sources should be identified, possibly with both time and country coverage. If there are no sufficiently dense data sources, a description of the kind of investment that is likely necessary to bring coverage to a sufficient extent to make global monitoring meaningful should be provided.

#### **4. Comment on the reliability, potential coverage, comparability across countries, and the possibility to compute the indicator at sub-national level.**

##### Reliability

Data on gene bank holdings which the indicator uses are relatively reliable as they have been periodically reported to FAO since 1996. For the majority of staple crops the largest collections are held by international research centres.

##### Coverage

Data from more than 2 million accessions conserved ex situ world-wide are already accessible. It is expected that by mid-2015 data from 0.5 to 1 million additional accessions will be gathered from countries around the world. This will allow a relatively accurate elaboration of the indicator, which nevertheless can be subsequently adjusted with the incorporation of missing gene bank data. The calculation of the indicator and its evolution overtime will be readjusted with the additional data.

##### Comparability across countries

The indicator can be calculated globally as well as for each individual country and region. National and regional values can be compared among themselves as calculation is done in the same way for all countries and regions.

##### Sub-national estimates

Not applicable.

#### **5. Is there already a baseline value for 2015?**

A numerical target for 2030 could be expressed as a minimum percentage *increase* of the indicator value, with respect to the value it had in a specific baseline year such as 1996, which is the year of adoption of the Global Plan of Action for the Conservation and Sustainable Use of PGRFA.

## Indicator 2.5.2

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

### 1. Precise definition of the indicator

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 14<sup>th</sup> 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.

Risk classes are defined as follows<sup>10</sup>:

- **extinct:** a breed is categorized as extinct when there are no breeding males or breeding females remaining. Nevertheless, genetic material might have been cryo-conserved which would allow recreation of the breed. In reality, extinction may be realized well before the loss of the last animal or genetic material.
- **critical:** a breed is categorized as critical if the total number of breeding females is less than or equal to 100 or the total number of breeding males is less than or equal to five; or the overall

<sup>10</sup> FAO. 2007. *The State of the World’s Animal Genetic Resources for Food and Agriculture*, edited by Barbara Rischkowsky & Dafydd Pilling. Rome. Accessible at <http://www.fao.org/docrep/010/a1250e/a1250e00.htm>.

population size is less than or equal to 120 and decreasing and the percentage of females being bred to males of the same breed is below 80 percent, and it is not classified as extinct.

- **critical-maintained:** are those critical populations for which active conservation programmes are in place or populations are maintained by commercial companies or research institutions.
- **endangered:** a breed is categorized as endangered if the total number of breeding females is greater than 100 and less than or equal to 1 000 or the total number of breeding males is less than or equal to 20 and greater than five; or the overall population size is greater than 80 and less than 100 and increasing and the percentage of females being bred to males of the same breed is above 80 percent; or the overall population size is greater than 1 000 and less than or equal to 1 200 and decreasing and the percentage of females being bred to males of the same breed is below 80 percent, and it is not assigned to any of above categories.
- **endangered-maintained:** are those endangered populations for which active conservation programmes are in place or populations are maintained by commercial companies or research institutions.
- **breed at risk:** a breed that has been classified as either critical, critical-maintained, endangered, or endangered-maintained.

## **2. How is the indicator linked to the specific TARGET as worded in the OWG Report?**

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”.

## **3. Does the indicator already exist and is it regularly reported?**

Yes, the indicator exists. It is calculated by FAO/AGAG and reported biannually to the Commission of Genetic Resources of Food and Agriculture. The most recent report is available at: <http://www.fao.org/3/a-mm278e.pdf>. The links to the BIP and CBD are provided above. FAO is a partner in the BIP and provides information on the indicator directly to the partnership.

The underlying data base DAD-IS is maintained by FAO/AGAG (see <http://dad.fao.org/>). The contact person for DAD-IS is Ms Roswitha Baumung. Data are officially provided by countries. Data entry is possible all over the year.

Sustainability of the indicator production and its use within a meaningful global monitoring framework is strongly dependent on the maintenance and development of DAD-IS by FAO.

#### **4. Comment on the reliability, potential coverage, comparability across countries, and the possibility to compute the indicator at sub-national level.**

##### Reliability

The reliability of measures of population size for breeds varies across countries and species (similarly to what is the case for population size of livestock species provided in CountrySTAT). However, rough estimates on country level are considered to be sufficient to reliably detect global and regional trends.

##### Coverage

The Global Databank for Animal Genetic Resources currently contains data from 182 countries and 38 species. The total number of national breed populations recorded in the Global Databank has increased dramatically since 1993 (from 2 716 national breed populations to 14 869 and from 131 countries to 182). The total number of mammalian national breed populations recorded in June 2014 was 11 062. The total number of avian national breed populations recorded in 2014 was 3 807. However, breed-related information remains far from complete. For almost 60 percent of all reported breeds, risk status is not known because of missing population data or lack of recent updates. Generally data collection should be possible in all countries. Updating of population size data at least each 10 years is needed for the definition of the risk classes.

##### Comparability across countries

Completely comparable as calculation is done in the same way for all countries and the same definitions on risk classification is applied.

##### Sub-national estimates

Sub-national estimates can be obtained with regard to the risk status of each national breed population and species. Results can be presented at the national, regional and global levels.

#### **5. Is there already a baseline value for 2015?**

With regard to animal biodiversity, SDG target 2.5 has been formulated as “...the genetic diversity of farmed and domesticated animals is *maintained*” which is consistent with the target formulation of Aichi Target 13 under the CBD. However the future projections presented in the Global Biodiversity Outlook 4, Figure 131, page 91 (see <http://www.cbd.int/gbo/gbo4/publication/gbo4-en-lr.pdf>) suggest to maintain/halt the loss of animal biodiversity may be very challenging.

### 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”**

#### **1. Precise definition of the indicator**

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 purpose, 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.

## **2. How is the indicator linked to the specific TARGET as worded in the OWG Report?**

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.

## **3. Does the indicator already exist and is it regularly reported?**

The indicator is maintained and reported by FAO in FAOSTAT, with metadata soon to be available at [http://faostat3.fao.org/mes/methodology\\_list/E](http://faostat3.fao.org/mes/methodology_list/E).

The underlying annual data is official country data, from 2001 to 2012, reported by countries through a questionnaire jointly developed by FAO and the IMF using the COFOG and GFSM classifications. The database currently covers 139 countries.

## **4. Comment on the reliability, potential coverage, comparability across countries, and the possibility to compute the indicator at sub-national level.**

The use of the COFOG and GFSM classifications promotes international and inter-temporal comparisons. The expenditure data reported is typically based on administrative data based on a government's public

accounts, while GDP and Agriculture Value Added is based on its National Accounts. The nature of the data typically prohibits indicators at sub-national level, as most countries do not compile sub-national GDP estimates, nor sub-national Government Expenditure figures.

#### Reliability

The numerator (Agriculture Share of Government Expenditures) is based on administrative data, which has no statistical margin of error. The denominator (Agriculture share of GDP) is based on a System of National Accounts, following international guidelines, in which either Agriculture Value-Added or GDP estimates can suffer from statistical errors, though it is difficult to measure. Errors and lack of reliability due to non-statistical errors can arise, for example, as a result of the mapping between national concepts to international classifications (by respondents), the use of different measures of government across countries due to reporting issues (budgetary central, central, and general, as described above).

#### Coverage

It is relatively high for these particular indicators, with 139 countries included. However, some countries have not provided data for all 13 years from 2001 to 2012, and the level of government to which expenditures pertain can differ.

#### Comparability across countries

It is facilitated by use of the Agriculture share of Government Expenditures in the numerator, which mitigates differences that arise when some countries report expenditures for all levels of government, and others only for the central government. This does not rule out the fact that state and local governments may spend a different share on Agriculture than the central government. For this reason, analysis of the trends in this indicator may be more reliable, for comparison purposes, than just the indicator alone.

While COFOG and GFSM facilitate international comparisons, not all countries report expenditures covering all three levels of government (Central, State and Municipal). The three levels of reporting include (from smallest to largest): 1) Budgetary Central Government; 2) Central Government, which includes Budgetary Central Government as well as extra-budgetary units; and 3) General Government, which includes Central, State and Local Government. Countries that fully report General Government Expenditures may not report Central Government Expenditures.

Since not all countries collect or share data on all three levels of reporting, the level with the most complete time series is used for each country. To the extent that the Agriculture share of Government Expenditures differs across levels of government (Central, State and Local), differences in this indicator may reflect differences in reporting.

#### Sub-national estimates

It is not possible to compute sub-national or population group estimates, given the nature of the underlying data.

### **5. Is there already a baseline value for 2015?**

There is no baseline value for this indicator for 2015.

There is some precedent for using government expenditures as a target indicator for Agriculture. Signatories to the Maputo Declaration set a target of 10% for the Agriculture and Rural Development *Share of Government Expenditures*. However, as Rural Development is not a purpose listed under the COFOG classification, there has been considerable difficulty in consistently measuring this indicator. Furthermore, in setting a universal target, this Share indicator suffers from the problems listed above (comparison of economies of different size, with different levels of government expenditures, and with different agricultural shares of GDP).

## 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)**

#### **1. Precise definition of the indicator**

Indicators of price anomalies (IPA) identify markets prices that are abnormally high, as it may occur when markets do not function properly.

One version of the IPA relies on a weighted compound growth rate that accounts for both within year and across year price growth. This indicator directly evaluates growth in prices over a particular month over many years, taking into account seasonality and inflation, allowing answering the question of whether or not an observed change in price is considered normal for any particular period. The algorithm defines as a price anomaly any difference of one standard deviation or greater in the observed growth rate over its historical trend for 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.

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

When applied to series of international commodity prices, such as those used for example to inform the FAO food price Index, (<http://www.fao.org/worldfoodsituation/foodpricesindex/en/>), IPA allow early detection of abnormal market conditions, as signs that the underlying markets are not working properly, permitting the timely adoption of policies and measures aiming to limit extreme food price volatility. The indicators are able to accomplish this since one can directly measure both the number of events and their intensity pre and post the adoption of policies.

As such, they are uniquely suited to Target 2.c.

#### **3. Does the indicator already exist and is it regularly reported?**

One version of the indicator is already implemented by FAO’s Global Information and Early Warning System through its Food Price Monitoring and Analysis (FPMA) website at <http://www.fao.org/giews/food-prices/indicators/all/en/>.

Similar versions can be easily applied to existing international commodity price series for which there are monthly figures (such as World Bank’s pinksheets series <http://go.worldbank.org/4ROCCIEQ50> or IMF’s Primary commodity price series <http://www.imf.org/external/np/res/commod/index.aspx> )

#### **4. Comment on the reliability, potential coverage, comparability across countries, and the possibility to compute the indicator at sub-national level.**

##### Reliability

To be reliable, the indicator requires monthly prices series that are at least 4 years in length, so as to estimate with confidence certain subcomponents of the indicator (such as the reference weighted averages and standard deviations).

This indicator has been compared to other proposed measures of abnormal price growth and has shown to have a lower probability (or lower Type II error) of revealing abnormal price growth when the price movements are indeed normal.

##### Coverage

As mentioned above, the indicator can easily cover all international commodity markets for which there exist monthly price series. The World Bank database currently include 74 series, with monthly data from January 1960, while the IMF database lists 54 series with monthly prices from 1908, both including all major energy, metal, agricultural and food commodities.

##### Comparability across countries

The IPA allows comparisons across different markets, from local to international, due to the definition of the threshold to identify abnormal price growth in relative terms, and the fact that the methodology is independent of the country/market being applied to.

##### Sub-national estimates

To the extent that it is applied to local market price series, estimates can be produced at subnational level. For example, sub-national estimates are automatically generated for the countries included in the FAO FPMA price tool that have sub-national data available (i.e., multiple market coverage).

#### **5. Can a meaningful numerical target for 2030 be set? Is there already a baseline value for 2015?**

Baseline levels could be set as the number of observed price anomalies over the 48 months of 2010-2014 for each commodity price series for which data exist. Targets for 2030 could be framed in terms of the percentage reduction that could be expected in the *number* of observed price anomalies in the 2026-30 period, compared to the baseline.

### 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”**

### **Indicator 5.a.1 (Core)**

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

#### **1. Precise definition of the indicator**

The precise definition of this indicator is: *“The legal framework includes special measures to guarantee women’s equal rights to landownership and control”*.

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 scoring system from 0 to 4, which signals the stage in the policy/legal framework working towards legal reform, as follows:

Score 0: Absence of the indicator in the legal framework

Score 1: A policy is being developed

Score 1.5: A policy is in place

Score 2: A draft legislation is to be submitted for deliberations

Score 3: The indicator appears in primary law

Score 4: The indicator appears in multiple legal instruments

N/A: Not applicable

The indicator considers whether:

- 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.”

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

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.

## **3. Does the indicator already exist and is it regularly reported?**

The indicator exists. It is being collected through the analysis of the legal and policy framework as part of the Legislation Assessment Tool for gender-equitable land tenure (LAT) of the Gender and Land Rights Database.

The indicator is not reported as such by the countries, but information can be extrapolated from the countries’ national laws. The legal information is mainly accessible in FAO’s FAOLEX a database that collects legal material from the official gazettes, compiling texts of laws and regulations that are sent by FAO’s Member Nations pursuant to Article XI of the FAO Constitution. The information is also available in as well as LandWise (Landesa).

The indicator is disseminated through the FAO’s Gender and Land Rights database (GLRD) through its Legislation Assessment Tool.

The indicator has been applied to 18 countries and the results are available on the LAT map of the GLRD. The complete LAT analysis can be expanded to 83 countries and validated by national legal experts with a total investment of US\$450,000 partly funded by FAO. Results are comparable across countries; however, the indicator available in the GRLD only applies to the national legal framework and does not include regional legal frameworks.

## **4. Comment on the reliability, potential coverage, comparability across countries, and the possibility to compute the indicator at sub-national level.**

### Reliability

We expect this indicator to be accurate because it reflects the existence of legal measures to promote women’s land rights and or productive resources. The indicator will have a value of 1 if one or more legal measures promote women’s land rights (as the examples shown above) exist in the country legal framework.

### Coverage

The indicator is nationally representative insofar these special measures apply to the national level.

#### Comparability across countries

As mentioned above, the indicator is comparable across countries. Even if countries take different promotional measures according to their context, the indicator measures whether countries are undertaking any legal measure to promote women's rights to land property and/or other productive resources.

#### Sub-national estimates

The indicator can be used as a sub-national indicator when special laws and legal procedures pertaining to one geographic area is analysed. However, up till now this indicator is only available at national level.

**Indicator 1.4.1 (Core)**

“a) Percentage of people with ownership or secure rights over agricultural land (out of total agricultural population), by sex and type of tenure; and (b) Share of women among owners or rights-bearers of agricultural land”, by type of tenure

*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)”

<p><b>Definition and method of computation</b></p>	<p><b>Level of water stress: Freshwater withdrawal in percentage of available freshwater resources</b></p> <p><b>Definition:</b> the ratio between total water withdrawn by all sectors (agriculture, industry, cities) and total renewable freshwater resources, after having taken into account environmental water requirements. This indicator is also known as water withdrawal intensity.</p> <p>The indicator builds on MDG indicator 7.5 and also accounts for environmental water requirements and includes both groundwater and surface water withdrawals.</p> <p><b>Concepts:</b> This indicator provides an estimate of pressure by all sectors on the country’s renewable freshwater resources. A low level of water stress indicates a situation where the combined withdrawal by all sectors is marginal in relation to the resources, and has therefore little potential impact on the sustainability of the resources or on the potential competition between users. A high level of water stress indicates a situation where the combined withdrawal by all sectors represents a substantial share of the total renewable freshwater resources, with potentially larger impacts on the sustainability of the resources and potential situations of conflicts and competition between users.</p> <p><i>Total renewable freshwater resources</i> are expressed as the sum of internal and external renewable water resources. The terms “water resources” and “water withdrawal” are understood here as freshwater resources and freshwater withdrawal.</p> <p><i>Internal renewable water resources</i> are defined as the long-term average annual flow of rivers and recharge of groundwater for a given country generated from endogenous precipitation.</p> <p><i>External renewable water resources</i> refer to the flows of water entering the country, taking into consideration the quantity of flows reserved to upstream and downstream countries through agreements or treaties (and, where available, the reduction of flow due to upstream withdrawal).</p> <p><i>Freshwater withdrawal</i> is the volume of freshwater extracted from its source (rivers, lakes, aquifers) for agriculture, industries and municipalities. It is estimated at the country level for the following three main sectors: agriculture, municipalities (including domestic water withdrawal) and industries. Freshwater withdrawal includes primary freshwater (not withdrawn before), secondary freshwater (previously withdrawn and returned to rivers and groundwater) and fossil groundwater. It does not include non-conventional water, i.e. direct use of treated wastewater, direct use of agricultural drainage water and desalinated water. Total freshwater withdrawal is in general calculated as being the sum of total water withdrawal by sector minus direct use of wastewater, direct use of agricultural drainage water and use of desalinated water.</p>
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	<p><i>Environmental water requirements</i> (Env.) are established in order to protect the basic environmental services of freshwater ecosystems. Methods of computation of environmental water requirements are extremely variable. For the purpose of the SDG indicator, environmental water requirements are expressed as a percentage of the available water resources.</p> <p>More details on method of calculation of the above variables can be found at <a href="http://www.fao.org/nr/water/aquastat/water_res/index.stm">http://www.fao.org/nr/water/aquastat/water_res/index.stm</a> or <a href="http://www.fao.org/nr/water/aquastat/data/wrs/readPdf.html?f=AFG-WRS_eng.pdf">http://www.fao.org/nr/water/aquastat/data/wrs/readPdf.html?f=AFG-WRS_eng.pdf</a>.</p> <p><b>Method of computation:</b> The indicator is computed as the total freshwater withdrawn (TWW) divided by the difference between the total renewable water resources (TRWR) and the environmental water requirements (Env.), multiplied by 100. All variables are expressed in km<sup>3</sup>/year (10<sup>9</sup> m<sup>3</sup>/year).</p> $Stress (\%) = \frac{TWW}{TRWR - Env.} * 100$ <p>It is proposed to classify the level of water stress in three main categories (levels): 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 and taking into account environmental water requirements.</p>
<p><b>Rationale and interpretation</b></p>	<p>The purpose of this indicator is to show the degree to which water resources are being exploited to meet the country's water demand. It measures a country's pressure on its water resources and therefore the challenge on the sustainability of its water use.</p> <p>The indicator shows to what extent water resources are already used, and signals the importance of effective supply and demand management policies. It can also indicate the likelihood of increasing competition and conflict between different water uses and users in a situation of increasing water scarcity. Increased water stress, shown by an increase in the value of the indicator, has potentially negative effects on the sustainability of the natural resources and on economic development. On the other hand, low values of the indicator indicate that water does not represent a particular challenge for economic development and sustainability.</p>
<p><b>Sources and data collection</b></p>	<p>Data for this indicator are usually collected by national ministries and institutions having water-related issues in their mandate, such as ministries of water resources, agriculture, or environment. Data are mainly published within national water resources and irrigation master plans, national statistical yearbooks and other reports (such as those from projects, international surveys or results and publications from national and international research centres).</p>
<p><b>Disaggregation</b></p>	<p>To compute this indicator, several sectoral data are needed. The indicator can be disaggregated to show the respective contribution of different sectors to the country's water stress, and therefore the relative importance of actions needed to contain water demand in the different sectors (agriculture, municipalities and industry).</p> <p>At national level, water resources and withdrawal are estimated or measured at the level of appropriate hydrological units (river basins, aquifers). It is therefore possible to obtain a geographical distribution of water stress by hydrological unit, thus allowing for</p>

	more targeted response in terms of water demand management.
<b>Comments and limitations</b>	<p>Water withdrawal as a percentage of water resources is a good indicator of pressure on limited water resources, one of the most important natural resources. However, it only partially addresses the issues related to sustainable water management.</p> <p>Supplementary indicators that capture the multiple dimensions of water management would combine data on water demand management, behavioural changes with regard to water use and the availability of appropriate infrastructure, and measure progress in increasing the efficiency and sustainability of water use, in particular in relation to population and economic growth. They would also recognize the different climatic environments that affect water use in countries, in particular in agriculture, which is the main user of water. Sustainability assessment is also linked to the critical thresholds fixed for this indicator and there is no universal consensus on such threshold.</p> <p>Trends in water withdrawal show relatively slow patterns of change. Usually, three-five years are a minimum frequency to be able to detect significant changes, as it is unlikely that the indicator would show meaningful variations from one year to the other.</p> <p>Estimation of water withdrawal by sector is the main limitation to the computation of the indicator. Few countries actually publish water use data on a regular basis by sector.</p> <p>Renewable water resources include all surface water and groundwater resources that are available on a yearly basis without consideration of the capacity to harvest and use this resource. Exploitable water resources, which refer to the volume of surface water or groundwater that is available with an occurrence of 90% of the time, are considerably less than renewable water resources, but no universal method exists to assess such exploitable water resources.</p> <p>There is no universally agreed method for the computation of incoming freshwater flows originating outside of a country's borders. Nor is there any standard method to account for return flows, the part of the water withdrawn from its source and which flows back to the river system after use. In countries where return flow represents a substantial part of water withdrawal, the indicator tends to underestimate available water and therefore overestimate the level of water stress.</p> <p>Other limitations that affect the interpretation of the water stress indicator include:</p> <ul style="list-style-type: none"> <li>• difficulty to obtain accurate, complete and up-to-date data;</li> <li>• potentially large variation of sub-national data;</li> <li>• lack of account of seasonal variations in water resources;</li> <li>• lack of consideration to the distribution among water uses;</li> <li>• lack of consideration of water quality and its suitability for use; and</li> <li>• the indicator can be higher than 100 percent when water withdrawal includes secondary freshwater (water withdrawn previously and returned to the system), non-renewable water (fossil groundwater), when annual groundwater withdrawal is higher than annual replenishment (over-abstraction) or when water withdrawal includes part or all of the water set aside for environmental water requirements.</li> </ul> <p>Some of these issues can be solved through disaggregation of the index at the level of</p>

	hydrological units and by distinguishing between different use sectors.
<b>Gender equality issues</b>	<p>Women and men tend to have different water-related uses, priorities and responsibilities. There are also trends along gender lines in terms of access and control over water and water rights. Gender differences and inequalities mean that women and men experience and respond to changes in water availability, services or water policies differently. Thus the impact of water stress on women and men should be studied in order to better capture the gender dimension of water use.</p>
<b>Data for global and regional monitoring</b>	<p>The Food and Agriculture Organization of the United Nations (FAO) is the agency responsible for compiling data and calculating this indicator at the international level. This is done through its Global Information System on Water and Agriculture (AQUASTAT) country surveys since 1993. These surveys are carried out every ten years, on average.</p> <p>Data are obtained through detailed questionnaires filled in by national experts and consultants who collect information from the different institutions and ministries having water-related issues in their mandate. Literature and information at the country and sub-country level are reviewed including national policies and strategies; water resources and irrigation master plans; national reports, yearbooks and statistics; reports from projects; international surveys; results and publications from national and international research centres; and the Internet.</p> <p>EWR data are presently not systematically collected by AQUASTAT, but several methods are available and could be used to compute EWR for countries that do not have the institutional arrangements and standards in place to assess or collect these data.</p> <p>Data obtained from national sources are systematically reviewed to ensure consistency in definitions and consistency in data from countries located in the same river basin. A methodology has been developed and rules established to compute the different elements of national water balances.</p> <p>Estimates are based on country information, complemented, when necessary, with expert calculations based on unit water use figures by sector, and with available global datasets. In the case of conflicting sources of information, the difficulty lies in selecting the most reliable one. In some cases, water resources figures vary considerably from one source to another. There are various reasons for such differences, including differing computation methods, definitions or reference periods, double counting of surface water and groundwater or of transboundary river flows. Moreover, estimates of long-term average annual values can change due to the availability of better data from improvements in knowledge, methods or measurement networks.</p> <p>Where several sources result in divergent or contradictory information, preference is given to information collected at the national or sub-national level rather than at regional or world levels. Moreover, except in the case of evident errors, official sources are privileged. As regards shared water resources, the comparison of information between countries makes it possible to verify and complete data concerning the flows of transboundary rivers and to ensure data coherence at the river basin level. In spite of these precautions, the accuracy, reliability and frequency with which information is collected vary considerably by region, country and category of information. Information is completed using models when necessary.</p>

	<p>Regional and global level aggregations are obtained by applying the same procedure as for country level computation.</p> <p>AQUASTAT data on water resources and use are published when new information becomes available on the FAO-AQUASTAT website at <a href="http://www.fao.org/nr/aquastat">http://www.fao.org/nr/aquastat</a>.</p> <p>Modelled data are used with caution to fill gaps while capacity is being developed. Data on water resources can be modelled by using GIS-based hydrological models. Data on water withdrawal are estimated by sector on the basis of standard unit values of water withdrawal.</p> <p>The System of Environmental-Economic Accounting (SEEA, 2012) proposes a systematic approach the assessment of withdrawal and consumption based statistics. The approach is currently being tested in a select number of countries.</p>
<p><b>References</b></p>	<p>Food And Agricultural Organization Of The United Nations. AQUASTAT. FAO's Global Information System on Water and Agriculture. Rome. Website <a href="http://www.fao.org/nr/aquastat">http://www.fao.org/nr/aquastat</a>.</p> <p>The following resources of specific interest to this indicator are available on this site:</p> <ul style="list-style-type: none"> <li>• AQUASTAT glossary (<a href="http://www.fao.org/nr/water/aquastat/data/glossary/search.html">http://www.fao.org/nr/water/aquastat/data/glossary/search.html</a>).</li> <li>• AQUASTAT Main country database (<a href="http://www.fao.org/nr/water/aquastat/data/query/index.html?lang=en">http://www.fao.org/nr/water/aquastat/data/query/index.html?lang=en</a>)</li> <li>• AQUASTAT Water use (<a href="http://www.fao.org/nr/water/aquastat/water_use/index.stm">http://www.fao.org/nr/water/aquastat/water_use/index.stm</a>).</li> <li>• AQUASTAT Water resources (<a href="http://www.fao.org/nr/water/aquastat/water_res/index.stm">http://www.fao.org/nr/water/aquastat/water_res/index.stm</a>).</li> <li>• AQUASTAT publications dealing with concepts, methodologies, definitions, terminologies, metadata, etc. (<a href="http://www.fao.org/nr/water/aquastat/catalogues/index.stm">http://www.fao.org/nr/water/aquastat/catalogues/index.stm</a>)</li> <li>• For surface water, environmental water requirement databases include: <a href="http://waterdata.iwmi.org/apps/flow_management_classes/">http://waterdata.iwmi.org/apps/flow_management_classes/</a>,</li> <li>• <a href="http://www.iwmi.cgiar.org/resources/models-and-software/environmental-flow-calculators/">http://www.iwmi.cgiar.org/resources/models-and-software/environmental-flow-calculators/</a>.</li> <li>• Environmental water requirement data for groundwater bodies will be available at IWMI by the end of 2015.</li> </ul>

## Indicator 6.4.2

### “Percentage of change in water use efficiency over time”

<p><b>Definition and method of computation</b></p>	<p><b>Definition:</b> This indicator tracks change in water-use efficiency over time for major sectors, including energy, industry, agriculture, and drinking water supply (municipal).</p> <p><b>Method of computation:</b> 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:</p> <ul style="list-style-type: none"> <li>• Step 1. Water use efficiency for each sector is computed through a sector-specific method. Change in water use efficiency is calculated over a 3 or 5 year period.</li> <li>• Step 2. Each sector change in water use efficiency over the agreed period is multiplied by the proportion of withdrawal tied to that sector.</li> <li>• Step 3. All sectoral results from Step 2 are added together to account for 100% of withdrawals/consumption.</li> </ul> <p><i>Water Efficiency in Agriculture</i> is calculated as the agricultural value added per agricultural water consumed, expressed in USD/m<sup>3</sup>. Agricultural water consumed is computed modifications to AQUASTAT water withdrawal data (in m<sup>3</sup>/year). Agriculture value added is obtained from Gross Value Added by Kind of Economic Activity at constant (2005) prices - US dollars, Agricultural sector (UNSD). Change in water efficiency over the selected period is obtained by the following:</p> <ul style="list-style-type: none"> <li>• Step 1. Calculate 3-year average of agricultural water consumed around each reference year (e.g. 2009-2011; 2014-2016 in the case of a 5-year time step).</li> <li>• Step 2. Calculate 3-year average agricultural value added around each reference year (e.g. 2009-2011; 2014-2016 in the case of a 5-year time step).</li> <li>• Step 3. Divide value added by water consumed to obtain water efficiency for each reference year.</li> <li>• Step 4. Subtract water efficiencies obtained between the two reference years.</li> <li>• Step 5. Divide result by water efficiency for first reference year to calculate percent change.</li> </ul> <p><i>Water efficiency of industries</i> is calculated as the industrial value added per industrial water withdrawals, and expressed in USD/m<sup>3</sup>. Industrial water withdrawal is obtained from AQUASTAT and expressed in m<sup>3</sup>/year. Industrial value added is obtained from Gross Value Added (GVA) by Kind of Economic Activity at constant (2005) prices – US dollars. Change in water efficiency over the selected period is obtained by the following:</p> <ul style="list-style-type: none"> <li>• Step 1. Calculate 3-year average of industrial water withdrawal around each reference year (e.g. 2009-2011; 2014-2016 in the case of a 5-year time step).</li> <li>• Step 2. Calculate 3-year average industrial value added around each reference year (e.g. 2009-2011; 2014-2016 in the case of a 5-year time step).</li> <li>• Step 3. Divide value added by water withdrawal to obtain water efficiency for each reference year.</li> </ul>
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	<ul style="list-style-type: none"> <li>• Step 4. Subtract water efficiencies obtained between the two reference years.</li> <li>• Step 5. Divide result by water efficiency for first reference year to calculate percent change.</li> </ul> <p><i>Energy (Power) Water Efficiency</i> is calculated as the power production per unit of water consumed for energy production, and expressed in MWh/m<sup>3</sup>. Energy water withdrawals are obtained from the 2012 World Energy Outlook (International Energy Agency). Electricity production (International Energy Agency), primary energy and primary electricity production (World Bank based on IEA data) or the UNSD energy statistics questionnaire. Change in water efficiency over the selected period is obtained through the following computation:</p> <ul style="list-style-type: none"> <li>• Step 1. Calculate 3-year average of water withdrawal for energy production around each reference year (e.g. 2009-2011; 2014-2016 in the case of a 5-year time step). convert to water consumed using evapotranspiration assumptions modelled per electricity source</li> <li>• Step 2. Calculate 3-year average of megawatt hours around each reference year (e.g. 2009-2011; 2014-2016 in the case of a 5-year time step).</li> <li>• Step 3. Divide the average megawatt hours produced by water consumed for each reference year.</li> <li>• Step 4. Subtract change between the two reference years.</li> <li>• Step 5. Divide result by water efficiency for first reference year to calculate percent change.</li> </ul> <p><i>Municipal water supply efficiency</i> is the ratio between water effectively distributed to households/ consumers and the water produced for domestic consumption by water supply utilities. It uses the statistics on unaccounted for water available from the IBNET database. Change in water efficiency over the selected period is obtained through the following computation:</p> <ul style="list-style-type: none"> <li>• Step 1. Calculate 3-year average of water production by water distribution facilities around each reference year (e.g. 2009-2011; 2014-2016 in the case of a 5-year time step).</li> <li>• Step 2. Calculate 3-year average of billed water volumes by water supply utilities around each reference year (e.g. 2009-2011; 2014-2016 in the case of a 5-year time step) (the difference represents unaccounted for water).</li> <li>• Step 3. Divide the billed water volumes by water production for each reference year.</li> <li>• Step 4. Subtract change between the two reference years.</li> <li>• Step 5. Divide result by municipal water efficiency for first reference year to calculate percent change.</li> </ul>
<b>Rationale and interpretation</b>	The indicator provides an aggregated measure of overall change in efficiency across sectors, but it is built on sectoral data and is therefore relevant to each of the sectors. The indicator provides incentives for countries to improve water efficiency through all sectors, while weighting the focus to those sectors within each country that represent the largest withdrawals. The indicator is most relevant when combined with sector-specific efficiency indicators.
<b>Sources and</b>	The indicator can be calculated using existing datasets from FAO-AQUASTAT (FAO)

<b>data collection</b>	<p>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 medium-term but is currently only being compiled by a select number of countries.</p> <p>Modeled data could be used to fill in gaps while capacity is being developed, so that the indicator could be calculated for all countries immediately.</p>
<b>Disaggregation</b>	<p>The indicator covers the agricultural, municipal, industrial, and energy sectors. Although it would be difficult to disaggregate the indicator to catchment or subnational scales, the calculations and methods provided as part of indicator development could be replicated by countries or water management organizations to provide similar data at a smaller scale.</p>
<b>Comments and limitations</b>	<p>Because it is a composite indicator, some changes in its value may be due not to changes in sectoral efficiencies but in changes in the overall share of water use by different sectors.</p>
<b>Gender equality issues</b>	<p>(blank)</p>
<b>Data for global and regional monitoring</b>	<p>A partial monitoring framework is in place, currently being finalized under the Global Expanded Water Monitoring Initiative (GEMI).</p> <p>Data on efficiency are available at the country level other than water withdrawal. FAO-AQUASTAT can provide withdrawal data for all countries across sectors (other than energy). Setting the energy withdrawal baseline for the year 2015 would be possible making several assumptions.</p> <p>The System of Environmental-Economic Accounting (SEEA, 2012) will provide robust withdrawal and consumption-based statistics in the medium-term.</p>
<b>References</b>	<p>Food And Agricultural Organization Of The United Nations. AQUASTAT. FAO's Global Information System on Water and Agriculture. Rome. Website <a href="http://www.fao.org/nr/aquastat">http://www.fao.org/nr/aquastat</a>.</p> <p>System of Environmental Economic Accounting (SEEA) (2012) System of Environmental- Economic Accounting. Department of Economic and Social Affairs, Statistics Division.</p> <p>System of Environmental Economic Accounting for Water (SEEA-Water) (2007) System of Environmental- Economic Accounting for Water. Department of Economic and Social Affairs, Statistics Division.</p>

### 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 (Core)**

**“Global Food Loss Index”**

##### **1. Precise definition of the indicator**

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.

##### **2. How is the indicator linked to the specific TARGET as worded in the OWG Report?**

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.

##### **3. Does the indicator already exist and is it regularly reported?**

The indicator has been developed and compiled, but further testing and validation is required before public release.

The costs of measuring losses directly and regularly, for example in surveys, are prohibitive. Therefore, the indicator is primarily model-based. It will be compiled on a regular basis as part of the Food Balance Sheets in FAOSTAT.

The calculation of the indicator relies on primary data collected from government agencies in the Agricultural Production Questionnaire or harvested from official publications and other sources. The model parameters are retrieved from the World Development Indicators database of the World Bank.

The coverage with primary data is lowest in Sub-Saharan Africa, North Africa and the Middle East. For sugar crops, tree nuts and milk the data are more difficult to obtain than for other types of commodities.

The accuracy of the estimates could be improved by investments into the statistical capacities for the assessment of losses at national level, probably in the scope of the Global Strategy, as well as into work on further improvements of the model.

**4. Comment on the reliability, potential coverage, comparability across countries, and the possibility to compute the indicator at sub-national level.**

Reliability

The accuracy of the indicator is difficult to assess, as the measurement error of the primary data collected from countries, which adds to the error made in the estimation by the model, cannot be quantified. Our preliminary comparison of predicted and observed losses makes us confident that our estimates are not systematically biased.

Coverage

The indicator can be compiled annually for the 177 countries for which Food Balance Sheets are produced.

Comparability

The indicator will be calculated on the basis of a standard definition and common methodology for each country in each year. However, the accuracy of the estimates will vary across countries as a result of differences in the availability and quality of the source data.

Sub-national estimates

Sub-national estimates will not be available.

#### **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”**

#### **Indicator 14.4.1 (Core)**

**“Proportion of fish stocks within biologically sustainable levels”**

##### **1. Precise definition of the indicator**

The indicator we propose is the “proportion of fish stocks within biologically sustainable levels”, not limits<sup>11</sup>. It is therefore slightly different from the indicator 7.4 currently included in the Millennium Development Goals<sup>12</sup>. The FAO Committee on Fisheries has requested changes (see the 2012 and 2014 Reports of the 30th and 31st Sessions of the Committee on Fisheries<sup>13</sup>) in the description of the status of the stocks based on sustainability to ensure clarify 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 569<sup>14</sup>. 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.

##### **2. How is the indicator linked to the specific TARGET as worded in the OWG Report?**

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.

<sup>11</sup> As opposed to the language used in the Aichi Targets of the Convention on Biological Diversity (CBD).

<sup>12</sup> See: <http://mdgs.un.org/unsd/mi/wiki/7-4-Proportion-of-fish-stocks-within-safe-biological-limits.ashx>.

<sup>13</sup> 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.

<sup>14</sup> <http://www.fao.org/docrep/015/i2389e/i2389e.pdf>

### **3. Does the indicator already exist and is it regularly reported?**

Yes, FAO has maintained and reported this indicator since 1974.

The global fish stock assessment program has been carried out by the Fishery Department and has been incorporated into its regular program activities. The assessment is usually done every 2 or 3 years.

### **4. Comment on the reliability, potential coverage, comparability across countries, and the possibility to compute the indicator at sub-national level.**

#### Reliability

This is probably the most quoted and used indicator on fisheries (e.g. the Global Biodiversity Outlook<sup>15</sup>, reports from the Millennium Development Goal process, etc.) and the most widely accepted indicator at the global level. This because it was the earliest indicator established and it uses the most comprehensive approach in comparison with other recently emerged indicators and methodologies.

#### Coverage

It is global, covering about 57% of the global catch. But it is not conducted by country. There are no current plans to do this by country because 1) fish migrates across areas beyond national jurisdictions, and 2) we don't want to get into political problems. But, there would be some hope to attempt this if funds are made available.

#### Comparability across countries

The assessment is not at country level, so not comparable among countries.

#### Sub-national estimates

No such estimates currently exist.

### **5. Is there already a baseline value for 2015?**

There are a number of targets have been proposed for this indicator. For instance, the World Summit on Sustainable Development proposed reaching 100% by 2015, while the Convention on Biological Diversity (CBD) Aichi proposed the 100 percent target by 2020.

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<sup>15</sup> Secretariat of the Convention on Biological Diversity (2014) Global Biodiversity Outlook 4. Montreal, 155 pgs.

#### Target 14.6

**“By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation”**

*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 14.4.*

*In FAO's view, this indicator would be more appropriate for monitoring this target than the proposals currently listed in the 11<sup>th</sup> of August list. Subsidies are not only a highly sensitive matter among member states, but "negative fishery subsidies" has no agreed definition. An indicator based on negative fishery subsidies is therefore unlikely to be accepted by member states, and may even be introducing new /contentious issues, in contravention to what has been requested by the IAEG-SDG.*

### **Indicator 14.6.1 (Core)**

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

#### **1. What is the precise definition of the indicator?**

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 questionnaire<sup>16</sup> which is circulated by FAO every two years to members and IGOs and INGOs. This indicator is calculated on the basis of the efforts being made by countries to implement key international instruments aiming to combat 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). For each variable, the maximum score will be obtained if implementation is also present, as reported. 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.

#### **2. How is the indicator linked to the specific TARGET as worded in the OWG Report?**

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<sup>16</sup> 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.

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 international instruments however can be compiled and presented to serve as essential data for monitoring of efforts towards achieving the said Targets.

**3. Does the indicator already exist and is it regularly reported?**

There is currently not such an indicator but FAO's biannual survey on CCRF implementation already compiles responses by Members on the above mentioned instruments. Therefore, survey responses and results on this indicator could be reported and presented every two years to COFI. This information could serve the purposes of monitoring on Targets 14.4 and 14.6.

**4. Comment on the reliability, potential coverage, comparability across countries, and the possibility to compute the indicator at sub-national level.**

Reliability

As long FAO Member Countries do respond to the CCRF Survey, as managed by FI, and responses are reviewed and compiled and presented by FI to COFI, the reliability and comprehensiveness of the global information and data set provided will enjoy significant and growing political recognition among FAO's Member Countries and the general public.

Coverage

The proposed indicator on IUU fishing would be global, covering all FAO members.

Comparability across countries

It would be possible to compare across countries and regions.

Sub-national estimates

Currently not available

**5. Is there already a baseline value for 2015?**

As indicated, the proposed indicator is new, although the CCRF survey has been including questions on efforts undertaken against IUU fishing. The new indicator would need a baseline which could be formulated for the next survey period.

### 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)”**

#### **1. What is the *precise* definition of the indicator?**

The indicator **“Productivity of aquaculture in utilizing natural resources (land, water and wild stock)”** is to provide for a measure the 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](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 (m<sup>3</sup>) 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)

## **2. How is the indicator linked to the specific TARGET as worded in the OWG Report?**

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.

## **3. Does the indicator already exist and is it regularly reported?**

FAO collects statistical data globally on aquaculture grow-out production (production volumes and values), seed production (in numbers), and surface areas covered (hectares) and volumes (m<sup>3</sup>) of cages and raceway used by aquaculture operations. However, only aquaculture grow-out production volumes and values are published annually, while other compiled data sets (i.e. surface areas covered and volumes of cages and raceways and seed production, as submitted by members) have been utilized only for the internal analysis, e.g. for SOFIA, due to significant problems in quality and coverage of reported data, and rather low reporting rates.

It is emphasized that FAO has data sets for areas (including both land and water surface areas; N.B. hectares or m<sup>2</sup>) covered by aquaculture, as reported to FAO, although these data sets are not yet complete and not yet available for publication/distribution. Progress is being made with compilation and presentation of area coverage data, and may be published in foreseeable future.

In comparison to such land cover data, data on aquaculture water use (i.e. volumes of water; N.B. km<sup>3</sup> or litres) are much more complex and much more difficult to obtain by and from most members. Therefore, many of the countries as well as FAO would as yet not be able to report and present data on water use in aquaculture.

FAO has collected some information on seed collected from wild or produced for aquaculture purposes but these data are still in development. While FAO regularly collects information on amount of fish

utilized for fish meals/ fish oil manufacturing, no information is available on a proportion to be used for aquaculture. Similarly, no systematic data is available for amount of trash fish and other wild fish being captured and directly fed for aquaculture grow-out purposes. FAO does not regularly collect data on aquaculture feeds and related ingredients, as such data are not regularly supplied by national statistical offices. However, reviews of aquaculture feeds and fertilizer uses and sources of feed ingredients are being undertaken by FAO and other institutions and organizations. Such reviews provide information on e.g. use of fish meal and fish oil for aquaculture feeds. For example, IFFO – the Marine Ingredients Organization (iffo.net), representing industry interests, publishes opinion papers and research report on these aspects but does not regularly issue related data sets.

In conclusion, the proposed aquaculture productivity indicator has not yet been established as a standard and readily available indicator. While data on aquaculture production are regularly provided by members, data sets on the use of natural resources in aquaculture are still being developed, with coverage and quality of data on land area use being much more advanced than water use and use of wild stocks.

FAO/FI continues to successfully enhance the database on land area use in aquaculture while data coverage is still insufficient for many countries, including some major producing countries. Data sets on aquaculture water use and wild-seed collection would require additional substantial investments in most countries. Collection of data on aquaculture feeds would need to be evaluated for feasibility and cost implications both in member countries and in FAO.

In order to make this indicator comparable among countries as well as among economic benefits obtained by other sectors by utilizing natural resources, it is important to establish direct links with the SEEA Central Framework. The SEEA Central Framework already integrated the natural resources in concern here, i.e. water, land and aquatic biological resources. The Coordinating Working Party on Fisheries Statistics (CWP) adopted the standard requirement for aquaculture statistics in 2013 that include the reporting of seeds and feeds and define a format of their measures.

Currently, FAO's aquaculture questionnaire, as dispatched annually to national reporting offices, does include entries for use/coverage of land (hectares) and use of freshwater (m<sup>3</sup>) for some aquaculture systems. However, response by member countries statistical offices as well as in-house capacities for collection and management of such data sets continue to need substantial support.

Research on feasibility and costs of collection of data on seed production, capture-based aquaculture, and fisheries-based aquaculture feeds would need to be planned and would need to be funded most likely with additional resources, if made available.

#### **4. Comment on the reliability, potential coverage, comparability across countries, and the possibility to compute the indicator at sub-national level.**

##### Reliability

Given significant issues of coverage and quality of presently unpublished data on area coverage by aquaculture, the need to further develop data sets on water use, and the required research on feasibility and costs of regularly collecting data on seed production and capture-based aquaculture, let

alone fisheries based aquaculture feed production, it appears that the proposed indicator would not satisfy expectations on reliability for all parameters.

However, the proposed indicator specifically on productivity of aquaculture in utilizing land (land water area covered by aquaculture) can satisfy expectations on reliability as long as member countries commit to collect data on land use in aquaculture.

#### Coverage

Given the above, coverage (geographic, temporal) at this stage cannot be assured for this indicator.

#### Comparability across countries

Comparability across countries would still need to be researched based on collection of actual data.

#### Sub-national estimates

Yes, based on some selected data sets, as available primarily for area coverage by aquaculture operations, it would be possible to compute the indicator for productivity over land cover (i.e. aquaculture production per area coverage; tonnes/ha) for specific aquaculture contexts and/or geographical areas.

#### **5. Is there already a baseline value for 2015?**

No, a meaningful numerical target cannot be set for 2030. There is no baseline value for 2015. Most likely, targets would be meaningful if formulated more specifically for aquaculture species groups or commodities. Significant differences exist not only between various aquaculture systems and species utilized, but also for socio-economic, environmental and developmental parameters between countries and regions.

#### **Suggestion:**

While the overall indicator A of productivity of aquaculture in utilizing natural resources (if it were to include all: land, water and wild stocks) may not be feasible at this stage, it may well be worth considering a less ambitious, more specific indicator on the productivity of aquaculture in utilizing land area (including water surface area). In case that such a productivity indicator will be presented for targets associated with other agricultural sectors, there would be strong rationale to do the same for aquaculture as well.

In such a case, an additional suggestion would be to re-name the proposed indicator, i.e. just to call it: *“aquaculture productivity indicator”* and then in the definitions to clarify that it focuses only on the productivity of aquaculture in utilizing land area (including water surface area).

### 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.*

*With this in mind, FAO is highly concerned that UNSD’s preliminary list of May determined only one priority indicator for this target. As stated above, target 14.b addresses both access rights and market access, and both elements cannot be subsumed under one sole indicator, and there is no objective reason to assume a prioritization between the two. In FAO’s view, both indicators would thus be necessary to effectively monitor this target.*

### **Indicator 14.b.1 (Core)**

**“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”**

#### **1. What is the *precise* definition of the indicator?**

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.

#### **2. How is the indicator linked to the specific TARGET as worded in the OWG Report?**

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.

#### **3. Does the indicator already exist and is it regularly reported?**

The indicator does not exist, but the information does exist for some countries where such catch documentation schemes already exist, which is primarily the case for developed countries. However, FAO is leading the development of guidelines for such schemes and it is anticipated that the guidelines will be discussed and possibly endorsed in 2016 (at COFI). There is sufficient interest in CDS to begin to discuss/develop a globally agreed indicator for products traded through major markets. A catch documentation scheme will provide the framework on which to build and manage the indicator.

The feasibility of the indicator will primarily be determined by countries and regions that put in place a CDS, and if instituted the cost of data collection will be a part of the CDS, and will operate on a continuing basis. The information in a CDS is collected along the value chain and to precisely calculate the indicator, the country where distribution of the product ends will be the collector of the information since they will have the point of origin and destination and will be able to determine the total volume of product landed and the volume of product landed that is subject to a CDS for catch less than X tons.

The EU and selected other countries are collecting such information and are interested in the CDS guidelines and their application by other countries that do not require CDSs.

**4. Comment on the reliability, potential coverage, comparability across countries, and the possibility to compute the indicator at sub-national level.**

The information collected from major markets should be reliable since these markets are more than likely to have systems in place to audit and to assess the reliability of the information they are receiving with shipments. The coverage has the potential to be quite widespread since fish are a highly traded commodity, with almost all countries engaged in trading some form of fish product. If the CDS guidelines are used by the various schemes, the indicator should be comparable across countries. There is potential for the indicator to be aggregated or disaggregated and deconstructed.

**5. Is there already a baseline value for 2015?**

Setting a global target for 2030 is possible but for a credible value, a baseline needs to be established. A differentiated target set by countries is perhaps the most meaningful approach.

### Indicator 14.b.2 (Core)

“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”

#### 1. What is the *precise* definition of the indicator?

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.

#### 2. How is the indicator linked to the specific TARGET as worded in the OWG Report?

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.

#### 3. Does the indicator already exist and is it regularly reported?

There is currently not such indicator but the biennial FAO survey questionnaire on the CCRF implementation<sup>17</sup> will include new questions in relation to small-scale fisheries and the implementation of the SSF Guidelines. The first results will become available for COFI in 2016, allowing for the definition of a baseline and starting period for this indicator. COFI 2016 can provide an opportunity to sharpen the

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<sup>17</sup> 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. See factsheet for indicator 14.c.1 below.

questions if needed. In addition, there will be a specific COFI agenda item on small-scale fisheries. Data could therefore be produced at country level every two years for COFI through the electronic questionnaire.

**4. Comment on the reliability, potential coverage, comparability across countries, and the possibility to compute the indicator at sub-national level.**

Reliability

As long as FAO Member Countries do respond to the CCRF Survey, as managed by FI, and responses are reviewed and compiled and presented by FI to COFI, the reliability and comprehensiveness of the global information and data set provided will enjoy significant and growing political recognition among FAO's Member Countries and the general public.

Coverage

The proposed indicator would be global, covering all FAO members.

Comparability across countries

It would be possible to compare across countries and regions.

Sub-national estimates

Currently not available

**5. Is there already a baseline value for 2015?**

As indicated, the proposed indicator is new, and will be integrated in the next survey which should provide insight on responses by countries. The indicator examines the application by countries of a legal/regulatory/policy/institutional framework for the recognition and protection of access rights for small-scale fisheries. However, this can be expected to be a complex process which could require a substantial amount of time to advance legal, administrative and capacity development efforts. A realistic numerical target for 2030 could be envisaged, but would need to be confirmed based on survey responses and results in the next survey effort. The new indicator would need a baseline which could be formulated based on results from the next survey period.

#### Target 14.c

**“Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in UNCLOS, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of The Future We Want”**

*This target is very broad and covers numerous interests and sectors. FAO would therefore propose the following ‘umbrella’ indicator for target 14.c:*

**“Progress by countries in implementing either legally or programmatically the provisions set out in relevant legally binding and voluntary instruments for sustainable use and conservation of the ocean including, instruments related to fisheries, shipping, labour, conservation at global and regional levels”**

*For the fisheries component, FAO would be able to monitor the following sub-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”*

*Moreover, FAO is highly concerned that this proposal has been omitted from UNSD priority list and even the full list of proposals of May. 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 (Core)

“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”

#### 1. Precise definition of the indicator

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 scale<sup>18</sup> 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

<sup>18</sup> 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.

of Responsible Fisheries (CCRF)<sup>19</sup> 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.

## **2. How is the indicator linked to the specific TARGET as worded in the OWG Report?**

This indicator is not linked to a specific target, but rather to the theme of Fisheries and Aquaculture (see FAO's 14 Themes), but it 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.

## **3. Does the indicator already exist and is it regularly reported?**

Yes, the indicator is currently used to monitor the percentage of countries that demonstrate update of sustainable management practices, in terms of the sustainable fisheries/ aquaculture practices, as one of Outcome Indicator of FAO Strategic Objective 2. All underlying data is collected via the Code of Conduct of Responsible Fisheries [CCRF] questionnaire that is administered by FAO's Fisheries and Aquaculture Department every 2 years.

The FAO Code of Conduct for Responsible Fisheries is recognized and respected worldwide as the global reference framework for sustainable governance of global fisheries and aquaculture. It provides the globally acknowledged umbrella framework for existing and emerging governance instruments in fisheries, for example also for the recently adopted Voluntary Guidelines for Sustainable Small Scale Fisheries.

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.

This response indicator aims to assess progress made in the implementation of the CCRF and in the adoption of more sustainable practices pertaining to fisheries/aquaculture. It is a composite indicator based on country responses to the CCRF questionnaire. It considers countries' implementation of fisheries management plans, execution of fish stock assessments, the use of environmental assessments

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<sup>19</sup> 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.

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.

**4. Comment on the reliability, potential coverage, comparability across countries, and the possibility to compute the indicator at sub-national level.**

Reliability

As long FAO Member Countries do respond to the CCRF Survey, as managed by FI, and responses are reviewed and compiled and presented by FI to COFI, the reliability and comprehensiveness of the global information and data set provided will enjoy significant and growing political recognition among FAO's Member Countries and the general public.

Coverage

It is global, covering all FAO members.

Comparability across countries

It is possible to compare across countries and regions.

Sub-national estimates

Currently not available

**5. Is there already a baseline value for 2015?**

There are a number of targets that have been proposed for this indicator. For instance, the World Summit on Sustainable Development proposed reaching 100% by 2015, while the Convention on Biological Diversity (CBD) Aichi proposed the 100 percent target by 2020. Since the indicator examines an extent of implementation of various international instruments and guidelines some of which would require substantial amount of time to complete legal and administrative process, it would not be realistic to assume reaching 100 % in a short period. However, aiming for 100 % of countries reaching to the High and Medium high category could be meaningful targets for 2030 or beyond.

## Annex : Details of fisheries/aquaculture CCRF response indicator

CCRF Questionnaire Number and Topic		Scoring Methodology	Full score
<b>Fisheries:</b>			
Q7.2	Management plans	Proportion implemented (Total 24, unless Marine/ Inland n.a.	
Q8	Ecosystem approach	Y in Q8 - 0.4; Y in Q8.1.1 to 3 additional 0.2; N in Q8 - 0	
Q18	Coastal area management	Average of Q18.1-18.3 [Full - 1; Partial - 0.5; None - 0]	
Q26.1	Stock assessment	As it is	
Q33	Over-capacity	Number of Y in Q33.1 and Q33.2 divided by number of items (20)	
Q34	Bycatch-shark	Y in Q34.1 - 0.3; Y in Q34.3 - additional 0.2	(
Q35	Bycatch-seabird	Y in Q35.1 - 0.3; Y in Q35.4 - additional 0.2	(
Q38.1/Q38.1.	NPOA-IUU	Y/Y - 1; Y/N - 0.5, N - 0	
<b>Aquaculture:</b>			
Q16.1	Environmental assessment	Y-0.5; Highly effective - additional 0.5, need improvement - additional 0.3; None - 0	
Q16.2	Monitor operation	Y-0.5; Highly effective - additional 0.5, need improvement - additional 0.3; None - 0	
Q16.3	Minimize harmful impacts of alien species	Y-0.5; Highly effective - additional 0.5, need improvement - additional 0.3; None - 0	

### 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”**

*Target 15.1 is a complex target addressing a vast range of ecosystems. FAO is glad to report that after consulting with the principle concerned international agencies on this target (UNEP, IUCN, UNFF, CBD), a consensus has been reached on the need for two key indicators:*

*“Forest area as a percentage of total land area”*

*and*

*“Protected area overlays with biodiversity”*

*FAO is responsible for monitoring the forest area indicator, the factsheet of which is provided below.*

## Indicator 15.1.1 (Core)

### “Forest area as a percentage of total land area”

#### 1. Precise definition of the indicator

The indicator is already included among the indicators for the Millennium Development Goals (MDG) (indicator 7.1 “Proportion of land covered by forest”)<sup>20</sup>. 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.

#### 2. How is the indicator linked to the specific TARGET as worded in the OWG Report?

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<sup>20</sup> See: <http://mdgs.un.org/unsd/mi/wiki/7-1-Proportion-of-land-area-covered-by-forest.ashx>

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.

### **3. Does the indicator already exist and is it regularly reported?**

Yes, the indicator already exists. FAO reports the data to UNSTATS. Further information can be found at: <http://mdgs.un.org/unsd/mdg/Metadata.aspx> (metadata needs updating).

### **4. Comment on the reliability, potential coverage, comparability across countries, and the possibility to compute the indicator at sub-national level.**

#### Reliability

It is not possible to determine a statistical margin of error of the estimates. The accuracy varies across countries depending on available information.

When reporting countries are asked to assign a Tier level 1, 2 or 3 indicating the level of detail of data sources used for reporting (where Tier 3 is regarded as the highest level of detail). Typically, Tier 3 estimates are recent data (i.e., less than 10 years ago) from National Forest Inventories (NFIs) or remote sensing, with ground validation or programme for repeated compatible NFIs. Tier 2 are older estimates (i.e., more than 10 years) from NFIs or full cover mapping/remote sensing. Core is any other data sources including expert estimates.

#### Coverage

FAO carries out global forest resources assessments at 5 year intervals, the results of the FRA 2015 will be released in September 2015 and next assessment will most likely be in 2020. Given the relative low accuracy of the reported data and the slow change, it is not advisable to report these data more frequently (i.e., annual reporting does not provide any added value).

#### Comparability across countries

The national figures in the global assessments are reported by the countries themselves following standardized format, definitions and reporting years, ensuring that data is comparable across countries and regions.

Further, the reporting format ensures that countries provide the full reference for original data sources as well as national definitions and terminology. Separate sections in the reporting format (country

reports) deal with the analysis of data (including any assumptions made and the methods used for estimates and projections to the common reporting years).

#### Sub-national estimates

Currently it is not possible to compute the indicator at sub-national level.

### Target 15.2

**“By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation 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.*

*FAO is highly concerned that UNSD’s priority list of May determined only one indicator for this target, down from two in its February list. As described above, target 15.2 includes a variety of elements that cannot be subsumed under one sole indicator, and there is no objective reason to assume a prioritization between them so as to guide the selection of indicator. As such, selecting only one indicator risks undermining the ambition of the SDG agenda by constraining the intended scope of its targets.*

*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 (Core) “Carbon stock in woody biomass”

### 1. What is the *precise* definition of the indicator?

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.

### 2. How is the indicator linked to the specific TARGET as worded in the OWG Report?

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.

### 3. Does the indicator already exist and is it regularly reported?

The indicator exists and is maintained by the FAO Forestry Department, through the Global Forest Resources Assessment which produces global assessments every five years. FRA 2015 provides carbon stocks in woody biomass for the years 1990, 2000, 2005, 2010 and 2015.

### 4. Comment on the reliability, potential coverage, comparability across countries, and the possibility to compute the indicator at sub-national level.

#### Reliability

Countries assigned quality levels for this indicator as Tiers where Tier 3 is the most recent (less than 10 years) National Forest Inventory (NFI). Tier 2 data are based on older sources (more than 10 years) NFI or full coverage mapping/remote sensing. Core comes from other data sources, including expert estimates.

#### Coverage

FAO carries out global forest resources assessments at 5 year intervals. The indicator is aggregated to the national scale.

#### Comparability across countries

The national figures in the global assessments are reported by countries following a standardized format, definitions and reporting years to provide a means of comparability across countries.

### Sub-national estimates

Currently it is not possible to compute the indicator at sub-national level.

#### **5. Is there already a baseline value for 2015?**

In keeping with the intention of the target, a meaningful numeric target could be set as: Annual change in average stocking level (Mg/ha) of carbon in forest biomass is either stable or increasing. FRA 2015 provides values for the year 2015. These values will be updated in 2020, 2025 and 2030.

## Indicator 15.2.2 (Core)

### “Forest area under sustainable forest management”

#### 1. What is the *precise* definition of the indicator?

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 unit of measure is the number of hectares covered by these attributes.

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

"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."

The proposed indicator supports the concept that sustainable forest management includes government commitments (e.g. permanent forest land use, policies and legislation), data-driven decision making, planning and stakeholder involvement. The indicator applies to all forest area as defined in the Global Forest Resources Assessment (FRA). An increase in the area reported through this indicator demonstrates increased commitment to permanent, sustainable management of forest resources including stakeholder inputs at national and operational scales.

#### 3. Does the indicator already exist and is it regularly reported?

Yes, FAO maintains this index based on country reporting beginning with the Global Forest Resources Assessment (FRA) 2015. Data is collected globally every 5 years with reporting anticipated in 2015, 2020, 2025 and 2030. <http://www.fao.org/forestry/fra/83059/en/>

#### 4. Comment on the reliability, potential coverage, comparability across countries, and the possibility to compute the indicator at sub-national level.

A quality descriptor is associated with the forest area, forest management planning and operational stakeholder involvement components of the index. Coverage is aggregated to the country level in the country reports. In 2015 some 155 countries reported for most of the elements in the index that add to a total of 2.200 M ha (55% global forest area). A common definition is used for each element so comparability across countries is good. Countries have not been asked for sub-national breakdown of the elements except for policies and legislation that support SFM. These data are requested at National and Sub-National (regional, provincial/state, local) scales. The indicator relates to international,

independently verifiable forest certification in that forest management plans and stakeholder involvement at the operational scale are present in both the SFM Index and in forest certification standards. Certification is therefore not included in the SFM Index because doing so would result in a type of double counting that is technically very difficult to avoid.

**5. Is there already a baseline value for 2015?**

A numerical global target could be set for this indicator and a reasonable value would be in the range of 50% increase in the area reported. This would be a global increase of about 500 million ha potentially covered by SFM due to the length of the period (15 years) as well as to an expected increase in the number of reporting countries. A relative target is proposed as a percentage increase. A specific target by country is recommended based on forest covered by the SFM Index as a proportion of total forest area. This would recognize the reality that countries are starting at different levels of preparedness for SFM.

### Target 15.3

**“By 2030, 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 (Core)**

**“Trends in Land Degradation”**

*FAO is glad to note that agreement has been reached for collaboration with UNCCD in order to develop this indicator jointly. Discussions are ongoing with a view to flesh out the details of respective roles and responsibilities. In particular, FAO's proposed indicator for target 2.4, "Percentage of agricultural area under sustainable agricultural practices" and proposed indicator for target 15.2, "Forest cover under sustainable forest management" will contribute to the suggested indicator for 15.3 and may represent a third tier to the proposal and help formulate a more comprehensive monitoring and evaluation framework for this target in the future.*

#### 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.*

*For these reasons, FAO believes that target 15.4 should not be monitored primarily on the basis of protected area coverage, and since this is already an strongly supported indicator for 15.1, target 15.4 should be monitored instead by the “green cover index” detailed below. 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 (Core) “Mountain Green Cover Index”

### 1. Precise definition of the indicator

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

### 2. How is the indicator linked to the specific TARGET as worded in the OWG Report?

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

We assign priority to 15.4 because this is solely “pure” mountain indicator.

### 3. Does the indicator already exist and is it regularly reported?

This indicator does not exist yet but it can be developed using the existing dataset Global Land Cover (GLC) SHARE maintained by FAO’s NRL Division.

The data set GLC SHARE developed by FAO’s NRL Division will be used as basis for the computation of the indicator, jointly with the definition of mountain areas as provided by UNEP-WCMC

Produced in 2000 by UNEP-WCMC, the first map of the world’s mountains defined them according to altitude, slope and local elevation range<sup>21</sup>:

Class 1:	Elevation > 4,500 metres
Class 2:	Elevation 3,500–4,500 metres
Class 3:	Elevation 2,500–3,500 metres
Class 4:	Elevation 1,500–2,500 metres and slope > 2
Class 5:	Elevation 1,000–1,500 metres and slope > 5 or local elevation range (LER <sup>(*)</sup> 7 kilometre radius) > 300 metres
Class 6:	Elevation 300–1,000 metres and local elevation range (7 kilometre radius) > 300 metres outside 23N–19S

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<sup>21</sup> Local elevation range parameter is obtained with a radius of interest around each grid cell: the maximum and minimum elevations within a particular neighborhood are calculated, as well as their difference. The pixel is classified as mountain area if the LER is > 300 on a 7 km radius.

As a first step and in order to define the baseline, the exercise will initially provide an overview of the current vegetation cover in mountain areas (based on GLC-SHARE 2014), and will include maps and area calculations of the current amount of woody vegetation (trees/shrubs) cover for each country, region and at global level and also by mountain class layer.

In five years' time, a comparison will be undertaken between GLC-SHARE 2014 and that of 2019 from which a trend will be extrapolated.

This five-year monitoring cycle is subject to the release of the GLC-SHARE data compiled by FAO's Land and Water Division (NRL); the monitoring and analysis will be under the responsibility of the Forest Conservation and Management Division and in particular of the Mountain Partnership Secretariat.

#### **4. Comment on the reliability, potential coverage, comparability across countries, and the possibility to compute the indicator at sub-national level.**

The index derives most of the information from GLC-SHARE, so their reliability and potential coverage are highly interrelated.

GLC-SHARE (v. 1.0): "The Global Land Cover-SHARE (GLC-SHARE) is a new land cover database at the global level created by FAO's Land and Water Division in partnership and with contribution from various partners and institutions. It provides a set of eleven major thematic land cover layers resulting from a combination of "best available" high resolution national, regional and/or sub-national land cover databases. The database is produced with a resolution of 30 arc-second<sup>2</sup> (~1sqkm). The GLC-SHARE 2012 Beta-Release 1.0 is published by FAO in 2014. Complete free and open access to the data and metadata products are available at FAO GeoNetwork ([www.fao.org/geonetwork](http://www.fao.org/geonetwork))."

Thanks to the way GLC-SHARE is structured, the Mountain Green Cover Index has a global coverage and it is possible to compute the indicator at the global, regional, national and sub-national level. In addition, the indicator allows for an analysis across the different mountain elevation classes.

Comparability across countries is technically feasible, but it is not necessarily the most interesting statistics that the index can provide.

#### 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, as internationally agreed”**

*FAO recognizes the importance of the Nagoya Protocol in this area, but recalls that the International Treaty on Plant Genetic Resources is also a key instrument. FAO’s proposal, elaborated below, combines the number of permits made available to the Nagoya Clearinghouse as well as number of SMTA communicated to the International Treaty, to reflect the role played by both instruments. For this reason, FAO has held discussions with CBD and an understanding has been reached that the indicator “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” should be the core indicator for target 15.6.*

## Indicator 15.6.1 (Core)

“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”

### 1. Precise definition of the indicator

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 Access and Benefit-sharing mechanism 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 21 August 2015, the Data Store has recorded 34,898 SMTAs from providers located in 30 countries, distributing material to recipients based in 172 countries. (<https://mls.planttreaty.org/itt/index.php?r=stats/pubStats>).

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

### 2. How is the indicator linked to the specific TARGET as worded in the OWG report?

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”.

### 3. Does the indicator already exist and is it regularly reported?

The information the indicator is based on is already being collected under the International Treaty. The ABS Clearinghouse is ready to start collecting permits/ equivalents. However, it should be noted that the Nagoya Protocol entered into force only recently.

**i. Which agency maintains and reports it?**

- The CBD Secretariat, through its ABS Clearinghouse, would be responsible for the ABS permits or their equivalents (<https://absch.cbd.int/>).
- FAO, through its Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture, would track the SMTAs ([www.planttreaty.org](http://www.planttreaty.org); Aya Idemitsu ([aya.idemitsu@fao.org](mailto:aya.idemitsu@fao.org)); Francisco Lopez ([francisco.lopez@fao.org](mailto:francisco.lopez@fao.org)).

**4. Comment on the reliability, potential coverage, comparability across countries, and the possibility to compute the indicator at sub-national level.**

In principle, the “permits/ equivalents indicator” will capture all cases of access and benefit-sharing which are covered by ABS laws of countries that are Parties to the Nagoya Protocol.

The SMTA indicator captures all access and benefit-sharing cases relating to material governed by the Treaty’s Access and Benefit-sharing mechanism.

Not all countries or providers of genetic resources will always report all permits / SMTAs. However, as countries become Parties to the International Treaty and the Nagoya Protocol and increasingly comply with their reporting obligations under the two instruments, reliability, coverage and comparability across countries will improve.

Sub-national estimates might require additional work.

PRIORITY	LEAD	Indicator	Target	notes
Core	FAO/WB	"a) Percentage of people with ownership or secure rights over agricultural land (out of total agricultural population), by sex and type of tenure; and (b) Share of women among owners or rights-bearers of agricultural land", by type of tenure	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		
Core	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.	
Core	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	
Core	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	Contributes to the indicator for 15.3
Core	UNISDR and FAO	Disaster damage and loss to agriculture		
Core	FAO-CGRFA	Ex situ Crop Collections Enrichment Index	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 promote 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
Core	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
Core	FAO	Agriculture Orientation Index for Government Expenditures	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.	
Core	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	
Core	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
Core	FAO/WB	"a) Percentage of people with ownership or secure rights over agricultural land (out of total agricultural population), by sex and type of tenure; and (b) Share of women among owners or rights-bearers of agricultural land", by type of tenure		Proposed for target 1.4
Core	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	
Core	FAO and others	Percentage of change in water use efficiency over time		

PRIORITY	LEAD	Indicator	Target	notes
Core	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	
Core	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	
Core	FAO	Progress by countries in [level/degree of] the implementation of international instruments aiming to combat IUU fishing	14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation	Relevant to target 14.6
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, including through sustainable management of fisheries, aquaculture and tourism	
Core	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	14.b Provide access for small-scale artisanal fishers to marine resources and markets	
Core	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		
Core	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 Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in UNCLOS, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of The Future We Want	
Core	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
Core	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 substantially increase afforestation and reforestation globally	
Core	FAO	Forest area under sustainable forest management		Proposed as a component for target 15.3
Core	UNCCD and FAO	Trends in Land Degradation	15.3 By 2030, 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
Core	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
Core	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, as internationally agreed	

**Contact information**

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