Supporting the Management Plan of a World Heritage Site Nomination Through a Multi-step Evaluation Approach

Sebastiano Barbieri(✉), Marta Bottero, Caterina Caprioli, and Giulio Mondini

Dipartimento Interateneo di Scienze, Progetto e Politiche del Territorio, Politecnico di Torino, Viale Mattioli, 39, 10125 Torino, TO, Italy
{sebastiano.barbieri,marta.bottero,caterina.caprioli}@polito.it, giulio.mondini@formerfaculty.polito.it

Abstract. The nomination of a site to the World Heritage List must be supported by a nomination document and a management plan. The management plan emphasizes the Outstanding Universal Value of the site, as well as it defines protection objectives and how to pursue them. However, neither UNESCO documents nor research applications provide a shared framework for the tools or methodologies that can support the different phases of the management plan. Within this context, the present paper started with an analysis of both management plans already implemented for UNESCO-listed sites and contributions provided by research applications. The result of this in-depth analysis suggests the proposal of a multi-step approach able to guide the entire decision-making process and to support the development of the management plan of a World Heritage Site nomination required by the World Heritage Convention. This approach could represent a guiding tool for researchers, practitioners, and decision-makers in the case of real-world site nomination and management for the World Heritage List. The mixed-method approach proposed starts with framing and structuring goals, objectives and values, as well as actors and stakeholders involved, and ends with the design, evaluation and monitoring of the project strategies. In particular, the proposed methodology for developing the management plan of a World Heritage-nominated site is constituted by four main working phases: (1) the problem framing and structuring, (2) the analysis of risks and resources, (3) the design of the strategies, and (4) the evaluation and monitoring phase. Each of these phases is supported by specific assessment methods and tools, both qualitative and quantitative.

Keywords: UNESCO site management plan · Cultural heritage · Sustainable assessment

1 Introduction

In 1946, United Nations (UN) founded UNESCO, a specialized agency based in Paris, with many goals for the promotion of culture, science, education, and collaboration between nations. Specifically, one goal is the intercultural understanding of heritages

© The Author(s), under exclusive license to Springer Nature Switzerland AG 2023
O. Gervasi et al. (Eds.): ICCSA 2023 Workshops, LNCS 14108, pp. 498–511, 2023.
https://doi.org/10.1007/978-3-031-37117-2_34

that have exceptional value and require specific protection and safeguarding. The concept of "exceptional value" was first introduced in 1972 during the general UNESCO conference "Concerning the Protection of the World Cultural and Natural Heritage". The introductory article of the convention clarifies the meaning of "cultural heritage", classifying it into monuments, groups of buildings, and sites, and the meaning of "natural heritage" as natural features, geological and physiographical formations and, natural sites and natural areas. In 1992, additionally to these classifications, the "cultural landscape" was included, that represents joint creations of man and nature [1]. Moreover, this article specifies the criteria for being considered an Outstanding Universal Value (OUV). In particular, the world cultural, natural and landscape heritage must have a value from an historical point of view (i.e., commemorative value), from an artistic point of view (i.e., aesthetic value), from a scientific point of view, from an aesthetic point of view, from an ethnological point of view or for its anthropological value [2]. They could be valuables as an expression of a specific culture, but then, they are "outstanding" because they represent examples, or the most representative example, of a particular type of cultural heritage [3]. The site proposed to be in World Heritage List (WHL) must face at least one of the 10 criteria established by UNESCO (i. "to represent a masterpiece of human creative genius"; ii. "to exhibit an important interchange of human values […]"; iii. "to bear a unique or at least exceptional testimony to a cultural tradition […]"; iv. "to be an outstanding example of a type of building, architectural or technological ensemble or landscape […]"; v. "to be an outstanding example of a traditional human settlement […]"; vi. "to be directly or tangibly associated with events or living traditions […]"; vii. "to contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance"; viii. "to be outstanding examples representing major stages of earth's history […]"; ix. "to be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of […] ecosystems […]"; x. "to contain the most important and significant natural habitats for in-situ conservation of biological diversity […]"). Furthermore, a site must respond to the requirements of integrity and authenticity and distinguish itself from other listed territories based on an in-depth comparative analysis [4].

Sites nominated to be included in the list need to be managed and protected to maintain the OUV. In particular, the purpose of a management system is to keep the asset's value unaltered for present and future generations [2]. The greater complexity of our world requires a suitable management approach able to consider the various factors that can affect cultural properties, such as natural disasters, political and financial constraints, human conflicts, as well as the diverse values in play (e.g., intangible and ecological) [5]. In the European context, the protection of OUV is demanded by each state which follows the directives issued by the European Union and then, according to their governance structure, to the competent authorities. Additionally, the Budapest Declaration [6] stipulated that states should strengthen the protection of world heritage. The guidelines drawn up in 1972 required that each site, in the nomination procedure, produces its own Management Plan (MP). This plan should address the combination of heritage protection and sustainable territorial development. This is because sustainable development can be understood as support for the environmental/cultural resources to be protected, but most importantly as a means by which heritage contributes to improving the environmental,

social and economic dimensions [5]. However, there is no unique way to develop the MP, and UNESCO documents provide limited help in tools or methodologies that can support the different phases of MP implementation of World Heritage Site (WHS).

Within this context, the paper proposes an overview of the main practices in the development of MPs for WHSs nomination, with particular reference to the assessment methods and evaluation approaches used to frame, plan and managing them. The paper analyzes both MPs already implemented for UNESCO-listed sites and contributions provided by research applications. This overview allows us to propose a multi-step evaluation approach that supports all the phases required by the MP. In particular, starting from the proposal of an integrated approach for a spatially explicit framing of the WHS, a combination of other qualitative and quantitative assessment methods is presented to guide the planning and managing phases.

After this Introduction, the paper will focus on the Italian legal framework for protecting and managing WHSs. This special attention will be given to the Italian case, both for the largest number of sites included in the WHL (i.e., 58 until now) [7] and for the specific methodology defined for the development of MPs [5]. In Sect. 3, the overview of recent MPs and contributions in literature is presented and analyzed. Section 4 will propose a multi-step evaluation approach able to produce an integrated and comprehensive understanding of the state, challenges, opportunities, and threats that guide the decision-making process and the development of a strategic MP. Moreover, the main evaluation methods able to support the development of MP plan for the nomination of WHS are described in order to highlight their main role and abilities. Finally, the Conclusions will summarize the main contents of the paper, highlighting future perspectives of the research.

2 Italian Legal Framework

According to the Convention concerning the Protection of the World Cultural and Natural Heritage, "each State Party to this Convention recognizes that the duty of ensuring the identification, protection, conservation, presentation and transmission to future generations of the cultural and natural heritage […] belongs primarily to that State. It will do all it can to this end, to the utmost of its own resources" [1].

In Italy, the normative framework can be divided into these main levels [8]:

- European/National level, where *ad hoc* directives for the protection of culture and landscape are included in the Constitution.
- Regional level, which provides guidelines for the protection of its elements, qualifying the landscape through conservation planning tools, such as landscape and territorial regional plans, i.e., Piano Paesaggistico Regionale (PPR) or Piano Territoriale Regionale (PTR). The first is an instrument of protection and promotion of the landscape, aimed at regulating its transformations and supporting its strategic role in the sustainable development of the territory. The second defines the strategies and objectives of the regional level, entrusting the implementation to the entities operating at provincial and local levels. In some cases, these two plans are integrated into a single regional plan.

- Provincial level, which identifies the most sensitive areas through the Piano Territoriale di Coordinamento Provinciale (PTCP) or, in the case of Metropolitan Cities, the metropolitan plans (e.g., PTGM, PTM).
- Local level, which defines the rules for the protection of sites included in the WHL through local plans. Each municipality where it is located a site included in the WHL has to modify its local plan to adapt its regulations, according to the guidelines approved by the region [8].

Concerning the MP, Italy regulates it in Law no. 77 of 20th February 2006, which imposes the development of MPs, not only for new sites but also for those already existing. A MP is a tool to evaluate and manage the anthropogenic dynamics that can lead the protected site to be damaged, or significantly change its qualities. On the one hand, the MP must define the protection guidelines for the site. On the other hand, it supports the process of adoption of the plans at the local level, which are those who actively build concrete actions for the protection of the site. The concrete implementation of MPs must be guaranteed by the proposers, providing for this purpose all the tools for effective protection of the area, and regularly publishing reports on the status of protection and implementation of the safeguard for individual areas. MP defines a management system that analyzes the values to be included and considered for the WHL and identifies strengths and weaknesses, goals, and strategies to achieve the expected results through specific actions. This plan is carried out through agreements between all those responsible for the site's protection, enhancement, and promotion.

3 Literature Review

To have an overview of the most useful evaluation methods to support the development of MPs, the analysis examined three kinds of documents:

- The guidelines at UE and Italian levels for the development of MPs;
- Scientific papers regarding evaluation methodologies employed in the development of MPs;
- Existing MPs developed for nomination to WHL.

Concerning the guidelines, two documents were in-depth analysed, the 2013 UNESCO manual "Managing Cultural World Heritage" [5] was analysed, and "the Italian model", developed by the Ministry of Cultural Heritage in 2004. The first document structures the process through 3 main steps. (1) The planning phase consists of a collection of data and information about the stakeholders involved in the process, the characteristics of the site (as strengths and weaknesses), as well as all the available resources and timing. Moreover, this phase states the actions that should be taken to achieve the goals. (2) The implementation phase articulates and details the strategies identified before, verifying that the planned actions produce the results expected and achieve the goals set. (3) The last phase, i.e., the monitoring phase, is devoted to verifying that the management system is feasible and eventually defining corrective actions [5]. The Italian guidelines for the MP implementation, instead, divides the process into four phases. (1) The first identifies the motivations and values of why the site is nominated. (2) The second phase collects all the data useful to understand the peculiarities

of the site in terms of strengths and weaknesses, but also threats and opportunities. It also develops a Stakeholder Analysis to determine who influences the decision-making process. For the development of these phases, the document suggests the use of spatial tools, such as Geographic Information System (GIS), which make it possible to organize, elaborate and map all useful information. (3) The third phase regards the protection and conservation of the site. In this phase, the conservation status of the artifacts, the damage and the risk factors are analysed and evaluated, as well as the available resources (i.e., economic, technical and human) are verified for the protection of the heritage site. (4) The final stage is the formulation of the projects, detailed in objectives, strategies, tactics and actions that are necessary to intervene in the preservation of the protected heritage. The projects are designed over at least 5 years and then specified for each year. The annual structure allows general control of the suitability of the plan [9].

Besides the analysis of the national and international documents, a literature search was conducted, aimed to collect evaluation methods and approaches used to conduct the development of MPs. This literature review led to the knowledge of several assessment methods by showing the stages in which they were used. Initial searches within the literature, using the Scopus database, identified some papers dealing with topics related to UNESCO nominations, without specifying the stage at which they were used or without explaining which method was best suited. In some of these cases, it was possible to identify the assessment method able to develop a specific part of the MP. Appiotti et al. (2020) [10], for example, use different methods such as questionnaires, SWOT analysis, Stakeholder Analysis, and Multi-Criteria Analysis (MCA) to develop the proposed strategy, corresponding to the implementation phase for the European document or the third phase for the Italian model. Ferretti (2021) [11] uses the same methods for both the implementation phase and the planning phase, supporting the entire process with the GIS tool. Santoro et al. (2021) [12] only use public participation as a tool to enhance the Ligurian case of the Cinque Terre, while Bottazzi et al. (2006) [13] evaluate the tourism demand of the same site through a set of indicators and Choice Models. Appiotti et al., (2020) [10], instead, identify methods useful for the implementation and risk assessment phase. Specifically, they use tools such as sets of indicators for MCA, supplemented by questionnaires, SWOT, and Stakeholder Analysis, and as always by the GIS tool.

A third analysis investigates existing MPs developed for sites that have recently joined the WHL. The Plans analysed are summarized in Table 1, which reports the assessment methods identified in the documents under investigation, indicating at which stage they are found (referring to the two guideline documents of the European Commission and the Italian Ministry). In particular, each phase of the European document process is assigned to a colour: light blue for the planning phase, yellow for the implementation phase, green for the monitoring phase, and orange if the method is used in every step of the process. Similarly, each phase of the Italian document is assigned to a number: "1" for the application and universal meaning of the site phase, "2" for the knowledge project, "3" for the protection project, "4" for the strategic project of the local cultural system and, finally, the symbol "*" refers to the entire process. From Table 1, it is clear that the most used methods are SWOT and Stakeholder Analysis for the planning stages, while indicator systems are the most used for monitoring, sometimes supported by matrices. In all MPs, the GIS tool is used to support the entire process, from planning

Table 1. Assessment methods used at different stages of MPs

MANAGEMENT PLANS	FOCUS GROUP	SWOT ANALYSIS	STAKEHOLDERS ANALYSIS	INDICATOR SYSTEM	MDCA	CHOICE MODELS	MATRIX	GIS
Venice and its Lagoon (Italy)		2	2	5				*
The Porticoes of Bologna (Italy)	*		2	5			5	2
Le colline del Prosecco di Conegliano e Valdobbiadene (Italy)		2	1, 2, 4	5				*
Ivrea, industrial city of the 20th century (Italy)				5				1, 2
Padua's fourteenth-century fresco cycles (Italy)	4	1, 2	2	5				1, 2
Venetian Works of Defence between the 16th and 17th Centuries (Italy, Croatia, Montenegro)		2	2	5			2	
Chaîne des Puys - Limagne fault tectonic arena (France)		2		5				1, 2
Amburgo Cathedral (Germany)			2					1, 2
Kojate Greenland: Norse and Inuit Farming at the Edge of the Ice Cap			2	5			5	
Mathildenhöhe Darmstadt (Germany)								*

EU - Planning phase = blue, Implementing phase = yellow, Monitoring phase = green, during all process = orange;
Italy - Application and universal meaning of the site = 1, Knowledge project = 2, Protection project = 3, Strategic project of the local cultural system = 4, during all process = *

to monitoring. For example, Padua's plan [14], the plan for the porticos of Bologna [15], the Prosecco Hills [16], and the plan for Venice and its lagoon [17] are the most complete regarding the use of evaluation methods, at all stages of the process. Bologna's plan uses participation tools throughout the process, organizing moments of information exchange and sharing. In particular, they used focus groups, in which the population and associations interacted and discussed the implementation of the plan. The phase in which evaluation methods are least used is the implementation phase: only Padua's plan conducted some focus groups and Prosecco Hills' plan used Stakeholder Analysis. It is also evident that quantitative or quali-quantitative methodologies, such as the MCA, are less used compared to qualitative approaches. In particular, MCA and choice models do not seem to be applied, at least for the analysed plans, at any stage of the process in contrast to the research applications. These methods are, in fact, found in some of the analysed papers, specifically Bottazzi et al. (2006) [13] for the use of choice models and Ferretti (2021) [11] or Appiotti et al. (2020) [10] for MCAs.

The entire analysis of documents allows for some considerations about the methods and models used. In general, existing MPs adopt methods and tools described into guidelines and directives without much experimentation. They mainly used qualitative methods (e.g., SWOT Analysis and Stakeholder Analysis) and sets of indicators for monitoring. Conversely, from the analysis of the documents in the literature, some authors tried to experiment with more sophisticated models and methodologies such as Choice Models, questionnaires, MCA, and Spatial Multi-Criteria Analysis (S-MCA).

4 A Multi-step Approach

The analysis of previous examples and applications in literature (Sect. 3) have highlighted different ways to tackle the development of the MP of WHSs during its nomination. Each of them has shed a light on the role of qualitative and quantitative evaluation approaches to support the decision-making process for the nomination of UNESCO sites and, specifically, for the development of MPs. However, neither the manual on how to manage Cultural World Heritage produced by UNESCO [5], nor the guidelines for the development of a MP by the Italian National Commission for UNESCO Sites and Local Tourist Systems [9], nor the research applications provide a shared framework on the tools or methodologies that can comprehensively support the different phases that compose the MP.

In this paper, we propose a multi-phase approach as a guiding tool for managing the entire process for the nomination of UNESCO sites. The multi-phase approach is one of the ways of designing and combining methods in decision-making theory [18]. This approach supports the development of a step-by-step process, where qualitative analyses are conducted in the first stages to highlight goals, objectives and values, as well as actors and stakeholders involved; then, quantitative analyses help to design, evaluate and monitor the project strategies [19]. In particular, the proposed methodology for the development of a MP is constituted by four main working phases: (1) the problem framing and structuring, (2) the analysis of risks and resources, (3) the design of the strategies, and (4) the evaluation and monitoring phase. In particular, Fig. 1 shows this multi-step approach, highlighting the connections among the different phases, as well as

the most suitable approach (quantitative or qualitative) to be used. In Sects. 4.1, 4.2, 4.3 and 4.4, these four steps are in-depth described, presenting the most suitable methods to be used.

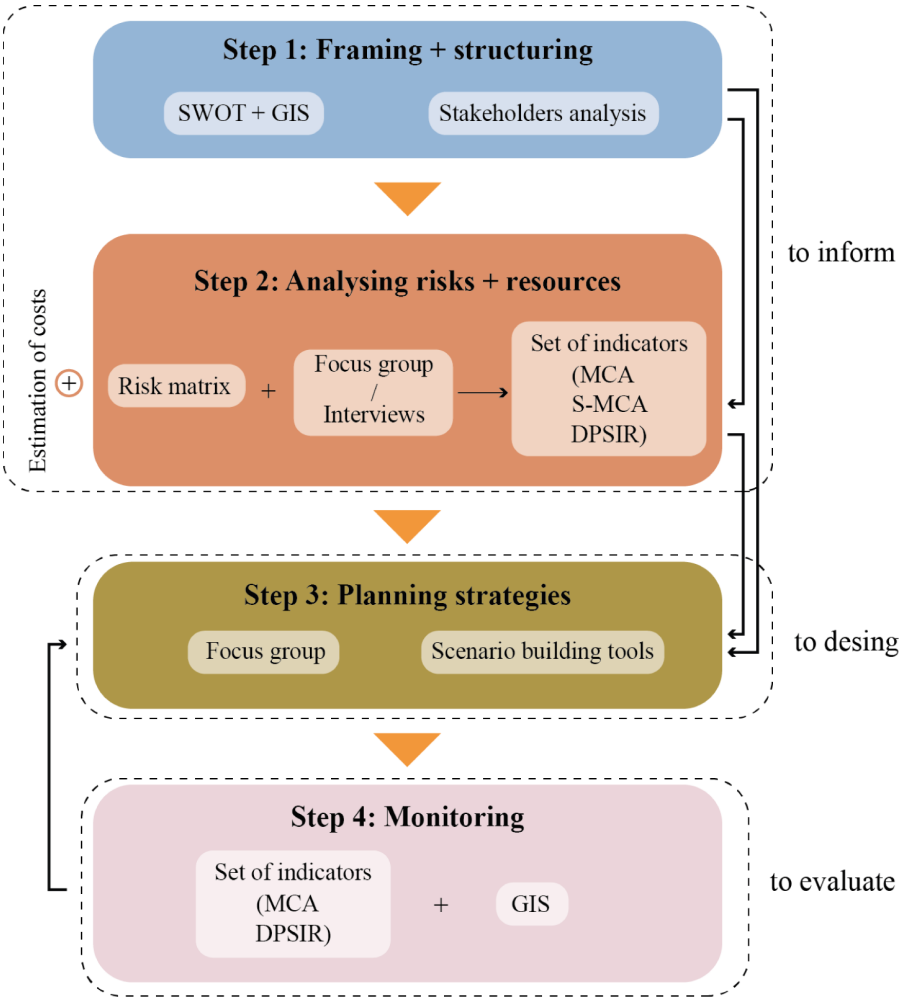

Fig. 1. Multi-step approach for managing WHSs in MPs

4.1 Framing and Structuring the Decision Context

Adequate problem framing and structuring are pivotal for a high-quality decision-making process [20]. This frame should be clear about the issue or opportunity being studied as well as what has to be accomplished (i.e., the decision objectives). Problem framing and structuring in territorial planning and regeneration processes are generally developed

through SWOT analysis, Strategic Choice Approach, cognitive mapping [11]. Additionally, the explicit consideration of the spatial dimension, using geographical maps, can significantly contribute to the territorial planning and management processes due to their inherent spatial nature, which is illustrated by the heterogeneous distribution of the characteristics of the area under analysis [21].

Within this context, the use of SWOT Analysis in combination with GIS data can provide adequate knowledge of the decision-making process. SWOT Analysis is a decision support tool that allows the rationalization of decision-making processes, through the organization of the relevant data according to four components, i.e., Strengths, Weaknesses, Opportunities and Threats [22]. SWOT Analysis allows to frame of the decision-making context according to the endogenous factors that characterize the territory (through strengths and weaknesses), and to predict exogenous factors that externally may or may not happen (through opportunities and threats) [19, 23]. In the context of managing UNESCO sites, the SWOT Analysis is suggested by the World Heritage Committee as a useful technique to be adopted [5]. However, the SWOT is generally implemented as a 4-quadrants matrix, by simply pinpointing the factors [24]. This way of collecting information is certainly useful in many fields, but it is limiting in territorial analysis, where the spatial distribution of the characteristics plays a crucial role [11]. Within this context, the use of spatial data, elaborated and processed by a GIS and, then, organized into a spatial SWOT Analysis, increases the quality and efficiency of the outcomes obtained. The development of a spatial SWOT Analysis is therefore particularly useful in the MP of nominated UNESCO sites, because it supports the identification of the most vulnerable areas within the region (Weaknesses) that require defense intervention and monitoring measures, as well as the environmental and physical aspects that are most affected by human intervention (Threats) and the most valuable areas (Strengths and Opportunities) within the region under investigation, for which monitoring and protection measures should be anticipated [11].

Moreover, in problem framing and structuring, the identification of actors and stakeholders is necessary to accomplish sustainable, resilient and inclusive territorial strategies [11, 25]. The comprehension of stakeholders' interests, needs, and objectives, since the beginning of the decision-making process allows to meet their satisfaction with the project to be developed, to highlight the conflicting interests among them at an early stage of the process and to avoid negative effects in the next ones [19, 26]. The development of structured Stakeholder Analysis produces a clear picture of stakeholders' level of intervention (national, regional, local), their role (political, bureaucratic, special interest, general interest, experts) and the resources carried out (political, economic, legal, cognitive) [27]. Additionally, by using specific tools, such as Power-Interest Matrix, Stakeholder Circle or Social Network Analysis is possible to map stakeholders' power, interest, urgency and proximity in a specific decision-making process, and their possible relationships [28–31]. In the context of managing nominated UNESCO sites, an analysis of the stakeholders is suggested by the World Heritage Committee [5]. However, most of the MPs simply list the stakeholders, without collecting the information and knowledge from using Stakeholder Analysis tools.

4.2 Analyzing Risks and Resources

The development of an assessment model of risks is fundamental for the conservation and management of heritage sites. The increasing risks that we have to face, both caused by natural events and man-made actions, require a systematic organization and collection of information and data [10]. Without them, it becomes hard to define adequate measures for the conservation of protected sites both in the short and long term.

In particular, for the nomination of a WHS, the analysis of the risks has to consider the analysis of actual and potential damages to the building, as well as to the environment [9]. Since the main focus in this step is on the heritage site, the analysis should start with the development of a risk matrix. The risk matrix is used in risk assessment to identify the level of risk according to the probability and severity of the event. In the matrix, it is, therefore, possible to locate the risks from the most certain to the rare probability of occurrence and from the minor to the most catastrophic severity. This allows to classify from very high risks to rare. Ni et al. (2010) [32] review a widely applied semi-quantitative tool for risk assessment, namely the risk matrix approach (RMA) as well as its typical variations. Besides the simplicity of the risk matrix, it represents a useful and easy-to-understand tool for enhancing risk visibility and supporting management decision-making. Its potential can be increased by involving experts and local stakeholders in the identification of the risks, through focus groups or interviews.

Once the matrix is filled, a set of indicators can be defined to monitor the most critical and certain risks over time. According to the specificity of the site under investigation, other methods and tools can support the analysis of the risks, such as using a DPSIR framework [33], S-MCA or spatial risk analysis tool [34], such as the Severity Risk Index (SRI) [35], which considers the spatial and temporal evolution of the extreme events.

In parallel to this phase, it can be useful, as suggested by the Italian National Commission for UNESCO Sites and Local Tourist Systems, to identify and estimate the financial resources available and acquired from the different governmental levels (i.e., local, regional or national).

4.3 Planning Strategies

A crucial step in the MP is the definition of the projects to be developed after the inclusion in the WHL. Each project has to be detailed according to the goals to be achieved, the strategies, tactics and actions, as well as in the prediction of the expected results [9]. This phase represents the creative moment in the MP, in which the characteristics of the local system, social and economic aspects and valorization have to be put together to form the development model. The development model has to identify intervention priorities and the articulation of the actions according to different time spans, in order to guarantee the real applicability of the proposed actions.

In the context of project definition in times of uncertainty and complexity, as for heritage sites, scenario building (also called scenario planning) has assumed increasing emphasis [36]. According to Kahn (1967) [37], one of the fathers of scenario planning theory, a scenario is intended as "a set of hypothetical events set in the future constructed to clarify a possible chain of causal events as well as their decision points". Scenario

planning is in fact able to deal with uncertainty and complexity in the entire decision-making process, increasing the consideration of a variety of potential future alternatives in a holistic, coherent, systematic and comprehensive manner [36, 38–40]. A variety of approaches and techniques can be used for scenario building, ranging from simple to complex, and qualitative to quantitative. Among the others, we can list STEEP or PESTEL analysis, interviews with stakeholders and comprehensive structural analysis using sophisticated computer tools (e.g., Micmac, SMIC and Mactor analysis), Wilson Matrix, Fuzzy Cognitive Map (FCM) based scenarios, trend impact and cross-impact analysis, double uncertainty 2x2 matrix or morphological analysis. For a comprehensive overview of all approaches and techniques for scenario planning, it is possible to see Amer et al. (2013) [36].

In the context of MPs of WHSs, scenario building techniques can therefore support the definition of projects through a strategic planning. Theoretical and operational examples of scenario building and scenario planning approaches in UNESCO sites can also be examined in Amer et al. (2013) [36], Assumma et al. (2022) [41], and Godet (2000) [42]. Due to its interdisciplinary approach and the long-term placed-based vision, strategic planning can play a bigger part in planning processes. Since MPs provide guidance for strategies and actions but not defined projects to be developed, this phase could start with interviews or focus groups with experts and stakeholders, then structuring the information gathered through scenario building tools, such as the Wilson Matrix.

4.4 Evaluating and Monitoring

The MP of a tentative site for WHL ends with the definition of indicators that progressively measure the goals achieved or not [9]. To support this phase, a coherent set of indicators must be defined, to take a picture of the state of the system and make eventually corrections to them, through specific actions or policies [43]. The list of indicators must reflect the objectives contained in the MPs, as well as the place-based characteristics of the territory under analysis [44]. In most cases, this list will cover the multidimensionality involved in a complex decision-making process, i.e., social, environmental, economic and cultural aspects [45]. In particular, there are several procedures to organize them, such as the DPSIR framework or MCA. Eventually, MCA can be used to produce a synthetic index, which combines all the information obtained from the multiple indicators representing the state of the system from an overall perspective.

Additionally, it could be useful in this phase to develop coaxial matrices. They allow to understand the interrelations among the strategies proposed, the possible impacts, the environmental components and the different assets involved. In this way, the plan is able to guide the definition of mitigation or monitoring actions [46].

The collection of all the data and their monitoring requires a close relationship with local municipalities and stakeholders [9]. Within this context, the use of an open GIS allows to produce a constantly connected network of shared information.

5 Conclusions

The present paper investigated the evaluation methods and tools that can support the nomination for the WHL and, in particular, the development of the MP. The study started by analysing recent papers and MPs to understand which methodologies were the most useful and used. This analysis showed that the SWOT and the Stakeholder Analysis are primarily adopted in the planning phase, while sets of indicators are selected for the monitoring phase. The implementation phase, instead, is the less investigated one. However, the cases of Padua and Bologna showed that surveys and focus groups can be useful tools in this phase for collecting information and data. In addition, the various phases can be deeply supported by the GIS tool and the use of matrices.

This in-depth analysis results in the proposal of a multi-step and mixed-method approach able to guide the entire process of MP development for WHS, according to the main contents required by the MP. This approach can be seen as a guiding tool for real-world sites nominated for the WHL, which starts from framing and structuring goals, objectives and values, as well as actors and stakeholders involved, and ends with the design, evaluation and monitoring of the project strategies. Deciding what strategies and how to develop them requires a set of strategic decisions, each characterized by multiple objectives and stakeholders, conflicting aspects, intangible elements and high levels of uncertainty (e.g. [47–49]). The adoption of a framework, constituted by existing tools and methods, can facilitate the decision-making process. It can guide decision-makers, researchers, and practitioners in all the fundamental steps of the MP for a WHS.

Future developments of the present work will apply the proposed multi-phase approach to a site nominated to the UNESCO list. Its application to a real-world case study can highlight its potentialities and limits, with particular reference to the specific context under investigation, the scale, and the actors involved.

References

1. UNESCO: Convention Concerning the Protection of the World Cultural and Natural Heritage
2. Cameron, C., Jokilehto, J., ICOMOS: The World Heritage List what is OUV? ; defining the outstanding universal value of cultural world heritage properties (2008)
3. Jokilehto, J.: World Heritage: Defining the Outstanding Universal Value (2006)
4. UNESCO: Operational Guidelines for the Implementation of the World Heritage Convention (2021)
5. Wijesuriya, G., Thompson, J., Young, C.: Managing Cultural World Heritage. UNESCO World Heritage Centre (2013)
6. UNESCO: The Budapest Declaration on World Heritage - Convention concerning the protection of the World Cultural and Natural Heritage (2002)
7. UNESCO: Patrimonio Mondiale. https://www.unesco.it/it/italianellunesco/detail/188#:~:text=In%20base%20alla%20Convenzione%20l,%E2%80%99umanit%C3%A0.%3A%2058%20siti. Accessed 30 Mar 2023
8. Pontiglione, I.: Valutazione Economica Spazializzata del Paesaggio del Roero (2018)
9. Ministero per i Beni e le Attività Culturali: ll modello del Piano di Gestione dei Beni Culturali iscritti alla lista del Patrimonio dell'Umanità - Linee Guida (2004)
10. Appiotti, F., et al.: Definition of a risk assessment model within a European interoperable database platform (EID) for cultural heritage. J. Cult. Herit. **46**, 268–277 (2020). https://doi.org/10.1016/j.culher.2020.08.001

11. Ferretti, V.: Framing territorial regeneration decisions: purpose, perspective and scope. Land Use Policy **102** (2021). https://doi.org/10.1016/j.landusepol.2021.105279
12. Santoro, A., Venturi, M., Agnoletti, M.: Landscape perception and public participation for the conservation and valorization of cultural landscapes: the case of the cinque terre and porto venere unesco site. Land (Basel). **10**, 1–24 (2021). https://doi.org/10.3390/land10020093
13. Bottazzi, C., Bottero, M., Mondini, G., Raineri, D.: Evaluation of the tourist demand in Management Plans for UNESCO sites: the case of the Cinque Terre Park (Italy). In: 2006 First International Symposium on Environment Identities and Mediterranean Area, pp. 367–372. IEEE (2006). https://doi.org/10.1109/ISEIMA.2006.345006
14. Comune di Padova: Giotto's Scrovegni Chapel and Padua's fourteenth-century fresco cycles Management Plan (2021)
15. Comune di Bologna: The Porticoes of Bologna - Management plan (2020)
16. Ministry of Cultural Heritage and Tourism, I.: Le colline del Prosecco di Conegliano e Valdobbiadene - Management Plan (2019)
17. Comune di Venezia: Venezia e la sua Laguna Patrimonio Mondiale UNESCO - Piano di Gestione 2012–2018 (2012)
18. Meissner, H.I., Creswell, J.W., Klassen, A.C., Clark, V.L.P., Smith, K.C.: Best practices for mixed methods research in the health sciences (2011)
19. Bottero, M., Assumma, V., Caprioli, C., Dell'Ovo, M.: Decision making in urban development: the application of a hybrid evaluation method for a critical area in the city of Turin (Italy). Sustain Cities Soc. **72**, 103028 (2021). https://doi.org/10.1016/j.scs.2021.103028
20. Spetzler, C., Winter, H., Meyer, J.: Decision quality: value creation from better business decisions (2016)
21. Ferretti, V., Montibeller, G.: Key challenges and meta-choices in designing and applying multi-criteria spatial decision support systems. Decis. Supp. Syst. **84**, 41–52 (2016). https://doi.org/10.1016/j.dss.2016.01.005
22. Humphrey, A.: SWOT analysis for management consulting. SRI Alumni Newsl. **1**, 7–8 (2005)
23. Treves, A., Bottero, M., Caprioli, C., Comino, E.: The reintroduction of Castor fiber in Piedmont (Italy): an integrated SWOT-spatial multicriteria based approach for the analysis of suitability scenarios. Ecol Indic. **118**, 106748 (2020). https://doi.org/10.1016/j.ecolind.2020.106748
24. Geneletti, D., Bagli, S., Napolitano, P., Pistocchi, A.: Spatial decision support for strategic environmental assessment of land use plans: a case study in Southern Italy. Environ. Impact Assess. Rev. **27**, 408–423 (2007). https://doi.org/10.1016/j.eiar.2007.02.005
25. Dell'Anna, F., Dell'Ovo, M.: A stakeholder-based approach managing conflictual values in urban design processes: the case of an open prison in Barcelona. Land Use Policy **114**, 105934 (2022). https://doi.org/10.1016/j.landusepol.2021.105934
26. Gill, L., Lange, E., Morgan, E., Romano, D.: An Analysis of usage of different types of visualisation media within a collaborative planning workshop environment. Environ. Plan. B Plan. Des. **40**, 742–754 (2013). https://doi.org/10.1068/b38049
27. Dente, B.: Understanding Policy Decisions, pp. 1–27. Springer, Heidelberg (2014)
28. Mendelow, A.L.: Environmental scanning--the impact of the stakeholder concept. In: ICIS 1981 Proceedings, vol. 20 (1981)
29. Bourne, L., Walker, D.H.T.: Visualising and mapping stakeholder influence. Manag. Decis. **43**, 649–660 (2005). https://doi.org/10.1108/00251740510597680
30. Guilarte, M., Marin, B., Mayntz, R.: Policy networks: empirical evidence and theoretical considerations. Contemp Sociol. **23**, 425 (1994). https://doi.org/10.2307/2075363
31. Rhodes, R.A.W., Peters, B.G.: Understanding govenance: policy networks, governance, reflexivity and accountability. Public Adm. **76**, 408–409 (1998). https://doi.org/10.1111/1467-9299.00107

32. Ni, H., Chen, A., Chen, N.: Some extensions on risk matrix approach. Saf. Sci. **48**, 1269–1278 (2010). https://doi.org/10.1016/j.ssci.2010.04.005
33. de Bisthoven, L.J., et al.: Social-ecological assessment of Lake Manyara basin, Tanzania: a mixed method approach. J. Environ. Manag. **267**, 11059 (2020). https://doi.org/10.1016/j.jenvman.2020.110594
34. Ferretti, V., Bottero, M., Mondini, G.: Decision making and cultural heritage: an application of the multi-attribute value theory for the reuse of historical buildings. J. Cult. Herit. **15**, 644–655 (2014). https://doi.org/10.1016/j.culher.2013.12.007
35. Trakas, D.N., Panteli, M., Hatziargyriou, N.D., Mancarella, P.: Spatial risk analysis of power systems resilience during extreme events. Risk Anal. **39**, 195–211 (2019). https://doi.org/10.1111/risa.13220
36. Amer, M., Daim, T.U., Jetter, A.: A review of scenario planning. Futures **46**, 23–40 (2013). https://doi.org/10.1016/j.futures.2012.10.003
37. Kahn, H., Wiener, A.J.: The next thirty-three years: a framework for speculation. Daedalus **96**, 705–732 (1967)
38. Coates, J.F.: Scenario planning. Technol. Forecast. Soc. Change **65**, 115–123 (2000). https://doi.org/10.1016/S0040-1625(99)00084-0
39. Jetter, A.J.M.: Educating the guess: strategies, concepts and tools for the fuzzy front end of product development. In: PICMET 2003: Portland International Conference on Management of Engineering and Technology Technology Management for Reshaping the World, pp. 261–273. Portland State University (2003). https://doi.org/10.1109/PICMET.2003.1222803
40. Burt, G., van der Heijden, K.: First steps: towards purposeful activities in scenario thinking and future studies. Futures **35**, 1011–1026 (2003). https://doi.org/10.1016/S0016-3287(03)00065-X
41. Assumma, V., Bottero, M., De Angelis, E., Lourenço, J.M., Monaco, R., Soares, A.J.: Scenario building model to support the resilience planning of winemaking regions: the case of the Douro territory (Portugal). Sci. Total Environ. **838**, 155889 (2022). https://doi.org/10.1016/j.scitotenv.2022.155889
42. Godet, M.: The art of scenarios and strategic planning. Technol. Forecast. Soc. Change **65**, 3–22 (2000). https://doi.org/10.1016/S0040-1625(99)00120-1
43. Berisha, E., Caprioli, C., Cotella, G.: Unpacking SDG target 11.a: what is it about and how to measure its progress? City Environ. Interact. **14**, 100080 (2022). https://doi.org/10.1016/j.cacint.2022.100080
44. Cassatella, C., Bagliani, F.: The management and upkeep of landscape. Considerations from the management plans for the UNESCO World Heritage Sites (2014)
45. Peano, A., Bottero, M., Cassatella, C.: Proposal for a set of indicators. In: Landscape Indicators, pp. 193–215. Springer, Dordrecht (2011). https://doi.org/10.1007/978-94-007-0366-7_9
46. Picuno, P., Tortora, A., Capobianco, R.L.: Analysis of plasticulture landscapes in Southern Italy through remote sensing and solid modelling techniques. Landsc. Urban Plan **100**, 45–56 (2011). https://doi.org/10.1016/j.landurbplan.2010.11.008
47. Leccis, F.: Regeneration programmes: enforcing the right to housing or fostering gentrification? the example of bankside in London. Land Use Policy **89**, 104217 (2019). https://doi.org/10.1016/j.landusepol.2019.104217
48. Omidipoor, M., Jelokhani-Niaraki, M., Moeinmehr, A., Sadeghi-Niaraki, A., Choi, S.-M.: A GIS-based decision support system for facilitating participatory urban renewal process. Land Use Policy **88**, 104150 (2019). https://doi.org/10.1016/j.landusepol.2019.104150
49. Ferretti, V., Grosso, R.: Designing successful urban regeneration strategies through a behavioral decision aiding approach. Cities **95**, 102386 (2019). https://doi.org/10.1016/j.cities.2019.06.017