

LAND AND ENERGY: MANAGING AND MONITORING THE TRADE- OFFS



United Nations
Convention to Combat
Desertification



**Linkages between the Sustainable Development Goals (SDG)
and the GBEP Sustainability Indicators for Bioenergy (GSI)
03 July 2017**

SDG indicator 15.3.1

Proportion of land that is degraded over total land area



The UNCCD is the custodian agency leading an Inter-Agency Advisory Group on 15.3.1

composed of our key partner FAO as well as the CBD, UNFCCC, UNEP and UNSD

to further refine the methodology and data tools/options for this indicator



UNCCD Progress Indicators

As adopted at COP.11 (decision 22)

Associated metrics/proxies

SO1 **SO1-1:** Trends in population living below the relative poverty line and/or income inequality in affected areas

Poverty severity OR
Income inequality

SO1-2: Trends in access to safe drinking water in affected areas

Proportion of population
using an improved drinking
water source

SO2 **SO2-1:** Trends in land cover

Vegetative land cover

SO2-2: Trends in land productivity or functioning of the land

Land productivity dynamics

SO3 **SO3-1:** Trends in carbon stocks above and below ground

Soil organic carbon stock

SO3-2: Trends in abundance and distribution of selected species

Global Wild Bird Index

Secretariat's support

(decision 15/COP.12)

The COP requested the UNCCD secretariat, in cooperation with relevant specialized institutions, to:

- **Compile and make available** to affected country Parties **national estimates** of the metrics/proxies associated with these indicators **from available global datasets** as default data for validation in accordance with the procedure established in decision 22/COP.11;
- Prepare **methodological guidelines** and provide **technical assistance** to affected country Parties on the compilation and use of such default data;
- Undertake measures aimed at **strengthening the capacities of affected Parties** to validate, replace or reject the default data.

Established Methodology

The methodology for the three sub-indicators is well established and accepted in the scientific literature, multilateral agreements and other international processes (essential climate and biodiversity variables)

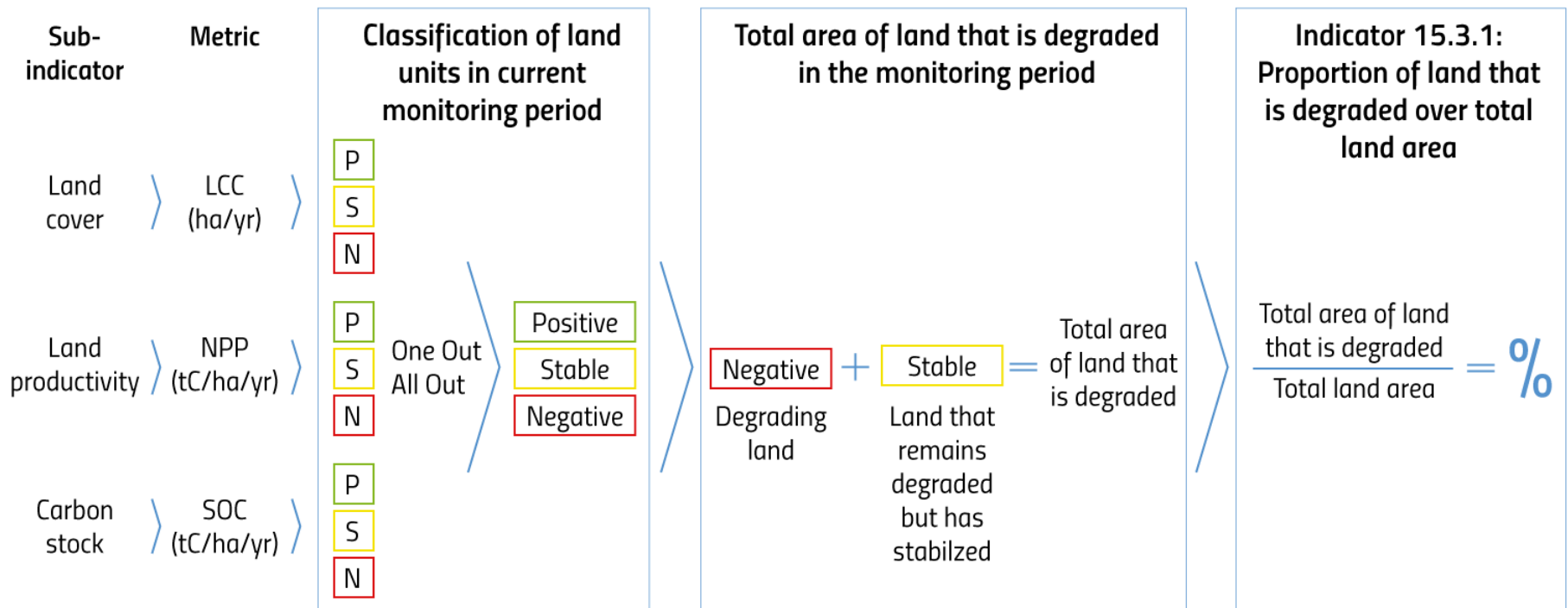
Land cover (ISO standard) – flexible classification system provides compatibility in terms of aggregation/disaggregation (IPCC-6 to SESA-15), between existing/future monitoring, and can accommodate national circumstances

Land productivity – well-established methods for the use of vegetation indices (NDVI) to evaluate trends in net primary productivity (NPP) – variety of corrections techniques given national circumstances (rainfall, cloud cover, growing season, inter-annual variability, etc.)

Carbon stocks – IPCC published methodology (IPCC, 2006) for carbon stocks can be employed to estimate the change in stocks based on land cover change (Tier One) – await further guidance from SPI/ITPS

Spatial Aggregation

1. **Setting the baseline** to determine the initial status of the sub-indicators.
2. **Detecting and validating the type of change** in each of the sub-indicators per land unit (e.g., pixel, polygon).
3. **Deriving the indicator by summing all areas subject to “negative” change** (i.e., degraded) and dividing by the total land area using “One Out, All Out” area-based approach where if any of the sub-indicators is determined to show significant negative change, it is considered degraded.



Good Practice Guidance

Good Practice Guidance (GPG) is now being developed based on the established methods for monitoring the three sub-indicators together with a method of computation for SDG indicator 15.3.1

GPG is intended to allow countries to select the most appropriate datasets and determine their own pathway for deriving the indicator

External review and consultation with the IAEG-SDGs Working Group on Geospatial Information (GEO/CEOS), countries (CEEA/GGIM) and other stakeholders

Working with data providers to build national capacities, set standards and increase frequency of reporting



Efforts Targeting Land Degradation to Achieve Neutrality

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

15.3.1 Proportion of land that is degraded over total land area

While ensuring national ownership and retaining the flexibility for countries to use their national data, the UN Convention to Combat Desertification (UNCCD) has outlined a standardized approach for reporting on SDG Indicator 15.3.1, which focuses primarily on the use of three sub-Indicators: Land Cover and Land Cover Change; Land Productivity; and Carbon Stocks above and below ground. Such a framework gives options for countries to use Earth Observation, geospatial information and other global/regional data sources in the absence of, or to complement and enhance, national data sources.

In 2015, the UNCCD secretariat conducted a Land Degradation Neutrality (LDN) Target Setting pilot project with 14 volunteer countries from all continents to design and test a methodological and

operational framework to achieve LDN and report on SDG 15.3.1. This pilot project of the UNCCD to set voluntary targets in sustainable land management and monitor progress is based on a harmonized set of 3 measurable sub-Indicators: (1) land cover and land cover change, (2) land productivity trends and (3) soil organic carbon trends, with the first two global data sets entirely based on satellite Earth Observation data. This effort is continued in a LDN Target Setting Programme (LDN-TSP) with over 100 UNCCD countries, with the objective to help countries formulating voluntary targets to achieve LDN and incorporating them in UNCCD National Action Plans (NAPs).

Earth Observation Data Use

Earth Observations from Space have proven their reliability to track land cover change and biomass activity over long periods. As many countries, in particular from the developing world, face difficulties to access this type of information, UNCCD has established partnerships with the European Space Agency (ESA), the European Commission Joint Research Center (JRC) and the International Soil Reference and Information Centre (ISRIC) to provide

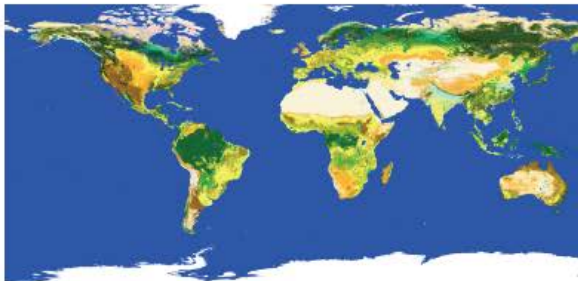


Fig. 21

Global Land Cover Map, epoch 2010, ENVISAT MERIS FRS, 300m.

The ESA CCI-Land Cover provides global land cover maps with 22 classes, at 300m resolution, for 3 epochs (2000, 2005 and 2010) and is entirely based on moderate resolution satellite data (ENVISAT MERIS, MODIS, SPOT VGT and PROBA-V).

Credit: ESA Land Cover CCI

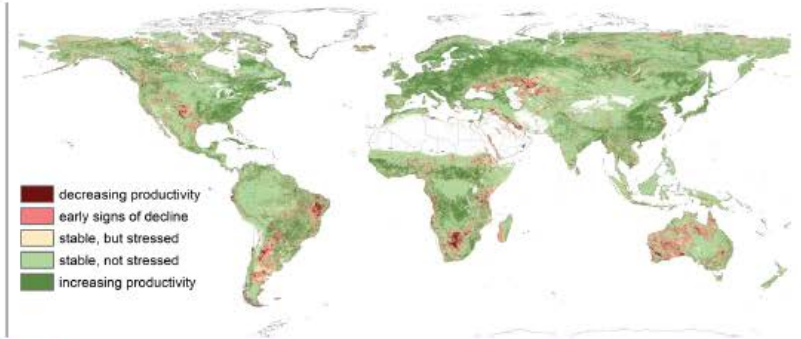


Fig. 22 Land Productivity Dynamics (LPD), 1989-2013; SPOT VEGETATION, 1km. The LPD dataset refers to the standing biomass productivity and is derived from phenological analyses of a 15-year time series (1988 to 2013) of global normalized difference vegetation index (NDVI) observations from SPOT-VGT, composited in 10-day intervals at a spatial resolution of 1 km. The map shows 5 classes indicating areas of negative or positive change or stability and is an indicator of change or stability of the land's apparent capacity to sustain the dynamic equilibrium of primary productivity in the given 15-year observation period. Credit: Joint Research Center (JRC)

all interested countries with extractions of global datasets as default information for their LDN target setting process: (1) Land Cover (CCI-Land Cover) from the ESA Land Cover Climate Change Initiative, (2) Land Productivity Dynamics (LPD) from JRC and (3) Soil Organic Carbon (SOC) from ISRIC.

Methodology

The work has focused on development of an agreed methodology to combine the three sub-Indicators into a measurement of the proportion of land that is degraded, which is required in order to fully implement the SDG Indicator 15.3.1.

While there is no single complex indicator which can unambiguously report on land degradation and restoration, monitoring efforts are nevertheless feasible when considering the three sub-Indicators in combination.

These methods are being developed with the assistance of institutions including the CSIRO.

Key Issues and Results

The LDN Target Setting pilot project has demonstrated the utility of global data sets on LC and LPD derived from satellite observations. Pilot countries have been able to use these global datasets in combination with their national data to set their national LDN targets.

Good practice guidance for each of the three sub-Indicators is essential to support countries in their measurement and evaluation of LC/LPD/SOC changes, and in their combination to assess land degradation. By summing those areas subject to

changes (according to the three sub-Indicators), and whose conditions are considered negative by national authorities (i.e., land degradation), countries would be able to determine their pathway to deriving Indicator 15.3.1.

Analysis, Status, and Outlook

Although the existing global data sets (ESA CCI-Land Cover, JRC LPD and ISRIC SOC) have been adequately used by pilot countries to conduct their LDN target setting, the moderate resolution of these datasets is an issue, especially in mountainous regions, small island states and highly fragmented landscapes (patchiness of different LC types). There is a need to move to high resolution datasets.

The future will involve development of methodologies for the production of higher resolution (10-30m) global data sets for all three 15.3.1 sub-Indicators and support for countries on the integration of national data sets and knowledge to properly assess the complex process of land and soil degradation in their territory.

Partners, Contacts and More Information

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Partners: Contracting Parties of the UNCCD that participate to the LDN-TSP.