Sustainable and Innovative Approaches for the Enhancement of Cultural Heritage in Fragile Areas. The Case Study of the Sibaritide Cultural Park

Verardi Ferdinando[1(✉)] and Passarelli Domenico[1,2]

[1] Department of Engineering, Pegaso Telematic University, 80143 Naples, Italy
ferdinando.verardi@unipegaso.it
[2] Mediterranean University, Reggio Calabria, Italy

Abstract. This paper explores how sustainable development, as defined by the Brundtland Report, the 1992 Rio Conference, and the UN 2030 Agenda, requires a multidimensional approach that integrates environmental, economic, and social considerations. It argues that effective sustainability strategies should be tailored to local contexts and embedded in the socio-economic fabric, especially in regions with structural vulnerabilities.

Focusing on the Sibaritide Cultural Park in Southern Italy-a territory rich in natural and cultural heritage but challenged by persistent socio-economic and environmental fragilities. The study presents an innovative cultural planning model. This model combines technological innovation with interdisciplinary, multi-stakeholder governance to address regional disparities and foster internal cohesion.

The Sibaritide initiative emphasizes the importance of inclusive collaboration among all sectors of society to strengthen "social capital" and achieve the UN 2030 Agenda's goal of revitalizing partnerships for sustainable development.

Keywords: Cultural heritage · sustainable development · technological innovation · inclusive collaboration

1 Introduction

The concept of sustainable development, as first introduced by the Brundtland Report and reiterated at the 1992 Rio Conference, emphasized not only environmental concerns but more broadly the responsibility toward future generations. Similarly, the United Nations' 2030 Agenda and its Sustainable Development Goals (SDGs) explicitly criticize the unsustainable nature of current development paradigms, broadening the scope to include economic and social sustainability alongside environmental considerations.

The outcomes of sustainability strategies have demonstrated that rigorous analysis and diagnosis, while necessary, are not sufficient unless interventions are deeply embedded in the socio-economic fabric of the target context. This is particularly pertinent in

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territories marked by structural vulnerabilities environmental, economic, and social that hinder their development trajectories.

The association of 2030 Agenda SDGs with the sectoral planning policies and their disciplinary instruments that can interpret local specificities and guide the participatory framework, is highly important to guarantee development initiatives that have an impact and are context-sensitive. This integrative approach transcends the reductionist view that sustainability as an environmental issue, rather with a multi-faceted concept of development [1].

The research is founded on the case study of Sibaritide Cultural Park which is an area of great natural and cultural resources, albeit embedded in a context characterised by long-standing social, economic and environmental fragilities, representing the common southern-Italian marginal areas [2]. This study presents a new cultural planning paradigm, which is founded on the integration of technology-led innovation and an interdisciplinary, multi-actor governance structure.

Rather than focusing on global megacities or the dire conditions of the world's least developed regions, the analysis centers on intra-national disparities. It highlights the internal cohesion issues of countries that, despite overall development, continue to struggle with regional imbalances. The Sibaritide initiative aims to address one of the cross-cutting goals of the UN 2030 Agenda: strengthening the means of implementation and revitalizing global partnerships for sustainable development.

This objective underscores the need for inclusive collaboration among all sectors of society from private enterprises and institutions to civil society, academia, cultural entities, and media. Accordingly, the Sibaritide Cultural Park project emphasizes enhancing the collaborative capacity of local stakeholders what development economists often define as "social capital" as a pivotal enabler of sustainable transformation [3].

2 Methodological Aspects. Multi-agent Design Instruments

Some of the design instruments to support integrated policies for plans at different levels are represented by territorial systems, plans and programs capable of providing precise and targeted guidelines, from strategic planning of vast areas to operational plans for land management; from risk reduction to emergency plans and operational plans, they represent just a few of the essential elements for the drafting and implementation of operational plans and programs that are preparatory to land management characterised by suitable resilience qualities. They can also form the database that can be used to achieve an integrated multi-agent and multi-dimensional design, which can absolutely be borrowed from object-oriented programming (OOP). Which, in turn, represents one of the most significant evolutions in the field of software development, a way of conceptualising a program as a set of interacting objects, each of which includes a data structure and a set of operations applicable to them, so as to improve their comprehensibility, reusability and strength. By having a design environment underpinned by ICT procedures, it is possible to conceive and develop projects consisting of a community of components, called agents, that interact with each other and can also be used, retaining their data, in subsequent design interventions. Similar to Agent programming, the type of design just described can be based on the use of objects, since an Agent can be defined as

an object or rather an instance of a class that includes the functionalities implemented by the Agent itself, in which methods and properties define the services it makes available to other Agents. Thus, multi-agent and multi-dimensional integrated planning, moreover intended as an opportunity for sustainable development for the territory in terms of governance management and planning, especially for the design of territorial systems, evidently similar, due to their peculiarities, to complex processes over vast areas, such as the case study. The design of new plans and/or programs thus becomes agile and comprehensible to the various actors involved. Working through the different thematic areas of the project, represents an authentic revolution, compared to which there is still much to be explored before operating with less load but with better results in terms of quality over time (even after the realisation of the work). This is perfectly superimposable to object-oriented programming (OOP, Object Oriented Programming), which represents, in turn, a significant evolution in the field of software development, a new way of implementing a project proposal by making use of a set of objects (design elements) that interact with each other, while, each of them, contributes to structuring a complex of operations that can be applied to the realisation of the proposal itself, starting from its design. Objects help the designer to better manage the complexity of procedures, improving their comprehensibility, reusability, identity, classification, inheritance and polymorphism. This new approach leads to the consideration of a new design philosophy for components, to the extent that the development of classes specialised in solving certain problems or implementing certain functionalities has become widely used, especially in the field of programming, where, new languages have been implemented while a new programming philosophy is emerging, thanks to the growing popularity of distributed environments. With a design environment, appropriately supported by ICT procedures, projects can be conceived and developed, formed by a community of components called Agents that not only interact with each other, but can also be used, retaining their data, in subsequent design interventions.

3 Project Objectives Sibaritide Cultural Park

The "Sibaritide Cultural Park" is an integrated development initiative promoted through a formal agreement between the Italian Ministry of Culture (MiBACT) and a consortium of 31 municipalities led by Cassano allo Ionio. The project aspires to systematize and enhance the region's extensive cultural and archaeological assets. Core objectives include: promoting the ancient city of Sibari; fostering a renewed collective identity anchored in the legacy of Magna Graecia; protecting and upgrading cultural heritage through innovative technologies; and facilitating the integration between traditional craftsmanship and emergent creative industries [4]. The broader vision transcends isolated interventions, envisioning cultural heritage as a catalyst for territorial cohesion and socio-economic revitalization [5].

3.1 Setting and Guidelines for the Design of Actions

The collective effort of the 31 municipalities is conceptualized as a comprehensive territorial project, oriented toward sustainable local development grounded in cultural,

environmental, and socio-economic values. This effort is not just about stacking up technical projects; it emphasizes strategic cognition that links short and medium range interventions to longer term pathways of development for local people. The final goal is to develop a territorially-integrated system of actions that respects and promotes the three dimensions of sustainability: technical-environmental, economical and social [6]. These dimensions are seen as mutually reinforcing preconditions for successful heritage preservation and development and also for testing new non-extractive models of use of cultural and natural capital [7].

Significantly, social legality and sustainability are necessary though not sufficient conditions for success. The Park must be experienced and internalized by residents as a vital part of their identity, actively engaged with rather than passively accepted. In this sense, emotional investment and shared ownership represent foundational principles for future-oriented development within the region.

3.2 Stakeholder Engagement, Social Capital, Subsidiarity

The area designated as the Sibaritide Cultural Park is not only rich in cultural heritage but also endowed with significant environmental resources. In this context, the principle of subsidiarity the active cooperation between public institutions and private or community actors emerges as a pivotal approach for both heritage and natural resource management. This principle is now widely acknowledged as essential in promoting inclusive and durable development processes.

According to this viewpoint, Article 118(4) of the Constitution, which requires the State, Regions, Metropolitan Cities, Provinces, and Municipalities to support and encourage independent civic initiatives addressing common goods, provides constitutional support for horizontal subsidiarity the collaborative framework that regulates relations between institutional and non-institutional actors [8]. These programs must be founded on the subsidiarity concept and may come from individuals or organizations.

This idea suggests that when private and social initiatives are more effective and efficient in serving the public interest, governmental institutions should work as facilitators rather than as the main executors, encouraging and coordinating them. The Code of Cultural and Landscape Heritage (Legislative Decree 42/2004) offers a strong legal framework to promote public-private partnerships for heritage enhancement in the particular field of cultural heritage, whether it be archeological, historical-artistic, environmental, or anthropological. Article 111 and later in Chapter II describe management practices and acknowledge the crucial role that non-public actors play in processes of valuation.

In a similar vein, global organizations like the International Union for the Conservation of Nature (IUCN) have emphasized the significance of co-management techniques and shared responsibility in the realm of the environment. Through participatory governance models that are frequently influenced by business-oriented approaches, these initiatives encourage creative finance mechanisms and fair benefit-sharing. Additionally, the European Commission has promoted the spread of sustainable tourism best practices for Natura 2000 and other protected areas through its Directorate-General for the Environment. The 2009 recommendations place a strong emphasis on long-term plans that involve all parties involved, growing networks of stakeholders, valuing new tourism trends, and developing alliances with astute players in the industry.

These principles promote a strong interconnection between tourism and local economies, urging the involvement of residents in planning, job creation, and the promotion of conservation-linked tourism.

Consequently, co-management has become a hallmark of the most advanced and sustainable models for managing cultural landscapes and environmental resources. It is also the only viable approach to ensure the continuity and reliability of services essential to park life. Relying solely on public funding exposes the park to risks of operational discontinuity, given the fluctuating and often insufficient flow of government resources.

However, implementing a co-management model requires robust capacity on both the public and private sides. Public authorities must possess technical and administrative competence to manage collaboration frameworks. Private actors, for their part, must cultivate creativity and entrepreneurial vision aligned with the territory's identity and environmental constraints [9].

Creating a virtuous cycle of shared governance also depends on strengthening the community's capacity for cooperation what development theory describes as social capital [10]. This refers to the ensemble of trust-based relationships, shared norms, and behavioral codes that facilitate cooperation within and across institutions. Social capital enhances organizational coherence and is shaped by a community's cultural memory and institutional context.

As economic historians and development economists such as Douglass North have demonstrated, institutional evolution directly influences economic performance by reducing uncertainty, lowering transaction costs, and ensuring the predictability of economic and social interactions. These are all crucial conditions for sustainable development.[11].

Thus, the regeneration of cultural and environmental heritage, the revitalization of the regional economy, and the consolidation of social capital are intertwined goals within the broader Territorial Project for the Sibaritide Cultural Park. The project's success hinges on its ability to articulate a governance system that is not only technically efficient, but socially embedded and forward-looking. Two strategic principles are central to this effort:

Develop a territorially-rooted circular economy, which reinforces local assets and unlocks new opportunities for communities;

Align local development with broader frameworks of tourism and territorial marketing, connecting the region with both domestic and global markets.

These principles translate into operational directives such as strengthening local identity; organizing attractions thematically; promoting plural and inclusive narratives of heritage; constructing a sustainable tourism ecosystem (covering services, mobility, public-private collaboration, and B2B synergies); facilitating new entrepreneurial opportunities; and responding to both current and potential demand.

4 Project Groups for the Sibaritide Cultural Park

Under the terms of the agreement signed between the Municipality of Cassano allo Ionio, acting as lead partner for the 31 municipalities in the Sibaritide area, and the Ministry of Culture (MiBACT), the development strategy was designed in alignment

with the foundational principles previously discussed. The guiding vision was to conceive the Sibaritide initiative as a comprehensive territorial project, which places local communities and social capital at its core, operationalizes the principle of subsidiarity, and promotes a circular economy model that is attentive to the regional socio-economic context yet responsive to market dynamics [12].

During the planning process, strategic reference was made to higher-level territorial planning instruments, especially those applicable to the Sibaritide area such as the Regional Landscape Protection Framework and the Provincial Territorial Coordination Plan. These frameworks provided not only normative direction but also key criteria for sustainable development in environmental, economic, and social dimensions.

The resulting strategic concept centers on the reinforcement of collaborative networks and the development of a structured tourism ecosystem. Tourism, by its nature, depends on both localized networks which support the embeddedness of enterprises and communities in the territorial matrix and broader networks that connect local actors with distant publics, potentially generating economic and cultural flows. Hence, the strategy emphasizes connectivity, not only among project components but between local and global scales [13].

The central idea is to build territorial cohesion around a strong and recognizable identity of the Sibaritide, particularly by leveraging the cultural legacy of ancient Sybaris. The objective is to establish a network of public and private services organized around cultural heritage, applying the subsidiarity principle to foster cooperation between institutions, enterprises, and civil society.

This framework supports the creation of a sustainable tourism system that promotes long-term heritage preservation, environmental stewardship, and socio-economic development. The project proposals are grouped into functionally coherent clusters, each supporting the overarching vision.

The first strategic cluster is composed of foundational and enabling projects, essential for supporting both tangible and intangible aspects of the tourism ecosystem. These include:

1. Establishment of the Cultural Park Service Center
2. Implementation of digital marketing and social media strategies
3. Development of interactive applications for geolocation and real-time sharing
4. Creation of a start-up support system and programming of events
5. Development of a creativity hub in the Sibaritide area
6. Design of an integrated system for smart and environmentally friendly mobility within the Park

These initiatives play a pivotal role in building the infrastructure necessary for territorial accessibility, visibility, and stakeholder coordination.

A second cluster focuses on enhancing cultural offerings and improving communication strategies. These actions aim to enrich the quality of the visitor experience while promoting greater awareness of local heritage. They include both physical interventions such as the restoration of cultural sites and digital strategies for content creation and dissemination. The projects in this group are:

1. Promotion of regional goods and resources;
2. Innovation in museums, ICT, and digital tourism tools;
3. Development of educational archaeology formats (Archeo Edutainment);
4. Organization of cultural events and artistic programming;
5. Celebration of the Arbëreshë cultural tradition through dedicated events.

One particularly innovative action is the establishment of artist residencies throughout the territory, which are designed to produce contemporary artworks and itinerant exhibitions, thereby fostering cultural continuity and integration across the Park's spatial dimensions (Figs. 1 and 2).

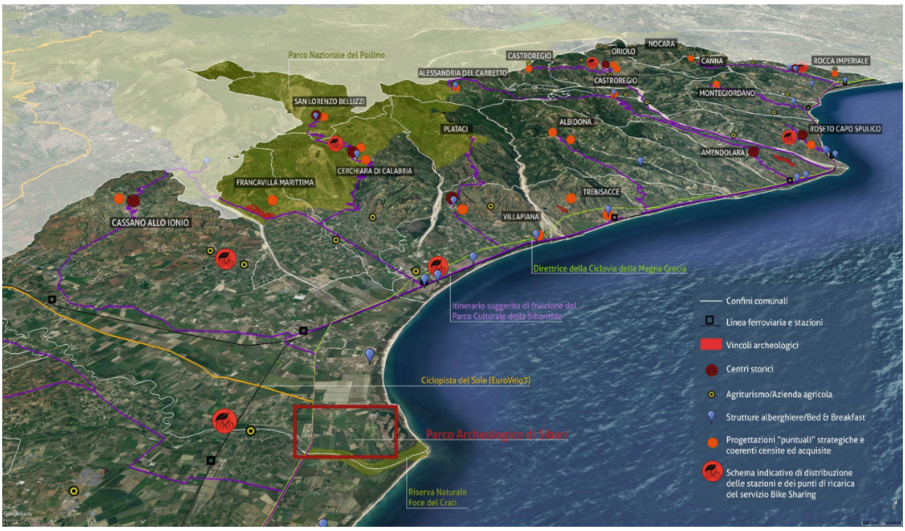

Fig. 1. Territorial image and spatial location of the projects of the Sibaritide Park – 1



Fig. 2. Territorial image and spatial location of the projects of the Sibaritide Park – 2

5 Recurring Critical Issues and Evaluation Needs

Despite its significant potential, the strategic planning of extensive areas containing exceptional cultural assets is often challenged by a series of structural and procedural limitations that can severely compromise the effectiveness of intended interventions. A comprehensive analysis of the relevant academic and policy literature reveals a set of recurring criticalities, which require careful consideration to ensure the success of large-scale territorial projects such as the Sibaritide Cultural Park.

Among the most frequently observed challenges is the institutional inadequacy of public entities in transitioning from traditional, top-down planning models to more dynamic, inclusive governance paradigms. This is reflected in difficulties related to managing structured and continuous dialogue among stakeholders, often resulting in fragmented institutional action and inefficient decision-making processes.

Another continuing issue relates to the predominance of self-referential planning processes. In many cases, stakeholder participation is merely nominal and key decisions are taken before a real consultation procedure. This threatens both the legality and the adaptive ability of planning initiatives. Moreover, while extensive data collection and analysis may be conducted, these do not always result in a fuzzy understanding of local needs, nor do they necessarily provide accurate understandings of current socio-economic and spatial changes.

An additional problematic lies in the illogicality between strategic goals and operative objectives. There is frequently a separate between the identification of territorial needs, the creation of long-term development visions, and the definition of tangible, actionable priorities. As a result, resource distribution may not align with actual territorial subtleties, thereby diminishing policy effectiveness and implementation capacity.

Furthermore, there is a limited ability to create plans that value territorial identity, balance development and conservation, or establish essential distinctions that can spur innovation. Planning procedures run the risk of perpetuating current stagnation rather than encouraging renewal if such transformational solutions cannot be articulated.

The absence of strong performance indicators that may convert objectives into quantifiable outcomes is another significant flaw. Inadequate monitoring mechanisms, which frequently fall short of producing insightful input for program or policy reform, exacerbate this shortcoming. As a result, there is a considerable chance that tactics will continue to be primarily theoretical, well-written on paper, and rarely put into reality.

An imbalance in stakeholder engagement exacerbates this gap between strategy formulation and execution.

An imbalance in stakeholder engagement exacerbates this gap between strategy design and execution: while the planning phase may attract significant interest and institutional backing, the implementation phase frequently receives less attention and participation. The continuity and robustness of planning initiatives are compromised by this cyclical irregularity.

Integrating evaluation methods into every stage of the planning process, from initial goal-setting to final impact assessment, is crucial to addressing these issues without sacrificing the process's iterative and adaptable nature. The ability to make well-informed judgments, monitor and modify implementation tactics, reevaluate priorities as needed, and understand the wider social and territorial ramifications of the approved policies is improved by the synergy between the policy design and evaluation processes.

Specifically, the introduction of a common organization of ex-ante, in itinere, and ex-post evaluations, supported by evidently clear indicators (implementation, outcome, and impact metrics), can significantly progress governance quality. Such a system enables real-time monitoring, facilitates the identification and correction of deviations, and ensures a comprehensive understanding of program efficiency and effectiveness.

Finally, the transparent dissemination of evaluation findings plays a critical role in reducing asymmetries of information among actors. This not only enhances institutional accountability and public trust but also contributes to the legitimacy of choices made within the broader planning framework, reinforcing democratic participation and adaptive policy learning.

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