Post-2015 and SDGs

Nourishing people, Nurturing the planet

Targets and Indicators

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

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

Rome, June 2014

This document is prepared by FAO drawing on its collaborative work with a wide range of partners. We extend a special acknowledgment to IFAD and WFP, with whom we have prepared a joint proposal for targets and indicators in the sphere of sustainable agriculture, food security and nutrition (document accessible at:
www.fao.org/fileadmin/user_upload/post-2015/Targets_and_indicators_RBA_joint_proposal.pdf).

FAO Appreciates Your Commitment to Food Security and Sustainable Development

Among the most pressing challenges facing the world today is feeding a growing global population projected to increase from over 7 billion currently to over 9 billion by 2050. To meet the increased demand for food, food production would need to increase by 60 percent globally over the same period. This challenge is compounded by the additional threats of climate change, increasing water and land scarcity, soil and land degradation, and a deteriorating natural resource base. These threats will mainly hurt the world's poor and vulnerable, especially those living in rural areas, who represent the vast majority of the at least 842 million who suffer hunger on a daily basis.

Feeding the world will be a monumental task, but it is feasible, if we accept that we must transform food and agriculture systems, embrace sustainable living and working practices, improve governance for development and, crucially, secure the political will to act. In this regard, the post-2015 development agenda is of critical importance.

To better support Member States as they respond to the great challenges of our times, the Food and Agriculture Organization of the United Nations (FAO) has drawn on its broad multidisciplinary knowledge and experience to propose measures to more effectively tackle the twin scourges of hunger and poverty and to help guide the way to a sustainable future for all.

We believe that sustainable development, including food security for all, can be the common thread that links the different challenges we face.

This document presents targets and indicators for 14 priority themes in the post-2015 sustainable development agenda, 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, malnutrition and rural poverty; better managing natural resources; and ensuring more sustainable ecological processes for a healthier environment for all.

The 14 FAO themes are: Food Security and the Right to Food; Nutrition; Poverty Eradication; Resilience; Social Protection; Climate Change; Ecosystems, Biodiversity and Genetics; Energy; Fisheries, Aquaculture, Oceans and Seas; Forests and Mountains; Land and Soils; Sustainable Agriculture (crops and livestock); Tenure Rights; and Water.

The targets identified cover the most important dimensions related to each theme. They are aspirational, yet realistic, and use widely accepted and rigorously defined concepts. For their part, the indicators have been identified primarily in terms of their relevance to the respective targets and their methodological soundness, which allows the indicator to be measured globally as well as to be disaggregated across regions and countries. Data for measurement are already available (or in a few cases, are expected to become available) for most countries.

FAO's vision
A world free of hunger and malnutrition where food and agriculture contribute to improving the living standards of all, especially the poorest, in an economically, socially and environmentally sustainable manner

FAO Members' Three Global Goals

- eradication of hunger, food insecurity and malnutrition, progressively ensuring a world in which people at all times have sufficient safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life;
- elimination of poverty and ensuring economic and social progress for all, with increased food production, enhanced rural development and sustainable livelihoods;
- sustainable management and utilization of natural resources, including land, water, air, climate and genetic resources for the benefit of present and future generations.

FAO's five new Strategic Objectives

1. Contribute to the eradication of hunger, food insecurity and malnutrition
2. Increase and improve provision of goods and services from agriculture, forestry and fisheries in a sustainable manner
3. Reduce rural poverty
4. Enable more inclusive and efficient agricultural and food systems at local, national and international levels
5. Increase the resilience of livelihoods to threats and crises

Beginning with the basic human right to food, the 14 themes identify the social, economic and environmental drivers and barriers to improved food security and better nutrition. They capture synergies between different dimensions of food security and other emerging priorities of the new development agenda, including health, inclusive growth, population dynamics, decent employment, sustainable consumption and production, education, sanitation, natural resource management, and environmental sustainability.

For FAO, healthy and productive lives cannot be achieved unless "*all people at all times have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life*". Today, there is enough food produced to feed the world. Hunger is no longer an issue of insufficient global supplies, but mainly of lack of access to the means to produce or purchase food. The perspective that informs these targets and indicators recognizes the **central role of rural poverty reduction in the fight against hunger**. Extreme poverty and food insecurity are still mostly concentrated in rural areas, where people depend directly or indirectly on agriculture, fisheries or forestry for incomes as well as food. Improving rural livelihoods will also stem rural-urban migration and increased urban poverty.

But hunger and malnutrition are not just social and moral challenges; they impose significant economic costs on health and fiscal systems, and reduce productivity and earnings, while encouraging unsustainable resource use. **Undernutrition sustains a vicious cycle of reduced productivity, deepening poverty, slow economic development and greater resource degradation.**

There is a critical need for a social protection floor to enable hundreds of millions to overcome hunger, malnutrition and poverty. Social protection programmes should also accelerate the transition from protection to production, through better support to smallholders, particularly rural women, and income generation opportunities. Agricultural growth in low-income and agrarian economies is twice as effective as growth in other sectors in reducing hunger and poverty, especially by enhancing employment and incomes.

The transformation of food and agriculture systems will continue to impact natural resources and the environment. The food sector currently accounts for 30 percent of the world's total energy consumption; crops and livestock use 70 percent of all water withdrawals; while, by 2025, it is expected that 1.8 billion people will be living in countries or regions with "absolute" water scarcity (<500 m^3 per year per capita).

In working for a more sustainable world, we must recognize and support the hundreds of millions of people managing food and agricultural systems – including the very poorest – who constitute the largest group of natural resource managers on earth. Forests provide food, shelter, medicines and fuel, while the conservation and sustainable management of ocean ecosystems is imperative for ensuring sustainable fisheries. In all food and agricultural production systems, the transition to more sustainable practices requires better appreciation of ecosystem services, whose benefits include more sustainable food production, climate change mitigation and nutrient recycling.

The key lies in building healthy and dynamic ecosystems more resilient to stresses, and better able to cope with – and respond to – climate change, extreme weather events, emerging diseases, shifts in population patterns and economic disruptions and shocks.

There can be no sustainable development while hunger, malnutrition and poverty persist. To achieve more sustainable food systems, it is also important to encourage healthier lifestyles and diets, and diminish the loss and waste of over a third of the food produced across the world. **Improved governance of food and agriculture systems will be crucial.**

The 14 themes presented here are designed to help governments and citizens to better prioritize objectives, and to more effectively measure and monitor progress towards the attainment of sustainable development goals that are not only realistic and achievable, but also ambitious, transformative and universal.

Theme	Targets	Indicators
Food Security and the Right to Food	▪ All people have access to adequate (safe, affordable, diverse and nutritious) food all year round	▪ Prevalence of Undernourishment ▪ Prevalence of population with moderate or severe food insecurity (*Food Insecurity Experience Scale*)
Nutrition	▪ End malnutrition in all its forms (undernutrition, micronutrient deficiencies and diet-related non-communicable diseases), with special attention to ending stunting	▪ Prevalence of stunting (low height for age) under five years of age, and particularly under two years of age ▪ Prevalence of wasting (low weight for height) under five years of age ▪ Prevalence of anaemia among women and children ▪ Prevalence of overweight/obesity based on growth charts for 0-19-year-olds (WHO BMA Body mass index- for age z-score) and BMI for adults
Poverty Eradication	▪ Eradicate poverty: Bring the number of people living on less than USD 1.25 a day to zero by 2030	▪ Poverty rate, disaggregated by rural and urban areas ▪ Poverty gap ratio, disaggregated by rural and urban areas
Social Protection	▪ Ensure universal access at least to basic social protection	▪ Coverage of social protection (percentage of population participating in social assistance, social insurance and labour market support programmes)
Resilience	▪ Reduce by 50 percent human and economic losses from crises and disasters from: (i) natural hazards, (ii) conflicts, protracted crises and socio-economic crises combined and (iii) food chain crises related to plant pests and diseases, animal diseases and food safety events by 2030	▪ Human and economic losses from crises and disasters from: (i) natural hazards, (ii) conflicts, protracted crises and socio-economic crises combined, and (iii) food chain crises related to plant pests and diseases, animal diseases and food safety events
Biodiversity	▪ Biodiversity is conserved and used sustainably to contribute to food security	▪ Ex-situ crop collections ▪ Number/percentage of local breeds classified as at-risk, not-at-risk and unknown levels of risk
Climate Change	▪ Reduce the intensity and slow down the growth of greenhouse gas emissions in food systems while meeting national and individual food requirements	▪ Emissions of greenhouse gases in agriculture (per hectare of land and per unit output, separately for crop and livestock sectors) ▪ Growth of absolute levels of emissions in relevant sectors and sub-sectors
	▪ Increase resilience of production systems to climate-change-driven extreme events and maintain sustainability of production systems in the face of long-term climate changes	▪ Coefficient of variability of crop yields matched with frequency of extreme events that affect production

Energy	▪ Reduce the intensity of fossil fuel use in food systems while meeting national and individual food requirements	▪ Direct use of fossil fuel energy in agriculture per hectare of arable land/ per unit of value of output/ per unit of calorie of food produced (to be normalized by levels of capital stock of machinery per unit of arable land) ▪ Proportion of households using traditional biomass for cooking
Fisheries, Aquaculture, Oceans and Seas	▪ Fisheries and aquaculture resources are conserved and used sustainably to contribute to food security	▪ Proportion of fish stocks within biologically sustainable limits ▪ Productivity of aquaculture in utilizing natural resources (land, water and wild stock)
	▪ Ensure sustainable management and conservation of oceans (within and beyond national jurisdictions) and coastal areas	
Forests and Mountains	▪ By 2030, ensure sustainable management of all forests and mountain ecosystems, maintaining a forest cover of at least 30 per cent of global land area, and increasing the contribution of forests and mountains to rural development	▪ Total area of forests over total area ▪ Forest area under sustainable forest management ▪ Total green cover (including forest, farm and pasture land) as a proportion of total mountain area ▪ Contribution of forest sector in GDP and employment
	▪ Increase carbon stocks in forests and reduce carbon emissions from forests	▪ Forest carbon stocks (to increase) ▪ Forest carbon emissions (to be reduced)
Land and Soils	▪ 30 percent increase in the area of land under crops, grazing land and forestry under sustainable management by 2030, ensuring restoration of degraded soils, conservation of biodiversity and increasing provision of productive, ecological and socio-cultural services	▪ Area of land/soils under sustainable management
Sustainable Agriculture (crops and livestock)	▪ Use all natural resources sustainably for food and agricultural production	▪ Relevant indicators on the sustainability of water use, soil and land use, energy, biodiversity, aquatic resources, forestry and climate (as specified under the other themes)
	▪ Increase the productivity, incomes and resilience of smallholder family farms	▪ Value of food production per hectare ▪ Value of agricultural production per labour unit
	▪ Reduce the global rate of food losses and waste by 50 per cent	▪ Global Food Loss Index (GFLI)
Tenure Rights	▪ Ensure equality of economic opportunity for all women and men, including secure right to land tenure	
Water	▪ Ensure sustainable use of water resources and improve agricultural water productivity in all countries through sound water governance and improved infrastructure	▪ Agricultural water withdrawal as a proportion of total water withdrawal and total water withdrawal as a proportion of total actual renewable water resources (percentage)

ANNEX: INDICATORS AND ANNOTATION

Food Security and the Right to Food

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

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

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

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

Nutrition

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

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

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

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

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

- Prevalence of overweight and obesity is high in high-income countries and is of increasing concern in low- and middle-income countries. It has therefore become a key indicator of malnutrition at global level.

- Data on WHO BMA (BMI-for-age z-score) and BMI for adults - male and female - are easily available for all countries from DHS surveys through weight and height measurements.

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

- Iron is one of many essential micronutrients. Iron deficiency, particularly among women and children, is the most prevalent micronutrient deficiency. Although other micronutrient deficiencies are also important, measuring each of them separately or through a composite index cannot be supported by available data. Hence, we propose that this crucial micronutrient deficiency be used.
- Disaggregated data are available for all countries from DHS surveys.

Poverty Eradication

Poverty rate, disaggregated by rural and urban areas

- Measures the proportion of the population living on less than USD1.25 a day, measured in 2005 international prices, adjusted for purchasing power parity (PPP).
- The processes of poverty alleviation in rural and urban areas are different, and it would therefore be important to disaggregate this indicator by rural and urban areas.
- Data provided by the World Bank.

Poverty gap ratio, disaggregated by rural and urban areas

- Measures the intensity of poverty, defined as the average poverty gap in the population as a percentage of the poverty line at USD1.25 a day (PPP).
- The processes of poverty alleviation in rural and urban areas are different, and it would therefore be important to disaggregate this indicator by rural and urban areas.
- Data provided by the World Bank.

Social Protection

Coverage of social protection (percentage of population participating in social assistance, social insurance and labour market support programmes)

- Social protection promotes food security and poverty reduction, supporting agricultural production and rural employment while enhancing sustainable natural resource management.
- Data provided by the World Bank.

Resilience

Human and economic losses from crises and disasters from (i) natural hazards, (ii) conflicts, protracted crises and socio-economic crises combined, and (iii) food chain crises related to plant pests and diseases, animal diseases and food safety events.

- The recurrence of disasters and crises undermines nations' efforts to eradicate hunger and malnutrition and to achieve sustainable development.

- Measured by: i) crude mortality rates (disaster deaths per 1000 inhabitants); and ii) direct economic losses as a percentage of GDP.

Biodiversity

Ex-situ crop collections

- The use of a limited number of crops and a narrow genetic base within crops enhances the vulnerability of agriculture systems and puts food security and nutrition at increasing risk.
- Data sources include the WIEWS and the World Information Sharing Mechanism on PGRFA (www.pgrfa.org/gpa) as well as USDA-GRIN, GENESYS and Eurisco.

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

- Due to a lack of data on diversity at the genetic level, the global status of animal genetic resources is currently assessed in terms of the extinction risk faced by the world's livestock breeds.
- Data for this indicator are available from the DAD-IS (Domestic Animal Diversity Information System) database maintained by FAO on behalf of the Commission for Genetic Resources for Food and Agriculture.

Climate Change

Emissions of greenhouse gases in agriculture (per hectare of land and per unit of output, separately for crop and livestock sectors)

- Captures the intensity of greenhouse gas emissions in agriculture.
- Output can be measured in terms of calories for crops and protein for animal produce. It can also be measured in terms of value, though changes in prices could cause problems of comparability over time.
- FAOSTAT provides data on emissions of methane and nitrous oxide produced from agricultural activities.

Growth of absolute levels of emissions in relevant sectors and sub-sectors

- For climate change mitigation, it is important to monitor not only the intensity of greenhouse gas emissions, but also their absolute levels, as the two components do not necessarily move in parallel.
- FAOSTAT provides data on emissions of methane and nitrous oxide produced by agricultural activities.

Coefficient of variability of crop yields matched with frequency of extreme events that affect production

- Captures the extent to which crop yields vary due to the increased frequency of extreme events that affect agricultural production, such as drought and heavy rainfall.
- Data on yields provided by FAOSTAT.

Energy

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

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

Proportion of households using traditional biomass for cooking

- Approximately three billion rely on traditional biomass for cooking and heating. This use of biomass for energy is often unsustainable with serious adverse consequences for health, the environment and economic development.
- Data on the proportion of households using woodfuel and charcoal for cooking are compiled by FAO and published for most less developed and in-transition countries every five years in the State of the World's Forests.

Fisheries, Aquaculture, Oceans and Seas

Proportion of fish stocks within biologically sustainable limits

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

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

- Aquaculture accounted for 49 percent of global food fish production in 2012. It has the potential to make a significant contribution to the increasing demand for aquatic food in most regions of the world. However, the expansion of aquaculture will increase the challenges related to natural resource use.
- FAO has data on the production of aquaculture as well as on the area of land, water and seed used in production.

Forests and Mountains

Total area of forests as a proportion of total area

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

Forest area under sustainable forest management

- The socio-economic and environmental services provided by all types of forests go well beyond forest boundaries, benefit all humankind and maintain conditions for life on Earth. This indicator can therefore measure the extent to which forest benefits for sustainable development are increasing.

Total green cover (including forest, farm and pasture land) as a proportion of total mountain area

- This is a proxy for the sustainable management of mountain areas from an environmental point of view. Maintaining or increasing the total green cover would mean that the net rate of land degradation is not growing and that the ecological services provided are not diminishing.

Contribution of forest sector in GDP and employment

- This is a measure of economic impact – on incomes and employment – of forests. Data on these are available in national statistics as well as in FAO's *State of World's Forests* report.

Forest carbon stocks and forest carbon emissions

- Deforestation and forest degradation are major causes of global carbon dioxide emissions, but sustainably managed forests are important carbon sinks. Protecting forests, improving forest management and establishing new forests all increase the climate-mitigation benefits of forests.
- The desirable trend is for forest carbon stocks to increase and forest carbon emissions to be reduced.

Land and Soils

Area of land/soils under sustainable management

- Soil is a non-renewable natural resource, and soil erosion threatens the capacity of future generations to meet their needs, compromising sustainable agriculture, food security and the provision of ecosystem goods and services.
- Data sources: GLADIS, LADA-WOCAT mapping tool (World Overview of Conservation Approaches and Technologies) and forthcoming Soils Statistics and Information (ITPS World Soil Resources Report, 2015).

Sustainable Agriculture

Value of food production per hectare (measured in constant USD/hectare, disaggregated for the two lowest quintiles of countries' farm size distribution, as well as for female-headed smallholder producer households)

- Small farms make up the majority of farms worldwide (an estimated 85 percent of farms worldwide are less than 2 hectares). Raising their productivity is essential to simultaneously eradicate hunger and meet increasing food demand resulting from rapid population growth (e.g. Africa's population is expected to more than double by 2050).

- The indicator measures productivity as production of food (crops and animal produce) per unit land. Given the lack of a universally applicable definition of "smallholders", it measures performance for the two lowest quintiles of countries' farm size distributions. Data will also be disaggregated for female-headed households.
- Data are presently available for about 80 countries from LSMS conducted by the World Bank, but also other household surveys. Due to data constraints, sex disaggregation is limited to data on female-headed smallholder households (this would exclude data for women not recognized as household heads).

Value of agricultural production per labour unit (measured in constant USD/unit of labour, disaggregated for the two lowest quintiles of countries' farm size distribution, as well as for female-headed smallholder producer households)

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

Global Food Loss Index (GFLI)

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

Water

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

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

Contact information

FAO Corporate Task Team on Post-2015
Economic and Social Development Department
Food and Agriculture Organization of the United Nations
Viale delle Terme di Caracalla
00153 Rome, Italy

E-mail: Post-2015-Development-Agenda@fao.org
Website: www.fao.org/post-2015-mdg/