

Article

Towards the Cultural Heritage Low Entropy Enhancement Approach: An Ex-post Evaluation of Creative Regeneration Practices

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Abstract: According to the current European and Italian scenario related to urban re-generation, cultural and landscape heritage, valorisation is being also enhanced by the activation of innovative processes. These involve the development of methodologies and tools that are able to address decision-making processes among low entropy economy, complex values and creative practices. In this perspective, the research aims to investigate the possibilities of developing a Cultural Heritage Low Entropy Enhancement (CHLEE) approach by considering how the complex values of cultural heritage can vary not only through a physical transformation of spaces but also through a program of uses and activities able to produce new values, where the human experience is essential. This type of model modifies the objectives that characterise the valorisation of cultural heritage and landscape, recognising that the fruition is no longer “consumerist” but “experiential”. A crucial role is represented by the heterogeneity of creative practices that contribute to **identifying** and **implementing** innovative management and governance models. The present paper explores the components of creative regenerative processes, based upon the ex-post evaluation of some Italian experiments, across the PROMETHEE-GAIA multi-criteria method, to understand how creative experiences are building innovation ecosystem thanks to low entropy economy and improve the ex-ante evaluation for new strategies and policies.

Keywords: Decision-Making Process; Creative Re-generation; Cultural and Landscape Heritage; Low Entropy Economy; Innovative Management; Creative Practices; Complex Values; Ex-Post Evaluation; PROMETHEE-GAIA method

1. Introduction

In the current European scenario, there is an evolutionary process of economic models that involve enhancing cultural and landscape heritage through innovative management models based on **re-design and re-generating** places in a multi-dimensional 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 centre 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 demonstrates how heritage is the primary vector of inclusive territorial development, 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 concept of entropy had already become established in the economy when Georgescu Roegen [18] began to question the efficiency of economic processes, concerning the material production that induces irreversible dissipation of resources and transformation of matter. Economic processes based on the production of material goods are affected by an uncertain future availability of energy and materials: as consequences, the anti-economic principle of consuming the maximum quantity of basic materials and complex components to create modern goods, heritages and services.

The matter related to using or transformation degrades (“matter do matters, too”) tend 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 derives the need to reduce the material dimension of transformation (including urban and environmental transformation) by enhancing the management of the present [16–21]. 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, recoverable only in the long term or 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 characterise the valorisation of cultural assets, after taking note that recently benefits provided by them are no longer “consumerist”, and start becoming “experiential” [22], mostly linked to “human life and feelings” [23] (Figure 1).

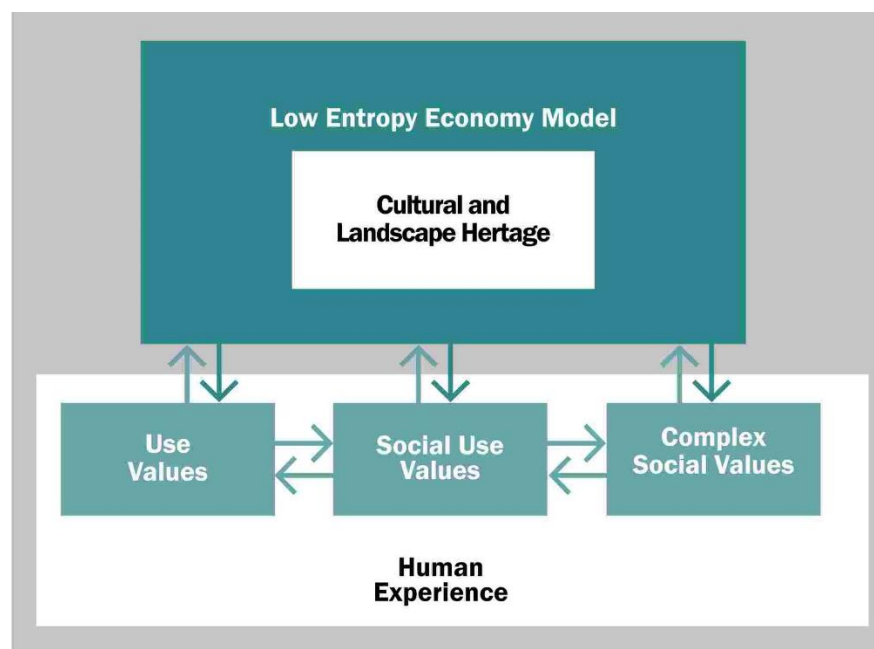


Figure 1. The “low entropy economy model” for cultural and landscape heritage (illustration: authors)

This approach started to be a method to enjoy low-cost services based on non-expansive reuse: now it is becoming a touchstone in strategies for the re-development of (initially) social, cultural and (finally) touristic amenities. Besides, what wasn’t 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 [24], in which experiences configure themselves as value-adding touristic activities [22,25,26]. In particular, the concept of “experience-based tourism” [27] 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 [28].

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 (1879) perspective [29], and of those who consider the economy of the “immaterial” as the future key to a respectful use of the 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 the immaterial heritage. Discovering different uses allows highlighting 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 valorisation strategies of cultural and landscape heritage have increasingly oriented up to the actions’ dematerialisation, 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 [19].

The use-value can, therefore, be interpreted according to the social [use-value](#) approach [30–36] able to grasp the multi-dimensional net benefits that concern the users who use the asset, recognising the decisive role of the relationships that are activated between the asset, the context and the other assets, the actual use and the potential use.

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 [32,37], [which explains the multi-dimensional benefits that result to the different types of users, direct, potential and future, and to take into account a long-term time perspective.](#)

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 not only the quality of 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 organised, representing a pluralism of values where culture and creativity generate multi-dimensional and multiscalar impacts at urban, metropolitan and regional levels [38].

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” [39]. In line with the European Agenda for Culture in identifying guidelines for the management and valorisation of cultural heritage [40,41], it constitutes a shared resource, a common good and a common responsibility [10,11,42] and its conservation is a priority for national, regional and local authorities. Moreover, it is recognised that the reuse of this heritage [43,44] and its efficient, effective and management is closely related to the development of local creativity and innovation, interpreting it according to multiple points of view: technological and innovative; cultural and artistic; artistic and technical and organisational [45]. Creativity plays a crucial role in constructing innovative forms of society, thereby implying several effects on the urban spaces and the socio-cultural processes [46]. Indeed, places should not be radically transformed in order to be usable: it is needed to identify new uses compatible with the intrinsic character of the built environment and landscape. Over time, this attitude is shaping the transition from permanent activities and places to other “temporary” ones, from “continuous” use of space to a “momentary” use [47].

In this scenario, a field open to multiple experimentations is being delineated to transform local resources into opportunities, enhancing specific heritage dimensions and related categories of values, together with the system of material and immaterial relations with 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 [48], aimed primarily at young people and new citizens, through the contamination between 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 and entered into force in 2011, outlines the framework of citizens’ rights and responsibilities in the participation in cultural heritage, and declines the possible meanings of its “value”, according to a multi-dimensional approach that highlights the contribution of cultural heritage to the development of human beings and society [49]. Heritage is recognised as being capable of producing socio-economic values, starting from the active protection of its use and non-use values by the community [50,51].

The Convention represents an [essential](#) reference because of giving guidelines and tools for comparison and sharing to Heritage Communities, allowing them to define and experiment new models of heritage valorisation [52]. This is a significant paradigm shift that shows culture and knowledge as the leading economic models that could resolve the current crisis, and which identify different intervention approaches including: the “evolved cultural district” [19,53,54]; 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 [55,56]. The presence of creative sectors, start-ups, social innovation and cultural activities can [enable re-generating abandoned cultural assets in innovation poles, combining cultural and economic growth, education and training, and](#) sustainable and fair business opportunities [57–63].

This research aims to investigate the possibilities of developing a “Cultural Heritage Low Entropy Enhancement (CHLEE)” by answering the following question: how the “use value” of cultural and landscape heritage can vary not only through a physical transformation of spaces but also through a different program of creative uses able to produce complex values? Can the heterogeneity of creative practices contribute to the identification and implementation of innovative management and governance models of cultural and landscape heritage?

Taking into account the above-mentioned research questions, the contribution has been structured according to the following path: 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 [40,41,64] 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” [65] allows analysing the creation, production, dissemination, transmission and the 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 [66]. This project, which arises from the “Convention on the Protection and Promotion of the Diversity of Cultural Expressions” [67], addresses “cultural expressions” in terms of values and norms that guide human action, understood not only as a sector productive or recreational.

The latest tool developed by UNESCO is the framework “Thematic Indicators for Culture in the 2030 Agenda” [68], 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 also in terms of re-generation of cultural heritage, in the activation of creative industries, in 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 realisation of the different SDGs [69].

A further crucial definition introduced by this European framework is the concept of cultural activity as an 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, organisations, groups or professionals within a specific cultural sector and according to the function necessary for its realisation.

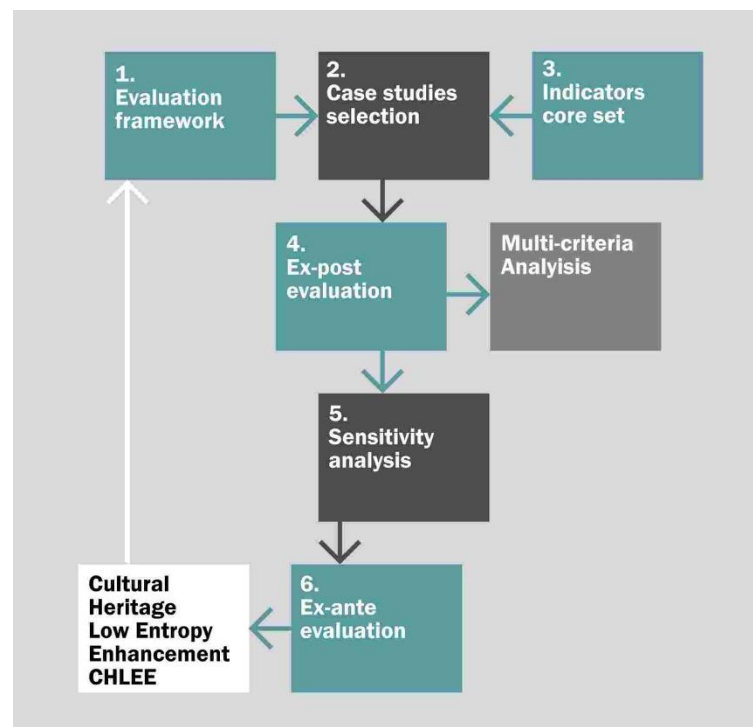


Figure 2. The methodological proposal (illustration: authors)

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 organised in 9 domains reflecting 3 critical dimensions of cultural and creative cities: “Cultural Vibrancy”, “Creative Economy” and “Enabling Environment” [62,70,71]. Taking into account the above reflections, the proposal of methodological approach has been articulated in the following phases: evaluation framework, case studies selection, indicators core set, 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 for understanding how to build complex values through the different creative use of cultural and landscape heritage in a perspective of low entropy economy (Figure 2).

The methodological approach explores the synergy among 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”.

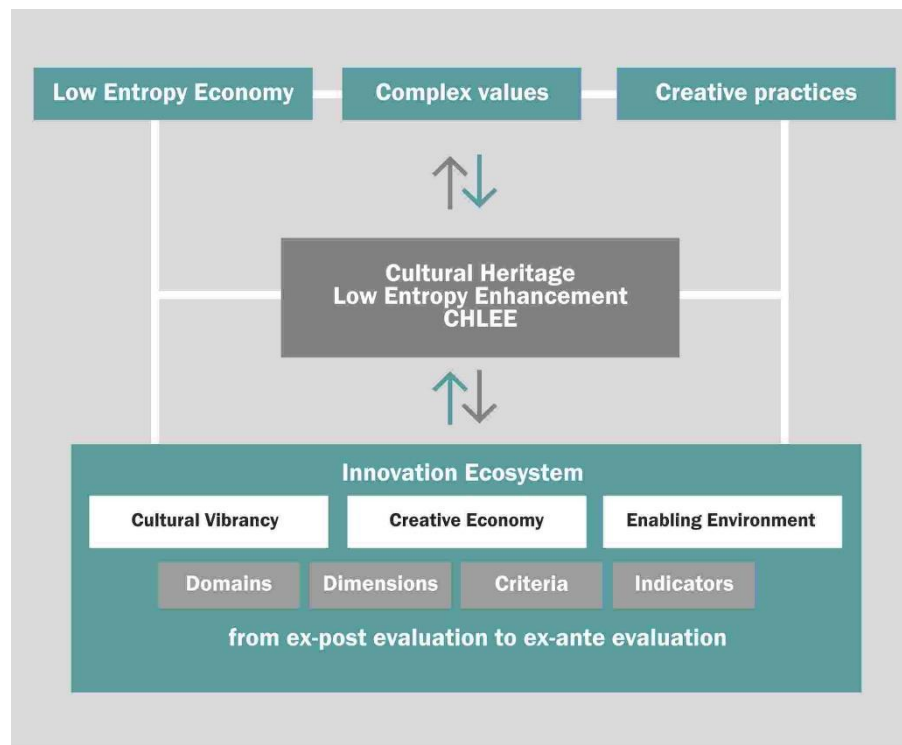


Figure 3. The model for “Cultural Heritage Low Entropy Enhancement (CHLEE)” (illustration: authors)

By definition, ex-post evaluation can be interpreted as an objective and systematic assessment of an ongoing or completed project, practice, program or policy, design, implementation, and results [72,73]. The ex-post evaluation approach is comprehensive, and it relates to many types of assessments, from socio-economic to business-value, and from holistic to performance measurement [74]. Some examples include: ex-post recalculations of ex-ante cost-benefit analyses; evaluations based on the principles of corporate finance; multi-criteria evaluations.

The analysis considers three domains as the significant aspects of the cultural, social, and economic vitality of cities [70]:

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

The set of indicators of the “Cultural Creative Cities Monitor” are 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 [75].

The ex-post evaluation framework elaborated for the local creative practices underlies how an appropriate evaluation framework should consider the relationships among a low entropy economy,

creative practices, and decision-making processes activated by the immaterial dimension of cultural and landscape heritage, contributing to creating an innovation ecosystem.

In search of a balance among the three main issues (low entropy economy, creative practices, and complex values for cultural and landscape heritage), the multi-criteria evaluation approach has been selected for taking into account a systemic view of a multi-dimensional problem [76–78].

Using this approach, we consider the domains, dimensions, criteria of the Cultural Creative Cities Monitor [79]. For every domain, dimensions 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, I.38) were identified for assessing creative practices at a local scale (Table 1).

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 year I.18. Private investment
		CE.1.2. Network	I.19. Number of associates I.20. Number of temporary employees I.21. Number of business partners/collaborations
	CE.3. New jobs in creative sectors	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 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, useful to understand and assess how cities and practices are able to promote re-generation processes, considering culture as central of policy agendas through significant experiences and success stories. Particular attention has been

dedicated to the collection of the raw data and the elaboration of final indicators and aggregated scores, also providing data sources, definitions, and the computation methodology.

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 have been selected by the Monitor framework able to explain the peculiarities of the analysed 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 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, 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 identifies 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 were considered: I.13. Number of cultural projects activated and I.14. Number of crowdfunding campaigns.

The domain of 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 that considers how creative and innovative ideas can be translated into new jobs.

For the dimension CE.1., the analysed 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 year; and I.18. Private investment. In the second case, the indicators are useful to understand 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 to consider the opportunity to grow the cultural and creative sectors, assessed by means of the indicator I.28. Number of people employed.

The domain of 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 the following: 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 the following: I.35. Number of local promoters and I.36. Number of international partners. 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 the following: I.37. Number of like and I.38. Number of social accounts.

The relationship between these categories of domains, dimensions, and criteria valorises anthropic and natural resources as a foundation for the participatory and creative re-generation 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 multi-criteria decision support system: the PROMETHEE-GAIA method of Preference Ranking Organisation Method for Enrichment Evaluations family [80–82].

The PROMETHEE method [82,83] 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 allows compensating a disadvantage on a specific point of view through advantages on other viewpoints [84], also finding a degree among stakeholders on the ranking of alternative options.

Based on several criteria defining a set of options, the method identifies the pros and cons of the alternatives with computation of 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 pair-wise comparisons of the alternatives are based on three preference flows: Phi+ (f+): the positive flow; Phi- (f-): the negative flow; Phi (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. cardinal scale (unit) as shown in our cases study evaluation matrix (Figure 4).

	CV.1.1.11	CV.1.4.19	CV.2.1.110	CV.2.2.113	CV.2.2.114	CE.1.1.117	CE.1.2.121	CE.3.2.128	EE.2.2.135	EE.2.2.136	EE.2.3.137	EE.2.3.138
Unità	unit	unit	unit	unit	unit	unit	unit	unit	unit	unit	unit	unit
Cluster/Gruppo	◆	◆	◆	◆	◆	●	●	●	■	■	■	■
Preferenze												
Min/Max	max	max	max	max	max	max	max	max	max	max	max	max
Peso	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Funz. di preferenza	Usual	Usual	Usual	Usual	Usual	Usual	Usual	Usual	Usual	Usual	Usual	Usual
Soglie	assoluto	assoluto	assoluto	assoluto	assoluto	assoluto	assoluto	assoluto	assoluto	assoluto	assoluto	assoluto
- Q: Indifferenza	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: Preferenza	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: Gaussiana	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												
Minimo	534	4	20000	1	0	€ 350.000	2	7	2	0	1895	2
Massimo	1488	6	300000	3	1	€ 16.800.000	42	24	30	1	183374	4
Media	1029	5	130000	2	1	€ 5.950.000	25	16	17	0	62682	3
Deviazione standard	390	1	121929	1	0	€ 7.673.439	17	7	11	0	85343	1
Valutazioni												
Notte della Taranta	534	5	300000	3	1	€ 16.800.000	42	7	18	1	183374	4
Volo dell'angelo	1065	6	20000	1	0	€ 700.000	2	24	2	0	2776	2
Ponte nel cielo	1488	4	70000	1	1	€ 350.000	30	16	30	0	1895	2

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

Among different tools used in this study and able to visualise and synthesise evaluation results, the GAIA plane is a useful tool that supports the PROMETHEE method providing a powerful graphical representation of the results. It is helpful to reduce multi-dimensional 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 useful tools are also 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, instead, is a graphical representation in which actions are identified with nodes and arrows drawn from emerging preferences. In both tools, we could 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 some tests of the [final decision's stability](#). The variation in the values of the criteria and indicators 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 allows experimenting 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 “spatial invariants” [15], put on 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 an 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):

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

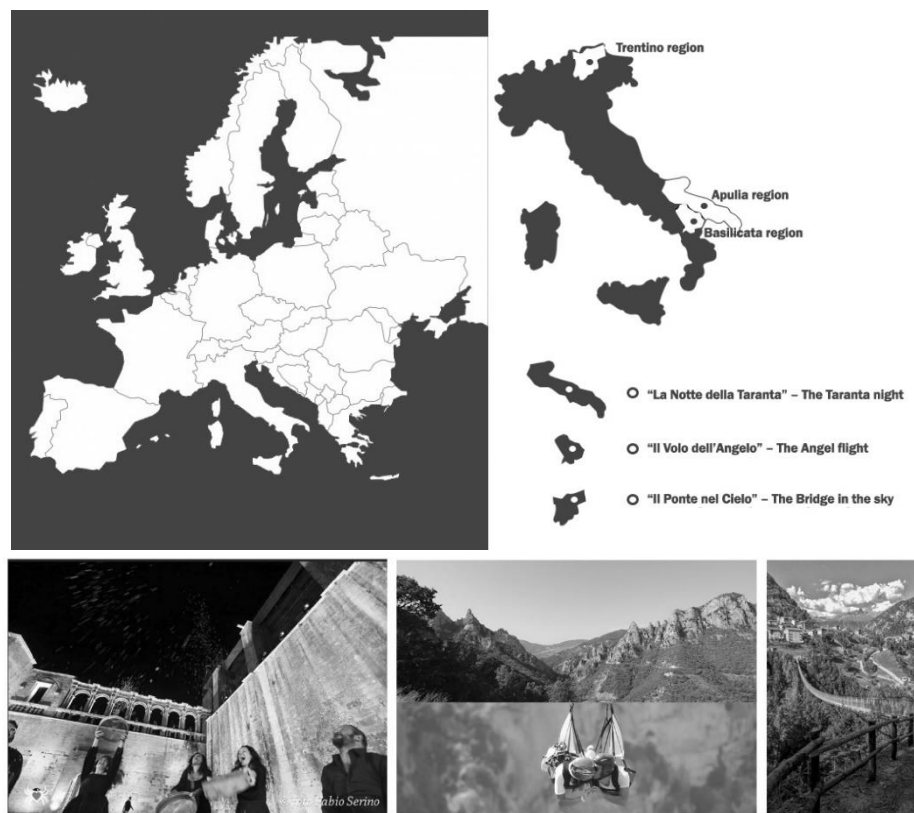


Figure 5. The 3 creative practices: “La Notte della Taranta” (a) “Il Volo dell’Angelo” (b) “Il Ponte nel Cielo” (c)
Retrieved from: <https://www.lanottedellataranta.it/>; <https://www.volodellangelo.com/>;
<https://www.pontenelcielo.it/it/>

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 Salento territory, within the Apulia region, focusing on rediscovering and valorising an intangible cultural heritage: a traditional Salento music and dance so-called “pizzica” [85]. Innovative is the way this traditional music is also enhanced through its fusion with other musical languages, from world music to rock, from jazz to symphonic music. In its 22nd edition, the festival has achieved an increasingly broad audience, attracting 200.000 spectators in the final concert in Melpignano village, near Lecce city. This experience 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 [47].

The second case study, “Il Volo dell’Angelo”, is located between Castelmezzano and Pietrapertosa villages, near Potenza city in 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 for observing the valley. “Il Volo dell’Angelo” is an attractor which allows innovative use of the environmental heritage responding to the need of living new experiences and looking for new emotions [86]. 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.

In the third experience “Il Ponte nel Cielo” (Tartano in Valtellina village - Trentino region), instead [76], the cable was built for a route to be tackled on foot, walking in the void on a 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, from the Andes to Asia, to the Alps. This adventure path connects Campo Tartano with Maggengo Frasnino, following other successful projects in Switzerland and Austria [87]. The project aims to testify 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 valorising 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, I.38) based on data recovered, the practices, conceived as alternatives are assessed through the outranking procedure of the multi-criteria method PROMETHEE-GAIA [40]. The method could also be an essential negotiation tool for finding an agreement among conflicting points of different decision-makers, and it is also useful to better understand the difficulties in making right decisions thanks to the following actions:

- Visualising evaluation problems;
- Achieving consensus decisions among several stakeholders;
- 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 year from the activities offered” and I37 “Number of likes received”, which combine the capacity of attracting people with its ability to communicate on the web and highlight the economic opportunities generated on the territory.

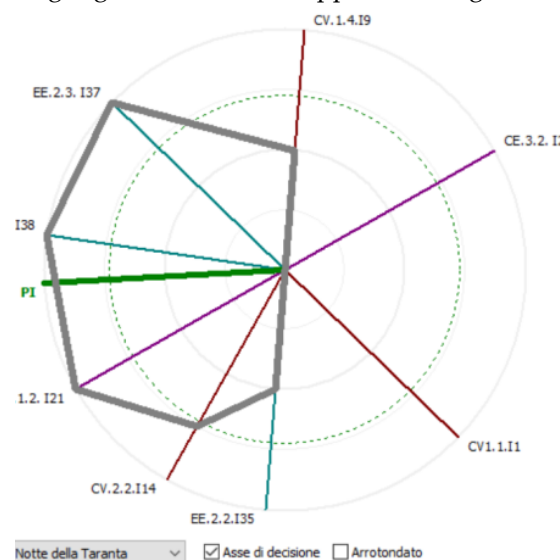


Figure 6. Evaluation of alternatives: GAIA Webs of La Notte della Taranta

The profile of “Il volo dell’Angelo” (Figure 7) describes its performance considering the following indicators: I9 “Number of cultural events”, I28 “Number of people employed”, highlighting the ability to design different cultural facilities and activating new jobs’ opportunities in the creative sector.

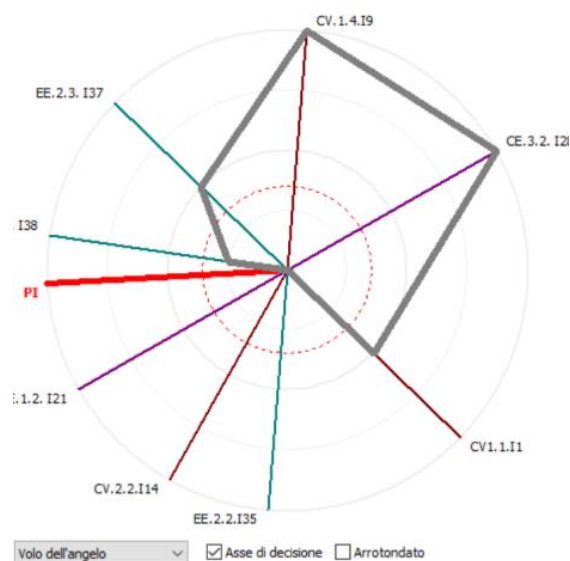


Figure 7. Evaluation of alternatives: GAIA Webs of Il Volo dell'Angelo

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

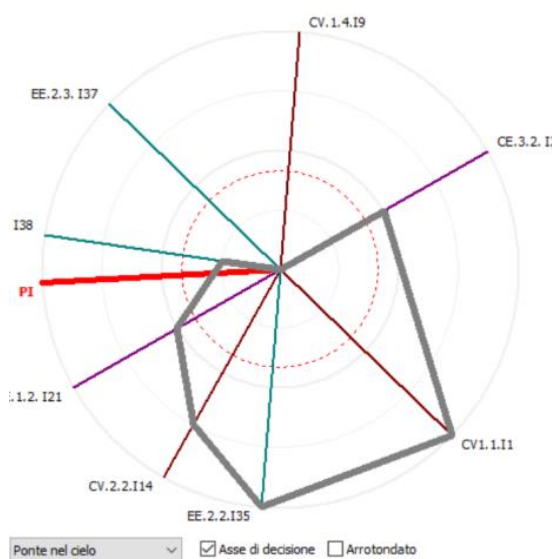


Figure 8. Evaluation of alternatives: GAIA Webs of Il Ponte nel Cielo

The GAIA visual analysis (Figure 9) allows understanding the choices that are possible and the ones that are not, analysing and better explaining the decision problem. The figure 8d 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 identifies “La Notte della Taranta”, followed by “Il Ponte nel Cielo” and “Il Volo dell’Angelo” as shown in the PROMETHEE Diamond and PROMETHEE Network (Figure 10).

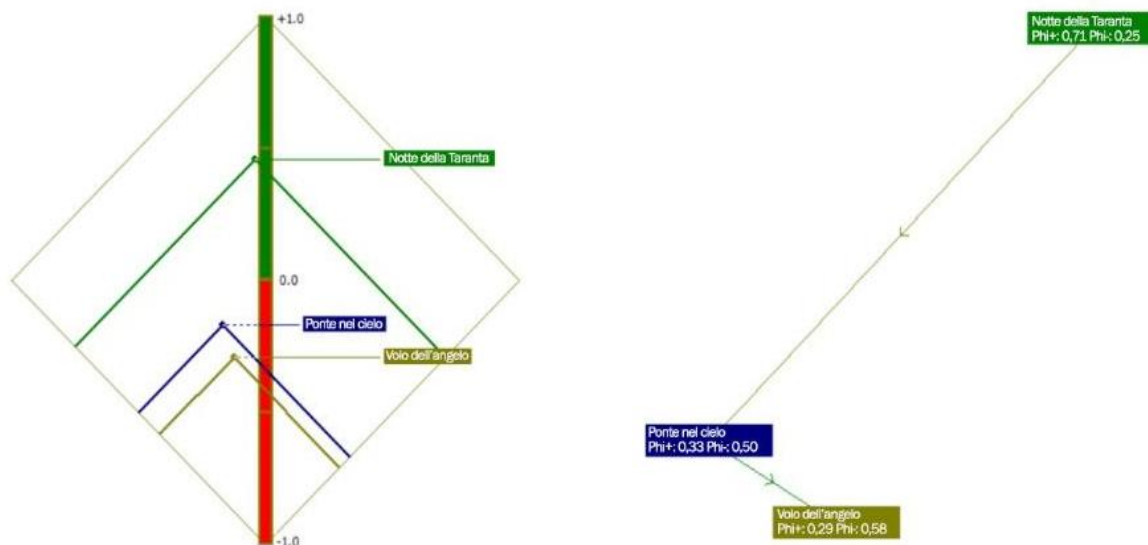


Figure 10. Evaluation of alternatives (a) PROMETHEE Diamond and (b) PROMETHEE Network

The decision-making model used is focused on providing the decision-maker with an analysis of the decision problem with sound advice.

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), Creative Economy (CE), 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. The reason can be related to the introduction of new types of creative economy and well-being

conditions linked to the immaterial dimension of heritage towards a low entropy economy. Conversely, “Il Ponte nel Cielo” and “Il Volo dell’Angelo” alternate in the second and third place. It is possible reading these experiences highlights how creativity is a crucial factor for an economic approach based on the metamorphosis of the 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 for focusing on this heritage reuse at low initial cost, for discovering new potentials, preserving the nature and identity of the past innovatively.

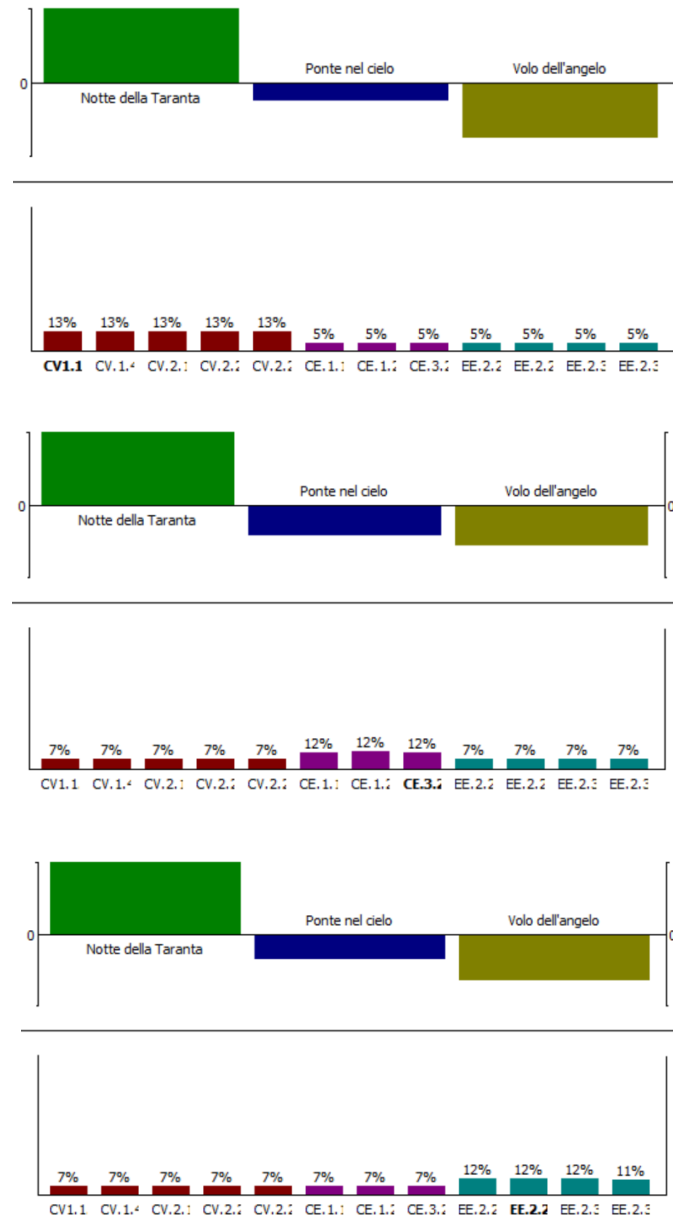


Figure 11. Sensitivity analysis – Walking weights for: a) Cultural Vibrancy (CV); b) Creative Economy (CE); c) Enabling Environment (EE)

4. Discussion

Creative re-generation 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 re-generation for sustainable development: renewing the image of the city and landscape, fostering pride and a sense of belonging amongst, 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 re-generation 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 [7,88] 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), Creative Economy (CE), and Enabling Environment (EE), and the related dimensions, criteria, and indicators that are selected to develop the ex-post evaluation of observed practices results. The elaboration of the described decision tree combines the suggestions derived both from literature analysis and the characteristics of selected experiences.

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

Starting from the decision tree, a core set of indicators has been identified to compare the three experiences, considering the main common issues. Used indicators measure quantitative units and allow the results to be communicated, taking into account information that is centred on the objective components of the evaluation. In a subsequent phase of the study, it is considered essential to develop appropriate indicators that allow the inclusion of subjective components, making explicit the points of view of the different types of actors involved in the decision-making process and of users (local communities and tourists). Structured assessment, combining both objective and subjective components, makes it possible to analyse 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 to understand and put on evidence that decision-making processes are incremental and adaptive, aiming to consolidate flexible and evolving networks of relationships, and are open to a constructive dialogue among the actors and users.

The three re-generation processes are [analysed to identify new uses of the existing heritage that](#) combine traditional local uses with innovative management models, additionally supported by ICT. Users are not limited to those who frequent the spaces, but also to the wider virtual community that follows the activities on the social network.

The selected practices consider the creation of relationships (physical, social, economic, cultural) among 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, tourism are the fields of experimentation of a new cultural production process. The direct participation in the process and the active involvement of the users allow producing new interests and stimulating new energies: new bonds are formed between the different decision-making actors. They recognise in collaboration and cooperation the concrete opportunity to improve their own well-being and that of 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 are evident. How communities are activated is often connected to the requests of certain subjects (individuals, groups, institutions, citizens and tourists) who recognise the need for change in contexts characterised by high potential.

Individual and collective culture, expressed in strategy, actions, and behaviours, becomes the link that feeds itself and re-generates itself, supporting the transformation process and guiding the identification of suitable actions.

The ex-post evaluation of results and of decision-making processes through the Multi-Criteria Analysis makes it possible to consider the different multi-dimensional components that characterise the analysed experiences, underlining the capacity to generate tangible impacts starting from the implementation of intangible actions. The multi-criteria evaluation methods allow to identify the overall performance of the activated process, considering the dimensions of the Cultural Vibrancy (CV), the Creative Economy (CE), and the Enabling Environment (EE), able to minimise the social costs of opportunity understood as the lost benefits of direct users but also of indirect, potential and future users.

The implementation of the PROMETHEE method, effective both from the point of view 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 characterise the case studies examined, highlighting their potentials to generate new values of use, social use and complex.

5. Conclusions

The CHLEE perspective can support the activation of creative governance processes, intended as an approach able to support not only cities but also small towns in enhancement strategies. Transition governance [89] or “reflective” governance [90] are 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 shared responsibility in line with the Faro Convention [8], where the Heritage Communities are also expression 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 [91]. Creative Communities, therefore, guest, and educate “existing citizens as creative interpreters or new citizenship” [92].

The application of the methods typical of Multi-Criteria Analysis and also of hybrid evaluation approaches [93–96], able to combine different techniques and tools, allows to understand the peculiarities of the processes and, at the same time, to explore the potential of new opportunities to manage the processes of enhancement of the existing cultural and landscape heritage, in which to generate economic value starting 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 “economically useful” only through the realisation of material interventions, are “reborn” in their intrinsic essence without necessarily hosting an insertion of permanent “services and installations”.

The practices have as common denominator an economic approach, based on the metamorphosis of the built heritage and landscape from its material cultural component to [becoming](#) a more ambitious and competitive immaterial design. Focusing on reuse at low initial cost allows discovering new potentials, saving the [past's nature and identity](#).

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