



Policy

Europe: COM (2013) 659 final EU Forest Strategy, RDPs (Pillar I and II); CAP; Reg. 1698/05 1974/06 (rural development)

Austria, Hungary, Italy: CAP Rural Development Plans 2014-2020

Austria: Federal Forest law; Austrian Programme of agri-environmental measures

Hungary: Act No. LIV of 1996 on Forests and the Protection of Forests

Italy: Legislative Decree 3/04/18 n. 34, Testo Unico in materia di Foreste e Filiere forestali (Tuff), Legislative Decree on Orientation and Modernization of the Forestry Sector, Agricultural policy instruments; Regional RDP; dlgs. 18/05/01 n.227

Campania Region: Regional Regulation on the Protection and Sustainable Forest Management of the regional forest heritage 28/09/17, n.3

First draft

TOOL FORESTRY – Territorial Scale: Local

WHY

The Forestry tool is designed to address integrated forest knowledge at municipality and local scale. This sort of information is of prior interest for forest management planning also in connection to soil conservation.

FOR WHOM

The end-users it addresses are mainly Local Forest Officers, private and public forest owners and forest practitioners that require a support for the identification of higher growing stock areas or need to evaluate whether some key environmental factors could ease forest operations.

HOW – if you want to select your Region Of Interest (ROI)

The tool works over the Telesina Valley and allows the free selection of any region of interest (ROI) by following this simple procedure:

Operational procedure

- By clicking on the "Draw (Polygon)" button on the top bar, drawing the desired area (ROI) and assign it a nameⁱⁱ.
- Using the "Save" button, the ROI is stored in the system memory and can be retrieved whenever necessary.

HOW – if you aim to “SUPPORT TO THE KNOWLEDGE OF YOUR LANDSCAPE”

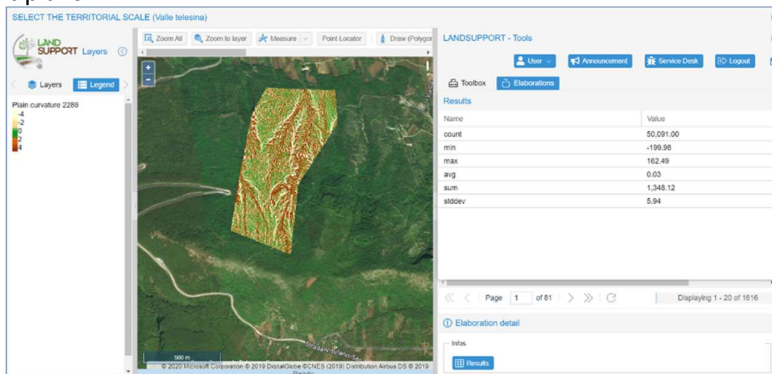
Operational procedure

The tool “Support to the knowledge of the landscape” can be selected in the toolbox on the right of the Graphic User Interface; then by clicking the icon “Support to the knowledge of the landscape” and by selecting the region of interest, the system will automatically open the "Results" section; by clicking the last operation performed, in the “Elaboration detail” area you’ll find a raster map or a table (both in the figure below: Plain Curvature) created for each of the selected variable. It contains information about the ROI related to its geography, topography, geology, soils and solar radiation index.

What for

The information obtained provides a support for the sustainable planning and management of forests especially within forest management plans. Indeed, the user can “explore” her/his ROI by evaluating some environmental data (DTM, profile and plan curvature, soil and forest types) that might facilitate the preliminary study of those environmental features, within the forest areas, that need to be included within forest management plans.

TOOL SUPPORT THE KNOWLEDGE OF YOUR LANDSCAPE



HOW – if you aim to “SUPPORT TO THE FORESTRY MANAGEMENT”**Operational procedure**

By clicking on the icon “Support to the forest management” it is possible to get LiDAR-derived estimates of the main dendrometric parameters to support forest planning.

Basically, the user can select the parameter of interest within the ROI. The results are found in the "Results" section. They are displayed once at a time by selecting the last operation performed and clicking on the buttons in the "Elaboration detail" section. The data can be consulted both in table format and as a map and both can be downloaded in different file extensions.

The module outputs consist in the production of graphs and maps related respectively to canopy cover (%), mean stand height (m), growing stock volume of stem and branches (m³ ha⁻¹), total above-ground and below-ground dry biomass (kg ha⁻¹) within the specific ROI defined by the user.

What for

Getting information, that are typically not easily available, related to forest types and quantitative stand attributes of a specific ROI, with the purpose of providing additional information for assisting planning phase of the chosen forest area. By this procedure private forest owners can optimize forest resources performing cutting series plan according to the Regional Regulation.

The tool allows forest owners and forest practitioners to get easily access to:

- (i) Main dendrometric forest parameters (height of trees, growing stock volume, forest cover);
- (ii) the prevailing functions and the relative priority planning designation (protective, naturalistic, productive, free evolution) of the forest resources;
- (iii) the ecosystem services provided by that forest area (supply, regulation, support and cultural);
- (iv) the sustainable forest management guidelines that refer to the type of management towards which it would be appropriate to address the typological unit.

This tool also provides detailed geospatial information about soil, topography, geology, landscape and biodiversity within forest ecosystems.

LIMITATIONS

The user must be aware that the following limitations exists, therefore he/she must well interpret our results.

Field and LiDAR derived data of the forest areas refer to 2011 and have not been refreshed or updated ever since.

Despite many forest DSS also process time-series data such as meteorological variables, it is for the moment not possible to access climatic data within this version of the forestry tool.

At the moment, the users cannot upload their own data (ktm files, dendrometric surveys) into the forestry tool to customize their AOI.

FUTURE DEVELOPMENT

Simulated silvicultural treatments through process-based models (PBMs) will be performed at local and regional level, taking into account climatic data, forest structure complexity and soil properties in an integrated Forest Ecosystem Model (FEM). The 3D-CMCC-FEM model (<https://www.3d-cmcc-fem.com/>) is currently under implementation in the forestry tool for selected Austrian, Hungarian and Slovenian forest sites. Through the model we will investigate different forest management option according under different climatic scenarios for complex and multi-layer forests.

ⁱ Special care is required when user draws/select the Region of Interest. In fact LANDSUPPORT is a multi-scale decision support system. Each of the 15 available tools is designed for a specific application and for a specific scale. Furthermore, the databases using specific standards required for that specific scale. The users of LANDSUPPORT web platform must therefore be well aware of the limitation embedded in the different maps that they require for their specific application. The users must be expert on their specific problem and must understand if the input data offered by the platform are suitable for their problem. In light of the above, the system provides very reliable results only if used appropriately.

ⁱⁱ It is also possible to draw a ROI with numerous polygons. In this case, it is possible to assign different values (eg numbers) to each of the drawn polygons.

REFERENCES

To get a more specific overview of the applications of the tool please read Marano, G.; Langella, G.; Basile, A.; Cona, F.; De Michele, C.; Manna, P.; Teobaldelli, M.; Saracino, A.; Terribile, F. A Geospatial Decision Support System Tool for Supporting Integrated Forest Knowledge at the Landscape Scale. *Forests* 2019, 10, 690 <https://doi.org/10.3390/f10080690>