

Showcase on SDG 2.4.1

Productive agricultural land

Policy context

The intended audiences of land productivity and degradation assessment are policy and decision-makers whose work may affect or be affected by land productivity, biodiversity or nature's contributions to people at all levels (local, national and global), as well as the United Nations entities and multilateral environmental agreements. The assessment is also relevant to the business and finance sectors in achieving positive impact.

Currently, degradation of the Earth's land surface through human activities is negatively impacting the well-being of at least 3.2 billion people, pushing the planet towards a sixth mass species extinction, and costing more than 10 per cent of the annual global gross product in loss of biodiversity and ecosystem services.

The main direct drivers of land degradation and associated biodiversity loss are expansion of crop and grazing lands into native vegetation, unsustainable agricultural and forestry practices, climate change, and, in specific areas, urban expansion, infrastructure development and extractive industry.

This is especially important considering the projected 4 billion people that will be living in drylands in 2050. Inherent feedbacks between the Earth's land systems, climate and human societies mean that efforts to address land degradation and restore land have multiplicative benefits. Land restoration and reduced and avoided degradation that increases carbon storage or avoids greenhouse gas emissions in global forests, wetlands, grasslands and croplands could provide more than one third of the most cost-effective greenhouse gas mitigation activities required by 2030 to keep global warming to below 2°C.

By 2050, land degradation and climate change together are predicted to reduce crop yields by an average of 10 per cent globally and up to 50 per cent in certain regions. Decreasing land productivity, among other factors, makes societies, particularly on drylands, vulnerable to socioeconomic instability. In dryland areas, years with extreme low rainfall have been associated with an increase of up to 45 per cent in violent conflict. Every 5 per cent loss of gross domestic product (GDP), itself partly caused by degradation, is associated with a 12 per cent increase in the likelihood of violent conflict. Land degradation and climate change are likely to force 50 to 700 million people to migrate by 2050.

A key aspect of all approaches to measuring sustainable agriculture is the recognition that sustainability is a multi-dimensional concept, and that these multiple dimensions need to be reflected in the construction of the indicator. This implies that Sustainable Development Goals (SDGs) indicator 2.4.1 ("Proportion of agricultural area under productive and sustainable agriculture") must be based on a set of sub-indicators that cover these three dimensions.

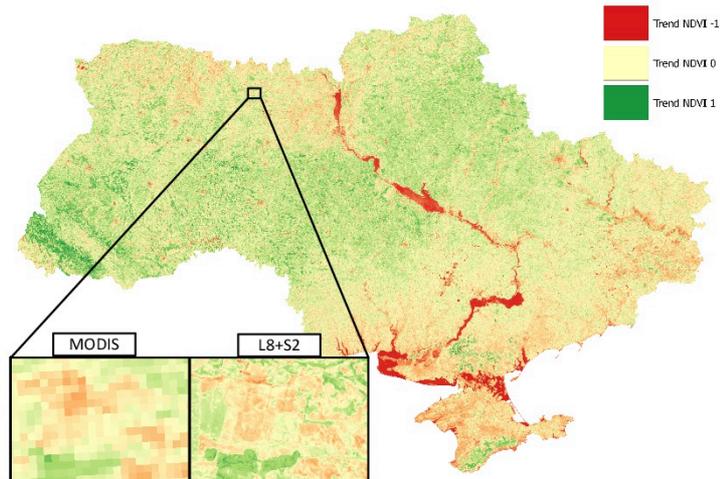


Figure 1: Land productivity for Ukraine territory

Showcase description

GEOessential	Productive agricultural land
Spatial Extent	Ukraine, Europe
Dashboard link	
Temporal Extent	2017
EVs used	Land cover, land productivity
Inputs	Sentinel-2
Outputs	Indicator 2.4.1
Targeted Policy	Target 2.4: By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality
Targeted indicators	2.4.1: Proportion of agricultural area under productive and sustainable agriculture
Main Process	The Virtual Laboratory Platform (Vlab) https://vlab.geodab.org/
Level of development	60%
GitHub code	https://github.com/LeonidShumilo/Vlab_241
Outputs endpoint	https://vlab.geodab.org/
Partner(s)	
Contact person	nataliia.kussul@gmail.com (SRI)