LAND AND ENERGY: MANAGING AND MONITORING THE TRADE-OFFS

Linkages between the Sustainable Development Goals (SDG) and the GBEP Sustainability Indictors 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)

### SO1

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

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

### SO2

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

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

### SO3

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

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

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**Associated metrics/proxies**

- Poverty severity OR Income inequality
- Proportion of population using an improved drinking water source
- Vegetative land cover
- Land productivity dynamics
- Soil organic carbon stock
- Global Wild Bird Index

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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 SEEA-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.

<table>
<thead>
<tr>
<th>Sub-indicator</th>
<th>Metric</th>
<th>Classification of land units in current monitoring period</th>
<th>Total area of land that is degraded in the monitoring period</th>
<th>Indicator 15.3.1: Proportion of land that is degraded over total land area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land cover</td>
<td>LCC (ha/yr)</td>
<td>P</td>
<td>S</td>
<td>N</td>
</tr>
<tr>
<td>Land productivity</td>
<td>NPP (tC/ha/yr)</td>
<td>P</td>
<td>S</td>
<td>N</td>
</tr>
<tr>
<td>Carbon stock</td>
<td>SOC (tC/ha/yr)</td>
<td>P</td>
<td>S</td>
<td>N</td>
</tr>
</tbody>
</table>
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 drought and floods, and 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 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 in accessing this type of information, UNCCD has established partnerships with the European Space Agency (ESA), the European Commission Joint Research Center (JRC) and the International Geosphere Reference and Information Centre (GRID) to provide all interested countries with extractions of global datasets as default information for their LDN target setting process. (1) Land Cover (GCL Land Cover) from the ESA Land Cover Climate Change Initiative. (2) Land Productivity Dynamics (LPC) 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 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 LDN/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 pathways to deriving Indicator 15.3.1.

Analyse, Status, and Outlook

Although the existing global data sets (ESA GCL, 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.