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WORKSHOP 1

Landscape inventory of Galicia: public participation for landscape characterisation and planning

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The autonomous region of Galicia covers an area of 29,356 sq.km, located in northwestern Spain, surrounded by Asturias and Castile-Leon (to the east). In addition, it shares land borders with Portugal to the south. The Atlantic Ocean lies west of Galicia and Cantabrian Sea lies to the north. Apart from the continental territory, it also covers some archipelagos (Cíes, Ons, Sálvora, Sisargas) and other islands such as Arousa, Cortegada and other smaller ones.

In relation to land use, it should be noted that 35% of the land is covered by trees and this percentage is increasing. 28% is scrub, 16% is arable and 7% is meadow and grassland. In the rest of the land, artificial coverage dominates.

With over 2,708,000 inhabitants, Galicia has a density of 92 people per square kilometre (similar to

Spain). Despite this coincidence, the Galician settlement system is really characteristic. The existence of a large number of singular entities of population (30,246 in 2017) shows a highly dispersed population. The territorial distribution is also unbalanced: nowadays, only one in five Galicians live in the rural areas, where the ageing proccess is more pronounced.

The European Landscape Convention was signed by Spain in 2007. One year later, the Galician Government passed the Law no. 7/2008 concerning Landscape Protection, which included landscape inventories among other instruments for landscape protection, management and planning. The Landscape Inventory of Galicia is a technical document focused on the first stage of landscape planning – that is, on landscape analysis and diagnosis.

The European Landscape Convention recognises the importance of public participation for landscape planning in order to capture local knowledge, sensitive issues and conflicts, boost the exchange of information and democratise the process. However, traditional public participation methods are frequently restricted to public exposure at the final stage of the planning process. New public participation movements call for a greater role for the people, at all stages.

A public participation process can be used for the official development of a legal landscape planning instrument by taking advantage of the potential value of Public Participation GIS (PPGIS) to capture the public opinion about those aspects in which the public perception is a key factor, and to integrate this information with expert knowledge and technical analysis to develop the Landscape Inventory of Galicia.

Aims of the project

The main aim of the project was the development of the first landscape instrument established on the Law of Landscape Protection of Galicia (landscape inventories) by applying a public participation procedure which took advantage of the potentiality of new geospatial technologies through the use of a PPGIS for facilitating and promoting citizen participation from the beginning of the process, thus ensuring the democratic nature of landscape planning. For this, a public participation strategy was designed to meet a series of requirements:

- integration of scientific knowledge and public participation;
- inclusion of participation in every stage of the process;
- involvement of a set of stakeholders and relevant participants from the community and, especially
- incorporation of the results of public participation into the results and contents of the inventory in an explicit, direct and transparent way.

The project

For the development of the project a technical team was designed with the support of a panel of experts and incorporating public participation. Through a collaboration agreement, the technical scientific team was formalised with the participation by the Land Laboratory of the University of Santiago de Compostela and the Institute of Land Studies.
The Land Laboratory (LaboraTe) is a research and teaching group integrating Professors and researchers of different disciplines, where the land (in the comprehensive sense, and especially rural land) are the principal subject of interest. The fact that the LaboraTe is integrated inside an Engineering

College orients all our activities to action-research – that is to say, to the integral development of rural areas, which results in improvement of the quality of life for the inhabitants.

The Institute of Land Studies aims at the analysis, study and advice on urban planning and Land planning, including landscape planning and the collection and processing of the information of the Galician territory, as well as the cartographic production.

The Public Participation: the tool, workshops and results

The objective behind the development of a PPGIS was to achieve a more proactive public participation by providing citizens and different stakeholders with the means to supply information, express their preferences and collaborate in the elaboration of the inventory in a comfortable and flexible way. This system (https://sixot.es/Paisaxe) was developed in as simple and user-friendly format as possible, with an explanatory video showing how to use the system.

To gain access to the system, users had to registered by introducing a username, password, name, email and, optionally, personal data related to address, age, gender and education. Personal data was included because it could help analyse the preferences and opinions about landscape depending on the social group. Once registered, users accessed a web interface divided into three modules: Locations, Values and Degraded Areas. These modules were designed to obtain information about three issues: locations with landscape interest, land areas with high landscape quality deemed singular or representative; landscape values, elements that give character to a place, values or features that make landscape different or characteristic; and degraded areas, in which certain actions resulted in land transformations that caused landscape impacts, leading to loss or decrease of landscape value, in a way that requires measures of protection or intervention.

The first requirement for effective public participation is the availability of suitable and updated information and its accessibility. This was achieved by including a web map for each module, in which different layers of geographic information could be displayed and queried. These layers allowed for the location of a specific area (administrative borders, landscape areas and regions, road networks, railways, settlements, aerial photographs and topographic maps) and provided landscape information (landscape types, elements of cultural heritage, natural spaces, lookouts and locations with landscape interest identified by technicians).

In addition to this, there was an editable layer in each module where the user could add information about the module itself. In the Locations module, users were asked to mark places with high landscape value and to introduce a comment about why the landscape and the associated area were interesting. In the Values module, users were asked to mark locations with certain types of relevant values or features, differentiating between: natural or ecological values; cultural or heritage values; aesthetic or scenic values; and values of use. In the Degraded Areas module, users were asked to mark places with landscape impacts and write a descriptive comment about the degradation.

The PPGIS was used in workshops but it was also available for public participation between September and November 2015, so participants could input as many points as they wanted and express their opinions and preferences. The use of the PPGIS allowed the possibility of automatically storing the spatial location of the places with special interest, degraded areas and types of values in a GIS database. The information was linked to the corresponding user data and to the date the information was introduced.

Workshops were designed so that participants could be representative of the community. However, such representativeness is not always evident, and two types of stakeholder are usually identified: "communities of place" and "communities of interest". Communities of interest are government departments, government agencies, local authorities and non-governmental organisations with environmental or other specific interests, as well as other local interest groups involved in the various land uses that shape the landscape. Communities of place are the individuals who live or work in a particular area or visit it, and have the most at stake in their local environment.

On the other hand, the four types of landscape values (natural, cultural, aesthetic and use) considered in the Inventory reflect different interests related to diverse stakeholders. The people invited to the workshops were selected in order to ensure maximum representativeness of each interest in each area. Representative agents of the interests on each type of landscape values, as well as the two groups of stakeholders were consequently invited, resulting in eight types of participants. A balanced distribution of these eight types of participant profile was sought on the list of invited agents, although workshops were open to the general public and anyone could participate.

Each workshop started by introducing the Landscape Inventory project, explaining its objectives, contents and methodology, as well as the overall process for public participation. The first activity of the workshop was an "icebreaker", consisting on a simple exercise in which participants had to write a brief definition of landscape. The facilitator subsequently asked the participants about it, analysing some of the provided definitions and generating a debate. The central part of the workshop was dedicated to working with the PPGIS and was organised in three sessions. In the first session, participants registered on the web platform and started identifying locations of landscape interest. In the first part of this session, participants were asked to locate these places on their landscape area. In the second part, they had to identify locations in the entire Galician region. In the second session, the technical team explained the concept of landscape value and the four types of values, requesting participants characterise their habitual environment according to its prevailing values. In the third session, the concept of degraded area was explained, requesting participants to identify locations or impacts on landscape that could, preferably, be recovered or improved. The last ten minutes were dedicated to a plenary session for the presentation and discussion of the workshop results.

In the workshops 1,171 stakeholders directly related to landscape management were individually invited to these workshops (157 finally attended). As workshops were open to the general public, the final number of participants was 208,121 from which were members of organisations or associations somehow related to landscape. The efforts dedicated to planning workshops and selecting participants were successful, since a quite balanced distribution of participant profiles was obtained: 14 % of participants were representative of natural values, 18 % of cultural values, 13 % of aesthetic values and 20 % of values of use, while 11 % of participants were representative of local administrations and 24 % were general citizens. These workshops were complemented with eight specific workshops, arranged for organisations or associations that requested them and with 128 participants. A further 41 people took part in visits to interest groups.

With regard to the PPGIS, 584 users were registered on the GIS-web platform, 330 of whom inputted some kind of data between 10 September and 6 November, resulting in the recording of: 2,096 locations of special landscape interest; 407 of degraded areas; and 995 of landscape values, divided into 254 natural or ecological values, 253 cultural or heritage values, 171 aesthetic or scenic values and 316 values of use. The information gathered through the participation process was applied for:

1. Characterisation of landscape types

The natural, cultural and aesthetic values identified by the population, as well as the landscape values assigned by technicians to the locations of special interest located by citizens, were used to characterise landscape types. The analysis entailed calculating, on the one hand, the frequency of appearance of each landscape value in each landscape type (number of locations with that value located in a specific landscape type divided by the total number of locations with that value) and, on the other hand, the proportion of each landscape type in the landscape area. Finally, the ratio between both values was obtained to reflect the relationship between the different landscape values and the landscape types. For ratios near 1, there is no or little correlation between landscape type and landscape value. Ratios above 1 suggest a concentration of a given landscape value in a given landscape type, and an increase in correlation with the increase in the ratio, whereas ratios below suggest negative correlations.

2. Delimitation of Special Interest Areas

Firstly, 3,019 Locations of Special Landscape Interest (LSLI) were identified: 731 by the technical team, 2,096 by citizens in the public participation process and 192 during the public exhibition that was required legally. The presence or absence of natural, cultural and aesthetic value was then assigned to each LSLI, removing locations lacking any of these values. The area extent was indicated for each LSLI, specifying whether the LSLI referred to a point location or to an area location. A 1 km buffer from each LSLI was calculated, such that the LSLI with point areas that were not included in the buffer of other LSLI were removed. The LSLI with area extent and areas resulting from merging several buffers gave rise to a candidate SIA when they had at least two different landscape values. As a result, 686 areas were identified, 445 of which met the required characteristics. These 445 were delimited by applying different criteria according to the existing types of landscape values, the landscape units and the areas protected by natural and cultural heritage legislation. Finally, 348 were delimited due to the merging of neighbouring areas and, to a lesser extent, to the exclusion of some areas because of the lack of land connectivity between the LSLIs. The panel of experts and the technical team selected 211 SIAs. The population had identified some LSLI in 184 of the final SIAs, that is, in 87% of them. Moreover, 68 of them (32%) were identified exclusively from citizen contributions.

3. Identification of Special Attention Areas (SAEs)

The identification of special attention areas was based on a set of locations with landscape impacts that was preselected by the technical team (100 locations) and on the degraded areas located by citizens in the public participation process (407 areas). Once this input was filtered and refined, each location was classified according to the cause of the impact on landscape. In this case, spatial areas were not delimited and only seven general types of special attention areas were identified, corresponding to the most common impacts or degradations: degraded urban landscapes; areas with high concentration of high-voltage power lines and wind farms included in SIAs; mining and quarrying activities; industrial activities poorly integrated on the landscape; abandoned areas; afforestation with allochthonous species in SIAs; and degraded areas by other environmental or landscape impacts.

Outcome

The outcome of the project was the document of the Landscape Inventory of Galicia (http://cmaot.xunta.gal/seccion-organizacion/c/CMAOT_Instituto_Estudos_Territorio?content=Direccion_Xeral_Sostibilidade_Paisaxe/Catalogo_paisaxe_galicia/seccion.html&std=Descarga.htm) consisting of 13 volumes, one methodological memory and one document for each of the 12 landscape areas of Galicia.

The contents of the inventory are:

- the identification of landscape types and the delimitation of landscape units;
- the landscape characterisation and the inventory of landscape values;
- a visibility analysis;
- the delimitation of Special Interest Areas (SIAs);
- the identification of Special Attention Areas;
- the analysis of drivers, dynamics and the current state of the landscape types.

Tasks that required more scientific development were carried out by the Land Laboratory of the University of Santiago de Compostela, supported by the panel of experts, and more technical ones, such as the land values, were fulfilled by the Institute of Land Studies.

A Cartographic Viewer of the Landscape Inventory of Galicia offers services of visualisation, query, analysis and downloading on the geographic information that makes up the Landscape Inventory of Galicia: https://mapas.xunta.es/visores/paisaxe