

# Refining UNCCD SO1 indicator and SDG 15.3.1 indicator

## Hungary



United Nations  
Convention to Combat  
Desertification



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## **Participating**

<b>Player</b>	<b>Role</b>
Lechner Nonprofit Ltd.	SO1-1 sub-indicator calculation
Institute for Soil Sciences – Centre of Agricultural Research	SO1-2, SO1-3 sub-indicators SO1/LDN 15.3.1 indicator calculation
UNCCD national focal points	Communication, coordination, review, compliance, translation, recommendations
UNCCD Science and Technology Correspondent	Communication (ICID, WMO), coordination, scientific review, CC aspects

- **Method - Reproducible for future reporting cycles**
- **Using national data where applicable**
- **Improve 2018 UNCCD national report on SO1**
- **Make proposal for voluntary national target(s)**
- **Make proposal for the way forward**

## Work carried out

- Examined **LCLU datasets** in detail concerning appropriateness to calculate SO1-1 indicator and proposed finally two distinct time series of UNCCD status layers,
- Created a consistent time series of UNCCD status in 100m raster resolution for the reference years of 1990, 2000, 2006, 2012 and 2018 by harmonizing **European CLC data**,
- Created a time series of UNCCD status in 100m raster resolution for the reference years of 2011, 2016, 2017, 2018 and 2019 on the basis **NHRL layers** created via satellite image classification,
- Created land **cover change matrix** and **degradation layers** in 100m raster resolution for both of distinct UNCCD time-series (i.e. CLC based and NHTRL based),
- **Validated all UNCCD status products** (i.e. UNCCD2000, UNCCD2011, UNCCD2016, UNCCD2017, UNCCD2018 and UNCCD2019),
- Provided **documentation** in English language

## Trends in land cover

**Table 4.1.3.a:** UNCCD change matrix for the CLC based reference years. Values are expressed in km<sup>2</sup>.

UNCCD CLASS	UNCCD1990	UNCCD2000	UNCCD2006	UNCCD2012	UNCCD2018
1: Tree covered areas	16 358	16 962	16 873	16 610	16 351
2: Grassland	13 893	13 365	13 685	14 495	14 747
3: Cropland	54 498	54 297	53 889	53 257	53 205
4: Wetland	867	873	873	871	874
5: Artificial surfaces	5 672	5 752	5 900	5 975	6 027
6: Other land	30	29	28	28	29
7: Waterbodies	1 694	1 733	1 763	1 775	1 780
<b>SUM</b>	<b>93 011</b>	<b>93 011</b>	<b>93 011</b>	<b>93 011</b>	<b>93 011</b>

**Table 4.2.3.a:** UNCCD change matrix for the NHRL based reference years. Values are expressed in km<sup>2</sup>.

UNCCD CLASS	UNCCD2011	UNCCD2016	UNCCD2017	UNCCD2018	UNCCD2019
1: Tree covered areas	26 298	23 951	23 861	24 212	23 423
2: Grassland	14 328	13 114	12 970	13 060	13 606
3: Cropland	46 030	49 197	49 250	48 922	49 096
4: Wetland	1 083	1 367	1 483	1 277	1 236
5: Artificial surfaces	3 734	3 895	3 965	4 051	4 156
6: Other land	-	-	-	-	-
7: Waterbodies	1 539	1 488	1 482	1 489	1 496
<b>SUM</b>	<b>93 011</b>	<b>93 011</b>	<b>93 011</b>	<b>93 011</b>	<b>93 011</b>

# Trends in land productivity or functioning of the land

## Proposal for data used

- MODIS Satellite data as a basis to generate vegetation productivity indices. Time series of 17 years (2000-2016), 500 m resolution for the whole country
- Land productivity data based on soil, terrain and climatic properties (Tóth et al. 2018). 500 m resolution to fit for joint spatial analysis with the satellite-driven data.

## Proposal for vegetation index

- Plant Phenology Index (PPI), Jin and Eklundh (2014)

## Proposal for computing the indicator

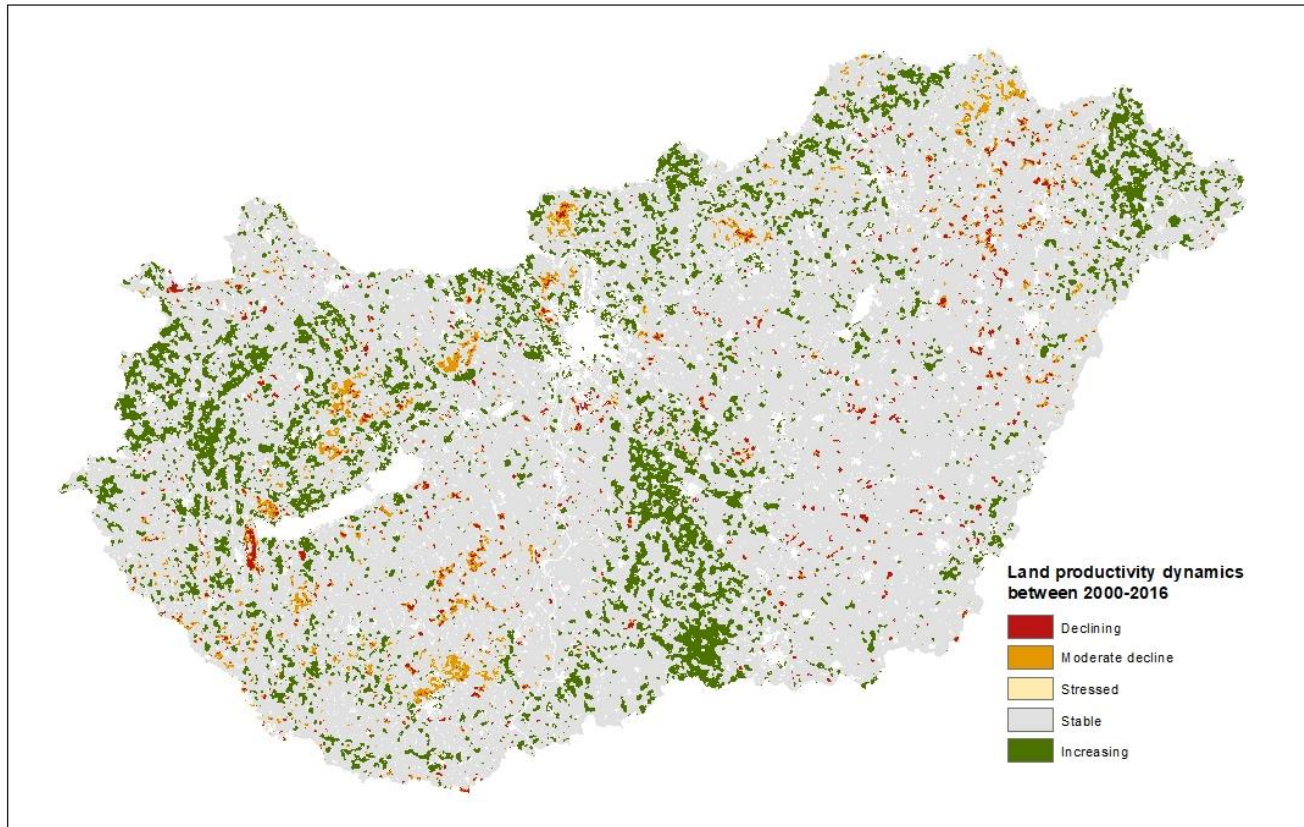
- Trend, State and Performance to identify areas potentially affected by degradation as seen from productivity dynamics (Cherlet et al. 2018, Ivits and Cherlet 2016, Sims et al. 2017)

## Proposal for baseline: from 2000 to 2013

## Proposal for delineating productivity categories

- Declining, Moderately declining, Stressed, Stable, Increasing

# Trends in land productivity or functioning of the land



Land productivity dynamics between 2000-2016 based on “Trend” indicator

# Trends in carbon stocks above and below ground

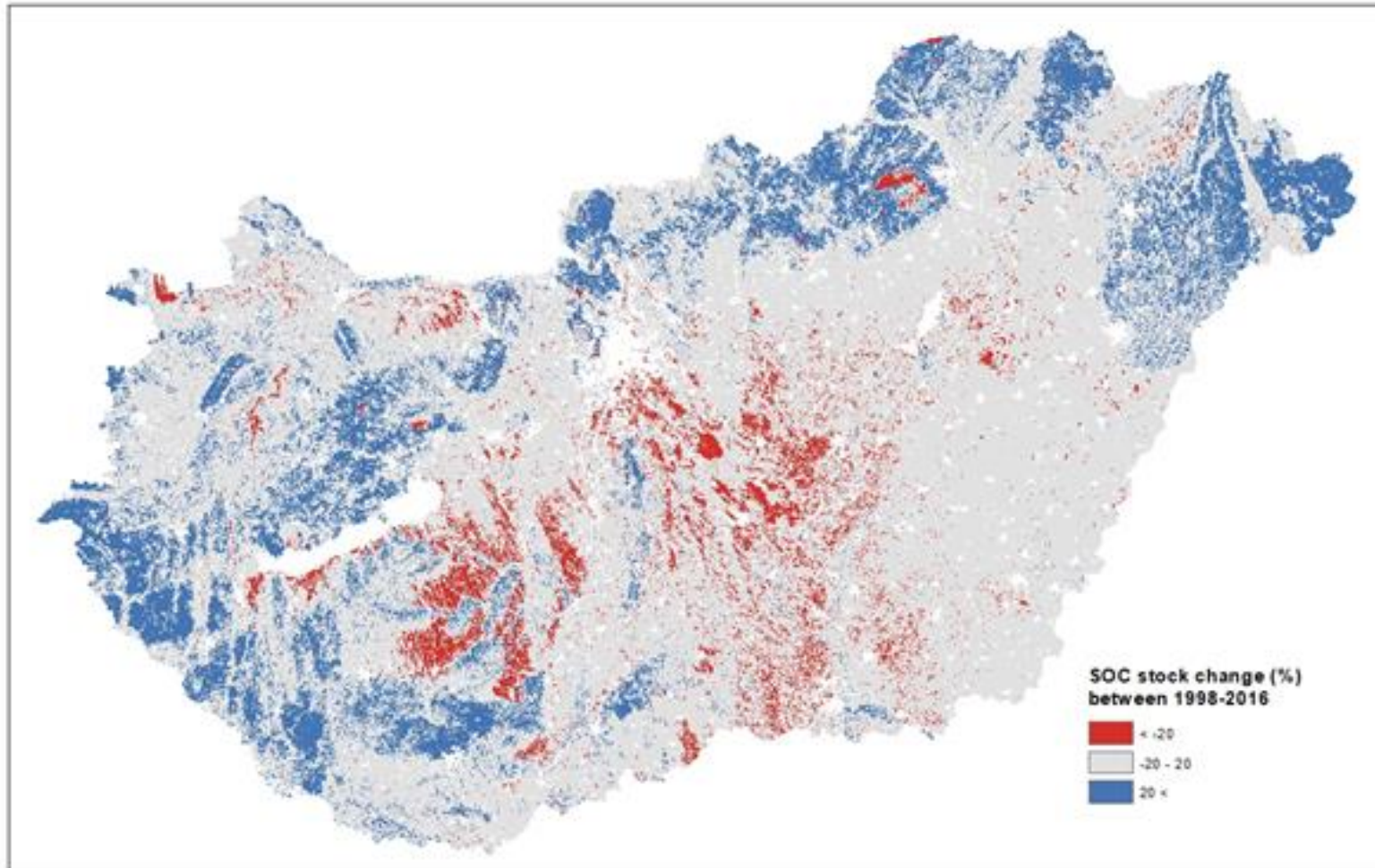
**Default data strongly recommended to be replaced by national estimation**

## **Work carried out**

- Prediction of SOC stock by digital soil mapping method
- Reference data: Hungarian Soil Information and Monitoring System
- Prediction of uncertainty
- Method for estimation of SOC stock change
- Detecting degraded and not degraded areas



# Trends in carbon stocks above and below ground



SOC stock change (%) between 1998 and 2016

## Proportion of land that is degraded over total land area

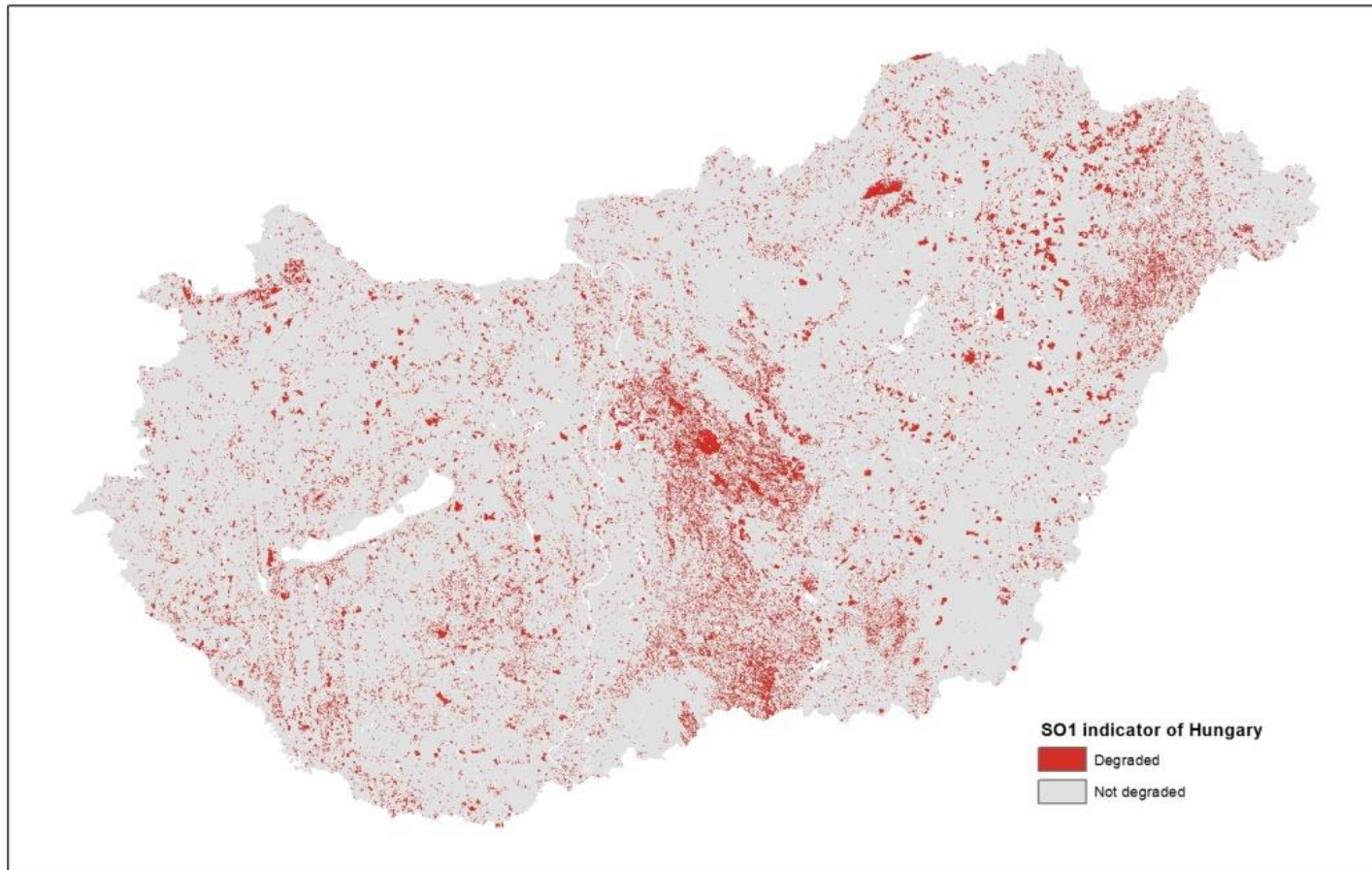
This indicator estimates the spatial extent of land that is degraded. It is a binary quantification based on indicators SO1: 1-3 and their metrics:

1. Land cover (land cover change)
2. Land productivity (net primary productivity); and
3. Carbon stocks (soil organic carbon stocks).

Since the indicators SO1: 1-3 are complementary and non-additive components of land-based natural capital, they are combined using a **one-out, all-out** (1OAO) approach

Total area of degraded land (km <sup>2</sup> )	Proportion of degraded land	Year
5120.23	5.6 %	2012
8837.48	9.7 %	2018

## Proportion of land that is degraded over total land area



Total area of land that is degraded in Hungary in 2018 compiled from three sub-indicators (in case of SO1-2, two land use categories: grassland and croplands are considered)

## **Recommendations for the use of the results**

- Recommendations to accept the methodology for the respective sub-indicators and SO-1 indicator

## **Proposal for national voluntary targets**

- Increase the irrigated areas of Hungary by 2030, in line with the Government's irrigation development program.
- The proportion of forest areas in Hungary will increase from the current 21% to 27% by 2030.
- By 2030, the number of monitoring stations operated within the framework of the Operational Drought and Water Scarcity Management System will reach 150.

**2021-2022 UNCCD national reporting cycle**

**Further review of the results of the study**

**Secure financial resources**

**THANK YOU FOR YOUR ATTENTION**