



## Strengthening National Capacities in Bhutan for monitoring Land degradation and reporting of the United Nations Convention to Combat Desertification

### Background:

By its decision 7/COP.13, the Conference of the Parties (COP) to the United Nations Convention to Combat Desertification (UNCCD) adopted the UNCCD 2018–2030 Strategic Framework, containing five strategic objectives (SOs) and an implementation framework. The SOs are:

- **SO 1:** To improve the condition of affected ecosystems, combat desertification/land degradation, promote sustainable land management and contribute to land degradation neutrality;
- **SO 2:** To improve the living conditions of affected populations;
- **SO 3:** To mitigate, adapt to, and manage the effects of drought in order to enhance resilience of vulnerable populations and ecosystems;
- **SO 4:** To generate global environmental benefits through effective implementation of the UNCCD; and
- **SO 5:** To mobilize substantial and additional financial and non-financial resources to support the implementation of the Convention by building effective partnerships at global and national level.

Progress made in the implementation of the UNCCD 2018–2030 Strategic Framework has been regularly reviewed through the national reporting process since 2018. The reporting procedures, as well as the role and responsibilities of the Committee for the Review of the Implementation of the Convention (CRIC) in reviewing the reports, are spelled out in decisions 13/COP.13 and 15/COP.13.

Since 2018, the UNCCD reporting process has also contributed to the follow-up of progress in implementing the 2030 Agenda for Sustainable Development. As the custodian agency for Sustainable Development Goal (SDG) indicator 15.3.1 “Proportion of land that is degraded over total land area”, the UNCCD secretariat is requested to use relevant information submitted in the national reports as a contribution to the overall follow-up and review by the High-level Political Forum on Sustainable Development.



The Performance Review and Assessment of Implementation System (PRAIS) is used by countries for reporting to the UNCCD. The deadline for submission of national reports for the period 2016-2019 (PRAIS4) is March 2023, but particularly for SO1 the deadline is 23<sup>rd</sup> of January. The Kingdom of Bhutan, as a country member of the UNCCD, and under the framework of the Enabling Activities financed by the Global Environment Fund "*Strengthening national-level institutional and professional capacities of country Parties towards enhanced UNCCD monitoring and reporting – GEF 7 EA Umbrella*" and in collaboration with the World Overview of Conservation Approaches and Technologies WOCAT is organizing a participatory workshop for the estimation of SO 1 indicators (Table 1) and co-developing a series of tools, including an LDN decision support system to facilitate this process and contribute to informed decision making to achieve the country LDN targets.

Indicator code	Indicator name	Metrics / proxies	Adopted / proposed	Reporting attribution	
				Affected country Parties	Developed country Parties
SO 1-1	Trends in land cover	Land cover change	Indicator adopted in decision 7/COP.13	X	*1
SO 1-2	Trends in land productivity or functioning of the land	Land productivity dynamics	Indicator adopted in decision 7/COP.13	X	
SO 1-3	Trends in carbon stocks above and below ground	Soil organic carbon stock	Indicator adopted in decision 7/COP.13	X	
SO 1-4	Proportion of land that is degraded over total land area	—	Background for indicator adopted in decision 9/COP.13	X	

Table 1: Strategic objective (SO) 1 indicators and reporting attribution. Source: UNCCD 2022 (<https://prais4-reporting-manual.readthedocs.io/en/latest/index.html>)



## Participatory workshop for the estimation of SDG indicator 15.3.1 (proportion of degraded land) and reporting of Strategic Objective 1 to UNCCD via PRAIS4

### Workshop objectives:

- Define in participatory way the most appropriate legend and data source to map degradation due to cover changes in Bhutan
- Identify which land cover changes correspond to either degradation, improvement or neutral transitions (transition matrix) and obtain the final map of degradation due to land cover changes integrating national experts' knowledge.
- Select in a participatory way of the most representative map of land productivity dynamics for the Kingdom of Bhutan.
- Define the strategy to improve the estimation of SOC changes
- Select the most appropriate methodology for the comparison of the degradation maps of the baseline and reporting period.
- Identify false positives and negatives and hotspots of degradation using the Bhutan LDN DSS

**Dates and time:** From 9<sup>th</sup> to 12<sup>th</sup> January 2023, from 09 to 18 hrs Thimphu time (GMT +6)

**Place:** Hotel River Valley, Punakha (in person) - Zoom meeting ID: 889 4944 6116 (virtual)

<https://us02web.zoom.us/j/88949446116>

### Participants:

1. Dr. Sonam Wangchuk, Program Director, Highland Research & Development Centre, Department of Livestock (DoL)
2. Mr. Ugyen Norbu, Chief, Economic and Environment Division, National Statistical Bureau (NSB)
3. Mr. Dawa Zangpo, Forest Resource Management Division, Department of Forests and Park Services, Ministry of Energy and Natural Resources (MoENR)
4. Mr. Chencho Tshering, Survey Engineer, Geoinformatics Division, Department of Survey & Mapping, National Land Commission Secretariat (NLCS)
5. Mr. Kezang Wangchuk, Biodiversity Officer, National Biodiversity Centre, Ministry of Agriculture & Livestock (MoAL)
6. Ms. Rinzin Wangmo, Geologist, Department of Geology and Mines, MoENR
7. Ms. Tshering Lhamo, Meteorologist, Meteorological Service Division, National Centre for Hydrology and Meteorology (NCHM)
8. Mr. Haka Drukpa, Land Management Program, NSSC
9. Mr. Dawa Tashi, Soil Survey Program, NSSC



10. Ms. Sangita Pradhan, Soil Survey Program, NSSC
11. Mr. Tashi Wangdi, NSSC
12. Ms. Nicole Harari, WOCAT
13. Ms. Ingrid Teich, WOCAT

**Methodology:** Participants in the workshop will discuss and make the necessary decisions to select the best available land cover, land productivity dynamics and SOC data, as well as the most appropriate algorithms to analyze these data sets, following UNCCD's PRAIS4 reporting manual<sup>1</sup> guidelines and the SDG 15.3.1 Good practice Guidance<sup>2</sup>.

Land cover data to map transitions and degradation due to land use change (sub-indicator SO1-1) will be explored using a specifically developed tool based on a Google Earth Engine (GEE) application that allows users to compare the default land cover data from the European Space Agency and the GlobeLand30 2020, the 30-meter resolution global land cover data product developed by China<sup>3</sup>. The tool can be accessed at <https://wocatapps.users.earthengine.app/view/dss-bhutan-lct>

Different (5) land productivity dynamics map will be compared using another Google Earth Engine application developed for this purpose, where users can obtain statistics at national and district level in order to compare assessments and identify the most representative ones following Teich et al. (2018)<sup>4</sup>: <https://wocatapps.users.earthengine.app/view/dss-bhutan-lpd>

Finally, an LDN Decision Support System is being codeveloped to integrate national information on SLM, land cover, SOC, and land degradation with global indicators on Biodiversity, climate change and LDN. This tool will be used to map hotspots and false positives and negatives for PRAIS4 and to contribute to informed decision making to achieve national LDN targets. It can be accessed at <https://wocatapps.users.earthengine.app/view/dss-bhutan>

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<sup>1</sup> <https://www.unccd.int/resources/manuals-and-guides/prais4-reporting-manual>

<sup>2</sup> <https://www.unccd.int/resources/manuals-and-guides/good-practice-guidance-sdg-indicator-1531-proportion-land-degraded>

<sup>3</sup> Chen J., Ban Y., Li S. China: Open access to Earth land-cover map[J]. Nature, 2014, 514(7523): 434-434. DOI:10.1038/514434c.

<sup>4</sup> <https://doi.org/10.3390/rs11242918>

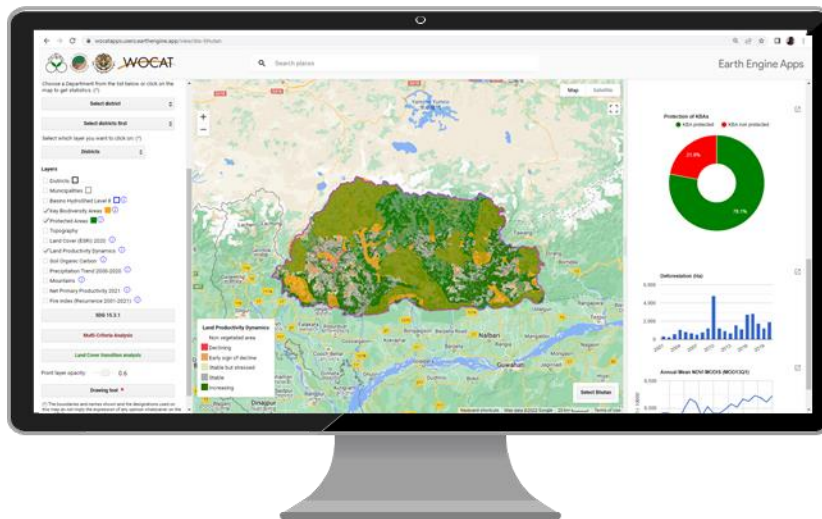


Figure 1: Bhutan LDN DSS available is being codeveloped for informed decision making to achieve national LDN targets. It can be accessed at <https://wocatapps.users.earthengine.app/view/dss-bhutan>

**Tentative Agenda:**

DAY 1 – January 9 <sup>th</sup>		
Time (GMT +6)	Activity	Responsible
08:45 – 09:00	Registration	
09:00 – 09:30	Welcome and introduction to the Participatory Workshop  Introduction of Participants	Mr. Tashi Wangdi, National Soil Services Centre (NSSC)
09:30 – 09:45	Presentation on UNCCD and Bhutan	Mr. Tashi Wangdi, NSSC
09:45 – 10:30	Presentation on online PRAIS 4 Reporting Templates and its Default Data	Mr. Haka Drukpa, NSSC
10:30 – 15:00	Presentation on Five Strategic Objectives and Indicators  Discussion on data needs and sources	Tashi & Haka, NSSC  Plenary
15:00 – 15:15	Opening of Virtual Participatory Workshop	Mr. Tashi Wangdi (UNCCD FP) and Nicole Harari (WOCAT)
15:15 – 15:30	Introduction of resource persons	
15:30 – 16:00	LDN mapping and monitoring and PRAIS4	Ingrid Teich (WOCAT)
16:00 – 16:20	Introduction to land cover transitions and SO1-1	Ingrid Teich (WOCAT)
16:20 – 17:00	Exploration of data sets and alternative legends	Group work
17:00 – 17:30	Results presentation and analysis	Group work



17:30-18:00	Conclusion	
<b>DAY 2 – January 10<sup>th</sup></b>		
<b>Time (GMT +6)</b>	<b>Activity</b>	<b>Responsible</b>
09:00 – 15:00	Participants continue to work on land cover transition data sets	Participants
15:00 – 15:15	Results of days 1	Ingrid Teich (WOCAT)
15:15 – 15:30	The Land cover transition matrix	Ingrid Teich (WOCAT)
15:30 – 17:00	Definition of Bhutan land cover transition matrix	Group work
17:00 – 17:30	Degradation due to land cover change in Bhutan	Ingrid Teich (WOCAT)
17:30 – 18:00	Conclusion	Cesar García (WOCAT)
<b>DAY 3– January 11<sup>th</sup></b>		
<b>Time (GMT +6)</b>	<b>Activity</b>	<b>Responsible</b>
09:00 – 15:00	Participants continue to work on land cover change	Participants
15:00 – 15:30	Land Productivity Dynamic maps	Ingrid Teich (WOCAT)
15:30 – 15:45	Introduction to the tool to identify the best map	Tashi Wangdi
15:45 – 16:30	Exploration of maps and selection by participants	Group work
16:30 – 17:00	Presentation of results	Group work
17:00 – 18:00	Conclusion and documentation of possible false positives and negatives	Ingrid Teich (WOCAT)
<b>DAY 4 – January 12<sup>th</sup></b>		
<b>Time (GMT +6)</b>	<b>Activity</b>	<b>Responsible</b>
09:00 – 15:00	Participants continue to work on Land Productivity dynamics maps	Participants
15:00 – 15:30	SO1-3 and SOC trends in Bhutan	Ingrid Teich (WOCAT)
15:30 – 16:00	Discussion	Group work
16:00 – 16:30	The 1AOA principle and the comparison of two periods	Ingrid Teich (WOCAT)
16:30 – 17:00	Final results	Ingrid Teich (WOCAT)
17:00 – 17:30	Bhutan LDN DSS and mapping of hotspots of degradation	Group work
17:30-18:00	Discussion and general conclusion	Group work