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Cultural Landscape Planning in Rural Contexts: A Comparative Appraisal of GIS-based and other Participatory Methods

Abstract

The European Landscape Convention (2000) is the first European charter dedicated to all landscapes, emphasising their importance for cultural identity and well-being, and promoting community engagement in their management and planning. Various participatory planning methods have been advanced in line with this charter, yet these methods have not been widely applied to cultural landscapes in rural contexts. To address this gap, this study evaluates the added value of methods harnessing Geographic Information Systems (GIS) for community participation in rural cultural landscape settings. It does so by comparing five European participatory experiences that use both GIS-based and non-GIS-based methods for landscape planning in rural contexts. The main findings provide insights into the advantages and disadvantages of various participatory methods based on inclusiveness, effectiveness, and repeatability. GIS-based methods show great potential in integrating citizen inputs into landscape planning, particularly by engaging a larger audience and facilitating discussion and exchange of spatial ideas through digital maps. Furthermore, the authors argue that simplified GIS-based methods could help disseminate the European Landscape Convention principles of community engagement in landscape planning.

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1 Introduction: rural landscapes, a new emphasis on participation and the diffusion of GIS-based methods

Rural landscapes are a vital component of Europe, encompassing over three-quarters (75.8%) of the continent and housing more than 20% of its population (Eurostat, 2023; European Commission, 2023). These areas are recognised for their unique ecological, economic, and cultural attributes (ASLA, 2007; European Commission, 2023). The term ‘cultural landscapes’ is frequently associated with European rural landscapes, as they largely result from the ‘combined work of humankind and nature’ illustrating the evolution of human society and settlements over time (UNESCO, 2008). However, these landscapes often maintain a delicate balance between small urban settlements, agricultural traditions, and natural resources. Consequently, there is a recognised need in heritage and landscape planning to develop innovative and inclusive approaches to preserve, develop, and protect these landscapes (Agnoletti, 2014; Taylor et al., 2015; European Commission, 2023).

The European Landscape Convention (ELC) (2000) and its subsequent implementations represent a significant milestone in European landscape care due to its innovative and inclusive approach. It was the first supranational charter dedicated to all landscapes across the continent, irrespective of whether they are considered outstanding, ordinary, marginal or degraded. The treaty concerns natural, rural, urban and peri-urban areas, and covers all aspects of the cycle of landscape care, from protection to management and planning (Council of Europe, 2000). A key aspect of the ELC is its connection between landscapes and cultural values, people’s identity and well-being, and their sense of attachment and belonging (Council of Europe, 2000, 2005, 2008; Manzo & Perkins, 2006; Roe & Taylor, 2014; Settimini, 2021). Accordingly, the ELC advocates for local communities to participate not only in consultation or information gathering but in all stages of the landscape planning process, including defining heritage and landscape values and designing strategies (Council of Europe, 2000; Taylor, Mitchell & St. Clair, 2015; Janssen et al., 2017). The creation of greater awareness, community building and empowerment, learning and ultimately leading

to better decisions are some of the benefits of participation (Chambers, 2006; Hovorka & Auerbach, 2010; Conrad et al., 2011; Cornwall, 2008; Rausch et al., 2022). Although most EU member states have ratified the ELC, its principles, particularly those related to community participation, are not yet widely applied (Garcia-Martin et al., 2017; Conrad et al., 2011; Cornwall, 2008; Jones & Stenseke, 2011; Rouet & Côme, 2023). It is still common practice for planning authorities and heritage experts – such as officers, representatives and decision-makers of municipalities and counties – to make unilateral decisions on landscapes and heritage values.

To avoid confusion in terminology, we distinguish between approaches, methods, and tools in participatory planning, following conventions in the literature. An *approach* refers to the overarching strategic or conceptual framework guiding participation (e.g., co-design, participatory planning or scenario planning), defining the philosophy and scope of engagement (Cornwall, 2008; Reed, 2008). A *method* refers to the concrete procedure or technique used to gather and structure participant input, such as interviews, workshops, or participatory mapping (Chambers, 2006; Bergold & Thomas, 2012). A *tool* is the practical instrument or technology employed in the method—for example, digital platforms like Maptionnaire, GIS software like ArcGIS (Brown & Kyttä, 2014; Kahila-Tani et al., 2019). This distinction is used consistently throughout the paper to describe the design and implementation of the five case studies.

Over time, a wide array of participatory approaches and methods have been developed and applied, ranging from public hearings to participatory budgeting, and from citizen juries to deliberative polls (Nanz & Fritsche, 2014; Rodenberg, Wagenaar & Burgers, 2023). Approaches focused on rural landscape planning include Participatory Rural Appraisal (PRA) and Participatory Learning and Action (PLA)¹. More recently, with the advent of Geographic Infor-

¹ Participatory Rural Appraisal (PRA) and Participatory Learning and Action (PLA) are a set of participatory approaches and methods that emphasise local knowledge and enable rural people to conduct their own analysis and planning. It typically uses low-tech, visual tools—such as mapping, timelines, and matrix ranking—to foster inclusive dialogue and community-driven development (Chambers, 1994).

mation Systems (GIS), innovative approaches and methods based on digital maps, including Public Participation GIS (PPGIS)², SoftGIS³, and Geo-design⁴, have enabled spatial engagement with communities (Chambers, 2006; Rantanen & Kahila, 2009; Steinitz, 2012). While SoftGIS originated as a digital platform, it has evolved into a method that combines geospatial tools with citizen-reported data for planning purposes (Kahila-Tani et al., 2019). These GIS-based approaches and methods have gained popularity in urban and environmental planning due to their spatial nature and their effectiveness in addressing the limitations of other participatory methods. The methods used and the organisation of participatory processes significantly affect participant empowerment, group representation, and the impact on decision-making (Fung, 2006; Chambers, 2006). GIS-based tools are recognised for minimising issues related to inclusivity and power dynamics, enabling wider outreach, and facilitating communication (Garcia-Martin et al., 2017; Hovorka & Auerbach, 2010; Rantanen & Kahila, 2009; Rausch et al., 2022). They use digital maps as a common language, which helps mediate between practitioners and citizens (Gottwald et al., 2021a). With advancements in internet and digital technologies, these tools have become accessible to a broader audience, including those less familiar with digital tools, thanks to more user-friendly interfaces and widespread internet connectivity across Europe, including in rural areas (Chambers, 2006; Rantanen & Kahila, 2009; Rausch et al., 2022).

Despite advancements in participatory methods, the ELC principles of community involvement in defining

landscape values and planning strategies are rarely implemented in practice (Jones & Stenseke, 2011; Conrad et al., 2011; Garcia-Martin et al., 2017). This limited implementation has been attributed to several interrelated factors, including institutional inertia, fragmented governance structures, lack of participatory capacity among planning authorities, and the absence of clear operational guidelines for applying ELC principles (Jones & Stenseke, 2011; Prieur & Dourousseau, 2006; Garcia-Martin et al., 2017). To bridge this gap between theory and practice in heritage and landscape planning, this study critically compares participatory methodologies used in various case studies that apply ELC principles. The comparison aims to assess the strengths and weaknesses of different approaches, particularly the benefits of GIS-based methods for community participation in rural cultural landscapes. The findings are expected to promote and enhance community participation in rural landscapes by providing a set of effective tools and approaches.

Research questions

The study seeks to answer the following two main research questions:

- *What are the advantages and disadvantages of the different analysed participatory methods in integrating citizen participation in the practice of cultural rural landscape planning?*
- *And specifically, compared to other methods, what is the added value of GIS-based methods?*

To answer these questions, three main criteria will be used to guide the sub-questions, which are based on the existing discourse on heritage and participatory planning (Arnstein, 1969; Cornwall, 2008; Jones & Stenseke, 2011; Glimmerveen et al., 2022). Specifically, these criteria expand upon the three dimensions of citizen participation within complex governance, as articulated by Fung (2006): who participates, how participants communicate with each other and make decisions together, and how discussions are linked to policies and public actions. Furthermore, we explore the potential applicability of these methods across different contexts.

I. Inclusiveness

The first criterion utilised is therefore that of inclusiveness, focusing in particular on how the

² Public Participation Geographic Information Systems (PPGIS) generally refers to tools and methods that integrate GIS technology with public participation, allowing communities to contribute local knowledge and spatial data to planning and decision-making processes. These tools aim to empower non-experts and enhance inclusivity in spatial planning (Sieber, 2006).

³ SoftGIS is a participatory geospatial method that combines online mapping tools with qualitative input from residents to capture their perceptions, experiences, and values in specific locations (Kahila-Tani et al., 2019).

⁴ Geo-design is an interdisciplinary design approach that integrates geospatial technologies (such as GIS) with collaborative planning and design processes, enabling stakeholders to visualise, assess, and iteratively develop spatial interventions based on real-world geographic data. It supports decision-making by combining scientific data, spatial analysis, and community input in real time (Steinitz, 2012).

different methodologies facilitated the inclusion, representativeness and empowerment of participants. For each case, we investigated how many people were involved, who these people were, who was in charge and to what degree they were asked to respond to canonised, authorised heritage and notions or invited to integrate personal heritage values. Were they consulted only, or were they invited to co-design and participate in decision-making?

II. Effectiveness

The second criterion we use to evaluate the different approaches is the effectiveness of the methods and results: how effectively have the various methods yielded results that were used in real-life spatial planning? Did the results impact the decision-making process, and were they included or implemented in existing planning strategies? Did using the method change the short-term or long-term societal impact of the project?

III. Repeatability

The third criterion used to assess the various approaches is that of repeatability. Is the method both sufficiently robust and flexible to be transferred to and repeated in other landscapes? In other words, can it help foster the application of ELC concepts and regulations in heritage and landscape planning across Europe? This criterion encompasses factors such as the duration, costs and organisational complexity of the tools and methods in question.

2 Methods: a comparative appraisal

A multiple case studies comparison approach was chosen for this study as it provides contextually rich insights, which facilitate bridging the gap between theory and practice. Case studies are particularly suited for exploring complex socio-spatial planning processes, allowing both in-depth understanding and some level of generalisation (Stake, 2006).

2.1 Case studies selection criteria

To identify relevant cases, an iterative search on the Scopus database was conducted using keywords

related to participatory planning, rural landscapes, and the European Landscape Convention (ELC). This was complemented by a narrative review of academic and grey literature. This process yielded an initial pool of 22 cases across 12 European countries, including both academic studies and practitioner-led initiatives involving participatory landscape planning. Cases were screened for relevance, availability of descriptive and evaluative data, and methodological diversity. From this pool, five case studies were selected based on three key criteria:

- First, they had to revolve around participatory processes focused on rural cultural landscapes, spatial planning-related objectives, and ELC application and/or implementation.
- Second, for the sake of critical comparison, the cases had to be varied and exhibit both differences and similarities with regard to participatory methods, tools, (landscape) scales, stakeholders and organisers.
- Lastly, to paint a picture of participatory landscape planning approaches across Europe, the projects also had to span a wide range of geographical and cultural contexts across various ELC countries.

The final selection includes one case conducted by the authors in Apulia (Italy), and four additional cases from the United Kingdom, Germany, Portugal, and Calabria (Italy). To avoid confusion between the two Italian examples, these are referred to as the Apulian and Calabrian cases throughout the text. These five selected cases were the only ones in the pool that fully met all of the predefined selection criteria. These criteria focused on ensuring both diversity and similarity in geographical context, participatory methods, and relevance to ELC application, ensuring that the cases provided a robust basis for comparative analysis. The cases span different timeframes, including both pre- and post-pandemic periods, and vary in terms of organisational leadership, from academic-driven initiatives to government-led programs (Figure 1). In particular, these cases were selected because:

- They all explicitly refer to the ELC application or implementation, and revolve around the participatory planning of diverse cultural landscapes in rural contexts;

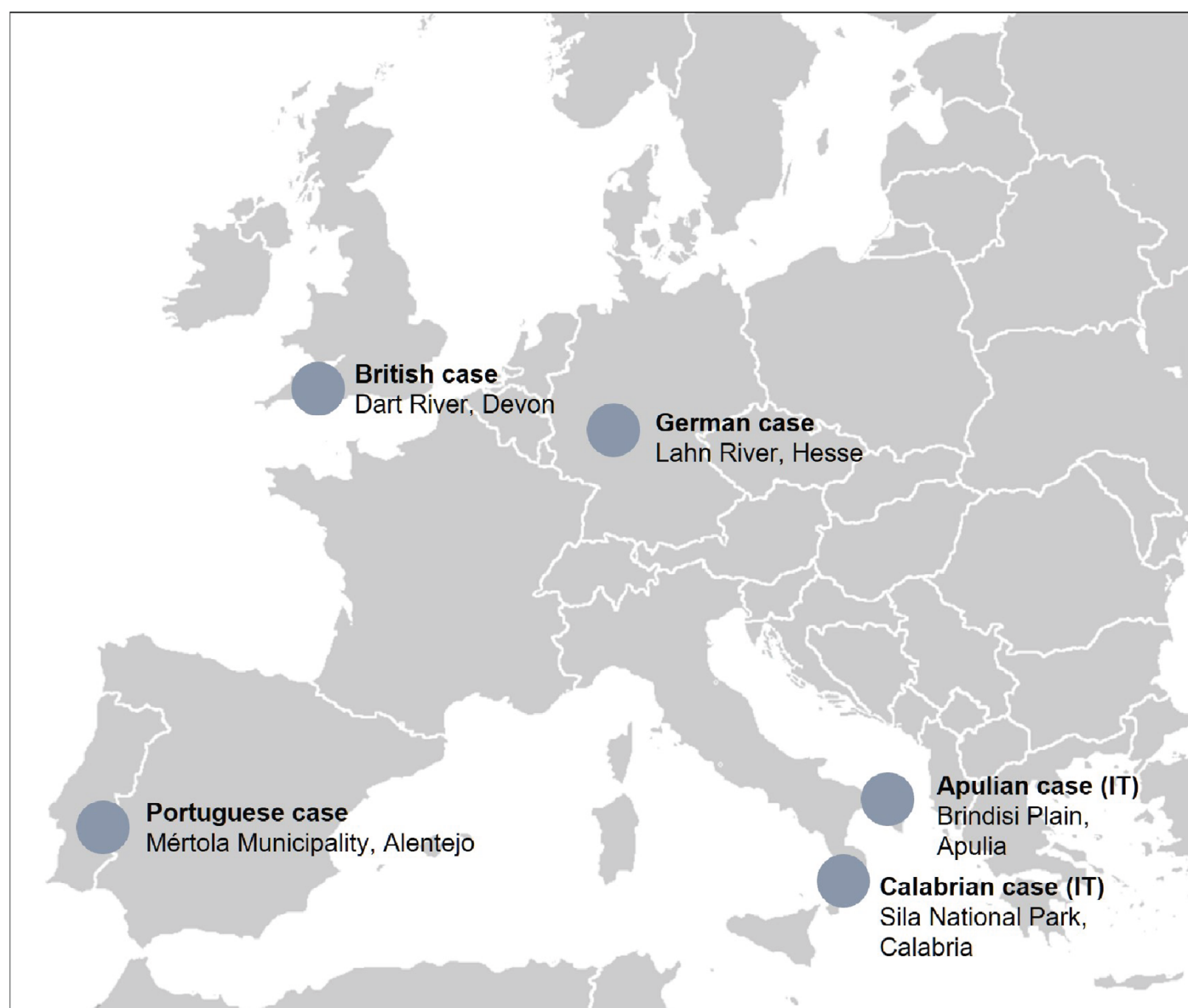


Figure 1. Distribution of the selected case studies.

Table 1. Synthesis of the case studies.

Location	Years	Landscape	Organiser	Tools and methods	Participants involved
Brindisi Plain, Apulia, Italy	2020-2022	Coastal plain	University researchers	PPGIS questionnaire, geo-design workshops	Citizens, interest groups representatives, experts
Dart River, Devon, UK	2003-2004	River catchment	Semi-public organisation	Guided discussion meetings and mind maps	Locals, interest groups representatives, experts
Mértola Municipality, Alentejo, Portugal	2008-2010	Remote rural landscape	University researchers	One-to-one interviews with scenarios	Experts and community representatives
Sila National Park, Calabria, Italy	2019-2020	National Park	University researchers and park scholars	Questionnaire, interviews, GIS analyses, focus groups scenarios	Locals, tourists, experts, scholars
Lahn River, Hesse, Germany	2019-2021	River stretch	Government and University	PPGIS questionnaire, geo-design workshops with impact scenarios	Citizens, experts

- They represent and span between a variety of European regions, organisers and years that cover different contexts and technologies available;
- On the methodological level, each of them uses different and/or similar methods and tools and involves different groups of stakeholders (Table 1). Two of the selected cases in fact employ non-GIS-based methods (the British and the Portuguese case) and will be analysed to gain a more general understanding of participatory processes in general and to compare GIS- and non-GIS-based approaches. The other two cases (the Calabrian and the German case) use GIS tools but take different approaches than in the Apulian case. In analysing the latter two cases, we will focus specifically on their use of GIS-based methods.

This selection supports a comparative evaluation of both GIS-based and non-GIS-based participatory approaches in diverse European rural contexts.

2.2 Selected case studies description

The selected cases will now be introduced separately, briefly presenting their contexts, organisers, aims and methodologies. The following results section will provide a comparative appraisal of the methods and results based on the three criteria of inclusiveness, effectiveness and repeatability. It is important to note that while several of the case studies analysed in this article span both pre- and post-pandemic periods, none of the materials reviewed made specific reference to the COVID-19 pandemic. As a result, this aspect was not addressed in the comparative analysis.

2.2.1 The Apulian case: a GIS-based approach

The participatory planning project in Apulia, a region in the south-east of Italy, targets an area around five small to medium-sized municipalities (773 km²) on the Brindisi Plain. The plain is characterised by a rich rural cultural landscape made up of historic towns, traditional farming operations, archaeological sites and protected natural areas, which however is under-recognized in local planning policies and funding structures in comparison to other areas of Apulia region. A participatory planning process was carried out here between 2019 and 2022 by researchers of the Vrije Universiteit Amsterdam in close collaboration with local associations and institutions. The

project aimed to test tools and methods for co-designing a spatial planning strategy to valorise the local cultural landscape, by enhancing the visibility, accessibility, and public recognition of the cultural and ecological values (Ducci et al., 2023a; 2023b).

The methodology consisted of three steps. First, a PPGIS questionnaire was implemented using the Maptionnaire platform, an online tool for collecting location-based survey data. The digital questionnaire was distributed via community social media channels and local associations mailing lists, targeting residents of the area. It allowed respondents to identify and map meaningful places, perceived landscape issues, and preferences for potential land-use transformations through a combination of spatial markers and multiple-choice questions.

Drawing on the questionnaire results, two geo-design workshops were organised with citizens and members of small private associations. These workshops employed digital maps and thematic prompts on cultural rural landscape (e.g., “Which sites or routes reflect local identity and should be enhanced in their usability?”) to support participants in collaboratively generating spatial planning proposals (Figure 2). Subsequently, two additional workshops involved experts and representatives from public or semi-public institutions to build upon and refine the citizen-generated proposals, integrating institutional perspectives and technical feasibility into the evolving spatial vision.



Figure 2. Geo-design workshop activity. Source: Ducci et al., 2023b

2.2.2 The British case: a discussion-based approach

The second case revolves around the Dart River catchment (472 km²) in Devon, in the south-west

of England. The catchment's is comprised of several protected areas, which support an important local tourist and recreational economy. The Devon Wildlife Trust organised a participatory process here between 2003 and 2004 as part of a pilot within a transnational project (Cycleau), which focused on engaging the public and stakeholders in participatory decision-making processes about the future of river landscapes (Spencer, 2011).

Four public participation meetings were organised in order to identify key values, threats or issues affecting the catchment (Figure 3). Subsequently, a stakeholder workshop was organised for representatives of organisations, statutory agencies, and specialist groups to prioritise issues and identify solutions. During the workshop, participants developed an Action Plan that outlined environmental priorities. Finally, a public and organisations stakeholder review workshop of the Action Plan and results was organised.



Figure 3. Public meeting discussion groups.
Source: Spencer, 2011

2.2.3 The Portuguese case: an interview-based scenario approach

This participatory planning project focused on the remote rural landscape of the Mértola municipality (1279 km²) in the south-east of Portugal. The area is rich in natural and cultural values, featuring Natura 2000 areas and Moorish heritage, but is witnessing landscape abandonment, agricultural decline and outmigration trends. In this context, participatory activities were carried out between 2008 and 2010 by researchers of the Centre for Studies of Regional and Urban Systems (CESUR) of the Technical University of Lisbon (Ramos, 2011). The aim was to implement the ELC by addressing the formulation of Landscape Quality Objectives (LQOs) and discussing a desirable future for the region with stakeholders and experts.

The methodology employed in this case was based on exploratory landscape scenarios and semi-structured interviews. After consultation with the public, researchers and experts, four plausible scenarios were envisioned for 2030, combining different driving forces identified for the development of Mértola. In the following phases, the researchers conducted in-depth interviews with experts and stakeholders, presenting them four scenarios through brief 150-word descriptions or photorealistic simulated landscapes (Figure 4).

2.2.4 The Calabrian case: a multi-analysis scenario-based approach

The other Italian case involved the Sila National Park (737 km²) in the region of Calabria in the south-west



Figure 4. Photorealistic simulation of a scenario (on the right) in which new features, such as dispersed housing, recreational activities and traditional farming are (re)introduced in the countryside (original image on the left). Source: Ramos, 2011.

of Italy. The park encompasses 21 municipalities and is a UNESCO Site of Excellence. With the inland areas undergoing rapid depopulation and rural abandonment, researchers of the Mediterranean University of Reggio Calabria ran projects in the area between 2019 and 2020 in collaboration with the park authorities and with the support of local municipalities. In these projects, they experimented with an innovative model for long-term sustainable tourism development, aiming to enhance the values and resources present within the park (Della Spina & Giorno, 2021).

The researchers behind this case also took a scenario-based approach with a four-phase methodology. The 'Intelligence' phase consisted of focus groups, paper and online questionnaires, and in-depth interviews with insiders (locals) and outsiders (tourists

and scholars) to determine which values landscape users share and decipher the meanings of the places that were perceived as being the most significant. In the 'Design' phase, the 'places of value' and new tourist routes within the park were presented in a geographic information system (GIS) (Figure 5). Explorative Spatial Data Analysis (ESDA) was used to analyse the data. Consequently, the aim of the 'Choice' phase was to make a choice between two scenarios for the local and touristic development of the park. The decision was made by focus groups using the Analytic Network Process (ANP) method. The final output of the ANP ('Output' phase) identified the most suitable scenario and the most suitable areas for implementing said scenario.

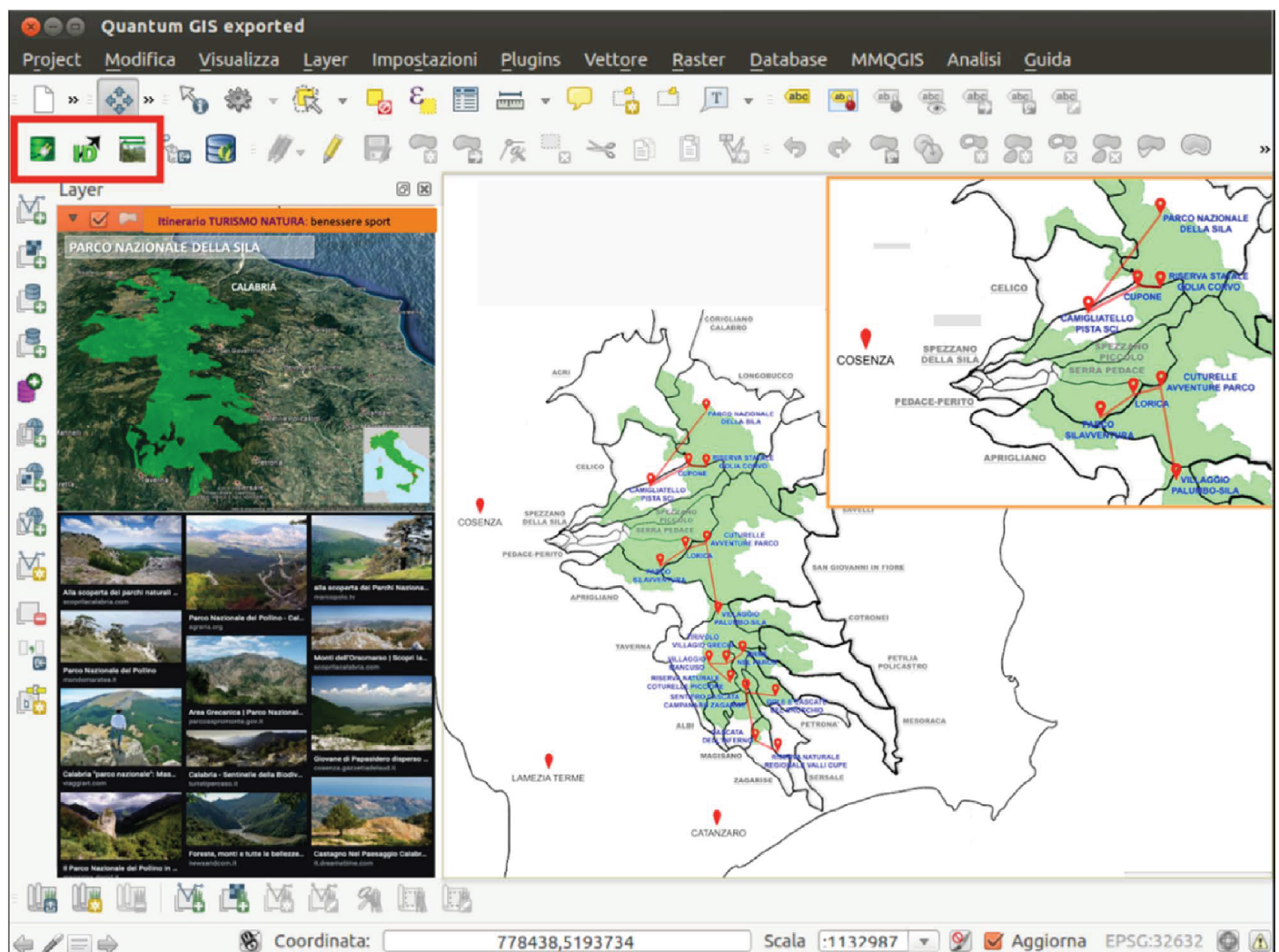


Figure 5. Cultural tourism trails and 'places of value' resulting from the interviews with participants were translated into GIS maps by the researchers. Source: Della Spina & Giorno, 2021.

2.2.5 The German case: a GIS-based scenario approach

The German case also revolves around a river landscape: a stretch of the river Lahn (22 km²) in central-western Germany. The landscape comprises a mix of rural and urban areas shaped by flood management interventions from the mid-19th century. The PlanSmart research group ran this project between 2017 and 2020 (Gottwald et al., 2021a; 2021b) as part of the EU Life Project Living Lahn (LiLa). The latter consisted of a consortium of administrative stakeholders from the local to the state level that aimed to enhance the ecological quality of the river.

This case employed a three-step methodology. First, an online PPGIS questionnaire implemented using the Maptionnaire platform was employed to map places perceived as meaningful by locals. Second, two workshops were organised with the Consortium to identify possible scenarios for the development of the river landscape. Third, a geo-design workshop was organised with stakeholders to integrate sense of place and design different spatial developments

for the river landscape based on scenarios developed previously. The workshop interface enabled the co-design of spatial scenarios, with the simultaneous exploration of the impacts of land-use changes on the provision of ecosystem services through the assessment of the likely co-benefits and co-costs of Nature-Based Solutions (NBS) (Figure 6).

3 Results: a three-criterion appraisal

In the previous section, we presented how five case studies approached participatory landscape planning. In this section, the various methods will be compared, focusing on the criteria of inclusiveness, effectiveness and repeatability.

3.1 Inclusiveness

In order to evaluate the inclusiveness of the methods and approaches of the selected case studies, we will analyse participant numbers and group breakdowns (3.1.1), as well as investigate to what degree

Meaningful places

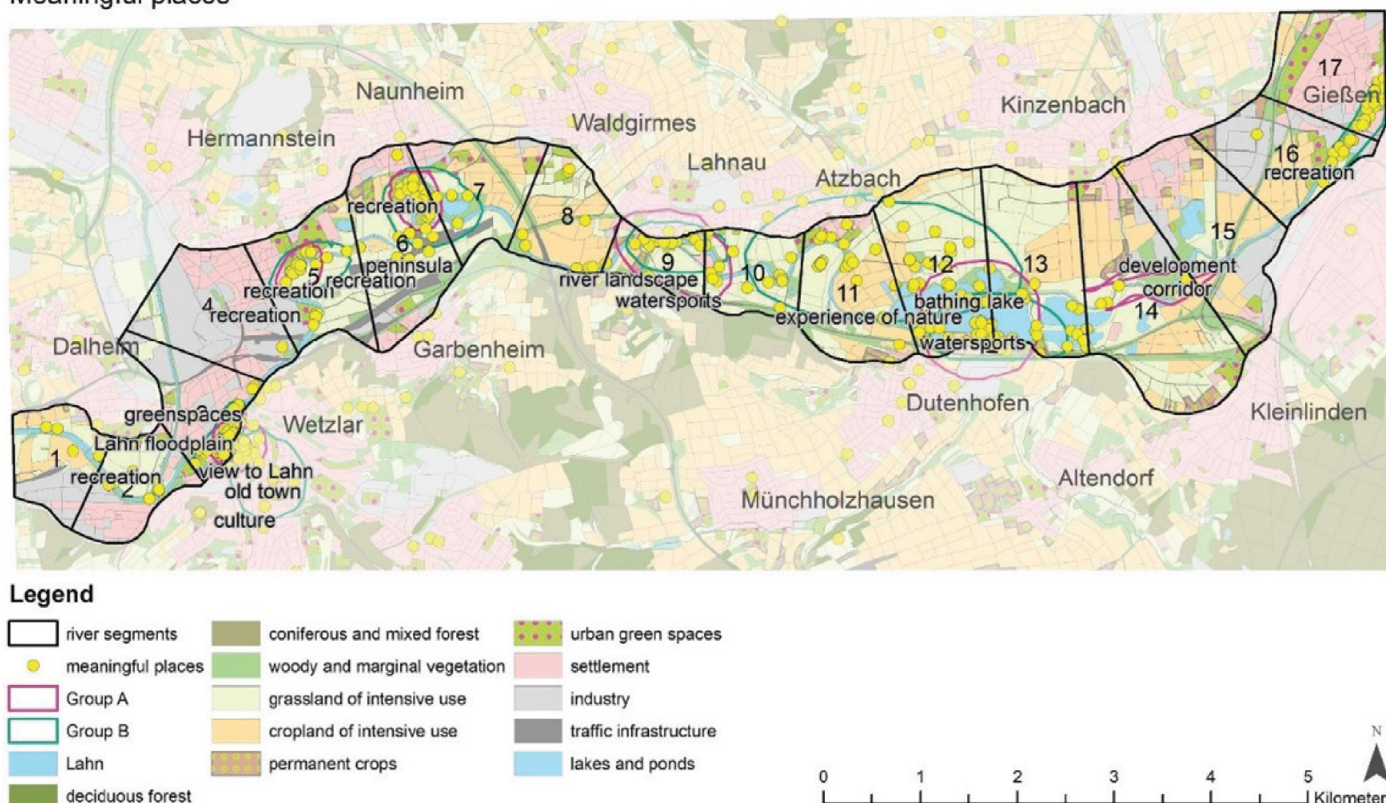


Figure 6. Meaningful places mapped by citizens and subsequently clustered by workshop participants over a land-use map. Source: Gottwald et al., 2021b

and in what phase of the planning process the methods facilitated the integration of participants' heritage values (3.1.2), the empowerment of participants and the sharing of ideas (3.1.3).

3.1.1 Number and diversity of participants

Compared to the other cases, the methodology employed in the Apulian and German cases made it possible to involve and collect input from a larger and more diverse group of people thanks to the questionnaires and their online, digital and simplified GIS nature. In both cases, between 400 and 500 people participated, in addition to the experts and institutional representatives involved through workshops (22 and 11, respectively). Several means of communication were used to disseminate questionnaires, and both self-selected and invited parties took part. Moreover, the questionnaires were designed to appeal to a diverse audience through the use of an application (Maptionnaire) that provides users with a simple but attractive and interactive interface based on maps and images. People of all ages and different sectors were reached through the questionnaires. However, although there are no indications that participants were hampered by their unfamiliarity with the digital tool or the map representations, both researchers remarked that most participants were highly educated or high-income individuals (Ducci et al., 2023a; Gottwald et al., 2021b). In the British case, a great effort was also made to involve as many people as possible through different means of communication. As a result, a relatively high number of participants was reached, with 113 locals being involved in the public meetings, 75 stakeholders (organisations' representatives, statutory agencies, and specialist groups) in the workshops and 50 experts (public and private stakeholders) in the Action Plan review (Spencer, 2011). The Portuguese case was marked by smaller numbers and a less inclusive approach, where 18 external experts (academics, private or public managers, governmental positions) and 16 local stakeholders (group representatives or people with a special position within the community) took part in in-depth interviews; while no citizens were involved (Ramos, 2011). No information on the specific numbers of participants was found for the Calabrian case, in which insiders and outsiders, such as active citizens, park scholars and tourists, took

part in questionnaires and interviews (Della Spina & Giorno, 2021).

From the above, we can conclude that, compared to other methods, GIS-based questionnaires, as used in the Apulian and German cases, are particularly apt tools for involving larger and diverse groups of people.

3.1.2 Integration of community heritage values

Except for the Portuguese case, all the other cases integrated citizens' perspectives and cultural landscape values. The Apulian case integrated what has been called 'local heritage perceptions', which are similar to the 'meaningful places' in the German case, and the 'places of values' in the British and Calabrian case. These values reflect deeply held connections to the landscape, rooted in personal and collective histories and identity.

In the British, Calabrian and Apulian cases, citizens were also involved in a later phase of the process. However, while British and Calabrian participants were asked to evaluate preliminary proposals developed by experts, in Apulia citizens were invited to actively develop their own spatial planning ideas. The results of this process showed that giving citizens an active role in the design phase is not only feasible, but also very beneficial for collecting different ideas and perspectives. This participatory role enabled residents to contribute localised and experiential knowledge that enriched the planning process (Ducci et al., 2023b). In particular, citizens frequently identified overlooked or informal public spaces, underused rural paths, and culturally meaningful gathering points that were absent from institutional datasets. Similarly, in the British and Calabrian cases, residents emphasised symbolic and historical connections to traditional footpaths, community meeting places, and locally significant landmarks that were not always recognized in formal planning documents.

In conclusion, the integration of community heritage values varied not only between GIS and non-GIS approaches but also among the cases that employed GIS differently. In the Apulian case, GIS was used as a participatory tool, enabling citizens to map and articulate spatial ideas directly, which led to the incorporation of more diverse and localized landscape values. In contrast, the Calabrian and German cases

employed GIS mainly as an analytical instrument to represent heritage values identified through prior consultations or expert interpretation, offering less direct citizen involvement in shaping spatial outcomes. Meanwhile, the British and Portuguese cases relied on non-GIS methods such as interviews, workshops, and document analysis. These approaches were effective in capturing symbolic and emotional connections to the landscape, but lacked the spatial precision and integrative potential that GIS methods provided. Ultimately, the comparison shows that participatory GIS approaches can enrich planning processes by bridging local knowledge and spatial analysis, while non-GIS methods remain essential for surfacing deep, narrative-based heritage meanings that may otherwise go unrecognised.

3.1.3 Empowerment of participants

In the Apulian and German cases, digital maps were used to enable participants to express themselves. These maps allowed a large group of people to insert and control their spatial inputs independently from moderators and other participants. Furthermore, in the geo-design workshops, the map representations facilitated the discussion and exchange of information, serving as a ‘mediator’ between participants (Ducci et al., 2023b; Gottwald et al., 2021a). In public meetings based on discussions, like the one organised in the British case, an important issue to consider is some people’s dominance over others (Arnstein, 1969; Cooke & Kothari, 2001; Fung, 2006). To manage this, the British project team paid particular attention to the group setting and rotation of participants, which, together with the fact that multiple meetings were held, fostered the open exchange of ideas and the creation of a shared result (Spencer, 2011). In the Portuguese case, four predetermined scenarios were presented to each participant in separate interviews. As a result, the organisers gained insight into the preferences and perspectives of different groups. An important drawback of this approach, however, was that it limited the exchange of information and interaction between participants, as well as participants’ control over the final outcome, which was the output of a separate phase. In the Calabrian case, the researchers translated the inputs collected through questionnaires and interviews to a GIS representation (Della Spina & Giorno,

2021). In the subsequent phase, the scenarios were presented to the participants and discussed in separate focus groups, divided according to their role in the area (organisers, operators, tourism agencies, local agricultural producers, locals and planning experts). In this setting, participants had little opportunity to determine the factors affecting the scenarios and interaction between the different focus groups was limited.

From the above, we can conclude that, compared to the other methods analysed, the GIS-based methods used in the Apulian and German cases were more effective in limiting power relationships and empowering participants by giving them control over their own spatial input.

3.2 Effectiveness

Participatory activities are deemed effective if they have a tangible impact on real decision-making processes or planning strategies. Indirectly, they are also deemed effective if they have intangible effects, such as stimulating knowledge exchange, creating awareness, and fostering a sense of ownership or stewardship (Chambers, 2006; Hovorka & Auerbach, 2010). In this section, the effectiveness of the five case studies will be discussed, considering both tangible and intangible results (3.2.1) and other factors that may have affected their process such as the contribution of organisers and involvement of planning authorities (3.2.2) and the perceived reliability of the participatory process (3.2.3).

3.2.1 Tangible and intangible results

One of the most evident results of the Apulian case is a set of spatial ideas, represented as geo-referenced map inputs, which integrate the perspectives of citizens, experts and stakeholders. Although the results would need further elaboration to be translated, as was the initial aim, into a shared planning strategy for the area (Ducci et al., 2023b), the process contributed to increased awareness of the local cultural heritage and landscape values, the intensive exchange of knowledge and ideas, and the creation of new stakeholder networks. Furthermore, the results have been used to support the candidacy of the Via Appia route – which traverses the area from west to east – as UNESCO World Heritage (Ducci et al.,

2023b). In the Portuguese case, the results demonstrated participants' preferences with regard to the 'most desirable' future development. However, the participatory process did not produce a shared vision, as the scenarios were discussed separately with each participant, and the results showed little consensus between the two groups (Ramos, 2011). In the British case, the results of the public, experts and stakeholders' meetings converged in a collective Action Plan, which directly affected local and national policies (Spencer, 2011). Furthermore, this initiative contributed to increasing awareness of the values of the catchment and strengthened the stakeholder network, which led to follow-up activities after the conclusion of the project. In the Calabrian case, the participatory process helped define local collaborative strategies to enhance the tourism value of local resources. As a result, new tourist routes and places of value were identified and integrated into the National Park website as itineraries. Moreover, according to the organisers, the multi-stakeholder approach developed deeper knowledge and awareness of local qualities and potential and formed useful support for decision-makers in defining collaborative strategies for sustainable development (Della Spina & Giorno, 2021). Finally, in the German case, the translation of scenarios into spatial maps deepened the understanding of the effects of land-use change and allowed the project team to identify and evaluate co-costs and co-benefits (Gottwald et al., 2021b). Even though it was part of a national study, the participatory project did not have a real impact on planning strategies or policies.

Comparing these projects, it may be observed that longer participatory processes and more intensive methods achieve concrete results more consistently. Cases in point are the group discussions organised in the British case or the four steps employed in the Calabrian one. Even though they may have required more time and effort from the participants, in the end, these approaches culminated in the intended results and translated them into real policies or planning. In the Apulian, German and Portuguese cases, the activities of the participatory process were more limited in terms of the length, duration, or type of commitment. Although they also delivered positive and useful intangible results, further steps would be needed to reach a shared vision for a real planning strategy.

From these observations, we can conclude that the effectiveness of a project, or its ability to produce both tangible and intangible results, greatly depends on the length and intensity of the overall process.

3.2.2 Collaboration with planning authorities and role of the organisers

Collaboration with public authorities is another factor to consider when it comes to reaching concrete results. Planning authorities – such as planning officers, representatives and decision-makers of municipalities and counties – generally regulate, perform and/or approve planning transformations. Thus, their involvement and collaboration are essential in every participatory process. In the British and Calabrian cases, the results were used in formal planning projects, partly because the organisers corresponded or worked closely with the authorities and those who put into practice the results of the processes, namely the Devon Wildlife Trust and the Sila National Park, respectively. An exception to this is the German case, where the results were not translated into actual planning or policy, even though the project was part of the LiLa Consortium. In the Apulian and Portuguese cases, the results were less concretely used in real planning or decision-making, probably because the project was research-oriented, and the local authorities were not among the organisers of the initiatives. Furthermore, the origin of the initiative—whether conceived by external actors such as researchers or by local communities themselves—also influenced how effectively outcomes were implemented. Projects initiated or co-led by local actors often reached greater legitimacy and ownership, which in turn facilitated continuity and integration into local governance. By contrast, externally driven initiatives, even when methodologically robust, faced more difficulty in sustaining local engagement and translating results into action. This underlines that the effectiveness of participatory methods cannot be evaluated in isolation from the socio-political dynamics and power structures in which they are embedded.

3.2.3 Perceived reliability

Lastly, the German and the Calabrian cases help us reflect on another aspect regarding the effectiveness of the methods. In the German case, the reliability

of the method was criticised by the Consortium experts, because the data used were considered too susceptible to subjectivity (e.g. the meaningful places mapped by citizens and the indicators considered by the researchers to create scenarios), and because of some technical issues with the tool (Gottwald et al., 2021a). Similarly, in the Calabrian case, the researchers carried out a relatively complex process, with minimum or no control by the participants on the map inputs and the factors chosen for determining the scenarios. In the Apulian case, similar tools to the German case have been used in a simplified manner; in this case, participants positively evaluated the tools and methods (Ducci et al., 2023b). In the Portuguese case, the researchers developed and proposed possible future scenarios; therefore, the stakeholders had little or no control over such scenarios, and this negatively affected the reliability of the process. In the British case, instead, all the phases were carried out in a more democratic and transparent manner, and participants were informed of the results of the discussion workshops; this positively affected the perceived reliability of the overall process and the results.

From this, one may deduce that a higher complexity of the tools and methods (either digital or analogue), as well as a less transparent or easily comprehensible process to the participants, can lead to the perception of unreliability and distrust in the participatory process, with negative effects on the results. Therefore, simpler and more accessible processes can be considered better for the effectiveness of the results, as everyone who participates can understand and have more control over the process and the results.

3.3 Repeatability

In order to investigate how and if co-design participatory methods, and particularly GIS-based ones, can support the ELC's ambition to disseminate citizen participation in the common practice of landscape planning in Europe, it is essential to ask also whether these methods can be transferred to other cases. Important considerations include the duration and effort (3.3.1), tools and organisational complexity of the different methodologies (3.3.2), and the costs (3.3.3), especially considering the conditions in

which planning authorities usually operate, such as the available time and resources.

3.3.1 Duration and effort

All the projects discussed in this study were carried out in 2 or 3 years. Within that time span, various phases can be distinguished: preparatory fieldwork, gathering information, identifying and engaging stakeholders, organising different steps and participatory activities, and elaborating and disseminating the results. While it is difficult to quantify the effort behind the preparatory work needed in each project, the number and types of different participatory activities and the skills required are more easily measured. Generally, planning authorities do not have much time and resources to invest in participatory projects. Furthermore, participatory activities are often criticised for being too demanding in terms of the time and effort required from participants (Chambers, 2006; Fung, 2006). It is therefore crucially important to take into account the complexity of the tools and methods used, as well as the intensity of the activities.

In this regard, the methodology employed in the Apulian case required limited effort from participants: 15 minutes for the questionnaire and 3 hours for a workshop. The researchers had to organise four workshops, but all were functionally identical and could be held within a week. The preparatory work consisted of making map layers available in public GIS systems, setting up the applications and structuring the workshops. In the German case, the effort required from the workshop participants was more considerable, as the Consortium experts were asked to meet multiple times and focus on different tasks, such as developing the scenarios, clustering questionnaire results and discussing possible land-use change. Furthermore, the researchers had to develop the possible scenarios based on scientific factors and elaborate the software that showed the impact of land-use change during the workshops. In the British and Calabrian cases, the duration of the participatory activities is not specified in the available literature. However, we can surmise that the number of meetings and the effort required from participants were relatively high. In the British case, participants attended one or two meetings, and the

group discussion consisted of having the participants rotate past all tables, while the organisers had to guide the group discussions at all three meetings. In the Portuguese case, the time and effort of the researcher were considerable overall, as analysis and elaborations were carried out in order to develop the scenarios, and several hours of interview recording and analysis of transcriptions were required in order to draw conclusions. In the Calabrian case, participants were interviewed, asked to complete a questionnaire or invited to a focus group, while the researchers had to carry out several analyses in preparation for the various phases.

From these observations, we can conclude that considering the number and intensity of the activities, the GIS-based co-design methods employed in the Apulian case made for an effective participatory approach that requires relatively limited effort from the participants.

3.3.2 Tool complexity

In the Apulian case, organisers needed basic knowledge of GIS applications. The questionnaire was created with a user-friendly application (Maptionnaire), which can be used to create interactive and attractive surveys (Ducci et al., 2023a). The geo-design workshops were built with ArcGIS AppBuilder, which can be used to create and personalise a web GIS application without requiring any coding skills. While to participants it was not required to have any prior experience with mapping applications, as the interfaces were intuitive and user-friendly. The same tools were used in the German case, with the addition of a more complex feature that required specific software and scientific knowledge from the organisers: a software extension to instantly show the impacts of land-use change. In the Calabrian case, the researchers used various tools and methods, such as GIS Explorative Data Spatial Analysis (ESDA) and the Analytic Network Process (ANP), using Superdecisions software for the latter (Della Spina & Giorno, 2021). Although effective, this combination of different tools requires multiple steps, specific software and scientific knowledge. The tools needed for discussion sessions and scenario interviews, like the ones used in the British and Portuguese cases, are less complex. However, they do usually require skills

to control bias and power relationships that could affect the process, as well as more time and personal investment to involve larger groups of people.

3.3.3 Costs

The economic aspects are perhaps one of the weaknesses of GIS tools, especially those used in the Apulian and German cases, as Maptionnaire and ArcGIS are not free. Furthermore, digital tools such as touch tables or tablets were used to let participants access the online applications. In countries where institutions have limited budgets, subscription fees or expensive equipment can indeed affect the regular use of these tools in planning practices. In contrast, the costs of the Calabrian approach were quite limited, as the tools used were based on free software (QGIS, LimeSurvey and SuperDecisions) (Della Spina & Giorno, 2021), and the equipment (computers) was mostly used by the researchers. In the British and Portuguese cases, the costs of the tools and organisation (meetings and interviews) were also probably quite limited. In the British case, the equipment consisted of analogue tools such as papers and post-its. However, the cost of hiring the specialists who organised the participatory activities must not be forgotten. In the Portuguese case, a simple recording device was used for the interviews.

From a cost perspective, the GIS-based methods used in the Apulian and German cases had their limitations due to the relatively high subscription fees and expensive equipment used compared to other cases. It is important to add, however, that many new free alternatives to the applications used in these cases have become available since these projects started (2019-2020) (Ducci et al., 2023a).

A synthesis of the overall result of this comparative appraisal is presented in Table 2.

4 Discussion

The relevance of public participation in cultural landscape planning in rural contexts has been widely recognised in Europe. However, community participation in rural settings still cannot be considered widespread in practice. Trying to bridge this gap between methodological and theoretical advances and

Table 2. A comparative appraisal of the case studies methodologies according to the criteria of inclusiveness, effectiveness and repeatability and the analysed subcategories.

Case study	Brindisi Plain, Apulia, Italy	Dart River, Devon, UK	Mértola Municipality, Portugal	Sila National Park, Calabria, Italy	Lahn River, Germany
Methodology	GIS-based approach	Discussion-based approach	Interview-based scenario approach	Multi-analysis scenario-based approach	GIS-based scenario approach
Inclusiveness					
Number and diversity of participants	+	+	-	NA	+
Integration of locals' heritage values	+	+	-	+	+
Empowerment of participants	+	+	-	-	+
Effectiveness					
Tangible results	+/-	+	-	+	-
Intangible results	+	+	+	+	+
Collaboration with planning authorities and role of the organisers	+/-	+	+/-	+	+/-
Perceived reliability	+	+	+	-	-
Repeatability					
Duration and effort	+	-	-	-	-
Tool complexity	+	+	+	-	-
Costs	-	+/-	+	+	-

Legend

The cases showed:

+ strengths

- weaknesses

+/- mixed

NA not available data

practice, this study proposed a critical comparison of different participatory methodologies employed in rural landscapes in the last 20 years. In particular, it focused on comparing and evaluating GIS-based methods with other participatory methods by selecting five European participatory studies carried out in rural contexts. This comparison was conducted to answer the following questions: *What are the advantages and disadvantages of the different analysed participatory methods? And specifically, compared to other methods, what is the added value of GIS-based methods?*

Answering these questions helped investigate the pros and cons of the different approaches and shed light on the added value of GIS-based methods in integrating citizen participation in the practice of cultural landscape planning. To explore this, three main criteria were considered: inclusiveness, effectiveness and repeatability.

As synthesised in Table 2, the methodologies used in the Apulian, British and German cases have been

evaluated positively on almost all criteria. The Apulian case in particular had good scores all around, except for tangible results and costs. In these aspects, the longer duration of the discussion-based approach taken in the British and Calabrian cases proved more effective in reaching concrete results. It should be noted that this was partly due to the fact that the process was carried out by the same authorities that could put them into practice. Finally, the Portuguese case proved to be a reliable approach when a consultation process with different stakeholders is needed.

Specifically, with regard to the first criterion, some methods turned out to be more inclusive than others. From this point of view, the GIS-based methods used in the Apulian and German cases significantly helped the organisers to reach out to larger and more diverse groups of people. They also allowed participants to share their personal landscape and heritage values and to integrate them into the spatial design. Furthermore, the map inputs empowered participants to control and represent their ideas and

deliver visible results, as well as helping to mediate and facilitate the exchange of ideas. However, these methods showed some limitations in reaching less educated or lower-income groups. For this reason, intensive communication and integration of different methods are also crucial for reaching a broader public. This was also demonstrated by the British case, where intensive communication led to a relatively large number of participants being involved in the various discussion meetings.

With regard to effectiveness, we can conclude that all participatory methods produced positive intangible results, such as raising awareness, exchanging knowledge and creating new networks. However, not all the methods resulted in tangible results, such as real planning actions or policy implementation. The GIS-based approaches were shown to be powerful methods because they made it possible to collect input from citizens and stakeholders in the same GIS data format that planning authorities typically use in the planning practice. However, in the Apulian case, formalised planning actions did not follow the results of the participatory activities. This was probably because the project functioned as a research laboratory and was not co-organised by the local planning authorities responsible for formal planning strategies. Similarly, no tangible results followed the participatory activities in the German and Portuguese cases either. In contrast, the British and Calabrian cases did prompt clear follow-up planning actions and policies. From these observations, one may conclude that longer participatory processes and more intensive methods achieve concrete results more consistently.

A key consideration in evaluating the effectiveness and impact of these cases is the role of the organisers. Projects initiated by external actors, such as academics or research institutions, often lack the same level of local ownership and long-term impact as those conceived locally with the support of facilitators or local authorities. For example, in the Apulian case, while local communities were engaged, the project was primarily research-driven and not directly linked to formal planning actions, limiting its long-term impact. In contrast, the British and Calabrian cases, where local authorities played a central role, saw stronger local ownership and more

tangible outcomes, as the authorities could implement the results.

The socio-political context also significantly influences the success of participatory methods. Projects in areas with active local governance and strong community engagement, such as the British and Calabrian cases, tend to yield more lasting results, as local authorities can integrate community input into formal planning processes (e.g., the British case where the local councils directly adopted the results into policy). In contrast, projects led by external actors, like the Apulian and German cases, may struggle to achieve tangible results without strong connections to local governance structures (e.g., the Apulian case where the project's outcomes were not formally integrated into local planning). Thus, the effectiveness of participatory methodologies is closely tied to both the type of organisers and the socio-political context in which the project takes place. In terms of repeatability, it can be concluded that considering the intensity of the activities, the complexity of the tools and the skills required, the GIS-based methodologies demonstrate great potential for widespread use among planning authorities as long as their complexity and costs are controlled. Despite their low-budget tools, the Portuguese and British methodologies are high-effort undertakings due to the time required for interviews and discussion groups, while the tools used in the Calabrian and German cases require high-level software skills.

Finally, it is important to note that while some of the case studies span both pre- and post-pandemic periods, COVID-19 did not significantly impact the objectives or overall approach of the projects. Although the pandemic may have influenced project design, participation formats (e.g., digital vs. in-person), and participant attitudes, no references to COVID-19 were found in the materials analysed. In the authors' experience with the Apulian case study, the only effect was a brief delay in physical workshops, which resumed once in-person gatherings were allowed, with masks. Notably, the use of masks did not appear to affect the participatory process. As a result, no substantial changes related to COVID-19 were observed in these projects.

5 Conclusions

To conclude, this study highlights the potential of GIS-based participatory methods to enhance community engagement in rural landscape planning, thereby helping to bridge the gap between theoretical advancements and practical implementation. By comparing five European case studies that employed both GIS-based and non-GIS-based approaches, this research contributes to a more nuanced understanding of how different participatory tools and methods can support inclusive and context-sensitive planning processes.

GIS-based methods demonstrated clear strengths in terms of inclusiveness, scalability, and the ability to collect spatially explicit input from large and diverse groups. Their use of interactive digital maps also facilitated communication among participants and between communities and experts, making them particularly effective for capturing a wide range of place-based perceptions, priorities, and spatial preferences. However, the study also identified several challenges associated with GIS-based approaches, including limitations in supporting extended deliberation, difficulties in achieving tangible planning outcomes without strong institutional collaboration, and concerns about transparency when tools or data processing methods were complex or unfamiliar to participants. Cost and technical accessibility may further affect their adoption in lower-resourced contexts.

In contrast, non-GIS-based methods—such as interviews and deliberative workshops—proved more effective in fostering sustained dialogue and deeper collective reflection, particularly when embedded in longer-term processes led by institutional actors.

Although based on a limited sample of five case studies, the insights from this comparative appraisal can assist researchers and practitioners in selecting participatory methods suited to their goals, resources, and community context—taking into account economic constraints, time investment, and required personal or technical skills. In particular, hybrid approaches that combine the broad outreach of GIS with the deliberative depth of analogue methods may offer promising pathways for inclusive and

effective rural landscape planning. Future research could further explore the integration of GIS with other participatory tools to enhance inclusivity and effectiveness, particularly in reaching marginalized or underrepresented groups. Ultimately, this study calls for a renewed commitment to fostering meaningful, inclusive participation that empowers communities to shape and define the landscapes of their future.

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The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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