Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

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

Indicator 15.2.1: Progress towards sustainable forest management

Institutional information

Organization(s):

Food and Agriculture Organization of the United Nations (FAO)

Concepts and definitions

Definition:

"Sustainable forest management" (SFM) is a central concept for Goal 15 and target 15.1 as well as for target 15.2. It has been formally defined, by the UN General Assembly, as follows:

[a] dynamic and evolving concept [that] aims to maintain and enhance the economic, social and environmental values of all types of forests, for the benefit of present and future generations" (Resolution A/RES/62/98)

The indicator is composed of five sub-indicators that measure progress towards all dimensions of sustainable forest management. The environmental values of forests are covered by three sub-indicators focused on the extension of forest area, biomass within the forest area and protection and maintenance of biological diversity, and of natural and associated cultural resources. Social and economic values of forests are reconciled with environmental values through sustainable management plans. The sub-indicator provides further qualification to the management of forest areas, by assessing areas which are independently verified for compliance with a set of national or international standards.

The sub-indicators are:

1. Forest area annual net change rate
2. Above-ground biomass stock in forest
3. Proportion of forest area located within legally established protect areas
4. Proportion of forest area under a long term forest management plan
5. Forest area under an independently verified forest management certification scheme

A dashboard is used to assess progress related to the five sub-indicators. The adoption of the dashboard approach aims at ensuring consideration of all dimensions of sustainable forest management and provides for clear view of areas where progress has been achieved.

Concepts:

See Annex 1 with Terms and Definitions.

Rationale:

The definition of SFM by the UN General Assembly contains several key aspects, notably that sustainable forest management is a concept which varies over time and between countries, whose circumstances – ecological, social and economic – vary widely, but that it should always address a wide range of forest values, including economic, social and environmental values, and take intergenerational equity into account.

Clearly a simple measure of forest area is insufficient to monitor sustainable forest management as a whole. The significance of the five sub-indicators can be briefly explained as follows:

1. Trends in forest area are crucial for monitoring SFM. The first sub-indicator focuses on both the direction of change (whether there is a loss or gain in forest area) and how the change rate is changing over time; the latter is important in order to capture progress among countries that are losing forest area, but have managed to reduce the rate of annual forest area loss.
2. Changes in the above-ground biomass stock in forest indicate the balance between gains in biomass stock due to forest growth and losses due to wood removals, natural losses, fire, wind, pests and diseases. At country level and over a longer period, sustainable forest management would imply a stable or increasing biomass stock per hectare, while a long-term reduction of biomass stock per hectare would imply either unsustainable management of the forests and degradation or unexpected major losses due to fire, wind, pests or diseases.
3. The change in forest area within legally protected areas is a proxy for trends in conservation of forest biodiversity as well as cultural and spiritual values of forests and thus a clear indication of the political will to protect and conserve forests. This indicator is related to the CBD Aichi Target 11 which calls for each country to conserve at least 17 per cent of terrestrial and inland water areas.
4. The fourth sub-indicator looks at the forest area that is under a long term forest management plan. The existence of a documented forest management plan is the basis for long term and sustainable management of the forest resources for a variety of management objectives such as for wood and non-wood forest products, protection of soil and water, biodiversity conservation, social and cultural use, and a combination of two or several of these. An increasing area under forest management plan is therefore an indicator of progress towards sustainable forest management.
5. The fifth sub-indicator is the forest area that is certified by an independently verified forest management certification scheme. Such certification schemes apply standards that generally are higher than those established by the countries' own normative frameworks, and compliance is verified by an independent and accredited certifier. An increase in certified forest area therefore provides an additional indication of progress towards sustainable forest management. It should however be noted that there are significant areas of sustainably managed forest which are not certified, either because their owners have chosen not to seek certification (which is voluntary and market-based) or because no credible or affordable certification scheme is in place for that area.

Comments and limitations:

The five sub-indicators chosen to illustrate progress towards sustainable forest management do not fully cover all aspects of sustainable forest management. In particular, social and economic aspects are summarized under the sub-indicators on areas under sustainable forest management plans. Furthermore, as the trends are calculated using only those countries which have data complete time series, different sub-indicators may reflect different sets of countries.

While the dashboard illustrates the progress on the individual sub-indicators, there is no weighting of the relative importance of the sub-indicators.

Methodology

Computation method:

National data on forest area, biomass stock, forest area within protected areas, and forest area under management plan are reported directly by countries to FAO for pre-established reference years. Based on the country reported data, FAO then makes country-level estimates of the forest area net change rate using the compound interest formula. The proportion of forest area within protected area and under management plan is calculated using the reported areas and the official FAOSTAT land area for reference year 2015. Data on forest area under an independently verified forest management certification scheme are reported to FAO by the head offices of respective forest certification scheme, who are jointly adjusting the figures to remove any double accounting.

No dashboard traffic lights are made at country level.

Treatment of missing values:

- ***At country level:***

For countries and territories where no information was provided to FAO for FRA 2020 (47countries and territories representing 0.5 percent of the global forest area), a report was prepared by FAO using existing information from previous assessments, literature search, , remote sensing or a combination of two or more of them.

For aboveground biomass sub-indicator, imputation of the missing values has been carried out by FAO for those countries with incomplete time series. For those countries where no value is available for any of the reporting years, no imputation has been implemented and the values for all years are set as “Not Available”.

- ***At regional and global levels:***

See above.

Regional aggregates:

See Annex 2 – Methodology. It should be noted that for those sub-indicators where there are gaps in the data set, only the countries with complete data for the relevant years (either provided by the countries or estimated by FAO) are included in the regional and global aggregates. Annex 2 also shows how the dashboard traffic lights are applied at global and regional level.

Sources of discrepancies:

The national figures in the database are reported by the countries themselves following a standardized format, definitions and reporting years, thus eliminating any discrepancies between global and national figures. The reporting template requests that countries provide the full reference for original data sources as well as national definitions and terminology. Separate sections in the template (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); calibration of data to the official land area as held by FAO; and reclassification of data to the classes used in FAO’s Global Forest Resources Assessments.

Regarding the data on forest area under an independently verified forest management certification scheme, these are usually not part of official national statistics, and are maintained by local offices of the respective certification schemes. They in turn report their data to their head offices. As certified forest area is dynamic and can change monthly as some certificates expire and new certificates come.

Therefore, the data are requested to correspond to the end of June each year. However, data are not always reported by the local offices according to that date.

Methods and guidance available to countries for the compilation of the data at the national level:

Detailed methodology and guidance on how to prepare the country reports through an online reporting platform and to convert national data according to national categories and definitions to FAO’s global categories and definitions is found in the documents “*Guidelines and Specifications*” (www.fao.org/3/I8699EN/i8699en.pdf) and “*Terms and Definitions*” (www.fao.org/3/I8661EN/i8661en.pdf).

Quality assurance

Once received, the country reports undergo a rigorous review process to ensure correct use of definitions and methodology as well as internal consistency. A comparison is made with past assessments and other existing data sources. Regular contacts between national correspondents and FAO staff by e-mail and regional/sub-regional review workshops form part of this review process.

All country reports (including those prepared by FAO) are sent to the respective Head of Forestry for validation before finalization and publishing of data. The data are then aggregated at sub-regional, regional and global levels by the FRA team at FAO.

Data sources

Sub-indicators 1 to 4

FAO has been monitoring the world's forests at 5 to 10 year intervals since 1946. The Global Forest Resources Assessments (FRA) are now produced every five year. The latest of these assessments, FRA 2020, contains information for 236 countries and territories on about 60 variables related to the extent of forests, their conditions, uses and values for several points in time.

Sub-indicator 5

Data on forest certification is submitted annually to FAO by the head offices of the respective forest certification scheme. Data include the area certified by each scheme, as well as areas that are double-certified by the two main schemes. That allows for estimating the total certified forest area, adjusted for double certified area.

Collection process:

Sub-indicators 1 to 4

Data on the sub-indicators are collected periodically (until now every 5 years) by FAO's Global Forest Resources Assessment (FRA) programme. Officially nominated national correspondents and their teams prepare the country reports for the assessment. Some prepare more than one report as they also report on dependent territories. For the remaining countries and territories where no information is provided, a report is prepared by FAO using existing information and a literature search.

All data are provided to FAO by countries in the form of a country report through an on-line platform following a standard format, which includes the original data and reference sources and descriptions of how these have been used to estimate the forest area for different points in time. The on-line platform was used for all data entry, review and quality control.

In order to obtain internationally comparable data, countries are requested to provide national categories and definitions, and in case these are different than the FAO categories and definitions, countries are requested to perform a reclassification of national data to correspond to the FAO categories and definitions and to document this step in the country report. Countries are also requested to use interpolation or extrapolation of national data in order to provide estimates for the specific reporting years.

Sub-indicator 5

Currently, forest certification by the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC) are included in the data submissions. The latter includes several national/regional certification schemes that have been endorsed according to the PEFC standards.

Data reported by the certification bodies and consolidated into estimates of total certified forest area are made available to the countries through an online platform where country officials can view the data that are being submitted.

Data availability

Description:

The Global Forest Resources Assessment 2020 collected data from 236 countries and territories. Below is a breakdown of the number of countries covered by region and by sub-indicator:

Region Name	Total number of countries	Number of countries reporting latest year					Percentage of countries reporting latest year			
		Forest area annual net change rate	**Above-ground biomass stock in forest**	**Proportion of forest area located within legally established protect areas**	**Proportion of forest area under a long term forest management plan**	**Forest area under an independently verified forest management certification scheme**	**Forest area annual net change rate**	**Above-ground biomass stock in forest**	**Proportion of forest area located within legally established protect areas**	**Proportion of forest area under a long term forest management plan**
World	236	236	205	162	128	236	100%	87%	69%	54%
Central and Southern Asia	14	14	12	9	9	14	100%	86%	64%	64%
Central Asia	5	5	4	3	3	5	100%	80%	60%	60%
Southern Asia	9	9	8	6	6	9	100%	89%	67%	67%

Eastern and South-Eastern Asia	16	16	16	11	9	16	100%	100%	69%	56%
Eastern Asia	5	5	5	3	4	5	100%	100%	60%	80%
South-Eastern Asia	11	11	11	8	5	11	100%	100%	73%	45%
Northern Africa and Western Asia	25	25	21	13	10	25	100%	84%	52%	40%
Northern Africa	7	7	7	4	4	7	100%	100%	57%	57%
Western Asia	18	18	14	9	6	18	100%	78%	50%	33%
Sub-Saharan Africa	51	51	48	43	30	51	100%	94%	84%	59%
Europe and Northern America	55	55	47	40	38	55	100%	85%	73%	69%
Europe	50	50	44	36	34	50	100%	88%	72%	68%
Northern America	5	5	3	4	4	5	100%	60%	80%	80%
Latin America and the Caribbean	50	50	43	37	23	50	100%	86%	74%	46%
Oceania	25	25	18	9	9	25	100%	72%	36%	36%
Oceania (exc. Australia and New Zealand)	22	22	16	7	6	22	100%	73%	32%	27%
Australia and New Zealand	3	3	2	2	3	3	100%	67%	67%	100%
Landlocked developing countries (LLDCs)	32	32	28	22	17	32	100%	88%	69%	53%

Least Developed Countries (LDCs)	47	47	42	36	23	47	100%	89%	77%	49%
Small island developing States (SIDS)	53	53	42	27	12	53	100%	79%	51%	23%

Time series:

2000, 2010, 2015, 2016, 2017, 2018, 2019, 2020

Disaggregation:

No further disaggregation of this indicator.

Calendar

Data collection:

Source data collection was initiated in 2018 and concluded in 2019.

Data release:

Data with updated time series and including year 2020 will be released June 2020. The possibilities of a more frequent reporting on forest area and other key indicators are currently being evaluated.

Data providers

The data are provided by the countries through a global network of officially nominated national correspondents. For the countries and territories which do not have a national correspondent, a report is prepared by FAO using previously reported information, literature search, remote sensing or their combination.

For sub-indicator 5, forest certification, data are provided by head offices of respective forest certification scheme.

Data compilers

Food and Agriculture Organisation of the United Nations (FAO)

References

URL:

http://www.fao.org/forest-resources-assessment/en/

References:

http://www.fao.org/forest-resources-assessment/current-assessment/en/

Annex 1 – Terms and Definitions [1]

FOREST

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**.**

Explanatory notes

1. 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.

2. 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.
3. 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.
4. Includes windbreaks, shelterbelts and corridors of trees with an area of more than 0.5 hectares and width of more than 20 meters.
5. 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.
6. Includes areas with mangroves in tidal zones, regardless whether this area is classified as land area or not.
7. Includes rubberwood, cork oak and Christmas tree plantations.
8. Includes areas with bamboo and palms provided that land use, height and canopy cover criteria are met.
9. 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.

ABOVE-GROUND BIOMASS

All living biomass above the soil including stem, stump, branches, bark, seeds, and foliage.

Explanatory note

1. In cases where forest understorey is a relatively small component of the aboveground biomass carbon pool, it is acceptable to exclude it, provided this is done in a consistent manner throughout the inventory time series.

PROTECTED AREAS

Areas especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.

FOREST AREA WITHIN PROTECTED AREAS

Forest area within formally established protected areas independently of the purpose for which the protected areas were established.

Explanatory notes

1. Includes IUCN Categories I – IV
2. Excludes IUCN Categories V-VI

FOREST AREA WITH MANAGEMENT PLAN

Forest area that has a long-term documented management plan, aiming at defined management goals, which is periodically revised.

Explanatory notes

1. A forest area with management plan may refer to forest management unit level or aggregated forest management unit level (forest blocks, farms, enterprises, watersheds, municipalities, or wider units).
2. A management plan must include adequate detail on operations planned for individual operational units (stands or compartments) but may also provide general strategies and activities planned to reach management goals.
3. Includes forest area in protected areas with management plan.

INDEPENDENTLY VERIFIED FOREST MANAGEMENT CERTIFICATION

Forest area certified under a forest management certification scheme with published standards and is independently verified by a third-party.

Annex 2 – Methodology

Sub-indicator 1 - Forest area annual net change rate

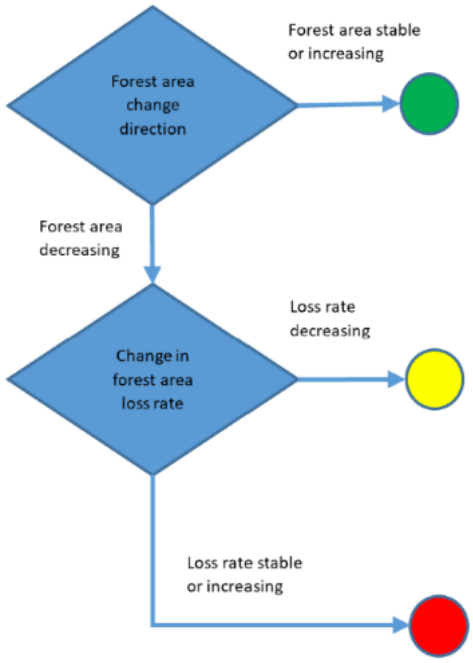
Unit: Percent

Reference period: Most recent period

Method of estimation: Compound interest formula

Translation to dashboard/traffic light:

The following flowchart explains the logic behind the translation of this indicator to a dashboard/traffic light:



The forest area change direction is determined by examining the value of the forest area change rate for the most recent period, a negative value indicate a loss of forest area, a zero value means that forest area is stable and a positive value means that forest area has increased. The change in forest area loss rate is based on a comparison of the current forest area net change rate with the baseline forest area net change rate for the period 2000-2010.

Comments:

This traffic light takes into consideration both the direction of forest area change (if forest area increases or decreases) as well as changes in the rate of forest area loss – the latter important in order to indicate progress among countries that are losing forest area but manage to reduce the loss rate.

For annual reporting, FAO can provide countries with imputed values based on previous trends that they can use in case they don't have new/updated information. The baseline should be updated every 5 years, so in 2020 a new baseline is calculated. Also, at country level, if a country gets new information and updates the historical time series, the baseline for the country will be recalculated, respecting the 2010-2015 period.

Sub-indicator 2 – Above-ground biomass stock in forest

Unit: tonnes/hectare

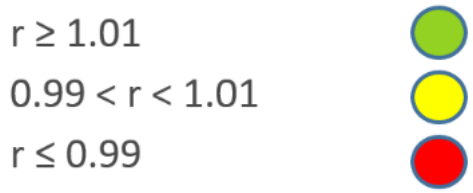
Reference year: Latest reporting year

Method of estimation: Reported directly by countries

Translation to dashboard/traffic light:

The indicator value for the latest reporting year is compared with the indicator value for previous reporting year for assessment of continuity of progress since last report.

The ratio (r) between the current indicator value and the previously reported value is calculated; r>1 means an increase in stock per hectare, r<1 means a decrease while 1 indicates no change. A narrow interval for r has been established to indicate a stable condition, and traffic-light colors are assigned as follows:



Sub-indicator 3 – Proportion of forest area located within legally established protected areas

Unit: Percent

Reference year: Latest reporting year

Method of estimation: Forest area within legally established protected areas / forest area 2015 * 100

Translation to dashboard/traffic light:

The indicator value for latest reporting year is compared the indicator value for previous reporting year for assessment of continuity of progress since last report.

The ratio (r) between the current indicator value and the previously reported value is calculated; r>1 means an increase in forest area within protected areas, r<1 means a decrease while 1 indicates no change. A narrow interval for r has been established to indicate a stable condition, and traffic-light colors

are assigned as follows:

$r \geq 1.01$

$0.99 < r < 1.01$

$r \leq 0.99$

Comment:

Using forest area in 2015 as denominator for estimating this indicator ensures that the time series of percentages reflect real changes in the forest area within legally established protected areas and is not affected by changes (losses or gains) in total forest area.

Sub-indicator 4 – Proportion of forest area under a long-term forest management plan.

Unit: Percent

Reference year: Latest reporting year

Method of estimation: Forest area under a long term forest management plan / forest area 2015 * 100

Translation to dashboard/traffic light: The indicator value for latest reporting year is compared with the indicator value for previous reporting year for assessment of continuity of progress since last report.

The ratio (r) between the current indicator value and the previously reported value is calculated; r>1 means an increase in areas under forest management plan, r<1 means a decrease while 1 indicates no change. A narrow interval for r has been established to indicate a stable condition, and traffic-light colors are assigned as follows:

$r \geq 1.01$

$0.99 < r < 1.01$

$r \leq 0.99$

Comment:

Using forest area in 2015 as denominator for estimating this indicator ensures that the time series of percentages reflect real changes in the forest area under forest management plan and is not affected by changes (losses or gains) in total forest area.

Sub-indicator 5 – Forest area under an independently verified forest management certification scheme.

Unit: Thousand hectares

Reference year: Latest reporting year (as of June 30)

Method of estimation: Data is collected directly from the databases of each certification scheme and provided to countries for validation.

Translation to dashboard/traffic light: The indicator value for latest reporting year is compared with the indicator value for previous reporting year for assessment of continuity of progress since last report.

The ratio (r) between the current indicator value and the previously reported value is calculated; r>1 means an increase in areas under an independent forest management certification scheme, r<1 means a decrease while 1 indicates no change. A

small interval for r has been established to indicate a stable condition, and traffic-light colors are assigned as follows:

$r \geq 1.01$

$0.99 < r < 1.01$

$r \leq 0.99$

Comments:

Using June 30 as the date for reporting, allows for the certification bodies to have their databases updated so they can provide information to FAO by end of the year, and then be included in the annual reporting to SDG in the beginning of the following year.

[1] Global Forest Resources Assessment 2015 – Terms and Definitions. http://www.fao.org/docrep/017/ap862e/ap862e00.pdf ↑

Related indicators as of February 2020

15.1.1: Forest area as a proportion of total land area