Article

Sustainable Collaborative Strategies of Territorial Regeneration for the Cultural Enhancement of Unresolved Landscapes

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Abstract: The experience of adaptation and instability to a plurality of threats that question the life of human beings on the planet, from the post-pandemic to political conflicts, up to the danger looming in the background—the upheavals expected from climate change—impose a reflection that recognizes that landscape/cultural heritage plays a key role in preservation/enhancement as a specific resource for its "human-centered development", based on values included. These threats are challenges in which phenomena that require solidarity and common actions are faced, which should lead humans to cooperate to face them. The European Landscape Convention of 2000 attributed an important role to the landscape, as an "essential component of the life context of peoples". The phase of listening to the territory and participatory and co-design processes are necessary tools for understanding the expectations and perceptions of the communities, co-exploring possible new uses of the landscape, being capable of generating added value for all stakeholders, and adopting a "win-win" approach. From this perspective, this contribution poses the following research question: how to build collaborative processes capable of putting local institutions, businesses, and local communities in synergy, to identify enhancement strategies for the cultural landscape? This study explores the potential of an integrated, incremental, and adaptive decision-making approach, oriented toward the elaboration of shared choices aimed at the elaboration of territorial enhancement strategies attentive to the specificity of the multiple values and complex resources that characterize the cultural terraced landscapes of the Costa Viola (Italy). In particular, the interactions between different knowledge, approaches, and tools makes it possible to formulate scenarios, strategies, and actions, contributing to the creation of a richer and more complex context of knowledge of the territory and to the construction of bottom-up and situated transformation strategies, supported from a decision-making process attentive to the identification of values and an understanding of the needs of the local 'landscape community' who live and animate it.

Keywords: cultural terraced landscapes; complex values; multidimensional approach; strategic planning and decision making; multi-criteria decision analysis; regime multicriteria method

1. Introduction

Over the centuries the concept of "landscape" has evolved assuming different meanings [1] that can be traced back to three interpretations: (i) of an aesthetic nature, the landscape as an image, with origins in romantic and late idealist philosophy; (ii) of a scientific nature, the landscape as a phenomenon, which coincides with the development of the natural sciences; (iii) systemic and interdisciplinary, the landscape according to an integrated and multidimensional approach.

The European Landscape Convention in 2000 (ELC) [2], in favor of the latter interpretation, defined the landscape as «a specific part of the territory, as perceived by the populations, whose character derives from the action of natural and/or human factors and from

their interrelations» (ELC, art. 1) [2]. With this meaning, it is considered a complex system of relationships between human/social, natural/manufactured, and historical/cultural capital. Its quality, which is the result of the interaction of these factors and the expression of the identity of the populations, is decisive for individual and collective well-being as well as for the sustainable development of a territory. The benefits it unfolds include the environmental, cultural, social, and economic fields; however, they often lose in political decision-making processes as they are always difficult to communicate and measure. Furthermore, the Convention introduced elements of considerable complexity and innovation linked to the recognition of a fundamental right to use the landscape [3]. In fact, the signatory States of the Convention must play an active role in its transformation, since it "represents a key element of individual and social well-being, and that its protection, management, and planning entail rights and responsibilities for each individual" (ELC, art. 2) [2]. A great merit of the Convention is precisely the vision of the landscape as a collective good, with respect to which public institutions must assume specific responsibilities through a broader process of social responsibility, supported and animated by the population's participation in strategic choices and consequent actions. Therefore, the Convention introduced a completely new vision, above all with respect to the realization of individual and collective well-being, and concerning its ability to generate added value (not only economic), intrinsic or existential value. Central to this perspective is the ability to proceed with valorization, in its multiple dimensions and implications: aesthetic, economic, financial, cultural, and social.

Moreover, the ELC [2,3] attributed full conceptual autonomy and legal recognition to the landscape as a community asset to be safeguarded, managed, and planned, and as an "essential component of the life context of the populations, an expression of the diversity of their common heritage cultural and natural and foundation of their identity" (ELC, art. 5) [2]. For this reason, the Council of Europe encouraged the production of studies capable of assessing the complexity of landscapes «taking into account the specific values attributed by the populations concerned» by initiating public participation procedures and co-design (ELC, art. 6) [2], particularly oriented toward raising levels of well-being and quality of life.

Cultural landscape, the most recent heritage category introduced by UNESCO [4,5], defined as the result of the historical combination of the work of man and nature, is an essential component of European heritage and an indispensable element for the quality of life of communities. Thanks to its ability to connect nature and culture, the landscape constitutes «a structure within which it is possible to implement the principles of sustainable development, i.e., the pursuit of human well-being and the protection of the environment, through a development of a holistic approach» [6].

The first practical implication of this meaning is the extreme opening of the reference horizon: the landscape extends to the whole territory and it no longer concerns some of its circumscribed areas.

Consequently, attention cannot focus only on 'excellent landscapes', but must also extend to 'common', 'ordinary', and 'unresolved' or abandoned ones, which are in any case the cultural expression of the society that produced them and inhabits them. The consideration of ordinary and common landscapes opens up a previously unknown management and redevelopment planning perspective, especially in Italy, where the approach of conservative protection has always prevailed, functional to a monumentalizing vision of the landscape.

The landscape is the product of an incessant anthropic activity of transformation of the territory, whose negative effects on both the natural environment and on health have led to a revision of the traditional development model, which only had objectives of an economic nature, toward a circular development model [7], in which, in addition to economic growth, environmental and social aspects must also be considered. The landscape can therefore be defined as a construct of both a cultural and a social nature [8]. In this sense, the concept of landscape is inclusive: people are constantly involved in its creation.

The landscape is connoted in a strategic sense only if it derives from the expression of a collective planning intentionality, the result of a conscious elaboration process by the communities that inhabit and animate it, transforming it into a strategic construct [9,10].

Over the last three decades, the progressive opening up of planning to the themes of landscape and identity, from the perspective of sustainable local development, has undoubtedly contributed to redefining the forms and contents of territorial policies, partly renewing the planning instruments, but above all by enriching their theoretical–interpretative devices with new meanings and new approaches.

Moreover, the exceptional circumstances that the whole world is going through due to the COVID-19 pandemic impose a reflection that recognizes the landscape/cultural heritage as having a key role in preserving/enhancing as a specific resource for its "human-centered development", based on the values included. From this perspective, the contribution poses the following research question: how to build collaborative processes capable of putting local institutions, businesses, and local communities in synergy, to identify enhancement strategies for the cultural landscape?

In this direction, it is necessary to adopt a widely shared strategic vision that can trigger bottom-up co-design policies and actions in order to not undermine the development process that is intended to be triggered. The synergies or conflicts that can emerge in the participation and interaction in the regeneration processes between the different categories of stakeholders are necessary for the determination of alternative evolutionary scenarios [11].

An inclusive and prosperous landscape is aware of its cultural diversity and protects the rights of all its inhabitants [12]. Therefore, through the participation and involvement of interested parties in creating sustainable urban development, belonging and identity are promoted, contributing to the definition of policies in a "landscape for all". Participatory planning is seen as a "potential exercise to support decisions" [13]; in fact, more and more new forms of stakeholder involvement are being perfected, precisely to encourage better sharing of the interested parties in defining strategic choices.

The selection and articulation of the different phases, approaches, and evaluation techniques that characterize a decision-making process can help improve the final decision, allowing the inclusion of the different components that influence the choices and providing a transparent description [6,12–14].

The need for an effective use of resources in the planning of actions for the protection and enhancement of cultural landscapes calls for the need for integrated evaluation methodologies capable of involving knowledge and examining the different points of view and benefits of local stakeholders. Decision-making processes must be supported by transparent evaluation systems capable of explaining the complexities of the landscape and defining action priorities in a transparent and effective way according to shared common objectives. An integrated perspective can be based on a values approach [15,16] that recognizes the need to develop appropriate models for specific contexts through multi-methodological assessments, is useful to make explicit an incremental, flexible, and adaptive decision-making process, and is attentive to the complexity of the various detectable territorial components.

Evaluation, therefore, becomes a process of active participation, self-learning, the social construction of meaning, and of collective identity through which initial values are modified and new values are constructed/produced [15,16].

This contribution deals with the evaluation of the terraced cultural landscape. The objective of this study is to explore the potential of an integrated, incremental, and adaptive decision-making approach, oriented toward the elaboration and evaluation of co-designed and shared territorial enhancement strategies, and which is attentive to the specificity of the multiple values and resources attributable to the cultural landscapes terraced, with reference to the case study of the Costa Viola in Southern Italy.

In detail, the document is structured as follows: after an introduction to the research objectives and the presentation of the case study (Sections 2 and 3), Section 4 presents the

multi-methodological framework, in which the methods and results for each step obtained are detailed; in the concluding Section 5 the results are analyzed, and research perspectives are identified.

2. Research Objectives

Public policy decisions are intrinsically multi-attribute problems characterized by multiple dimensions, with heterogeneous, often conflicting goals further exacerbated by an uncertain policy cycle and scarce public resources. This requires inclusive participatory decision-making that facilitates discussion and is able to include multiple points of view and different perspectives.

However, it should be noted that investments and management decisions for the enhancement and regeneration of cultural heritage are by their nature complex and involve high costs, which discourages investment by public and private subjects. Today, the importance of protecting agricultural cultural landscapes, and in particular of terraced cultural landscapes, collides with the uneconomic nature of traditional agricultural practices carried out in areas that are difficult to access and have a high hydrogeological risk.

The terraced landscape represents one of the most complex landscape systems, being made up of a multiplicity of elements and functions (ecological, historical–cultural, social, and economic).

On this front, the National Recovery and Resilience Plan (PNNR) and the NextGenerationEU program (NGEU), the temporary instruments designed to stimulate recovery and Italian economic growth, dedicate various investments and grants to the protection and enhancement of the immense cultural heritage of our country [17]. The measures envisaged by the PNNR, of unprecedented scope and ambition and never financed in Europe, provide resources for the protection and enhancement of architecture and the landscape aimed at preserving and enhancing rural and historical landscapes through the protection of tangible and intangible cultural heritage, and promoting initiatives and activities related to sustainable tourist-cultural use, enhancing local traditions and culture. The measures are inspired by a philosophy of environmental sustainability and strong digitization, as well as cooperation between public and private entities, and provide for specific investments to accelerate the ecological and digital transition, improve the training of male and female workers, and achieve greater gender equality, territorially and generationally [17].

In this context, it becomes urgent to support public strategic decisions through adequate evaluation methodologies, able on the one hand to manage the complexity of the interests at stake (not always consensual) of the stakeholders involved and on the other to evaluate the various intervention scenarios according to the different dimensions of sustainability (cultural, social, and economic).

This complexity needs to be addressed through appropriate evaluation approaches, which can effectively support public decisions regarding the investment and management of the cultural landscape.

In particular, this paper fits into this line of research by proposing a Multi-Criteria Decision Aid approach (MCDA), elaborated on with respect to specific objectives and criteria and capable of providing the public decision-maker with a multi-methodological framework, which is useful for classifying and deducing a ranking of preferability among alternative intervention strategies and scenarios. An integrated evaluation approach based on creative and collaborative tools [8,13,14] for the territorial regeneration of the vulnerable 'unresolved' landscapes, such as terraced landscape of the Costa Viola in Southern Italy, is capable of triggering new values and adding value to the community development of the territory concerned. In this sense, it represents an effective tool for managing landscape transformations, is capable of governing the territory, involving multiple sectors and skills at various levels, and of integrating the preferences and needs of the community through a process of co-design and co-evaluation of a more shared desirable future.

The international initiatives for the protection of terraced landscapes (World Alliance for Terraced Landscapes), agricultural cultural landscapes [18], and the protection of bio-

diversity [19] highlight the importance of rural cultural landscapes for sustainable development [20]. Furthermore, terraced landscapes are considered an effective example of a resilient system built over the centuries [21]. They are a resilient territorial system that has been able to respond flexibly and dynamically to external pressures (economic, social, and ecological), using their self-organizing capacity to continuously evolve while preserving their structure and identity.

Evaluation is the basis of the dialogue between knowledge and values, it is capable to translate this dialogue into the selection of objectives and actions, the identification of key values and their meanings, the exploration of opportunities and the construction of alternatives, analyzing the possible impacts and effects, and supporting the management of complex systems with multiple priorities.

The dialogue between experts in the landscape community and the integration of these different values in the decision-making process generates greater feelings of consensus and trust in public decisions [12] and the reduction of conflicts [13]. In this context, the evaluation process, through the integrated multi-methodological approach used and applied to this case study, integrates the contribution of different knowledge and is based on the sharing of responsibilities among the various stakeholders and on the concertation of design choices through the complementarity between experiences and skills of different domains.

3. Case Study

The theme of the landscape as a "common good" [22], according to the definition of Historic Urban Landscape (HUL) [23], has been explored as a field of investigation and experimentation for an innovative model of local development to be implemented for the terraced landscape of the Costa Viola (CV), in which the values that characterize the concept of HUL persist. The HUL represents the most recent contribution to the international debate on the identification, conservation, enhancement, and management of cultural heritage [22,23].

The complex landscape, the object of study (Figure 1), is characterized not only by the presence of immense material and immaterial cultural heritage but also by a heritage of biodiversity to be safeguarded and valorized.

Figure 1. Case study.

The significance of the CV cultural landscape results from the stratification of intangible and tangible cultural components representative of different periods of history and vividly characterized by the relationship with the morphology and the hydrography of the territory.

The Calabrian terraced landscape of the CV is located in Southern Calabria in the territory of the province of Reggio Calabria. The CV is a Special Protection Area (SPA) whose territory has a total area of 29,425.00 hectares [24–26].

The coastal territory extends for about 35 km between the Strait of Messina and the lower Tyrrhenian Sea and includes territories facing the sea and, behind it, the vast hinterland of the Aspromonte Park. The coast, squeezed between the sea and the mountains, is dominated by high and jagged coasts, with an altitude between 0 and 500 m [26].

The structure and shape of the landscape have been modified by the presence of local communities that have developed their social and productive life near the sea, exploiting its resources (agriculture and fishing). The mountain ranges facing the sea alternate sandy and gravel coasts with hilly plateaus largely shaped by the agriculture that has settled on the mountainsides; the entire coastal strip is dotted with rural houses, defensive works, and watchtowers that characterize the territory producing results of extraordinary landscape value.

It is a cultural landscape that, in the past, has traditionally performed socio-economic, ecological–environmental, and cultural functions for the historically settled local communities, which has profoundly modified the natural structure of the soils, transforming them into a system of terraces.

This landscape, characterized by multiple and complex values, has undergone a slow process of abandonment by the local communities in recent decades, which historically have consolidated and preserved the territory, drawing benefits and comforts from it. The changed conditions and the socio-economic opportunities have determined, as for other traditional agricultural landscapes, the loss of the economic value deriving from the productivity of the terraced soils, which tend to re-naturalize, causing a loss of stability of the slopes. At the same time, the most profitable activities in the tourism sector, which indirectly use the landscape as the main element of economic attractiveness, risk further depleting local ecological resources due to seasonal environmental pressure.

The hydrogeological risk and the irreversible loss of the cultural and identity values inherent in the landscape, here as in other terraced areas, make it urgent to implement a shared regeneration strategy [26]. The terraced landscape, the result of countless individual modifications over the centuries, must be considered a "common good" [20,22] functional to the well-being and sustainable development of the communities that inhabit it. It is, therefore, necessary to adopt a widely shared strategic vision that can trigger enhancement and recovery actions widely supported by the private sector, restoring the conveniences linked to landscape maintenance [27]. The evaluation of the benefits generated by the landscape, beyond the economic, requires evaluation approaches capable of making explicit the values and their relationships, evaluating the impacts of the design actions to identify the intervention priorities, and monitoring the achievement of shared objectives.

4. Materials and Methods

The proposed methodological path is structured in three phases (Table 1):

1   Knowledge of the Historic Urban Landscape being studied, through the approaches of Hard and Soft Systems Analysis [28–32].
2   Identification of strategic actions and alternative scenarios through tools such as Customer, Actors, Transformation process, Weltanschauung, Owner/s Environmental constraints (CATWOE) [33] and Strategic Options Development and Analysis (SODA) [34].
3   Assessment of alternative scenarios through the multi-criteria method of Regime [35,36].

The evaluation approach was conceived in successive steps. For each step, the most appropriate analysis and evaluation methodologies and techniques were therefore selected, being able to support the pre-established results of the decision-making process according

to the emerging problems and considering the characteristics and emerging problems in the study context. In particular, considering the CV as a Historic Urban Landscape, an expression of the practices of ordinary life, and of the relationships and links between the specific context and those who live in it, have been selected for each of the phases of the decision-making process techniques that are consistent with the Systems Thinking approach (ST) [28–31].

Table 1. Steps of the methodological framework.

Steps	Methods	Results
1. Landscape Knowledge	Hard Analysis Fishbone Diagram Soft Analysis	Context/Indicator Analysis Criticism and Potential Map Stakeholder
2. Scenarios Definition	CATWOE SODA Analysis Domain Analysis Central Analysis	Community Preferences Cognitive Maps Strategic Actions
3. Scenarios Assessment	Regime multicriteria	Preferable Scenario

The ST is a way of thinking aimed at solving complex problems related to the uncertainty of the real world. Indeed, ST analyzes the impacts and behaviors of each element and how it interacts with the entire system. If the world is a set of highly interconnected and hierarchically organized technical and social entities, then it is possible to produce observable behaviors by stakeholders, who are subjects directly interested or influenced by such behaviors.

In this sense, ST, or Systems Thinking approach, is a tool for describing a system as a whole, highlighting its dynamic nature and the interaction that takes place between its elements.

To better understand what ST is and how to be able to think in systems to improve the strategic positioning of an organization or to guide its organizational transformation, it is necessary to carry out some insights into the discipline at its base, which can be represented as a collection of tools and methods, as well as a profound new philosophy of thought.

This philosophy concerns the following fundamental aspects:

- the ability (sensitivity) to be able to observe and grasp the "circular" nature of the world in which we live;
- awareness of the role of the structure of "systems" in determining the situations we are confronted with;
- the understanding that there are potential unintended consequences to the actions we take.

The ST is therefore also a diagnostic tool applied to problem-solving, because it allows, through a rigorous approach, to analyze problems more accurately and completely before acting.

One could therefore define "Thinking for Systems" as thinking approaches for systemic analysis that allow us to give the right answers to vital questions for the organization since, even before reaching hasty conclusions (pursuing the modern need to have—too much—to quickly provide the "right answers"), one is able to identify the right questions to ask/ask in the analysis of the problems under examination.

The art of seeing the forest and not the single tree: thinking in systems, therefore, means moving from the mere and simple analysis of the individual components of a system toward the understanding of the whole system in its entirety and in its emerging properties. Additionally, once the system has been defined, one can move from the observation of the events (or of the data connected to them) toward the identification of the patterns of behavior over time of the phenomena of interest, and from there to the underlying structures that generate them.

The ability to understand and modify those "structures" that are not operating at their best (including our mental models or perceptions) allows us to expand the selection of choices available and thus create more effective long-term solutions to chronic problems.

The ST, therefore, expands the range of choices available for solving a problem, broadening our capacity for analysis and articulation in an innovative and different way. At the same time, the principles of Systems Thinking make us aware that there are no optimal or even perfect solutions: the choices we make will impact other parts of the system. By anticipating the impacts of each such trade-off, we can minimize its severity or even use it to our advantage.

Not surprisingly, the power of Systems Thinking approach has also recently been recognized by the OECD (Organization for Economic Co-operation and Development) [37,38], which, in one of its latest reports, identified the need to use this paradigm if we want to successfully solve the challenges of the 21st century.

The OECD is not alone in recognizing the benefits of Systems Thinking as a skill that helps solve problems more effectively. The World Bank has also promoted this methodology in two very different fields: as a model for more effective education and as a methodology to better evaluate investment policies in education and training around the world.

According to the ST approach, decision problems are by their nature complex; they can influence habits, behaviors, and practices. These problems can therefore be better understood and analyzed by considering the reciprocal relationships, the bonds, and the interactions between the elements that make up the totality of the system and the other systems, in a cyclic rather than a linear process. The experience is considered complementary to the observation and the landscape is interpreted as an expression of the collective memory, as an explanation of the wider cultural context [39,40].

It is therefore widely believed that ST is a fundamental approach to managing the complexity of the problems facing the world in the coming decades.

ST is applied by a wide variety of disciplines as it enables decision makers and managers of all types and at all levels to deal with the subtleties and confusion of the complex situations they face. As a decision support system, the ST is used in the field of planning and management of territorial systems, landscape and urban planning, feasibility studies, strategic planning, and construction of alternative scenarios, as in the decision-making context of the study addressed in this research [6,8,10,13,16,28–31].

In particular, the combination of techniques such as Soft Systems Analysis and Hard Systems Analysis [28–32] has made it possible to structure a learning process aimed at understanding the specificities of the context perceived by the main and various categories of local stakeholders, being actively involved in the decision-making process, and determining how to improve the definition of the components of the decision-making problem under examination.

In the first phase, through Hard Systems Analysis, this study made it possible to structure a synthetic and objective cognitive framework relating to specific thematic areas and problems of the terraced cultural landscape of the CV and identifying measurable and representative issues of the specific problems. Subsequently, the critical issues and potential of the territory were then identified according to some potential actions that were structured according to a Fishbone diagram [41].

In the first phase, through the Hard Systems Analysis, this study made it possible to structure a synthetic and objective cognitive framework of the terraced cultural landscape of the CV with reference to specific thematic areas, identifying measurable and representative issues of the specific problems.

However, applied to a situation such as that of the Costa Viola, which is characterized by complex problems that follow non-linear logics, the "hard" approach proved to be insufficient to produce useful results for understanding the different components which must be considered. In fact, in many real-life situations, it can be difficult to describe the decision problem in a way that can be easily addressed. For these reasons, it is possible to integrate the "hard" approach with the "soft" one and resort to Soft Systems Analysis, which allows

tackling unstructured problems where the objectives cannot be easily specified and the relevant data are not identified. The integration of these two approaches makes it possible to structure issues more attentively to the multiple dimensions of a decision-making context, in which the combination of "hard" and "soft" data provides a rich and articulated picture of emerging issues and significant characteristics for the present case.

In the next phase, through the Soft Systems Analysis, the "soft" data collection phase was conducted starting from the definition of an identification map of the stakeholders involved in the decision-making process through the Institutional Analysis (IA) technique [42]. In structuring an IA process it is necessary to identify alternative solutions and criteria that are shared by the stakeholders and that reflect the hierarchy of preferences and interests of the various actors in the landscape community. To identify the point of view of the stakeholders, the CATWOE approach (C-customers, A-actors, O-owners, E-environmental constraints) [33] was used, which was particularly suitable for analyzing the roots of the decision-making problem, offering the interviewees the opportunity to express their opinions in a profound and reasoned way.

The soft data collection was built through the realization of exemplified in-depth interviews using the CATWOE approach, which made it possible to facilitate the sharing of information as well as the interactions between the actors involved in the theme of the regeneration of the historic terraced landscape of the CV. CATWOE is a decision aid technique typical of Soft Systems Analysis which refers to the Soft Systems methodology formulated by Checkland in 1981 [32].

The phase of identifying and processing the perception of problems, preferences, and possible solutions expressed by the community was developed through the application of the strategic options development and analysis (SODA) approach [34]. The SODA approach allows for the elaboration of cognitive maps starting from the verbal protocol of an exemplified in-depth interview and the analysis of preferences by elaborating the relative orders of preference useful for identifying shared visions and actions.

The SODA analysis, together with the analysis of the plans and programs in place in the area, contributed to the elaboration of five alternative intervention scenarios.

Finally, the last phase presented the Regime method [35,36], the multi-criteria methodology elaborated based on the knowledge acquired and the experiences presented in the previous phases. The Regime method was applied to the evaluation of the terraced landscape of the CV to classify the identified shared scenarios.

The methods, tools, and results of applying the proposed methodology for each phase of the multi-methodological assessment framework are described in the next section.

5. Application and Results

The proposed decision-making process made it possible to structure a learning process aimed at understanding the specifics of the study context, in which, for each of the phases, the techniques most consistent with the Systems Thinking approach were selected.

5.1. Knowledge Phase: Hard Systems Analysis

In the preliminary cognitive phase of the decision-making process, a Hard Systems Analysis (HSA) was used, characterized by the acquisition of objective and measurable "hard data" [30,32]. The HSA made it possible to acquire a reference cognitive framework, which was useful for defining a set of qualitative and quantitative indicators structured according to specific thematic areas. The hard data were extracted from various institutional databases (national, regional, provincial, and municipal) of public and private entities operating in the area, from territorial analyses, planning and programming tools, and bibliographic research [43].

This made it possible to structure a synthetic and objective cognitive framework of the territory in question, organized by thematic areas, with respect to which a set of indicators were identified among those most representative of the problems of the study context and able to indicate the mutations of the phenomena and related changes over time. The infor-

mation framework was structured with reference to specific thematic areas: population; economy; tourism; transport; infrastructure; agriculture; soil and subsoil, hydrosphere; cultural and landscape heritage; and services for the citizen.

As considerations on the sidelines of the study of existing programming and design tools, it should be noted that there is a lack of an overall and unitary vision of the entire CV site. What emerged from this analysis was not only the lack of coordination of the projects in the temporal planning and the territorial space, or between the various municipalities of the CV landscape, but also the lack of integration of the projects concerning the different resources and landscape components, as well as compared with the entire local system. Therefore, the analysis of this planning shows how, in reality, the projects related to the different landscape dimensions are not realized according to the landscape system, neither its components nor its dynamics. In any case, the existing lines of development that emerged from the planning in force were identified in order to understand the evolution of the landscape system, and to consequently propose a project scenario shared with the CV community. In fact, making explicit the guidelines in place allows you to compare the current state of affairs with a more advantageous vision and to define the trajectories toward which to direct the management of the site. From this perspective, specific scenarios were then developed and then evaluated, as described in the following sections.

Finally, starting from the analysis of the set of selected indicators the "criticalities" and "potentialities" of the territory were identified according to the possible intervention actions, structured and classified according to the Fishbone diagram [41]. The actions were therefore classified taking into account their relevance, highlighted through a specific and appropriate evaluation scale (High relevance, Medium relevance, or Low relevance), to which a chromatic scale was associated (see Tables 2 and 3)

Table 2. Criticality.

POPULATION	ECONOMY	TOURISM	TRANSPORT
Demographic decrease.	Lack of management, enhancement, and integration policy for economic activities.	Tourist seasonality.	Inadequacy of public transport.
Low level of education.	Progressive abandonment of economic activities such as agriculture and crafts.	Low quality of the tourist offerings.	The main use of private transport.
	Quite high unemployment rate.	Poor enhancement of the various tourist attractions.	Insufficiency of the road network.
		Inadequate tourist services.	Large tourist bus turnout.
		Outdated accommodation facilities.	Lack of integration between the different types of infrastructure and transport.
		Touch and go tourism.	Lack of parking.
		Unqualified personnel.	

AGRICULTURE	SOIL, SUBSOIL, AND HYDROSPHERE	CULTURAL AND LANDSCAPE HERITAGE	SERVICES FOR THE CITIZEN
Abandonment of agricultural activities.	Presence of areas with high hydrogeological risk.	Lack of management, protection, and enhancement policy for the landscape resource.	Absence of social recreational facilities.
Poor valorization of organic products.	Rise of numerous empty houses.	Lack of an integrated program of knowledge and enhancement of cultural heritage.	The concentration of events and demonstrations in the summer months.
		Threat to the conservation of biodiversity.	
		Bad management of cultural heritage.	
		Abandonment of proto-industrial buildings (mills, etc.).	
		Poor maintenance of paths and mule tracks.	

Legend:

High relevance
Medium relevance
Low relevance

Table 3. Potentiality.

POPULATION	ECONOMY	TOURISM	TRANSPORT
	Tourism: economic sector in constant growth.	Tourist attraction.	Maritime transport.
	Presence of traditional local economic activities	Presence of uncontaminated landscapes and authentic places.	
		The annual increase in arrivals.	
		Typical products.	
		Natural–historical and hiking trails.	

AGRICULTURE	SOIL, SUBSOIL, AND HYDROSPHERE	CULTURAL AND LANDSCAPE HERITAGE	SERVICES FOR THE CITIZEN
Typical agricultural products.	Forest and vegetation cover most of the territory.	Presence of proto-industrial heritage.	Presence of centers of local history and culture.
Costa Viola products: IGP wine.	Architectural heritage largely before 1945.	Presence of significant biodiversity systems.	Presence of school facilities.
Unused agricultural areas.	Possibility of exploiting water for the production of electricity.	Presence of numerous Nature Reserves.	
		Typical products.	
		Cultural and religious events.	

Legend:

High relevance	
Medium relevance	
Low relevance	

Therefore, through the preliminary cognitive phase of the HSA, the problems of the study context were now clearly defined, and it was, therefore, possible to structure and clearly define the objectives oriented according to development strategies shared with all the actors involved.

5.2. Knowledge Phase: Institutional Analysis

However, the "hard" approach, applied to a situation such as the Costa Viola, which is characterized by complex problems that follow non-linear logic, proved to be insufficient to produce useful results for understanding the different components that must be considered. In fact, in many real situations, it can be difficult to describe the decision problem in a way that can be easily addressed. For these reasons, it is possible to integrate the "hard" approach with the "soft" one and resort to Soft Systems Analysis, which allows for tackling unstructured problems where the objectives cannot be easily specified and the relevant data are not identified. The integration of these two approaches makes it possible to structure issues more attentively to the multiple dimensions of a decision-making context, in which the combination of "hard" and "soft" data provides a rich and articulated framework of emerging issues and significant characteristics for the case under consideration.

The "soft" data collection phase was conducted starting from the definition of an identification map of the various actors involved in the decision-making process through the Institutional Analysis [42].

The Institutional Analysis [42] supported the analysis and identification of available endogenous human, social, and environmental resources, as well as the identification of social and economic perceptions of the community, which was useful for identifying alternative solutions and the criteria which expressed the preferences and reflected the hierarchy of interests of the different groups that make up the CV landscape community.

Through the Institutional Analysis [42] it was possible to define an identification map of the various stakeholders involved in the decision-making process through an analysis of the context and its evolution over time. In particular, through the study of the history of

the CV, it was possible to trace who were and who are the dominant and significant figures for the local culture and the characteristics of the places.

They have been recognized among the institutions operating in the area, the representatives of the dominant economic sectors, the main users, the experts, the locally organized groups, and the influential associations. Through the analysis of the main actors involved, it was possible to understand how the options to be built should be aimed at the specific interests of the community, taking into consideration the preferences of the actors representing a particular condition or a more general need. An Institutional Analysis oriented in this way made it possible to increase the cognitive framework and improve the selection of tools through which to develop alternative scenarios.

The stakeholders were divided into three main groups: the promoters (institutions, experts, and universities), the operators (production activities, accommodation businesses, and associations), and the users (citizens and tourists).

The first group included institutions and experts with a high degree of influence in choices oriented toward the pursuit of one's objectives.

In the second group were classified the operators of the dominant economic sectors, operators of productive and hospitality activities, but also the associations, i.e., those who have a high degree of interest and a significant influence in the choices.

Finally, the addressees of public policies, to be involved in the formulation of the same policies as citizens and tourists, who have a high interest but a low influence, were classified in the third group.

5.3. Strategic Actions Identification Phase: Soft Systems Analysis

The Institutional Analysis [42] supported the analysis and identification of available endogenous human, social, and environmental resources, as well as the identification of perceptions. To identify the stakeholder point of view, in-depth interviews were carried out using the CATWOE approach [33], a decision-aid technique typical of Soft Systems Analysis [40]. The CATWOE is a useful tool for structuring the interview and for exploring the decision-making problem from multiple points of view.

The understanding of the issues and the identification of possible strategies are articulated according to the following points:

- Customers: Who could obtain advantages or disadvantages?
- Actors: Who performs the transformations?
- Transformation process: What is proposed in terms of input and output?
- Weltanschauung: Which vision makes the proposed activity meaningful?
- Owners: Who could oppose this activity?
- Environmental constraints: Which environmental constraints could be conditioning?

The model proposed for the landscape of the Costa Viola enriches the points of the CATWOE by inserting two others, considered significant for describing some aspects of the problem more clearly, to integrate the information already obtained through the analysis of the "hard" data and explained with the Fishbone diagrams (see Tables 2 and 3).

- Criticality: What are the major critical issues?
- Potentiality: What are the greatest potentialities?

The stakeholder interviews respected the CATWOE's eight interpretative questions.

The interview was, therefore, structured on the basis of some issues considered significant for the sustainable development project of the Historic Terraced Landscape of the CV, to bring out the perception of the critical issues and potential, and identifying future scenarios of transformation and related implementation strategies.

The elaboration phase of the perceptions of the problems, the preferences, and the possible solutions made explicit by the community was structured through the application of the Strategic Options Development and Analysis (SODA) approach [34].

The method makes it possible to structure, from a formal and methodological point of view, and adequately analyze the qualitative data starting from the cognitive maps and

the verbal contents of the interviews. The elaboration of cognitive maps allows a mental representation and serves to acquire, codify, memorize, recall, and decode a system of concepts and to identify the relationships between them, to communicate the nature of the decision-making problem in question and the related implications.

Operationally, the verbal protocol according to the CATWOE model with the eight interview questions was administered to each group of stakeholders. The eight questions making up the interview were associated with the concepts of criticality, potentiality, actions, future visions, obstacles, actors, environmental limits, and an identifying color.

Contextually, using the Decision Explorer3.1 software, the relative cognitive map was elaborated for each group of stakeholders (institutions, hoteliers, restaurateurs and traders, experts, associations, agricultural producers, tourists, and citizens).

Finally, the analysis and comparison of the results of the domain analysis and the central analysis allowed the formulation of the structure of the preferences of the different stakeholders involved. The preferences identified, and made explicit by the landscape community, made it possible to outline future shared visions, strategic actions, and enhancement scenarios of the Historic Terraced Landscape of the CV.

Five alternative "scenarios" were constructed for possible landscape enhancement and regeneration, and consisted of a set of "strategic actions" integrated with each other with respect to the interdependencies that characterized the reference territorial system.

The "scenarios" were constructed with reference to three territorial dimensions (cultural heritage, natural heritage, and infrastructure of the territorial system) and made explicit through "strategic actions" that responded to three "strategic objectives", identified in relation to the same identifying components of the landscape:

- To Protect and Enhance the Cultural Heritage;
- To Protect and Enhance the Natural Heritage;
- To Improve and Strengthen the Infrastructural System.

Specifically, the general objectives were identified by analyzing the study context and taking into account the coding of the in-depth interviews considering the preferences expressed by the community. While the strategic actions were aimed at an effectively integrated valorization of the territory, they constituted specific, punctual, and local interventions relating to the complex territorial system and were conceived to trigger dynamics of development and sustainable management, which introduced new sap to "restore" the denied values of the territory and promote an effectively integrated enhancement of the landscape.

5.4. The Multi-Criteria Evaluation

In the research applied to the study context, in order to arrive at a synthetic evaluation, a Multi-Criteria Decision Analysis (MCDA) [44,45] was adopted, which was able to help find answers regarding the identification of intervention priorities within the development guidelines in the study context and which allowed a ranking of preferability among the different identified scenarios.

Multi-criteria methods appear capable of grasping the multiplicity of values at stake that planning aimed at achieving sustainable development must take into consideration.

Within the large family of multicriteria analyses, Regime's method is a discrete MCDA method [44,45] capable of reflecting the plurality of values, and therefore able to express the quantitative/qualitative approach for the evaluation of the complex social value of the intervention alternatives, such as of the future scenarios identified for the Historic Terraced Landscape of the Costa Viola in this specific case.

The MCDA analysis, and the discrete method of Regime [35,44] in particular, have been proposed as perspectives capable of helping to find answers regarding the identification of intervention priorities within the guidelines of development in the context of this study.

Regime's multi-criteria method is, in particular, a discrete multi-criteria evaluation method capable of managing qualitative and quantitative data. It is a tool suitable for

planning problems characterized by great uncertainty and complexity regarding existing territorial, social, and economic structures and their interrelationships [42,46].

It is a decision support method which, in addition to the possibility of considering data of different natures (quantitative and qualitative), offers the opportunity to assign different weights to the identified criteria, manage conflicts between objectives, and deduce priorities between options alternatives.

The Regime method, in fact, is able to manage data of mixed types (binary, ordinary, cardinal, and categorical). It can be considered a qualitative method since the information on the preferences of the Decision Makers (DM), which then represent the weights, have only an ordinal (qualitative) definition, while the criteria can also be defined in a quantitative form [35,36]. From a methodological point of view, the method is based on the generalization of the agreement analysis, which in turn is a generalization of the pairwise comparison.

From an operational point of view, it is necessary to define: the impact matrix and the weight vector, which derive from the preferences expressed by the Decision Maker(s) on the order of importance of the weights [35,47–50].

The impact matrix summarized the effect of each action on each evaluation criterion, the weights, and the relative importance assumed by the evaluation criteria.

By comparing all the alternatives in pairs with respect to each evaluation criterion, it was possible to identify the concordance and discordance sets that served as a basis for arriving at the net concordance index, with regard to which it was necessary to focus above all on the sign that presented. This is because weights were also involved in the evaluation process, on which we only had ordinal information. The ranking of the alternatives was based on an aggregate probability linked to the sign of the net agreement index, which was expressed as a performance score.

The inputs required by the Regime method were the list of evaluation criteria and the vector of weights.

The output produced by the model was the ranking of preferences for every single alternative based on the "net index of a concordance".

For the synthetic evaluation of the Costa Viola landscape, the multi-criteria analysis of the Regime was elaborated with reference to three objectives and five criteria, deducing a ranking of preferences among the future scenarios shared by the "community" of the Costa Viola landscape. It also developed a sensitivity analysis to verify the "robustness" of the final results obtained.

The "scenarios" shared by the Costa Viola community were constructed with reference to three territorial dimensions (cultural heritage, natural heritage, and infrastructure of the territorial system) explicated through "strategic actions" that responded to three "strategic objectives", identified in relation to the same identifying components of the landscape.

In order to arrive at a summary assessment that allowed for the identification of a ranking of preferability among the various future scenarios proposed, the assessment was structured taking into account the three reference objectives, such as:

- Protect and Enhance the Cultural Heritage;
- Protect and Enhance the Natural Heritage;
- Improve and Strengthen the Territorial System.

Additionally, six criteria, for each of which the impacts were assessed:

- Archaeological Heritage;
- Built Heritage;
- Historical Landscape;
- Natural Heritage;
- Infrastructure System;
- Socio-Economic System.

The Guidelines from UNESCO 2011 [23] were used for the scenarios' impact assessment.

From an operational point of view, the overall impact assessment was obtained by combining the "intensity of change" with the "effects of the change produced".

A five-point impact assessment scale (no change, negligible change, marginal change, moderate change, and major change) was used to evaluate the impact of the scenarios with respect to the "intensity of change".

For the evaluation of the "effects of the change produced", positive and negative, a five-point impact evaluation scale was used; for this purpose, a five-point impact rating scale (from "very high" to "negligible") was used.

Considering the UNESCO proposal [23], for each scenario an overall assessment of the impacts was defined with reference to each strategic action and six evaluation criteria (archaeological heritage, built heritage, historical landscape, natural heritage, infrastructural system, and social economic) [19].

Note that a certain strategic action can be common to several scenarios (see Table 4); empty boxes indicate that the scenario was not affected by the corresponding strategic action. Since the impact assessment regards each strategic action, the effect (expressed on a scale from "very strong" to "weak") was identical for each scenario containing that strategic action (see Table 5). Note that the impacts are all positive and, for ease of reading, the empty boxes indicate "zero impacts".

Table 4. Cultural Heritage strategic actions.

	Objective I: To Safeguard and Enhance the Cultural Heritage					
		SCENARIOS				
n.	**Strategic Actions**	**A**	**B**	**C**	**D**	**E**
a1.1	Restoration of Agriculture Mosaics through the support of agricultural and non-agricultural activities	☐		☐	☐	
a1.2	Restoration of the terracing system and its irrigation system	☐		☐	☐	☐
a1.3	Safeguard and recovery of the forest system, connected to the system of terraces and its supply chain	☐		☐	☐	
a1.4	Protection of the distributed ancient settlements			☐	☐	
a1.5	Redevelopment of settlements and environment			☐	☐	
a1.6	Strengthening of the tourist accommodation and tourism services in the inner areas: identification of different well-equipped poles (central reception and information services; promotion and sale of localproducts; interchange station among the tourist buses, etc.)			☐	☐	☐
a1.7	Integrated redevelopment of the main rural network of mule and trails (Rural Service) and complementary infrastructure to the main rural tracks (hiking trails)			☐	☐	☐
a1.8	Safeguard of the centralized ancient settlements				☐	
a1.9	Consolidation and integration of territorial polarities consisting of historical and architectural interest assets			☐	☐	
a1.10	Integrated safeguard and enhancement of the historical architecture of civilian type and defensive military (such as watchtowers and defense along the coast)			☐	☐	
a1.11	Promotion of cultural network made up of the numerous historical-architectural assets spread throughout the area, aimed at a tourist-cultural circuit, also of a scholastic nature			☐	☐	
a1.12	Enhancement of the religious tourism circuit				☐	
a1.13	Enhancement of the museum circuit				☐	
a1.14	Enhancement of the archaeological tourist circuit			☐	☐	
a1.15	Enhancement or the early industrial architecture circuit	☐		☐	☐	

Table 5. Cultural Heritage impacts evaluation.

Strategic Actions	Criteria						SCENARIOS				
	Arch. Heritage	Built Heritage	Historical Heritage	Natural Heritage	Infrastr. System	Soc. Ecosystem	A	B	C	D	E
a1.1			VS	S		S	☐		☐	☐	
a1.2			VS	S		M	☐		☐	☐	☐
a1.3			S	VS		M	☐		☐	☐	
a1.4		VS	S						☐	☐	
a1.5		VS	VS	M					☐	☐	
a1.6					S	VS			☐	☐	☐
a1.7			M		M	W			☐	☐	☐
a1.8		VS	S							☐	
a1.9	S	VS	M			VS			☐	☐	
a1.10		VS	M			M			☐	☐	
a1.11		S	M			M			☐	☐	
a1.12		S	M			S				☐	
a1.13		S	M			VS				☐	
a1.14	VS					S			☐	☐	
a1.15		S	M			M	☐		☐	☐	

VS—Very Strong; S—Strong; M—Moderate; W—Weak.

In detail, the scenarios were compared by applying the multi-criteria Regime method [35,36,48] and using the DEFINITE 2.0 software (DEcision on a FINITE set of alternatives) [51].

In the preliminary summary assessment, the three objectives were assigned the same weight (0.33 for each objective, with the sum of the weights equal to 1.00), and the criteria were assigned a weight obtained by dividing the weight of the objective by the number of criteria (equal to six), i.e., assigning a weight of 0.055 to each evaluation criterion (see Table 6).

The assessment returned the following preference rankings:

- The first ranking, with equal weights for all objectives.
- The second constituted a set of rankings obtained by attributing, in turn, to each objective a greater weight than the others and equal weighting to the two remaining objectives; in this way, a sensitivity analysis of the rankings was carried out as the weights varied.

The rankings obtained agree in identifying the following ranking of preferability among the scenarios:

- First position: Scenario D (score 1.00).
- Second position: Scenario E (score 0.75).
- Third position: Scenario C (score 0.50).
- Fourth position: Scenario A (score 0.25).
- Fifth position: Scenario B (score 0.00).

By applying the Regime method, the final result was reached, in which Scenario D was the most performing and which received the greatest consensus from the Costa Viola landscape community, highlighting the reasons that contributed to determining this preferability through the elaboration of an appropriate sensitivity analysis, which also explained the "robustness" of the alternative.

This final result also highlights that the preference for Scenario D is due to the performance of the scenario and that the results are not sensitive to the different attribution of the weights assigned to the objectives but only to the characteristics of the other scenarios.

Table 6. Multicriteria evaluation: Ranking scenarios.

(a) Equal Weight to the Three Objectives		(b) Greater Weight for Objective: to Protect and to Enhance the Cultural Heritage	
	Regime		*Regime*
Scenario D	1.00	Scenario D	1.00
Scenario E	0.75	Scenario E	0.75
Scenario C	0.50	Scenario C	0.50
Scenario A	0.25	Scenario A	0.25
Scenario B	0.00	Scenario B	0.00
(c) Greater Weight for Objective: to Improve and to Reinforce the Infrastructure System		(d) Greater Weight for Objective: to Protect and to Enhance the Natural Heritage	
	Regime		*Regime*
Scenario D	1.00	Scenario D	1.00
Scenario E	0.75	Scenario E	0.75
Scenario C	0.50	Scenario C	0.50
Scenario A	0.25	Scenario A	0.25
Scenario B	0.00	Scenario B	0.00

6. Conclusions

The "structural invariants" of the landscape of the Costa Viola site, as essential resources of the territory, represent the potential generators of sustainable and lasting wealth; these fundamental resources of the territory determine self-sustainable development that depends on the projects, and on their strategy in particular.

The evaluation process thus makes it possible to "hold together" the different territorial components in order to restore the integrity of the landscape and to establish how the transformation of the territory can be regulated [45]. An integrated approach relating to strategic planning and a coordinated set of different methodologies of knowledge and construction of bottom-up paths for the identification of values and understanding of needs has a high degree of operational effectiveness: the conservation and enhancement of the landscape is an activity which by its nature tends to oppose the processes of reductive simplification and homologation, which weaken territorial identities [2,14,15,35,44].

The combined use of different methodologies and multidimensional assessments allows one to outline a conscious and shared transformation and enhancement project that is consistent with the principles underlying the HUL approach [4,5,19,23,37,38,52,53], and to re-capitalize the "landscape as heritage" to build an ethical development in respect of the multiple material and immaterial components of the place, or rather to enhance the legacy of the past to produce new wealth, non-destructive of consolidated values, but capable of determining territorial added value [54–57].

In particular, the application of multi-criteria evaluation methods appears indispensable in the evaluation process as tools capable of building participation, making explicit the transparency of decisions, and also guiding "ethical" decisions of conservation, enhancement, and "construction" of the Historic Landscape Urban [23,58,59].

It is therefore appropriate that the strategic planning scenario is composed of projects based on the recognition of heritage values [12,14,46–49,53,58–60]. In conclusion, the evaluation process, supported by MCDA, demonstrates strategic value on three different levels:

- supports the feasibility of strategic landscape planning, as the multi-criteria approach is able to understand the complexity of the landscape and promote planning for its enhancement, favoring the implementation of integrated projects;
- it can favor the implementation of regional programming to which the strategic projects themselves must refer in order to be financed, thus also encouraging coherence in the transclarity of the plans and programs;
- makes the pursuit of landscape quality objectives operational, by virtue of which the European Convention aims to design landscapes as an expression of shared values.

Furthermore, the evaluation approach contributes to making operational the guidelines proposed by UNESCO and to implementing integrated and shared intervention strategies, also in line with what is indicated by the European Landscape Convention [2], which widens and solicits attention to all landscape typologies, as well as to all elements of urban structure, including social and cultural practices and values, economic processes, and intangible dimensions of heritage, as well as those related to diversity and identity [61–63].

Furthermore, as a landscape that maintains an active social role in contemporary society, closely associated with a traditional way of life and in which the evolutionary process continues over time, it is necessary to implement processes of valorization and the promotion of good governance, through the relational involvement of the local community, and which requires integrated and shared strategies capable of improving local deliberative democracy as a basis for shared actions in a long-term vision aimed at the development and effective construction of public decisions [12,22,27,29,45,48,52,54].

In conclusion, it can be said that the proposed evaluation structure represents a useful tool for managing the transformations of the terraced landscape, capable of governing the territory with a multi-dimensional approach, i.e., involving many sectors, skills, and decision-making levels [12,13,22,48,49,52,53]. According to this approach, scientific research and techniques do not have the task of defining optimal choices once and for all, but can be an important support for an interactive decision-making process involving various actors—citizens, administrations, and entrepreneurs—within some important shared values, what ultimately makes "local society" as is now sanctioned by all official documents, among which the European Landscape Convention, signed in Florence in 2000, stands out [2].

Finally, the work carried out opens up future research lines in the construction of an Integrated Spatial Decision Support System based on the assessment of ecosystem services and the landscape, which could be capable of providing increasingly accurate estimates of impacts on a spatial and economic scale, and of integrating the preferences and needs of the community for the "collaborative" construction of a desirable future [12,47,49,52,53,64].

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