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Article

A Cultural Heritage Low Entropy Enhancement Approach: An Ex Post Evaluation of Creative Practices

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Abstract: According to the current European and Italian scenario related to urban regeneration, cultural and landscape heritage valorization is being enhanced by the activation of innovative processes and new emerging approaches. These involve the development of methodologies and tools that can address decision-making processes based on creative practices consistent with a concept named “low-entropy economy” in this paper. The low-entropy economy represents an economic approach based on the minimization of physical urban transformation and the enhancement of the existing heritage. In this perspective, the research aims to develop the Cultural Heritage Low Entropy Enhancement (CHLEE) approach by exploring how some frugal experiences have promoted cultural heritage enhancement and related complex values through a program of temporary uses and activities able to produce new values, where the human experience is essential. A crucial role is represented by the heterogeneity of creative practices that contribute to identifying and implementing innovative management and governance models. The analysis of creative practices, based upon the ex post evaluation of some Italian case studies across the PROMETHEE-GAIA multicriteria method, is able to show how these experiences build innovation ecosystems and improve the ex ante evaluation for new strategies and policies, underlining strengths, weaknesses, and milestones that shape creative experiences as drivers of urban competitiveness.

Keywords: decision-making process; creative regeneration; cultural and landscape heritage; low-entropy economy; innovative management; creative practices; complex values; ex post evaluation; PROMETHEE-GAIA method



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1. Introduction

In the current European scenario, there is an evolutionary process of economic models that involves enhancing cultural and landscape heritage through innovative management models based on redesign and regenerating places implementing a multidimensional approach [1–6]. In the past, in general, the policies for enhancing this heritage have focused on permanent physical interventions, carried out through restoration and recovery, which have not always produced promising results.

In recent years, cultural heritage has increasingly become a potential producer of socio-economic values, which places the concept of equity at the center of community life as a fundamental human development resource [7–11].

In the European debate, cultural heritage is understood as a pillar of social, economic, and environmental sustainability, as demonstrated in the “Cultural Heritage Counts for Europe Study” [12]. The report “The Socio-Economic Impact of the Cultural Heritage on the Communities” [13,14] also underlines how heritage is the primary vector of inclusive territorial development, a strategic pillar of the European paradigm of cognitive and network capitalism.

In this perspective, it is possible to read an evolutionary path of the economic approaches, based on the ability to define new competitive models of use with a low physical transformation [15–17]. The interpretative model from “transformation for a new use” to “new use without transformation” is consistent with a “low-entropy economy model” [15].

The introduction in economics of the “entropy” concept had already become established when Georgescu Roegen began to question the efficiency of economic processes, concerning the material production that induces the irreversible dissipation of resources by the cycle from rough matters to products. From the viewpoint of thermodynamics, matter–energy enters the economic process in a state of low entropy and comes out of it in a state of high entropy [18]. Humankind, with its economic activity, is the most significant contributor to entropic degradation by the increasing rates of extraction of natural resources and elimination of waste into the environment [19]. Indeed, according to Roegen [20], thermodynamics can be considered the physics of economic values [21], underlining how economic processes oriented to production turn the low entropy of the original goods and services into the high entropy of the final goods and services.

A system that has a great deal of free energy has low entropy, while a system with a great deal of bound energy is characterized by high entropy [22]. Low entropy is responsible for the utility of a given good, and economic resources are those with low entropy, while economic processes are characterized by the conversion of low entropy to high entropy. Economic processes based on the production of material goods are affected by an uncertain future availability of energy and basic materials: consequently, the approach of consuming the maximum quantity of basic materials and complex components to create modern goods, heritages, and facilities can be anti-economic, due to the risk represented by high real costs that are accompanied by potential revenues. As the entropic process continuously converts low entropy to high entropy, and as the process is irreversible, the useful endowment of the earth ultimately must be exhausted, and mankind’s career must come to an end.

Matter related to ready use or recovery for the future (“matter does matter”, too) tends to decrease the probability of being reused for future economic activities. Matter and energy, therefore, enter the economic process with a relatively low degree of entropy and exit with a higher degree of entropy. From this consideration, the probability of reducing the “material” dimension of transformation (including urban and environmental transformation) strengthens low-entropy approaches [16–18,23].

Despite this, the “high-entropy economy” model operates in urban recovery and regeneration, when intervention on the historical heritage involves relevant initial material and financial costs. Such costs seem recoverable only in the long-term, with the support of public funding that, in many cases, contribute to increasing the debt.

A “low-entropy economy” model, on the other hand, entails low initial costs (and risks), which can be recovered in a shorter time even if the revenues are less substantial, but in any case offset by the initial costs. This kind of model changes such objectives that characterize the valorization of cultural assets and can generate behavioral attitudes, after taking note that benefits provided by them are no longer exclusively “consumerist” but instead become “experiential” [24] and linked to “human life and feelings” [25].

This approach started to be used as to enjoy low-cost services based on non-expansive reuse, and now it is becoming a touchstone in strategies for the re-development of (initially) social, cultural, and (finally) touristic amenities. In addition, what was previously not considered an amenity in the material dimension started to be regarded as a further immaterial amenity. The experience economy has been defined as a novel phase of the economy [26], in which experiences configure themselves as value-adding touristic activities [27,28]. In particular, the concept of “experience-based tourism” [29] builds on the emotional and cognitive engagement of tourists and visitors who construct their past experience as a memory that satisfies their needs and nudges them to return to the same place [30].

Satisfaction generated by the discovery of a historical city core area or a forest, for example, is an experience in itself and does not necessarily concern an adaptation to new functions. It could be defined as a contemporary revision of John Ruskin’s (1879) per-

spective [31] and of those who consider the economy of the “immaterial” as the future key to a respectful use of cultural and landscape heritage. The examples of this experiential fruition are particularly significant, and above all they show that a relevant role of creativity accompanies the competitiveness of immaterial heritage. Discovering different uses shows that the traditional concept of integrated conservation, compared to past values, can be inclusive of the idea of creativity, able to identify new opportunities for heritage enhancement. The valorization strategies of cultural and landscape heritage have increasingly oriented up to the actions’ dematerialization, considering heritage as a place of “new experiences” and, consequently, “new uses”. This means assuming that the “use value” of a built environment or landscape can vary not only through a “change of use”, resulting from a material transformation, but also through a simple “different use” that allows introducing new activities in cultural spaces or natural environment, without changing their physical features [32].

The use-value can, therefore, be interpreted according to the social use-value approach [33–39], able to grasp the multidimensional net benefits that concern the users who use the asset, recognizing the decisive role of the relationships that are activated between the asset, the context and the other assets, the actual use, and the potential multiple uses.

The social use-value corresponds to the sum of the values of public use of an asset, a measure of the service it renders to the community, and is, therefore, linked to the value of the collective use of the asset itself. Evolution of the concept of social use-value is that of complex social value [35,40], which explains the resulting multidimensional benefits to the different types of users, direct, potential, and future, and takes a long-term perspective into account.

The increase in values, of use-value, social use-value, and complex social value that may result from the change of uses related to activities and processes, can improve the quality of not only the physical scenario, but also the socio-economic one.

Cultural heritage, particularly in degraded urban spaces and buildings, is often the focus of alternative creative uses by local communities that manage, plan, and engage in a variety of ways both spontaneous and organized, representing a pluralism of values where culture and creativity generate multidimensional and multiscale impacts at urban, metropolitan, and regional levels [41].

In this direction within the current European debate, cultural and landscape heritage is seen as the main driver of development for Europe and a pillar of social, economic, and environmental sustainability, as demonstrated by the study “CHCfE—Cultural Heritage Counts for Europe” [12]. In line with the European Agenda for Culture in identifying guidelines for the management and valorization of cultural heritage [42,43], it constitutes a shared resource, a common good, and a common responsibility [10,11,44], and its conservation is a priority for national, regional, and local authorities. Moreover, it is recognized that the reuse of this heritage [45,46] and its efficient, effective management is closely related to the development of local creativity and innovation, interpreting it according to multiple points of view: technological, innovative, cultural, artistic, technical, and organizational [47]. Creativity plays a crucial role in constructing innovative forms of society, thereby implying several effects on urban spaces and socio-cultural processes [48]. Indeed, places should not be radically transformed in order to be usable: new uses compatible with the intrinsic character of the built environment and landscape need to be identified. Over time, this attitude shapes the transition from permanent activities and places to other “temporary” ones, from a “continuous” use of space to a “momentary” use [49].

In this scenario, a field open to multiple experimentations is being delineated to see local spatial components as resources, enhancing specific heritage dimensions and related categories of values, together with a system of material and immaterial relations in the context in which they are located, including density, proximity, and diversity. The rethinking of this heritage becomes an opportunity to promote and support creative projects and social innovation [50], aimed primarily at young people and new citizens, through the

contamination of business, bottom-up initiatives, public policies, and research, activating innovative forms of collaboration between profit, non-profit, and institutions.

In this sense, the “Council of Europe Framework Convention on the Value of Cultural Heritage for Society” [8], signed in Faro (Portugal) in 2005, outlines the framework of citizens’ rights and responsibilities in the participation in cultural heritage, and rejects the possible meanings of its “value”, according to a multidimensional approach that highlights the contribution of cultural heritage to the development of human beings and society [51]. Heritage is recognized as being capable of producing socio-economic values, starting from the active protection of its use and non-use values by the community [52,53].

The Convention represents an essential reference because it gives guidelines and tools for comparison and allows Heritage Communities to define and experiment new models of heritage valorization [54]. This is a significant paradigm shift that shows culture and knowledge as the leading economic models that can resolve the current crisis, and that identifies different intervention approaches including the “evolved cultural district” [32,55,56], the attraction of creative talent, the competitive transformation of the production system, and the local community “capability”.

To trigger innovation processes for the management of cultural and landscape heritage through the design and production of such experiences, it is necessary to enable entrepreneurial skills capable of interacting with civic and institutional energies, through multi-level governance processes.

Cultural heritage, as an opportunity for entrepreneurial development and job in general, is the research field necessary to counterbalance traditional economic policies in crisis, which have aimed at exploiting existing resources [57,58]. The presence of creative sectors, start-ups, social innovation, and cultural activities can enable the regeneration of abandoned cultural assets in innovation poles, combining cultural and economic growth, education and training, and sustainable and fair business opportunities [7,59–64].

The low-entropy economy model for cultural and landscape heritage (Figure 1) could represent a way to preserve and enhance heritage with new use values and social use values, generating complex social values without high initial investments for physical transformation, and emphasizing the crucial role of human experience in the dynamics of regeneration.

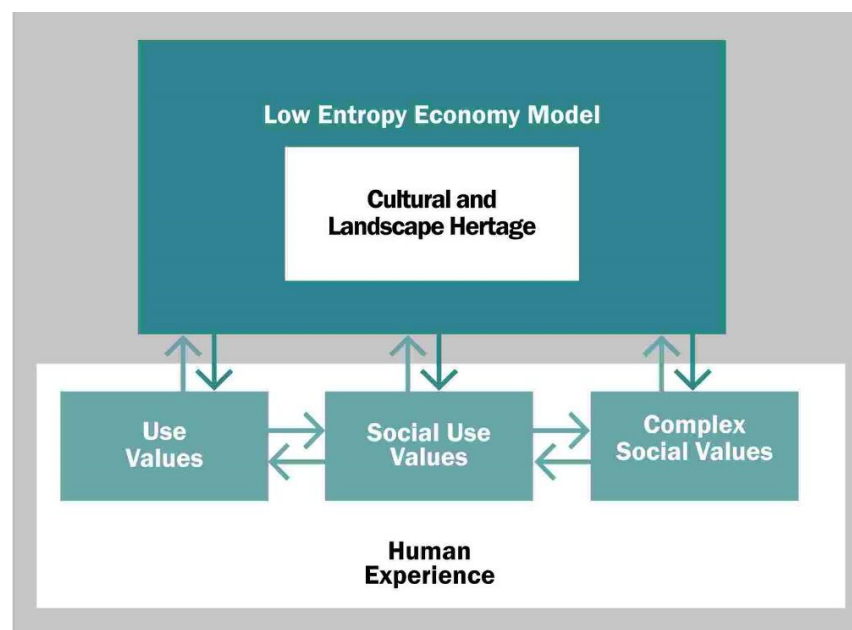


Figure 1. The “low-entropy economy model” for cultural and landscape heritage (illustration: authors).

This research aims to investigate the possibilities of developing a “Cultural Heritage Low-Entropy Enhancement (CHLEE)” by considering that creative experiences highlight the potentials of immaterial activities in valorizing cultural and landscape heritage, especially in territorial contexts that face critical conditions and crucial economic development issues. The CHLEE approach aims to understand and evaluate the different multidimensional components of experiences, underlining the capacity to generate tangible impacts starting from the implementation of intangible actions.

Taking into account the above-mentioned issues and purposes, this contribution has been structured as follows. Section 2 describes the methodological approach and the main methods and tools used for the ex post evaluation. Section 3 presents the analysis and description of the results deriving from the ex post evaluation of three Italian creative experiences based on new uses of cultural heritage and landscape. Section 4 discusses the results, and Section 5 presents the conclusions.

2. Materials and Methods

Cultural-creative production has assumed a strategic role within the European political agenda [42,43,65] and in policies for the sustainable development of the territories, highlighting the need for monitoring systems to evaluate and measure the social and economic dimensions of the cultural phenomenon.

In particular, in 2009, UNESCO developed “The 2009 UNESCO Framework for Cultural Statistics (FCS)”, in which the “culture cycle model” [66] allows one to analyze the creation, production, dissemination, transmission, and consumption of cultural processes. This framework defines cultural production as a set of distinctive spiritual, material, intellectual, and emotional characteristics of a social group or society that include systems of values, ways of life, traditions, and beliefs.

Subsequently, UNESCO also developed the “Culture for Development Indicators (CDIS)” project, which proposes a new methodology to demonstrate the role of culture as an engine of sustainable development processes based on empirical data [67]. This project, which arises from the “Convention on the Protection and Promotion of the Diversity of Cultural Expressions” [68], addresses “cultural expressions” in terms of values and norms that guide human action, understood as a productive or recreational sector.

The latest tool developed by UNESCO is the framework “Thematic Indicators for Culture in the 2030 Agenda” [69], whose main objective is to measure and monitor the contribution of culture in the implementation of the Sustainable Development Goals (SDGs) of the Agenda 2030. This framework aims to evaluate both the role of culture as a productive sector and the transversal contribution of culture in the various policies at the national and local level. The methodology uses existing qualitative and quantitative data to assess the contribution of culture in terms of the regeneration of cultural heritage, the activation of creative industries, the production of culture and local products, creativity, and innovation, involving local communities, local resources, and the cultural diversity of each context, demonstrating the importance of local knowledge in the realization of different SDGs [70].

A further crucial definition introduced by this European framework is the concept of cultural activity, activity based on cultural values and/or artistic expressions, which includes both market-oriented and non-commercial activities. These activities can be carried out by individuals, companies, organizations, groups, or professionals within a specific cultural sector and according to the function necessary for its realization.

The “Cultural and Creative Cities Monitor” is another relevant European study to understand the implications of cultural sectors in urban development, especially in terms of employment and economic growth. The tool is based on 29 indicators organized in nine domains reflecting three critical dimensions of cultural and creative cities: “Cultural Vibrancy”, “Creative Economy”, and “Enabling Environment” [63,71,72]. Taking into account the above reflections, the proposal of the methodological approach has been articulated in the following phases: the evaluation framework, case study selection, the indicator core set, the ex post evaluation of alternatives, and sensitivity analysis. These

phases are oriented to improve the ex ante evaluation and elaborate strategies able to implement a Cultural Heritage Low-Entropy Enhancement. The ex post evaluation process has been implemented in three Italian creative practices, selected to understand how to build complex values through the different creative use of cultural and landscape heritage in a perspective of low-entropy economy (Figure 2).

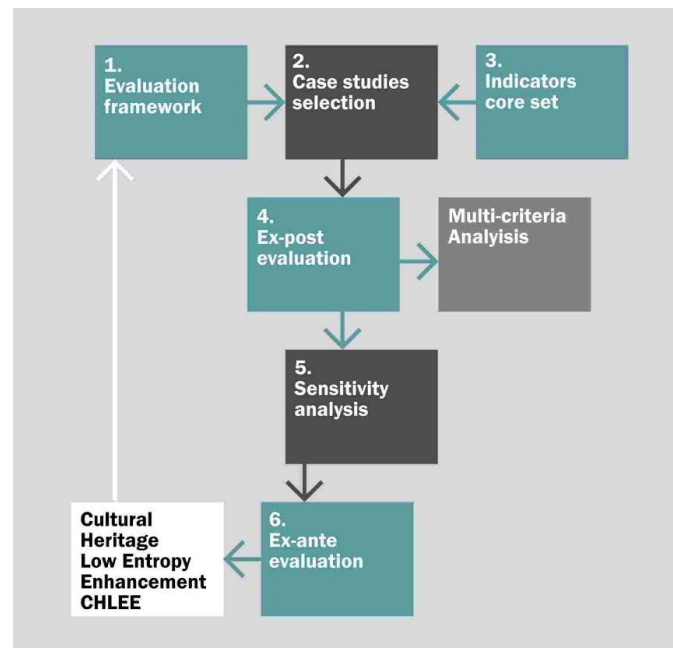


Figure 2. The methodological proposal (illustration: authors).

The methodological approach explores the synergy between the low-entropy economy, complex values, and creative practices for the innovation ecosystem in cultural and landscape heritage enhancement, underlying that it can be effective if it can provide a common framework for “Cultural Heritage Low Entropy Enhancement (CHLEE)” (Figure 3), which brings together the different issues of the creative cultural city as illustrated within the “Cultural Creative Cities Monitor”.

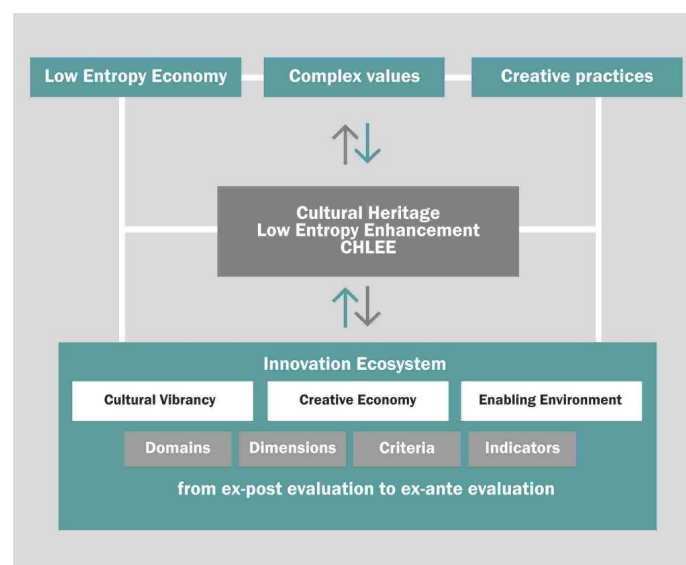


Figure 3. The model for “Cultural Heritage Low-Entropy Enhancement (CHLEE)” (illustration: authors).

By definition, ex post evaluation can be interpreted as an objective and systematic assessment of an ongoing or completed project, practice, program, policy, design, implementation, or result [73,74]. The ex post evaluation approach is comprehensive, and relates to many types of assessments, from socio-economic to business-value, and from holistic to performance measurement [75]. Some examples include ex post recalculations of ex ante cost–benefit analyses, evaluations based on the principles of corporate finance, and multicriteria evaluations.

The analysis considers three domains as the significant aspects of the cultural and economic vitality and community involvement of cities [72] in terms of the following:

1. Cultural Vibrancy (CV), for capturing the urban “cultural pulse”, considering the cultural dimension;
2. the Creative Economy (CE), in terms of creative sector jobs/opportunities and cultural innovation, underlining the economic dimension;
3. the Enabling Environment (EE), for stimulating people engagement in cultural and landscape heritage re-generation, with attention to the social dimension.

In the Italian context the term “re-generation” has been recently used just to underline “more strongly in order to emphasize commercial advices in the second-hand market, as regards refurbished and renewed high-quality products, as sustainable practice in wide-spread markets”.

The set of indicators of the “Cultural Creative Cities Monitor” is modified and integrated to evaluate innovative local experiences, considering a diverse scale of analysis: rather than the metropolitan range that is used within the European tool, it has been focused on a municipal or regional scale linked to low-entropy economy [76].

Indeed, more than half of Italian municipalities (5509) account for less than 5000 inhabitants [77]. A relevant part of the economic life of such small settlements is based on the integration of tourism, craftsmanship, and rural leisure [78]. In such realities, characterized by little economic activity, a minimal demographic size, a decreasing population, and few opportunities for young inhabitants, the low-entropy economy represents not merely a simple choice but also an obligation for survival. The ex post evaluation framework elaborated for the local creative practices activated in small Italian municipalities underlines how an appropriate evaluation framework should consider the relationships between a low-entropy economy, creative practices, and decision-making processes activated by the immaterial dimension of cultural and landscape heritage, contributing to an innovation ecosystem.

In search of a balance between these three main issues (low-entropy economy, creative practices, and complex values for cultural and landscape heritage), a multicriteria evaluation approach has been selected to take into account a systemic view of a multidimensional problem [79–81].

By using this approach, we consider the domains, dimensions, and criteria of the Cultural Creative Cities Monitor [82]. For every domain, dimension, and criteria within the ex post evaluation framework, a core set of situated indicators (I.1, I.9, I.10, I.13, I.14, I.17, I.21, I.28, I.35, I.36, I.37, and I.38) were identified for assessing creative practices at a local scale (Table 1) [76].

The Cultural and Creative Cities Monitor is a cross-city performance monitoring tool, compiled on a biannual basis, that shows how 190 cities in 30 European countries perform on a range of measures describing the Cultural Vibrancy, the Creative Economy, and the Enabling Environment of a city. These domains present three relevant issues that are useful to understand and assess how cities and practices are able to promote regeneration processes, considering culture as central to policy agendas through significant experiences and success stories. Particular attention has been dedicated to the collection of raw data and the elaboration of final indicators and aggregated scores, also providing data sources, definitions, and computation methodology.

Table 1. The ex post evaluation framework for a “Cultural Heritage Low-Entropy Enhancement (CHLEE)”: domains, dimensions, criteria, and selected indicators.

Domains	Dimensions	Criteria	Indicators
Cultural Vibrancy (CV)	CV.1. Cultural venues and facilities	CV.1.1. Virtual landmarks	I.1. Number of people who report the site as a point of interest
		CV.1.4. Cultural activities	I.9. Number of cultural events
	CV.2. Cultural participation and attractiveness	CV.2.1. Cultural participants	I.10. Number of participants at cultural events
		CV.2.2. Place attractiveness	I.13. Number of cultural projects activated I.14. Number of crowdfunding campaigns
Creative Economy (CE)	CE.1. Creative knowledge-based jobs	CE.1.1. Creative opportunities	I.16. Funds collected by crowdfunding I.17. Revenues for the year I.18. Private investment
	CE.3. New jobs in creative sectors	CE.1.2. Network	I.19. Number of associates I.20. Number of temporary employees I.21. Number of business partners/collaborations
		CE.3.2. Jobs in new cultural creative sectors	I.28. Number of people employed
Enabling Environment (EE)	EE.2. Human Capital	EE.2.2. Local and international relationships	I.35. Number of local promoters I.36. Number of international partners
		EE.2.3. Communication strategy	I.37. Number of like I.38. Number of social accounts

The domain of Cultural Vibrancy (CV) identifies the capacity to be pulsating by means of cultural infrastructure and participation in cultural activities and processes. According to this definition, two relevant dimensions selected by the Monitor framework explain the peculiarities of the analyzed practices: CV.1. Cultural venues and facilities and CV.2. Cultural participation and attractiveness.

The dimension CV.1. is related to cultural life and can be considered a key component of its quality and well-being conditions, and of its ability to be a catalyst of talent and new creative opportunities. The two criteria CV.1.1. Virtual landmarks and CV.1.4. Cultural activities describe the preferable points of view that are significant for evaluating the peculiarities of the selected practices. The related indicators are, respectively, I.1. Number of people who report the site as a point of interest and I.9. Number of cultural events.

The dimension CV.2. describes the capacity to attract different audiences to participate in cultural life, where participation is a crucial component and, at the same time, an expression of engagement in promoting arts and culture. The two criteria CV.2.1. Cultural participants and CV.2.2. Place attractiveness identify the involvement of different participants at cultural manifestations and the place’s capacity to be attractive. For the first criterion, the selected indicator is I.10. Number of participants at cultural events, while, for the second criterion, two indicators are considered: I.13. Number of cultural projects activated and I.14. Number of crowdfunding campaigns.

The domain of the Creative Economy (CE) refers to the contribution of the cultural and creative activities and sectors in terms of employment, job creation, and innovation. For this domain, the main dimensions are CE.1. Creative knowledge-based jobs, related to qualified workers in creative and knowledge-intensive fields, and CE.3. New jobs in

creative sectors, which considers how creative and innovative ideas can be translated into new jobs.

For the dimension CE.1., the analyzed criteria are CE.1.1. Creative opportunities and CE.1.2. Network. In the first case, the indicators are selected to consider the economic opportunities promoted by creative and cultural activities and are related to I.16. Funds collected by crowdfunding, I.17. Revenues for the year, and I.18. Private investment. In the second case, the indicators are useful for understanding the typology and the dimension of the network and are the following: I.19. Number of associates, I.20. Number of temporary employees, and I.21. Number of business partners/collaborations.

For the dimension CE.3. New jobs in creative sectors, the criterion of CE.3.2. Jobs in new cultural creative sectors is effective for considering the opportunity to grow the cultural and creative sectors, assessed by means of the indicator I.28. Number of people employed.

The domain of the Enabling Environment (EE) identifies the different kinds of assets, tangible and intangible, that help build the conditions to attract creative talent and encourage cultural engagement.

For the dimension EE.2. Human Capital, the criteria are EE.2.2. Local and international relationships and EE.2.3. Communication strategy. The criterion EE.2.2. is able to consider how the different kinds of relationships can influence the promotion of human capital and its potentials. In this case, the indicators are I.35. Number of local promoters and I.36. Number of international partners. As per the criterion EE.2.3., it is useful to assess the effectiveness of the communication campaign and disseminate information relating to events and different activities. The selected indicators are I.37. Number of likes and I.38. Number of social accounts.

The relationship between these categories of domains, dimensions, and criteria valorizes anthropic and natural resources as a foundation for the participatory and creative regeneration of cultural and landscape heritage and improves an ex ante evaluation framework for future practices.

The comparative analysis has been applied to the selected case studies through a multicriteria decision support system: the PROMETHEE-GAIA method of Preference Ranking Organization Method for Enrichment Evaluations family [83–85] was chosen for allowing one to validate decisions based on objective elements. It is designed to help in evaluating several possible decisions or items according to multiple often conflicting criteria for identifying the best possible decision. This also allows us to visualize the decision or evaluation problems to better understand the difficulties in making good decisions and achieving consensus decisions when several decision-makers have conflicting points of view.

The PROMETHEE method [85,86] is an outranking method used for a finite set of alternative actions to be ranked and selected among often conflicting criteria. The PROMETHEE-GAIA method compensates for a disadvantage of one point of view by the advantages of other viewpoints [87], also finding a degree among stakeholders on the ranking of alternative options. PROMETHEE-GAIA is a multicriteria decision aid (MCDA) free software (version 1.4). Based on several criteria defining a set of options, the method identifies the pros and cons of the alternatives and computes a uni-criterion pair-wise comparison of indicators that identifies preference degrees (scored between 0 and 1) ranking the alternatives from best to worst from the point of view of the decision-maker.

To strengthen the results, the pairwise comparisons of the alternatives are based on three preference flows: Φ^+ (f^+): the positive flow, Φ^- (f^-): the negative flow, and Φ (f): the net flow. The uni-criterion preference degree is computed for each criterion. The pair-wise comparisons refer to the difference between the evaluations of the two actions, like the difference in price or quantity, e.g., the cardinal scale (unit), as shown in our case study evaluation matrix (Figure 4).

	CV1.1.11	CV.1.4.19	CV.2.1.110	CV.2.2.113	CV.2.2.114	CE.1.1. I17	CE.1.2. I21	CE.3.2. I28	EE.2.2.135	EE.2.2.136	EE.2.3. I37	EE.2.3. I38
Unit	unit	unit	unit	unit	unit	unit	unit	unit	unit	unit	unit	unit
Cluster	◆	◆	◆	◆	◆	●	●	●	■	■	■	■
Preferenze												
Min/Max	max	max	max	max	max	max	max	max	max	max	max	max
Weight	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Preference Funct.	Usual	Usual	Usual	Usual	Usual	Usual	Usual	Usual	Usual	Usual	Usual	Usual
Thresholds	absolute	absolute	absolute	absolute	absolute	absolute	absolute	absolute	absolute	absolute	absolute	absolute
- Q: Indifference	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
- P: Preference	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
- S: Gaussian	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Statistica												
Minimum	534	4	20,000	1	0	€ 350,000	2	7	2	0	1,895	2
Maximum	1488	6	300,000	3	1	€ 16,800,000	42	24	30	1	183,374	4
Media	1029	5	130,000	2	1	€ 5,950,000	25	16	17	0	62,682	3
Standard deviation	390	1	121,929	1	0	€ 7,673,439	17	7	11	0	85,343	1
Valutazioni												
<input checked="" type="checkbox"/> Notte della Taranta	534	5	300,000	3	1	€ 16,800,000	42	7	18	1	183,374	4
<input checked="" type="checkbox"/> Volo dell'angelo	1065	6	20,000	1	0	€ 700,000	2	24	2	0	2776	2
<input checked="" type="checkbox"/> Ponte nel cielo	1488	4	70,000	1	1	€ 350,000	30	16	30	0	1895	2

Figure 4. The case studies' evaluation matrix (PROMETHEE-GAIA software).

Among the different tools used in this study that can visualize and synthesize evaluation results, the GAIA plane is a useful tool that supports the PROMETHEE method and provides a powerful graphical representation of the results. It is helpful to reduce multidimensional problems to two-dimensional ones, and for dealing with the issue of the weights related to criteria and for understanding the conflicts among them.

The GAIA plane Principal Component Analysis (PCA) provides a valuable tool for the decision-maker to identify the quality of each alternative on the different criteria. Two other useful tools are the PROMETHEE Diamond and the PROMETHEE Network.

The PROMETHEE Diamond is a two-dimensional representation of both PROMETHEE I partial and II complete rankings: each alternative is represented as a point in the (Phi+, Phi−) plane angled at 45°. The PROMETHEE Network is a graphical representation in which actions are identified with nodes and arrows drawn from emerging preferences. In both tools, we can appreciate the proximity between the levels of incomparability in the partial ranking and actions.

Furthermore, the GAIA Web window tool is a spider-web display for one action. It is used in this study for comparing the profiles of each alternative, showing a representation of the uni-criterion net flow scores of the selected alternative.

The ex post evaluation closes with the Walking Weights, a key tool for sensitivity analysis, able to perform tests of the final decision's stability. The variation in the values of the criteria and indicator parameters may change scores and ranking. It is an interactive tool used for modifying the weights in real-time, showing the changes in different alternatives from different decision-makers' perspectives.

3. Results

The cultural and landscape heritage are repositories of fundamental values and traditions that allow for experimentation with different creative practices based on experiential processes. The examples of such experiential fruition are quite significant and, above all, show that, in a social process, the importance of roles and the influence of the immaterial dimension depend on the relevance of creativity. The discovery of different uses and functions, related with objects, practices, and places until now considered only as "spatial invariants" [15], provides evidence and highlights the potentials of creative expressions in the various dimension of the local community (e.g., agriculture, education, art, architecture, and manufacturing).

Within the Italian framework of virtuous experiences, the following best practices have been selected for their operative attempt to generate values and to enhance the sensitivity of communities through new uses and innovative cultural and landscape heritage management towards a low-entropy economy (Figure 5):

- “La Notte della Taranta”—The Taranta night (Melpignano and Salento area—Apulia region);
- “Il Volo dell’Angelo”—The Angel flight (Castelmezzano and Pietrapertosa—Basilicata region);
- “Il Ponte nel Cielo”—The Bridge in the sky (Tartano in Valtellina—Trentino region).

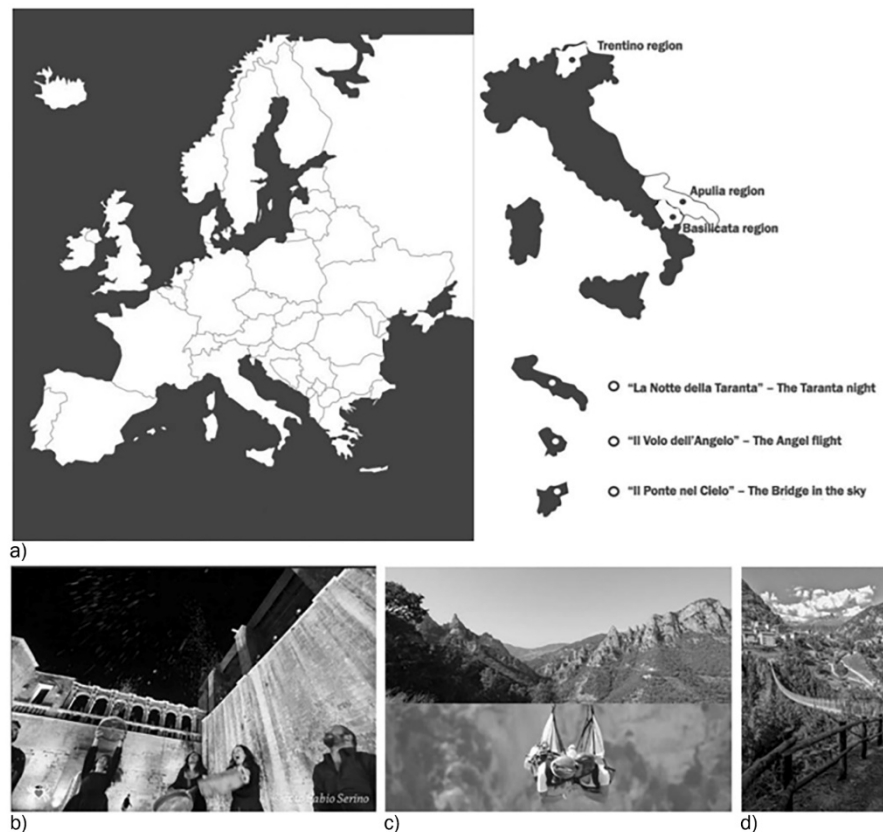


Figure 5. The 3 creative practices (a): “La Notte della Taranta” (b), “Il Volo dell’Angelo” (c), and “Il Ponte nel Cielo” (d). Retrieved from: <https://www.lanottedellataranta.it/>; <https://www.volodellangelo.com/>; <https://www.pontenelcielo.it/it/> (accessed on 2 October 2020).

As regards the demographic dimension, in 2020, Melpignano had 2168 inhabitants, Castelmezzano and Pietrapertosa together had 1723 inhabitants, and Tartano had only 197 inhabitants.

The first example, “La Notte della Taranta”, regards one of the most significant events in popular culture in Europe and the biggest festival in Italy. It takes place in the Salento territory, within the Apulia region, focusing on rediscovering and valorizing an intangible cultural heritage: the traditional Salento music and dance known as “pizzica” [88]. The way in which this traditional music is enhanced through fusion with other musical languages, from world music to rock, or from jazz to symphonic music, is innovative. In its 22nd edition, the festival achieved an increasingly broad audience, attracting 200,000 spectators to the final concert in Melpignano village, near Lecce city. This allows us to identify new uses compatible with the intrinsic character of the built environment: from permanent activities to “extemporaneous” activities, from “continuous” use to “momentary” use [49].

The second case study, “Il Volo dell’Angelo”, is located between the Castelmezzano and Pietrapertosa villages, near the Potenza city in the Basilicata region, two of the most beautiful villages in Italy. The experience has altered the perception of a beautiful landscape only by changing the point of view through which the valley is observed. “Il Volo dell’Angelo” is an attractor that allows for innovative use of the environmental heritage responding to the need for new experiences and the search for new emotions [89]. In

fact, by laying a cable along the valley that separates the two villages (Castelmezzano and Pietrapertosa), and travelling suspended in the void, the distance between the two settlements is covered by flying over the valley floor. It was enough to arrange simple equipment for the laying of cables and hooks and two reception points.

For the third experience, “Il Ponte nel Cielo” (Tartano in Valtellina village, the Trentino region) [79], a cable was built for a route to be taken on foot, walking over the void on the so-called “Tibetan Bridge”: a suspension bridge with a system of ropes and a wooden walkway, a typical historical path used in many places in the world, including the Andes, Asia, and the Alps. This adventure path connects Campo Tartano with Maggengo Frasnino, following other successful projects in Switzerland and Austria [90]. The project aims to exemplify the relationship between the environment and the “courage” of low materials and technologies.

This analysis aims to compare different typologies of these creative experiences in distinct surrounding contexts, highlighting the potentials of immaterial activities in valorizing cultural heritage. Starting from the ex post evaluation framework (Table 1), the indicators selected (I.1, I.9, I.10, I.13, I.14, I.17, I.21, I.28, I.35, I.36, I.37, and I.38) based on the data recovered, the practices conceived as alternatives are assessed through the outranking procedure of the multicriteria method PROMETHEE-GAIA [85]. The method can also be an essential negotiation tool for finding an agreement between conflicting points of different decision-makers, and it is also useful to better understand the difficulties in making correct decisions thanks to the following actions:

- visualizing evaluation problems,
- achieving consensus decisions among several stakeholders, and
- validating or invalidating decisions starting from objective elements.

The profile of “La Notte della Taranta” (Figure 6) is more relevant for the indicators I10 “Number of participants at cultural events”, I17 “Revenues for the year from the activities offered”, and I37 “Number of likes received”, which attract people with their ability to communicate on the web and highlight the economic opportunities generated in the territory.

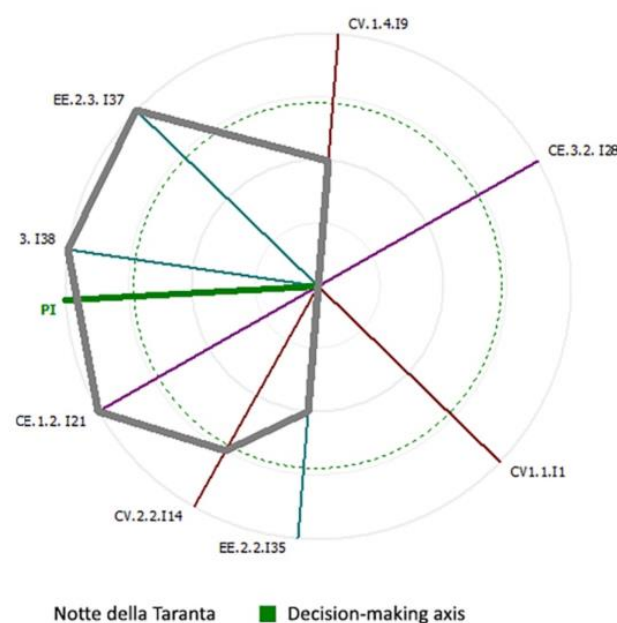


Figure 6. Evaluation of alternatives: GAIA Webs of “La Notte della Taranta”.

The profile of “Il Volo dell’Angelo” (Figure 7) describes its performance considering I9 “Number of cultural events” and I28 “Number of people employed”, highlighting the

ability to design different cultural facilities and activating new job opportunities in the creative sector.

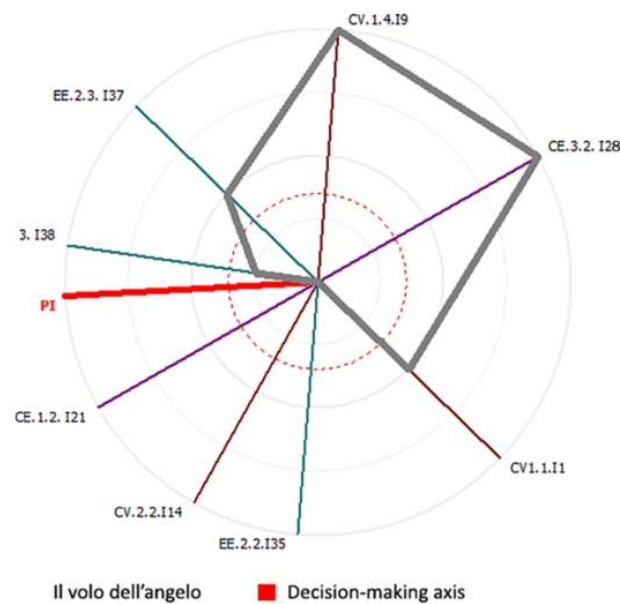


Figure 7. Evaluation of alternatives: GAIA Webs of “Il Volo dell’Angelo”.

The profile of “Il Ponte nel Cielo” (Figure 8) identifies the indicators I1 “Number of people who report the site as a point of interest” and I35 “Number of local promoters”, demonstrating that the initiative can involve both local communities and temporary citizens and develop a common sense of belonging to landscape heritage.

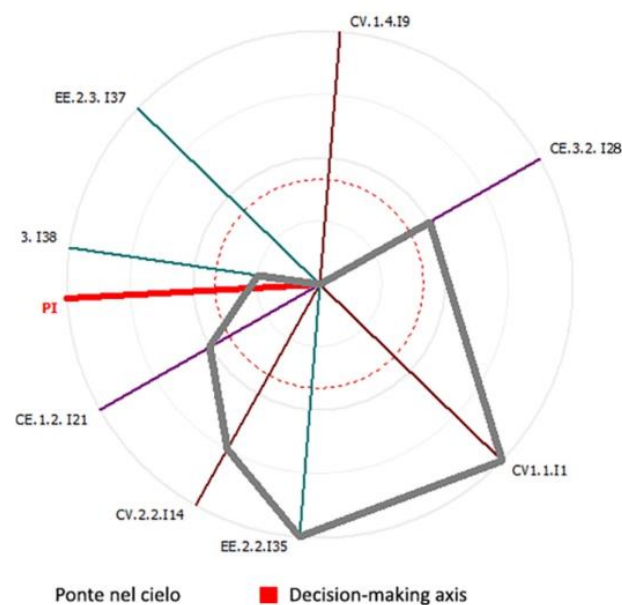


Figure 8. Evaluation of alternatives: GAIA Webs of “Il Ponte nel Cielo”.

The GAIA visual analysis (Figure 9) allows one to understand the choices that are possible and the ones that are not, and to analyze and better explain the decision problem. Figure 9 shows the results of the GAIA Visual Analysis with the final ranking of the case studies and the position of the indicators. In the GAIA Visual Analysis, the PROMETHEE decision stick and the PROMETHEE decision axis provide a sensitivity analysis tool. The

GAIA plane shows that the preferable alternatives are located in the direction of the decision axis.

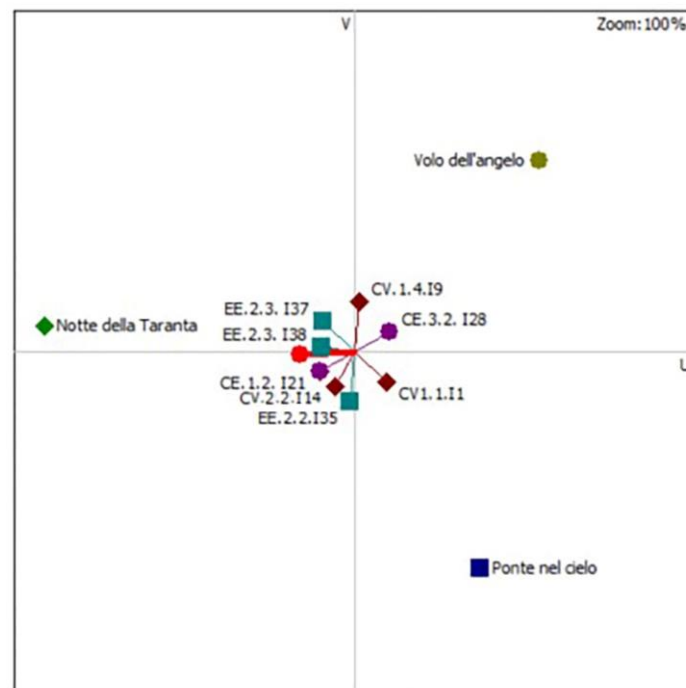


Figure 9. Evaluation of alternatives: the GAIA Visual Analysis.

The complete ranking shows that “La Notte della Taranta” is followed by “Il Ponte nel Cielo” and “Il Volo dell’Angelo”, shown in the PROMETHEE Diamond and PROMETHEE Network (Figure 10).

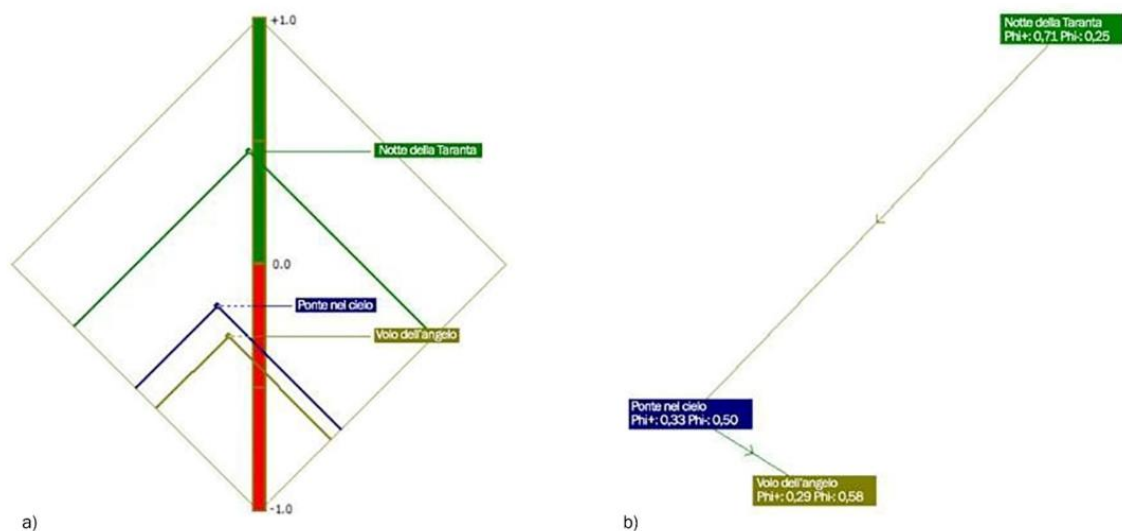


Figure 10. Evaluation of alternatives (a) PROMETHEE Diamond and (b) PROMETHEE Network.

The Walking Weights sensitivity analysis (Figure 11) compares the three different dimensions of the Monitor to highlight the evaluation changes of different alternatives: in every hypothesis, the weights are higher on criteria related to every Cultural and Creative Cities Monitor domains: Cultural Vibrancy (CV), the Creative Economy (CE), and the Enabling Environment (EE).

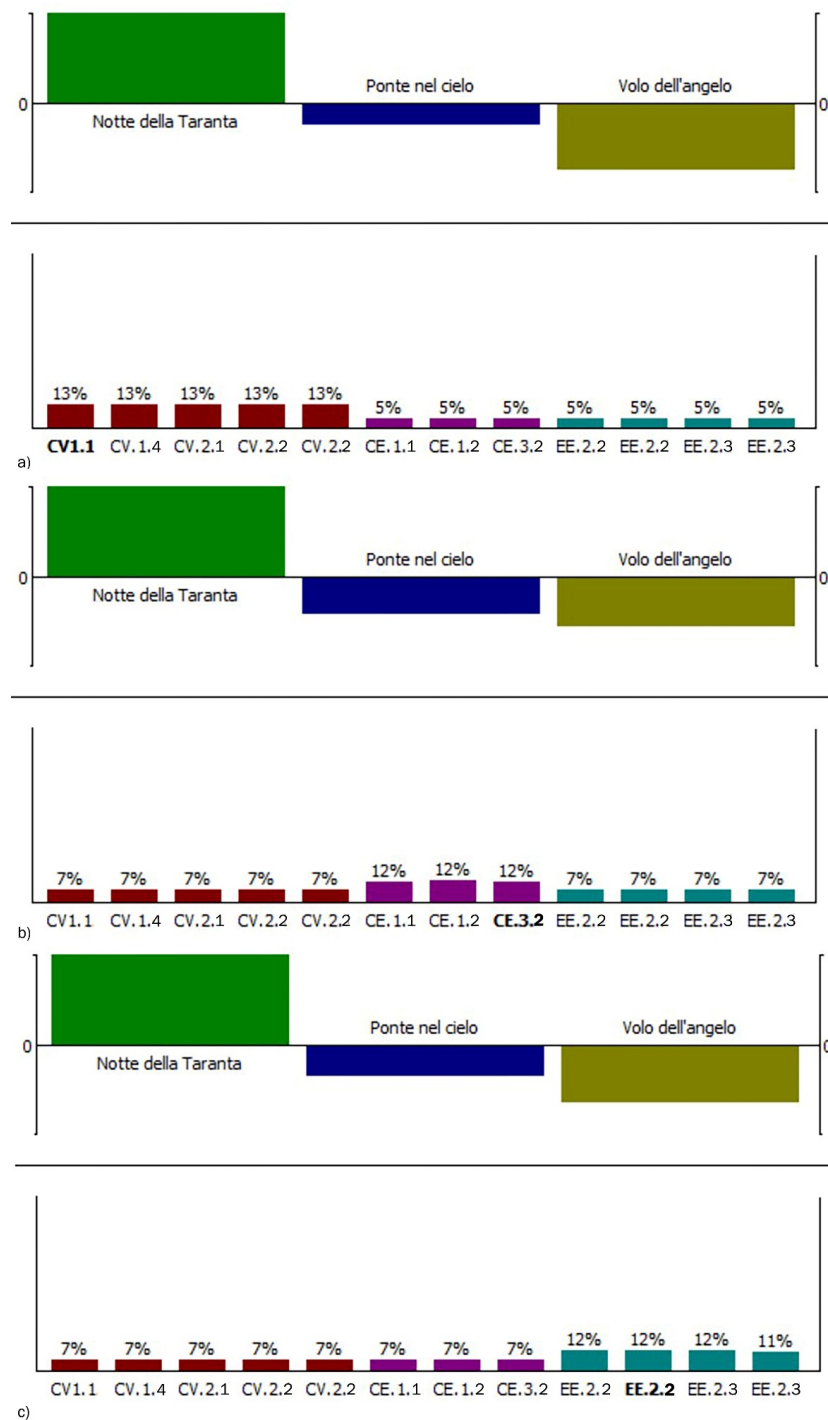


Figure 11. Sensitivity analysis. Walking weights for (a) Cultural Vibrancy (CV), (b) the Creative Economy (CE), and (c) the Enabling Environment (EE).

The data analysis suggests that “La Notte della Taranta” is the most balanced practice in terms of activating innovative decision-making processes for cultural and landscape heritage enhancement. This might be due to the introduction of new types of creative economies and well-being conditions linked to the immaterial dimension of heritage towards a low-entropy economy. “Il Ponte nel Cielo” and “Il Volo dell’Angelo” are in second and third place. This highlights how creativity is a crucial factor for an economic approach based on the metamorphosis of built and environmental heritage from its material cultural component to a more ambitious and competitive immaterial essence. It is essential

to change the point of observation of reality to focus on this heritage reuse at a low initial cost, for discovering new potentials and innovatively preserving the nature and identity of the past.

4. Discussion

Creative regeneration is a strategic priority in current theories, policies, and practices. Indeed, culture, as an integrated and driving component, can make a difference in the processes of creative regeneration for sustainable development: renewing the image of the city and landscape, fostering pride and a sense of belonging, attracting investment and tourism, improving the quality of life and social cohesion, enabling new job opportunities in the cultural and creative sectors, etc. The synergistic effect of creative regeneration depends, therefore, on how the process can create a shared and inclusive social representation, in which the various local communities can learn to expand their ability to interact, creating and sharing information and ideas to cooperate and compete together.

The complex value of places [7,91] is generated through an interactive growth process and a governance model in which both the bottom-up and the top-down approaches coexist, enabled by human experiences to which urban space is, at the same time, the social, and the cultural arena.

The evaluation framework identifies three main domains, Cultural Vibrancy (CV), the Creative Economy (CE), and the Enabling Environment (EE). The related dimensions, criteria, and indicators that are selected to develop an ex post evaluation of observed practices are a result. The elaboration of the described decision tree combines the suggestions derived both from literature analysis and the characteristics of selected experiences.

In the case study selection, taking into account the explored research questions, we can underline the local practices analyzed in their implementation process, and the results identify the human-made capital, the human capital, the social capital, the local knowledge, and the community traditions as main cultural resources. The identification of the change opportunities enhances the specific and situated resources and activates a decision context that can optimize their mix to achieve local, sustainable development goals.

Starting from the decision tree, a core set of indicators was identified to compare the three experiences, considering the main common issues. These indicators measure quantitative units and allow the results to be communicated, taking into account information that is centered on the objective components of the evaluation.

In a subsequent phase of the study, it is considered essential to develop appropriate indicators that allow for the inclusion of subjective components, making explicit the points of view of the different actors involved in the decision-making process and the users (local communities and tourists). Structured assessment, combining both objective and subjective components, makes it possible to analyze practices, taking into account the results obtained and how they are perceived by the different actors and users involved in the decision-making process.

The last two phases of the methodological approach, related to the ex post evaluation of alternatives and sensitivity analysis, help one to understand and provide evidence that decision-making processes are incremental and adaptive, aiming to consolidate flexible and evolving networks of relationships, and are open to constructive dialogue among the actors and users.

The three regeneration processes are analyzed to identify new uses of the existing heritage that combine traditional local uses with innovative management models, additionally supported by ICT. Users include not only those who frequent the spaces, but also the wider virtual community that follows the activities on social networks.

The selected practices consider the creation of relationships (physical, social, economic, and cultural) between different activities and the role of users, as essential elements, able and aiming to trigger chains based on multi-dimensional values. Each practice promotes a short-chain process, implementing different declinations of a low-entropy economy model, in which agriculture, art, training, research, and tourism are the fields of experimentation

in a new cultural production process. The direct participation in the process and the active involvement of users yields new interests and stimulates new energies: new bonds are formed between different decision-making actors. They recognize in collaboration and cooperation the concrete opportunity to improve their own well-being and that of the community.

The creation of a network of complex values is, at the same time, a challenge and a goal: the networks of values that are formed intertwine economic, social, cultural, and environmental values concerning the direct interests of users. How communities are activated is often connected to the requests of certain subjects (individuals, groups, institutions, citizens, and tourists) who recognize the need for change in contexts characterized by high potential.

Individual and collective culture, expressed in strategy, actions, and behaviors, becomes the link that feeds and regenerates itself, supporting the transformation process and guiding the identification of suitable actions.

The analyzed practices underline how the valorization of urban and territorial context can be based on a new increase in the competitiveness of the existing cultural, environmental, and architectural dimension of heritage, without relevant modifications to the built environment. Such a new vision modifies the perspective of valorization of cultural, urban, and landscape heritage, no longer accompanied by a “consumerist” but by an “experiential” fruition. A crucial aspect is represented by the multiplicity of “creative practices” based on innovative models of urban governance and spatial management. This creative dimension of some regenerative “un-material” processes, despite a physical transformation, make urban and territorial contexts attractive, without expansive and complex intervention that will “increase entropy”. The ex post evaluation of results and of decision-making processes through the Multicriteria Analysis makes it possible to consider the different multidimensional components that characterize the analyzed experiences, underlining the capacity to generate tangible impacts starting from the implementation of intangible actions. The multicriteria evaluation methods indicate the overall performance of the activated process, considering the dimensions of Cultural Vibrancy (CV), the Creative Economy (CE), and the Enabling Environment (EE), able to minimize the social costs of opportunity understood as the lost benefits of direct users and of indirect, potential, and future users.

The implementation of the PROMETHEE method, effective both in terms of the methodological procedure (easy to manage and to appreciate) and of the opportunities to explore the results and verify their significance, supports the understanding of the specificities that characterize the case studies examined, highlighting their potentials to generate new use, social use, and complex values.

This model may be a useful tool for decision-makers seeking to fine-tune strategies and measures so as to understand how the different, creative use of cultural and landscape heritage from the perspective of low-entropy economy may help to regenerate complex values for implementing social innovation in cultural heritage enhancement.

The CHLEE methodology may be a useful tool to develop a monitoring system and to assess the implications of “low-entropy economy” uses, social innovation, and community engagement in urban regeneration strategies. It may also serve as a decision-making system to define intervention priorities aiming at enhancing a society’s response capacity.

Furthermore, the CHLEE methodology may be a useful tool both in the planning and in the implementation of lifesaving and rescue activities as well as a basis for the integration of these challenges in urban development and for boosting the innovation ecosystem in cultural and landscape heritage enhancement.

However, the application of the proposed methodology in ex post evaluation has some limitations. The first limitation is related to the number of case studies selected and the availability of data, a factor that inevitably influences the variable selection process and the overall structure of the model.

5. Conclusions

The CHLEE perspective can support the activation of creative governance processes, intended as an approach able to support, above all, small towns in enhancement strategies. Transition governance [92] or “reflective” governance [93] is necessary to monitor the changes in the generation of new values according to a transformative capacity. In this sense, it is possible to activate a cultural and landscape heritage enhancement thanks to the shared responsibility in line with the Faro Convention [8], where the Heritage Communities are also expressions of the “creative communities”, consisting of different skills, complementary and synergistic, able to develop decision-making processes oriented to conceive and test shared actions, generating complex productive networks among people, values, and space [94,95].

The application of the methods typical of Multicriteria Analysis and of hybrid evaluation approaches [96–103], able to combine different techniques and tools, allows one to understand the peculiarities of the processes and, at the same time, to explore the potential of new opportunities to manage the enhancement processes of the existing cultural and landscape heritage, in which economic value can be generated from non-economic values. Such experiences show that it is possible, thanks to temporary activities, to identify, among the rest, new compatible uses by the intrinsic character of the built environment and landscape, where complex values are essential. In this new perspective, the places that are “economically useful” only through the realization of material interventions are reborn in their intrinsic essence without necessarily hosting an insertion of permanent services and installations. The practices have as a common denominator an economic approach based on the metamorphosis of the built heritage and landscape from its material cultural component to a more ambitious and competitive immaterial design. Focusing on reuse at low initial cost allows for discovering new potentials, saving the past’s nature and identity.

Research follow-up could be related to comparing the CHLEE approach to the other case studies. It could be relevant to test the methodology in other local contexts to highlight creative “low-entropy economy” practice categorizations useful for understanding how to evaluate complex values generated by different creative “temporary uses” of cultural and landscape heritage.

In this perspective, a CHLEE database could be developed with the support of ICT technologies integrated into open innovation approaches. They can represent tools intended to enable the activation, management, and implementation of creative regeneration processes. ICT may have particular relevance in the collaboration, cooperation, and active engagement among heritage actors (institutions, social innovator, cultural managers, creative people, associations, enterprises, and citizens), as they can bring out objectives, problems, and ideas and participate in their organization and management, implementing the deliberative evaluation process. This means integrating the contribution of different expert knowledge (planning, evaluation, economics, and law) and context-aware knowledge (citizens, public administrations, entrepreneurs, associations, etc.) in a pluralistic and inclusive perspective.

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