

Showcase on SDG 15.3.1

Land degradation

Policy context

Within Global Support Programme and Land Degradation Neutrality (LDN) Target Setting Programme of United Nations Convention to Combat Desertification (UNCCD) several proxies of assessing state of land according to Sustainable Development Goals (SDG) of Sendai Framework for Disaster Risk Reduction 2015–2030 the following criteria were selected: (i) trends in land cover (vegetative land cover); (ii) trends in land productivity or functioning of the land (land productivity dynamics).

The LDN target setting processes are contributing to achieving the Sustainable Development Goal (SDG) 15, Life on Land, and in particular its target 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”)

The goal of LDN is to maintain or enhance the natural capital of the land and associated land-based ecosystem services. LDN therefore implies a commitment to avoid further net loss of the land-based natural capital relative to a reference state, or baseline.

Among the indicators recommended for tracking progress towards LDN there are following: (i) land cover; (ii) land productivity; (iii) carbon stock dynamics.

Together these indicators provide good coverage of the condition of land-based natural capital and ecosystem services that are provided from that land base. In addition, they address change in the system in different yet highly relevant ways. Land cover provides a first indication of changing vegetation cover, to some extent as proxy of the underlying use, and of land conversion and resulting habitat fragmentation. Land productivity offers an indication of ecosystem functioning and health and sharpens the focus on ecosystem services.

Existing global datasets have low spatial resolution and not sufficiently accurate. Therefore, creation of global and regional land cover maps based on high resolution satellite images (such as Landsat series at 30 m, Sentinel-1/2 at 10-20 m) is an extremely important task for wide area of applications in agricultural and environmental domain.

Development of these products requires applying High Performance Computations and modern information technologies and can be used as valuable input for environmental monitoring tasks.

On global data up-to 0.25% of Ukraine has signs of land degradation (included in national reporting of Ukraine to UNCCD in 2018 as a part of SRI cooperation with Ministry of natural resources of Ukraine), this estimate will be updated with national high-resolution products. In these computations it should be noted that *ESA CCI land cover* highly overestimates cropland areas - actually it seems to be a mixture between grassland and cropland areas. With quite low spatial resolution it's not possible to capture transitions of artificial objects and other areas class to any other in reliable way.

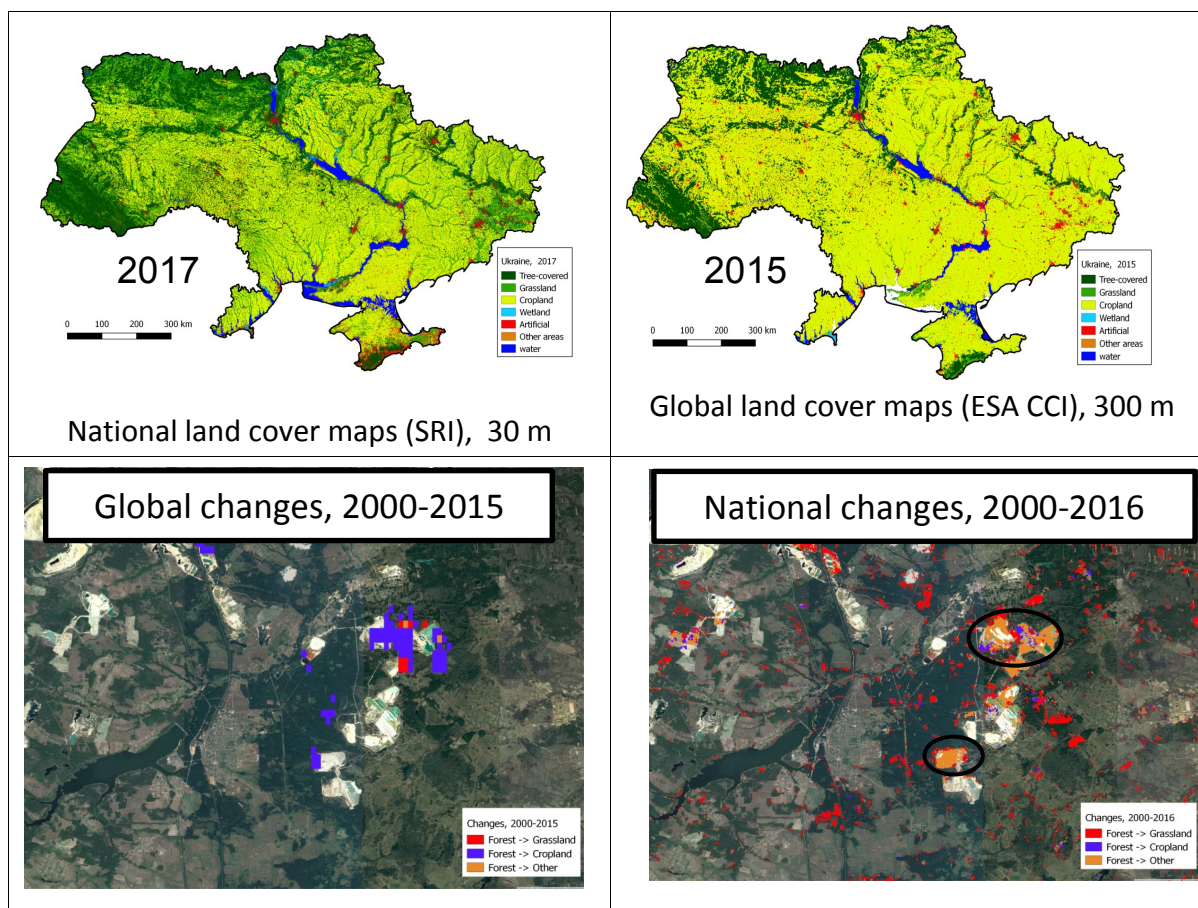


Figure 1: National vs global products over territory of Ukraine

Showcase description

GEOessential	Land degradation
Spatial Extent	Ukraine, Europe
Dashboard link	NA
Temporal Extent	2000-2015
EVs used	Land cover, land productivity, soil carbon
Inputs	Landsat, Modis, Copernicus, ESA-CCI-LC, HWSD, SolidGrid250m, Global SOC Map + Sentinel-1 and Sentinel-2
Outputs	Land degradation indicators
Targeted Policy	SDG 15.3.1: 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
Targeted indicators	15.3.1: Proportion of land that is degraded over total land area
Main Process	Trends.Earth model : http://trends.earth + own scripts + vlab
Level of development	70%
GitHub code	https://github.com/AndriiKolotii/vlab_sdg_15.3.1
Outputs endpoint	To be included when available
Partner(s)	SRI
Contact person	andrew.k.911@gmail.com (SRI)