

Proposal for land and soil indicators to monitor the achievement of the Sustainable Development Goals (SDGs)

Land and soils will contribute to the achievement of several SDGs. Therefore, appropriate accompanying indicators should be included in the Post-2015 Development Agenda to ensure effective monitoring. The purpose of this document is to provide decision-makers and stakeholders with concrete suggestions for indicators and how these indicators support the achievement of multiple goals for the on-going discussions on the Post-2015 Development Agenda.

A group of experts on sustainable land and soil management (Annex I) convened by the European Environment Agency (EEA) and Institute for Advanced Sustainability Studies (IASS), and further from the following organisations: Argentinian Soil Institute (INTA), European Commission – Joint Research Centre, French National Centre of Scientific Research (CNRS), German Aerospace Centre (DLR), German Federal Environment Agency, International Institute for Applied Systems Analysis (IIASA), International Institute for Sustainability Analysis and Strategy (IINAS), ISRIC – World Soil Information, Moscow Lomonosov State University, National Autonomous University of Mexico (UNAM), South African Council for Scientific and Industrial Research (CSIR), UNCCD, University of Greenwich, University of West Indies, Venezuelan Soil Science Association; met in Copenhagen, Denmark, on 5-6 February 2015 to develop a set of indicators to contribute to the Global Land Indicators Initiative (GLII) and the Post-2015 Development Agenda.

The GLII is a multi-stakeholder platform of partners and individuals learning and sharing knowledge aimed at exploring innovative means of collecting data that will be affordable, easy and manageable by member states. Our goal is to complement GLII-agreed indicators on land tenure security, land conflict and dispute resolution, and land administration services with a set of indicators on sustainable land and soil management. In this document, we propose a shortlist of land and soil indicators and aim to develop a longlist to address the management of these resources in a more comprehensive manner within the wider framework of the GLII process.

Rationale

The proposed SDGs as per the outcome document of the Open Working Group highlight the need to protect land and soil resources in support of sustainable development. These resources underpin key services, such as the production of food, feed, fibre and fuel, the sequestration of carbon, nutrient cycling, protection of biodiversity, and water regulation. Therefore, land and soil will play a crucial role in the achievement of several goals. We support maintaining the references to land and soil in the final set of SDGs. More specifically, we support the need to “*progressively improve land and soil quality*” (proposed target 2.4); “*to combat desertification, and restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land-degradation neutral world¹*” (proposed target 15.3).

¹ Cf. Para 206, Rio+20 Outcome Document.

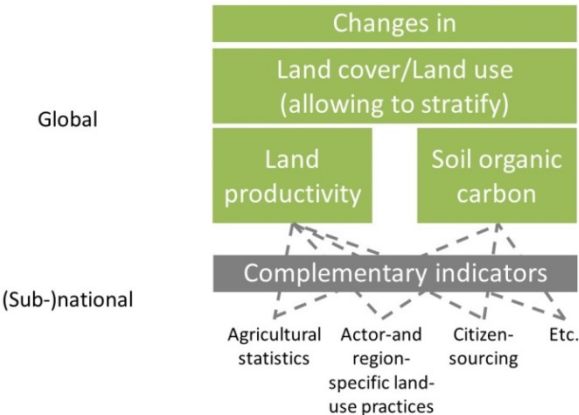
Discussions at the Copenhagen workshop focused on developing a joint understanding of land and soil indicators. The indicators proposed build upon the work by the UNCCD secretariat to explore the development of common land indicators across the Rio Conventions (UNCCD, CBD and UNFCCC²). According to this approach³, it is proposed to use readily available global data sources to measure the shortlist of global indicators in order to decrease the reporting burden on member states. This approach aims at limiting data collection efforts at national level, and puts greater emphasis on data quality improvement and interpretation.

The indicators proposed in this document have been substantially discussed within global relevant fora (principally UNCCD). While there is no international consensus on an alternative proposal, there are concerns about the ability of these indicators to properly grasp the complexity of land and soil degradation. Even combined, they do not comprehensively address all quantity and quality aspects of land. Therefore, the monitoring of these indicators needs to take place within the context of broader monitoring and accountability strategies. Complementary indicators at national to sub-national scale that monitor issues relevant to specific national contexts are crucial. Countries should validate default global data with national data, using data sourced nationally/locally. In addition, monitoring of these indicators needs to be accompanied by local monitoring and accountability initiatives that include a wide range of stakeholders. Linking global data to (sub-) national data would thus blend a top-down with a bottom-up approach.

Furthermore, the implementation process of the SDGs should live up to the aims for effective, accountable and transparent institutions and; for responsive, inclusive, participatory and representative decision-making at all levels outlined under proposed SDG 16 for peaceful and inclusive societies. We acknowledge that good governance of land and soil resources is essential and the GLII has developed indicators in this regard.

Shortlist of land and soil indicators

The indicators follow a tiered approach (see graphic below) and can be enriched at the national and sub-national level. The list of global land and soil indicators encompasses: 1) land cover/land use change, 2) land productivity change and 3) soil organic carbon change. These indicators are measurable and essential in capturing a minimum of land characteristics that are globally comparable.



² UNCCD, United Nations Convention to Combat Desertification; CBD, United Nations Convention on Biological Diversity; and UNFCCC, United Nations Framework Convention on Climate Change

³ Documented in ICCD/COP(11)/CST/2 for presentation at the eleventh session of the Conference of the Parties – Committee on Science and Technology, held in Windhoek, Namibia, from 17–20 September 2013.

We propose that the indicators in this shortlist be included in the list of proposed indicators that the UN Statistical Commission is preparing and are considered in the further Post-2015 agenda and SDG process.

Proposed indicator	Description	Measurement	Link to relevant global initiatives (Annex II)	Proposed SDGs ⁴ that it contributes to
Land cover/land use change	Land cover/land use serves as an 'umbrella indicator' that allows stratification/disaggregation of the land productivity and soil organic carbon indicators. Land cover classes (e.g. forestry, agriculture, urban) will vary in importance depending on the context. Changes in land cover/land use give a first indication of the loss or degradation and restoration of land and soil quality.	Proportions of different land cover/land use classes according to a globally-accepted legend (e.g. FAO Land Cover Classification System - LCCS). The indicator requires geo-spatial mapping of land cover/land use classes using comparable methodologies at regular time intervals. Harmonised data are available at global and national scales.	EC, EEA, FAO's LCCS, LQC & LUC, GBEP, GEF through land degradation assessment, GOFC-GOLD, SDSN, UNCCD, UN-HABITAT, WB's LGAF	Proposed SDGs 6, 11, 13, 15
Land productivity change	Land productivity addresses the net primary production per unit of area and time. Land productivity reflects the overall quality of land and soil, as a result of climatic conditions and resource use/management. Changes in land productivity, interpreted together with additional data, may give an indication on the loss or degradation, as well as on the restoration of land and soil quality.	The indicator requires a long-term time series of land productivity measures in high spatial resolution, best addressed by Earth-Observation-approximated net primary productivity (NPP). Methodologies for calculation of NPP based on remotely-sensed data are established. Global data for reference years are readily available.	EC's Copernicus Programme data, EC-JRC data sets, FAO land suitability criteria & crop types and yields, UNCCD, WB	Proposed SDGs 1, 2, 6, 7 13, 15
Soil organic carbon change	Soil organic carbon is relevant to estimate carbon fluxes and can be an important indicator of overall soil quality.	Soil organic carbon (C) can be estimated as a stock (expressed as mass per unit area, e.g. g C per ha) or as content (e.g. % or g C/100 g soil) for a reference depth. The indicator requires geo-spatial mapping of soil organic carbon over a reference depth using comparable methodologies at regular time intervals. Methodologies to model soil organic carbon are established. Global modelling outputs of soil organic carbon are available for reference years.	FAO agro-environmental indicators, FAO-UNESCO Soil Map of the World, GBEP	Proposed SDGs 13, 15

⁴ Proposed SDG 1. 'End poverty in all its forms everywhere'

Proposed SDG 2. 'End hunger, achieve food security and improved nutrition, and promote sustainable agriculture'

Proposed SDG 6. 'Ensure availability and sustainable management of water and sanitation for all'

Proposed SDG 7. 'Ensure access to affordable, reliable, sustainable, and modern energy for all'

Proposed SDG 11. 'Make cities and human settlements inclusive, safe, resilient and sustainable'

Proposed SDG 13 'Take urgent action to combat climate change and its impacts'

Proposed SDG 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'

Annex I

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Disclaimer

The views contained in the document are those of the experts and do not represent the official position of the institutions they are affiliated to.

Annex II

Organisations and initiatives that the proposed indicators are linked to:

- EC – European Commission (Copernicus – The European Earth Observation Programme)
- EC-JRC – European Commission’s Joint Research Centre
- EEA – European Environment Agency
- FAO – Food and Agriculture Organization of the United Nations (LCCS – Land Cover Classification System, LQC – Land Quality Control Data, LUC – Land Use Change)
- FAO-UNESCO – United Nations Educational, Scientific and Cultural Organization
- GBEP – Global Bioenergy Partnership
- GEF – Global Environment Facility
- GOFC-GOLD – Global Observation of Forest and Land Cover Dynamics
- SDSN – Sustainable Development Solutions Network
- UNCCD - The United Nations Convention to Combat Desertification
- UN-Habitat – United Nations Human Settlements Programme
- WB – World Bank (LGAF – Land Governance Assessment Framework)

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