

**Policy**

Europe: SUSTAINABLE DEVELOPMENT GOAL 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.

EU Soil Strategy for 2030 COM(2021) 699 final

First draft

Geoinformatics Options By Context (GeOC) – Scale: Europe

Sustainable Land Management (SLM) practices can best help achieving LDN if they fit the social and ecological contexts. GeOC (Geoinformatics Options by Context) is designed to provide land users, development projects, and policy decision-makers with plausible robust contextual similarity unit (CSUs) maps for (a) assisting the selection of SLM options fitting to contexts, and (b) using CSUs as extrapolation domains for context-relevant out-scaling of SLM (Le et al. 2016; Le et al. 2017). GeOC functions based on a CSU map and on sets of georeferenced and standardized SLM data. The CSU map is the result of a separate study that performed socio-ecological cluster analysis and tested differences in LDN indicators among clusters (Le et al. 2022). The CSU map shows the spatial pattern of CSUs that are clusters of biophysical, economic and social contextual factors/drivers of land use and land management, which influence SLM adoption and the resulting LDN scenarios. The SLM data have been purposely compiled for LANSUPPORT project from different sources. Each SLM is composed of a GIS polygon file delineating the sites of SLM implementation and a work sheet describing the technical features of the SLM practice.

The tool through the pdf report help to describe the user RoI in term of CSUs. The tool allow also to individuate the SMLs that are successful applied considered a certain CSUs context

WHY

Land use planning is highly complex, as it requires understanding the multifaceted contexts and identifying solutions (e.g., SLM, or landscape restoration approaches) that fit such contexts and have potential for successful implementation.

FOR WHOM

This tool is dedicated to land users, development projects, and policy decision-makers (mainly at national and regional levels) who have to plan actions to combat land degradation.

HOW

Due the need to operate within regions that are relatively homogenous in terms of socio-ecological contexts, the tool has been set-up to work on the Mediterranean bioclimatic regions of the European Union.

Operational procedure

After clicking on the “Land Degradation” icon in the toolbox, and selecting “Geoinformatics Options by Contexts (GeOC)” tool, a window appears in which users can select one of the two ROI: administrative or drawn.

In the result section, in particular in elaboration detail, the user can download the pdf report by clicking the GEOCC button.

The pdf report contain:

- i) A table with the CSU statistics (area in % and in ha). This table defining the meaning of each CSU to provide users with insights on the socio-ecological contexts characterizing the degraded land in the ROI.
- ii) A table with SMLs implemented with percentage composition in term of CSUs that are present in ROI
- iii) A table with SMLs description in detail

What for

The information obtained provides support for Public Authorities as they endeavour to satisfy European and national regulations by knowing the socio-ecological contexts, and by projecting areas with a potential for context-relevant out-scaling of site-specific SLM practices.

LIMITATIONS

The current version of this tool is based on a pre-classified and tested CSU map and on a set of pre-compiled SLM practices, for the European Mediterranean Bioregion. This prototype employs a simplified WebGIS functions compared to those offered by the WebGIS-based global GeOC tool operated by ICARDA that to date does not cover the EU regions.

FUTURE DEVELOPMENT

Further tool versions will seek to extend the functionalities to (i) other European Bioregions; (ii) LD context. It will also enable users to save CSU and SLM data in standard GIS formats and statistical spread-sheets (e.g. Excel).

References

- Le, Q.B., Biradar, C., Thomas, R., Zucca, C., Bonaiuti, E., 2016. Socio-ecological Context Typology to Support Targeting and Upscaling of Sustainable Land Management Practices in Diverse Global Dryland. In: Sauvage, S., Sánchez-Pérez, J.M., Rizzoli, A.E. (Eds.), Proceedings of the 8th International Congress on Environmental Modelling and Software, July 10-14. International Environmental Modelling and Software Society (iEMSs), Toulouse, France, p. 294.
- Le, Q.B., Thomas, R., Bonaiuti, E., 2017. Global Geo-informatics Options by Context (GeOC) Tool for Supporting Better Targeting and Scaling-up of Sustainable Land Management: Designing the System and Use Cases. CGIAR Research Program on Dryland Systems (CRP-DS) and International Center for Agricultural Research in Dry Areas (ICARDA), Amman, Jordan, p. 24.
- Le, Q.B., Zucca, Manna, P., Terribile, F., 2022. Functional Context Similarity Units for Supporting Out-scaling of Sustainable Land Management in European Mediterranean Bioregion. Poster presented at the International Workshop titled “Save Our Soils”, organized by EC-H2020 LANDSUPPORT project, 27-28 April 2022 in Portici (Naples), Italy.