



Policy

Europe Dir. Habitat 92/43/UE; 92/43/EEC; Reg. 477/2011 (birds and natural habitats); Action Plan COM2017/ 198 final}; Agenda for sustainable tourism COM (2007) 621 final, EU Soil Strategy for 2030 COM(2021) 699 final

First draft

TOOL ECOTOURISM – Territorial Scale: Regional

The ecotourism tool is devoted to increase public awareness on the importance of the landscape. This specific tool is intended to encourage people to travel thoroughly, preserving the environment and improving the well-being of local people" (TIES, 1990).

The tool is designed for individuals, SME or associations promoting ecotourism, thus working on trying to combine nature and culture.

The Ecotourism Tool is divided into 3 sub-tools:

- (i) one devoted to hiking; this is based on the Italian Alpine Club, namely Club Alpino Italiano (CAI) paths and trails, while in Marchfeld and Zala County, the paths related to a selection extracted from the "Waymarked Trails" project will be freely selectable
- (ii) another, more generic, aimed at facilitating the discovery of natural, cultural and enogastronomic heritage and
- (iii) in the experimental phase and only for the territory of the Telesina Valley, the tool of immersive reality.

WHY

To offer a more informed and immersive experience in excursion (planning different paths). It allows the followings:

- For more experienced users: to get information about the paths from an environmental perspective (soils, geology, land use, habitat quality)
- For less experienced users: to a cautious choice of the most suitable path relating it to seasonal conditions (exposure, min and max altitude, thermal indicator) and to the different physical abilities (difference in height, length).

FOR WHOM

This subtool is dedicated to both hikers (experts and beginners, great walkers and occasional amateurs) and SME or association promoting ecotourism.

HOW

The tool works on the entire territory of the Campania region, Zala County and Marchfeld. In Campania region is allowed the free selection of the regional CAI paths; in the territory of Zala and Marchfeld, the paths related to a selection extracted from the "Waymarked Trails" project will be freely selectable.

Operational procedure

After clicking on the "Natura 2000 and Ecotourism" icon in the toolbox and selecting the "Ecotourism – search your path" tool, a drop-down menu appears from which the users can make a pre-selection of a group of trails based on one or more of the following characteristics: administrative limits, level of difficulty, length, elevation max, difference in elevation, main aspect, path shape. this preselection will allow the user to visualize on the platform only the paths he is actually interested.

In the "Results" section, by clicking on the last operation performed, the 'Elaboration detail' window will open at the bottom, by checking the 'Ecotourism - Path search' box it will be possible to see the group of selected paths on the map, and then proceed with the final selection.

The button in the action column of the table below will allow to download the pdf report with the following information¹:

- Path main features (length, elevation, slope, synthetic aspect, thermal indicator)
- Main environmental features (land use – synthesis, mostly represented soils, mostly represented geology, habitat quality)
- Additional environmental features (location at the start and end, mountain relieve, municipalities concerned, aspect detail, frequency distribution of elevation classes, land use detail, main geological units).

What for

The information obtained provides guidance in the choice of a path and allows for informed planning of an excursion on the basis of different needs and physical abilities. The information about the nature of the landscape and its integrity, from its geology to the quality of the habitats along the route, allows for a more informed experience and as complete a vision as is possible of the territory.

WHY

The sub-tool allows the user to discover the natural, cultural and enogastronomic heritage of the regional rural territories and to improve experiences of ecotourism.

FOR WHOM

For (i) lovers of nature, local culture and enogastronomy and for (ii) SME and operators who want to improve the ecotourism they offer and increase their business.

HOW

The tool works for the entire Campania Region, Zala County and Marchfeld.

It allows the free selection of any point of interest (ROI) through a very simple procedure:

Operational procedure

By clicking on the "Draw (Polygon)" button on the top bar and by choosing the "Use Point" option, it is possible to select the desired point of interest directly on the map. It is then also possible to assign a name and a value (eg a number) to this point.

Using the "Save" button, the point is saved in the memory and, thus, it is possible to retrieve it whenever necessary.

The "Natura 2000 and Ecotourism" tool can be selected from the toolbox on the right of the Graphic User Interface. Then, by clicking on the "Ecotourism - Cultural and environmental site description" icon, a drop-down menu appears from which the previously saved point of interest can be selected. Next the user can freely select a radius (km) of his choice around the point of interest. Then the system will prepare a pdf file. This file will contain information about the Municipalities in the area (even partially), altitudes, geology, soils and land use, quality of habitats, points of naturalistic interest (mountains, monumental treesⁱⁱ, picnic areas, paths), as well as points of cultural interest (monuments, museums etc.) and places of enogastronomic interestⁱⁱⁱ, including retailers of local produce and Slowfood Presidia^{iv}. The pdf file, named "PDF for Agritourism – Cultural and environmental site description", including the above-mentioned environmental information can be found in the "Results" section. Then, by clicking (i) on the last operation and (ii) on "Elaboration detail" area, the pdf can be visualised and downloaded.

What for

The tool allows the access to detailed information on a defined area, providing the user with a thorough knowledge of places, their history and the services provided. Data concerning naturalistic, cultural and enogastronomic points of interest facilitate the planning of a total experience, closely related to the territory and answering the different needs of different users.

WHY

This tool allows you to remotely "visit" the places of naturalistic and cultural interest in rural areas of the Campania region and to deepen their peculiarities.

The goal is to allow users to obtain a realistic, informed and 360-degree view of the Campania rural area and its cultural and naturalistic beauties. The user can then consciously plan the itinerary of a possible excursion or simply enjoy the landscape and stories related to it, told by experts in the environmental, historical and archaeological sectors, through an immersive experience, directly on their devices.

FOR WHOM

This tool has been designed mainly for those who want to know the rural areas and listen to their stories, to plan a conscious excursion, but also to give the opportunity to live an immersive experience for those who are unable to physically reach these places.

HOW

The tool works for the entire territory of the Campania region and allows the free selection of points of interest.

Operational procedure

The "Immersive Reality" tool can be selected from the toolbox, to the right of the graphic interface; the user is free to select and viewpoints of cultural or naturalistic interest or both at the same time. To view these points, simply select the last operation in the "Results" section and then click on the button that will appear in the section below ("Elaboration detail section"). By placing a check mark, the map of the territory with the geo-referenced points of interest will be displayed and, at the bottom, the table will appear with the descriptions associated with the points themselves (name and type of the point, description and link for the multimedia content). The user can make his / her selection either by clicking directly on the map or by selecting a row from the table; once the point has been chosen and after clicking on the icon in the "Actions" column, a high-resolution video shot at 360 degrees will be displayed, optimized for the use of an Oculus Rift (virtual reality headset that can be worn on the face), but it can also be navigated with any device. The user will be able to observe the landscape in any direction, accompanied by information relating to the selected point told by experts in the naturalistic and cultural fields.

What for

The high-resolution and 360-degree images and information on the landscape and its history allow for an immersive experience of virtual travel and the fullest possible knowledge of the rural area and its natural and cultural beauties.

LIMITATIONS

The current version of the path tool does not produce kilometric statistics, but these can be accumulated for the entire route. Important graphic representations of the paths in the pdf and information layers such as viewshed are still missing.

Even if they can be viewed and navigated from a monitor or screen, the videos of the "Immersive Reality" tool are shot and optimized for viewing through an Oculus Rift.

FUTURE DEVELOPMENT

We hope that the current version of tools will evolve into more performing tools in the ability of orientation of the ecotourist and to tell the territory. The tool dedicated to paths will allow users to draw up their own itinerary and calculate the statistics for each kilometer.

ⁱ Different data and statistics were used in different case studies.

Campania Region

Data concerning the paths are edited by Club alpino italiano (CAI).

The statistics related to elevation, slope, and aspect were calculated starting from the DEM (digital elevation model) provided by ISPRA, with a resolution of 20 m. Note about the aspect. the aspect of the path has a decisive influence on the temperature

perceived by ecotourists during the excursion (see also the thermal indicator); therefore it is good to know the hiking aspect to better plan and choose the excursion. Obviously, the thermal comfort of the excursion will also be influenced by other factors such as altitude.

The thermal indicator is a dimensionless value (varies from 1 to 24) which can help the ecotourist to assess the potential thermal comfort of the excursion. This indicator was obtained starting from LANDSAT TM8; the value attributed to each pixel is the highest recorded value by overlaying the scanned maps on the following dates: 22/06/2017, 08/07/2017, 08/08/2017, 25/08/2017. The usefulness of this index was tested within the project. It is clearly influenced by many factors (altitude, exposure, land use, soil, etc.) and this makes it particularly useful. On hot days it will be advisable to move towards low values of this indicator, vice versa on cold days, it will be better to choose paths with higher values.

Statistics on land use (including the index of variability in land use) were calculated from "Carta di Uso e Copertura del Suolo nazionale" high resolution 2012 derived from ISPRA - Copernicus data, with 10m resolution. The index of variability of land use, for each path, was calculated taking into account all land uses intercepted by the path (up to the fourth level) with the exception of urban areas.

Soil statistics were extracted from "I sistemi di terre della Campania" (by Di Gennaro et al, 2002). Ed. Risorsa s.r.l. -Regione Campania, Napoli.

Statistics on geological units were extracted from the geological map provided by the "Servizio Geologico d'Italia" –ISPRA (2011): B. Compagnoni, F. Galluzzo, R. Bonomo, F. Capotorti, C. D'Ambrogi, R. Di Stefano, R. Graziano, L. Martarelli, M.L. Pampaloni, M. Pantaloni, V. Ricci, D. Tacchia, G. Masella, V. Pannuti, R. Ventura, V. Vitale, scala 1:1.000.000.

The statistics relating to the quality of the habitats have been calculated starting from the "Habitat Quality" map on an area that has 100 meters of radius around each path. Habitat quality values are dimensionless and range from 0 to 1. The "Habitat Quality" map was created by ISPRA used the InVEST software (Integrated Valuation of Ecosystem Services and Trade-offs, Natural Capital Project) (AA.VV. 2015) and in particular the Habitat Quality model. Sallustio L. et al. 2017. Assessing habitat quality in relation to the spatial distribution of protected areas in Italy. *Journal of Environmental Management* 201: 129–137. <https://doi.org/10.1016/j.jenvman.2017.06.031>.

Contact point. It is the association or institution that proposed the inclusion of this specific path. Often the same association/institution provides (on a voluntary basis) the maintenance of the path.

The statistics for the municipalities involved were calculated starting from the shapefile of the municipal limits ISTAT 2018.

Zala County

The paths were extracted from the "Waymarked Trails" project. For more information: www.hiking.waymarkedtrails.org

The length of the path was calculated through the GIS operation, within the LANDSUPPORT project.

Statistics were calculated using the shapefile of the municipal limits EUROSTAT (nuts 2013).

Statistics related to slope, aspect and elevation were calculated using the European Digital Elevation Model (EU-DEM), version 1.1 (25m resolution). EU-DEM v1.1 was coordinated by the European Environment Agency (EEA) in the frame of the EU Copernicus programme.

Statistics on geological units were extracted from the geological map provided by Geological Institute of Hungary: GYALOG, L. & SÍKHÉGYI, F. (eds.) 2005: Magyarország földtani térképe, M=1:100 000. [The Geological Map of Hungary, 1:100 000] – Magyar Állami Földtani Intézet [Geological Institute of Hungary] Budapest.

Statistics on land use were calculated from Corine Land Cover (CLC) 2018, Version 20 (100m resolution). The Corine Land Cover (CLC) is an European programme, coordinated by the European Environment Agency (EEA).

Marchfeld

The paths were extracted from the "Waymarked Trails" project. For more information: www.hiking.waymarkedtrails.org

The length of the path was calculated through the GIS operation, within the LANDSUPPORT project.

Statistics were calculated using the shapefile of the municipal limits EUROSTAT (nuts 2013).

Statistics related to slope, aspect and elevation were calculated using the European Digital Elevation Model (EU-DEM), version 1.1 (25m resolution). EU-DEM v1.1 was coordinated by the European Environment Agency (EEA) in the frame of the EU Copernicus programme.

Statistics on geological units were extracted from the "Kartographisches Modell 1:500000 Austria – Geologie"

Statistics on land use were calculated from Corine Land Cover (CLC) 2018, Version 20 (100m resolution). The Corine Land Cover (CLC) is an European programme, coordinated by the European Environment Agency (EEA).

ⁱⁱ Monumental trees website (www.monumentaltrees.com/en/) has been used for Marchfeld and Zala County.

ⁱⁱⁱ In Campania case study data concerning "Wines", "Extra virgin olive oils" and "Other typical products from Campania" are extracted from "Regione Campania Assessorato Agricoltura" (agricoltura.regione.campania.it/); geodate produced by Interdepartmental Research Centre on the "Earth Critical Zone" for supporting the Landscape and Agroenvironment management (CRISP) within the LANDSUPPORT project.

^{iv} Data extracted from Slow Food website (slowfood.it/); geodate produced by Interdepartmental Research Centre on the "Earth Critical Zone" for supporting the Landscape and Agroenvironment management (CRISP) within the LANDSUPPORT project.