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**A stakeholders-oriented approach to analyze the case of the
UNESCO's Man and Biosphere reserve CollinaPo**

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Abstract

The paper investigates the combined use of storytelling and the Simos-Roy-Figueira (SRF) method to support the identification of the most important decision criteria in a decision process concerning a valorization strategy for a UNESCO's MaB reserve. The approach is illustrated with an Italian case study ("CollinaPo"), describing one of the four focus groups where it has been applied, as part of a training course to discover and valorize the values and peculiarities of the area. The choice of a combination of storytelling and SRF has been also induced by the very varied composition of the workshop participants: the two methods are intuitive and entertaining, the latter in particular allows to select and weight the criteria on a subjective scale that stimulate the stakeholders' acceptance. The fact that several common criteria arose across of different groups despite the limited time and the variety of the participants, seemed a positive indicator of the goodness of the choice. The participants pointed out this sense of "belonging" to UNESCO's MaB reserve "CollinaPo" beyond the division into individual municipalities, expressing a clear vision of the need to act as a "network" on the territory to reinforce the attractiveness of the area. Even if the article illustrates the results of a single case, it incorporates a series of reasoning related to three workshops already done in the same project, and other applications are scheduled.

Keywords: sustainable development, SRF method, stakeholders-oriented approach, storytelling

CHAPN.1 Introduction (2 p)

According to the Brundtland report (Keeble, 1988), "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." This definition has to be understood in an economic perspective involving environmental, social, technical and financial aspects that together support the so-called green economy. In this sense, the sustainable development is a globally endorsed principle whose practice is multidimensional and complex as highlighted by the United Nations General Assembly in the Sustainable Development Goals of the Agenda 2030 (un.org).

Among the widespread sustainable development programs, particularly interesting is the UNESCO's Man and the Biosphere (MAB; Dyer and Holland, 1988). The MaB is an intergovernmental scientific program launched in 1971 whose primary objective is the rationale use and protection of the biosphere resources. In particular, the MaB aims to analyze and improve the strong interdependence among the environment and the people who live it, promoting the protection of

natural ecosystems and the equitable distribution of benefits. In order to reach this objective, the MaB advocates new approaches to the economic development that are socially, culturally and environmentally sustainable (unesco.org).

In this perspective, the MAB program can be defined as an evaluation tool of the UNESCO (Ishwaran et al., 2008) according to four main steps: i) to identify the climate changes imputable to the human and natural activities and the subsequent effects on people and environment; ii) to study the dynamic relationships among ecosystems and socio-economic processes considering the de-growth of cultural and biologic diversity; iii) to ensure the human and environmental well-being in a context in which rapid urbanization and energy consumption are carriers of environmental change; iv) to promote the exchange of knowledge of environmental problems and solutions and strengthen the education for sustainable development (Ishwaran et al., 2008).

Here emerges the need for policies and strategies to propose concrete actions able to properly address the sustainable development of the UNESCO's MaB reserves. Accordingly, an important element of complexity is constituted by the shallow knowledge of the MaB reserves in terms of available information useful to design sensible sustainable development strategies (Brunetta et al., 2018).

To help overcoming this problem, this paper proposes the use of new approaches in order to support the traditional evaluation perspective based on numerical data. Those new approaches can be defined as "stakeholders-oriented" since they can make up for the vagueness of information and knowledge through the interaction between actors and experts (Abastante et al. 2018, 2019; Abastante, 2016; Abastante and Lami, 2018, Beccali et al., 2003) in a participatory process. In this sense, the stakeholders-oriented are methodological and applicative approaches able to integrate the multiplicity of values intrinsic in sensible and effective decision processes (Lami and Tavella 2019; Tavella and Lami, 2018; Lami and Abastante, 2014).

In particular, the paper investigates the use of the Simos-Roy-Figueira (SRF) method (Figueira and Roy, 2002), also known as "playing cards" method, combined with a previous step based on a "storytelling approach".

The "stakeholders-oriented" approach has been used to support the discussion around the UNESCO's MaB reserve "CollinaPo" (Turin metropolitan area, Italy) and to identify the most important decision criteria able to support a valorization strategy of the aforementioned reserve. It is important to stress that this paper reports the partial results of an ongoing research.

The chapter is structured as follows: after the introduction, section 2 reports the basic elements of the methodological approach, section 3 analyses the case study applying the SRF method, section 4 provides the discussions while section 5 concludes the paper highlighting the future development of the research.

CHAPN.2 Methodological approach: the stakeholders-oriented approaches

Determining the importance of the decision criteria and their relative weights to support the decision choices is complex.

The literature suggests many methods able to help solving this issue (Lombardi et al., 2017; Lami and Abastante, 2014). According to Wang (2009), these methods can be divided into two main groups:

1. “*Equal weights*” methods: the weights of criteria are evaluated as $W_i = 1/n$; $i = 1, 2, \dots, n$. Equal weights method was popularized and applied in many decision-making problems
2. “*Rank-order weights*” methods: the weight of the criteria takes into account the relative importance among criteria as:
“ $w_1 \geq w_2 \geq \dots \geq w_n \geq 0, \sum_{i=1}^n w_i = 1$ ”. This method can be usually classified into two main categories:
 - a. Subjective weighting method (e.g. Playing cards, Pairwise comparison, AHP), which are mainly based on the stakeholders and decision makers’ preferences and visions and are therefore called “stakeholders-oriented” approaches.
 - b. Objective weighting method (e.g. TOPSIS method, Minmax deviation method), which are based on mathematical methods.

Although the stakeholders-oriented approaches have been rarely considered, we strongly believe that they can be very helpful in situation characterized by a scarcity and/or vagueness of the available knowledge. In particular, the stakeholders-oriented approaches are simple to be implemented and are usually well accepted by the stakeholders. Interestingly, the stakeholders-oriented approaches (Hamdy et al., 2017) are very intuitive and engaging methods, which allow clearly to select and rank a set of preferred decision criteria. Hence, we can affirm that the novelty of this paper is based on the stakeholders’ involvement from the early phase of a valorization strategy process.

The first step of the stakeholders-oriented approach here applied is based on the storytelling, which is «the set of techniques to tell and share a story that generates interest and which conveys a message in order to convince and adhere to a conclusion that presents itself as definitive» (Lewi, 2009). Storytelling facilitates unlearning which corresponds to unlearning individual and disciplinary perspectives, as well as knowledge taken for granted. Writing in a more narrative way improves understanding, it allows us to go beyond the objectivity of scientific

and qualitative approaches, favoring different points of view and interpretations. Storytelling's goal is to promote empathy among stakeholders, in order to create the good context for discussing interdisciplinary issues that can become conflictual.

CHAPN.2.2 Simos Roy Figueira - SRF

The SRF method (Figueira and Roy, 2002) is a generalization of the consolidated approach proposed by Simos (Simos, 1990) generally called "Playing Cards" (Siskos and Tsotsolas, 2015; Aşlıoğlu and Memlük, 2017). It is considered as a Multicriteria Decision Analysis (MCDA) because it allows people involved to think about and express the way in which they wish to hierarchize multiple criteria in a given context (Figueira and Roy, 2002; Zheng et al, 2016).

The method demands a limited cognitive effort to the stakeholders involved thanks to the material supports used and the procedure itself. A set of cards is created (similar in form to playing cards) corresponding to the criteria identified. Similarly to what often happens in ordinary life when it is necessary to decide which are the most relevant aspects to take a decision, the stakeholders are invited to define a sort of criteria (the literature suggests from the least important to the most important). In this way, the stakeholders will rank in ascending order according to the importance they want to ascribe to the criteria (Figueira and Roy, 2002). The SRF also contemplates the possibility that there are two or more criteria of equal importance, in this sense a subset of *ex equo* "criterion cards" can be built.

The stakeholders are then asked to think about the fact that the importance of two successive decision criteria in the ranking can be more or less close.

Therefore, the stakeholders insert "white cards" between two levels of the ranking in line with the logic expressed by Figueira and Roy (2002): no white card means that the criteria have not the same weight but that the difference between the weights can be chosen as the unit for measuring the intervals between weights; one white card means a difference of two times; two white cards mean a difference of three times and so on. Obviously, the greater the difference between the mentioned weights of the criteria, the greater the number of white cards.

The last step is the definition of the so called "z value", whose calculation constitutes the main difference between the original "Playing Cards" proposed by Simos and the SRF method. To define the "z value", the stakeholders are asked to express how many times, the last criterion is more important than the first one in the ranking. After the stakeholders' provided a complete ranking and the ratio through the "z value", the preferences expressed are converted into weights using

the SRF algorithm. This step can be supported by the SRF dedicated software (Maystre et al. 2004), or DecSpace (Costa et al., 2019). The reader can refer to Figueira and Roy (2002) for more comprehensive details, since providing a detailed description of the algorithms supporting the SRF method is beyond the scope of this paper.

CHAPN.3 Case study: the UNESCO's MaB CollinaPo

Currently, the UNESCO's MaB network involves 686 different reserves in 122 Countries and in particular 15 reserves in Italy (Figure 1).



Figure 1. The location of the 15 Italian UNESCO's MaB network (source: biosferadelpo.org)

The CollinaPo reserve (Turin metropolitan area, Italy) obtained the UNESCO's MaB acknowledgment in 2016 thanks to the application managed and promoted by the association called "Ente Parco", which performs a strong activity of facilitation of systemic network programs.

The CollinaPo is the most urbanized among the Italian UNESCO's reserves. It is a unique territory, far from the traditional stereotype of the natural area but characterized by environmental and landscape wealth difficult to find elsewhere. In fact, the CollinaPo reserve includes an anthropized tissue where a river and a hill coexist together with different natural habitats, historical architectural excellences and a metropolitan area (biosferadelpo.org).

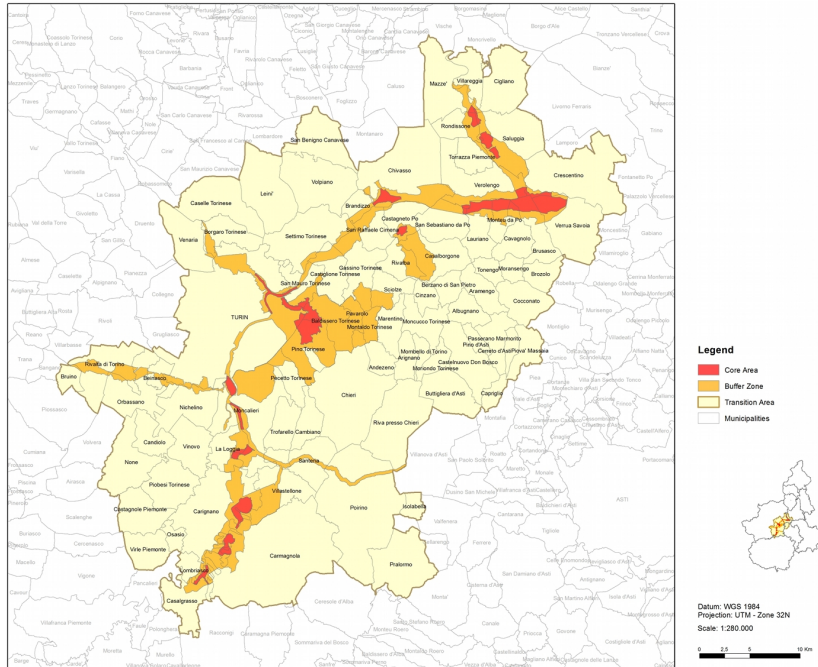


Figure 2. Location of the UNESCO's MaB CollinaPo (Source: parks.it)

As showed in Figure 2, the UNESCO's MaB CollinaPo involves 86 Municipalities of the Turin metropolitan area and it is located along the river Po axis between the foothills of Turin, where the river heads north, and that of the upper plain.

From a natural point of view, the CollinaPo reserve shows two extremely interesting elements: the river Po and the Turin hill. In particular, the reserve comprises different protected green parks and numerous sites inserted in the so called "Nature Network 2000", which identifies 35 habitats of community interest as a testimony of a high biodiversity (unesco.org). Those habitats are called "core areas" and are surrounded by protective buffer zones in order to properly guarantee the ecologic, functional, physical and territorial continuity. This is possible mainly thanks to the river Po, which acts as an ecologic corridor protecting the core areas with the riparian vegetation.

Parallel to the nature elements, the reserve is characterized by many economic activities as agriculture, industries, tourism. If properly managed, those can constitute an advantage for the territory in exam since they make the reserve a laboratory for experimentation and implementation of sustainable management practices of natural and cultural resources. The CollinaPo reserve assumes a key role for the conservation of biodiversity: the system is indeed an important

ecological network that performs the crucial function of conservation of species, communities as well as ecosystems.

In this heterogeneous situation, the aim of the paper is to identify the decision criteria able to support the requalification and enhancement of the UNESCO's MaB CollinaPo proposing effective valorization strategies in a sustainable perspective.

CHAPN.3.1 Application of the SRF

In order to reach the aforementioned objective, we applied a combination of storytelling and SRF method as a stakeholders-oriented approach (Abastante et al., 2017). The present research is based on four different focus groups on the territories of the CollinaPo reserve, and it is part of a training course to discover and valorize the values and peculiarities of the area, funded by Iren Local Committees. The course includes two training modules (one of which is partially structured in workshops) and guided tours, repeated in four different municipalities of the 86 municipalities in the MaB CollinaPo. The course is intended for citizens interested in enhancing their territory, operating in several sectors. Since the research is still ongoing, this paper aims at reporting the first results obtained during the one of the focus groups.

The stakeholders involved in the discussion and participating to the focus group were 20 citizens and representatives of the Public Administration with different backgrounds and jobs and between 25 and 80 years old (Table 1).

Table 1. Composition of the stakeholders

CURRENT JOB	FEMALE	MALE	TOTAL
Teacher	2	0	2
Restoration/commercial activities	2	1	3
Tourism	2	2	4
Public Administration	2	2	4
Student	1	1	2
Association	0	3	3
Retired	2	0	2
TOTAL	11	9	20

From Table 1 emerges that the composition of the participants is balanced in terms of gender and jobs.

After having identified the stakeholders, the focus group has been structured into four main working sections. During the first one, we presented to the stakeholders the objectives of the focus group paying particular attention to the theoretical aspects of the urban sustainability processes (Lami, 2019) as well as to the SRF methodological approach. In the second section, we use a simplified version of the storytelling, asking to the stakeholders to reflect about the possible decision criteria perceived as the key elements of the territory, answering to specific questions. In the third section, the stakeholders worked in groups. Finally, a general discussion was stimulated, starting from the comparison of the different rankings. In the following text we will illustrate the last three phases.

In order to support the stakeholders in thinking about the decision criteria, we posed them three questions that should be able to stimulate the definition of the problems and potentialities of the territory highlighting the point of views and thought of each stakeholder. In this perspective, the storytelling is used to develop shared vision and future goals, through narrations from a personal point of view.

The questions were of the type:

1- In your opinion, which are the main strengths and weaknesses of the territory in exam? Describe with a maximum of 4 sentences which are the most important characters of the reserve CollinaPo from different point of view (natural/touristic/cultural/gastronomic...).

2- In your opinion, what is missing or what could be developed in the receptive/tertiary/residential/tourist sector? Describe with a maximum of 4 sentences which are the most promising sectors able to guide a valorizing strategy of the territory.

3- In your opinion, which are the decision criteria/key elements useful to evaluate the actions proposed at point two? Describe with a maximum of 4 sentences which are the decision criteria useful for a public administrator in order to guide a valorizing strategy of the territory considering a limited budget.

After having privately answered to the three aforementioned questions, the stakeholders were better situated to face the group work. They were therefore divided into three heterogeneous groups supported by facilitators with the aim of

discussing the different point of views and to define the most important criteria reaching the consensus.

Once each group defined an agreement in terms of the decision criteria to be considered, they were asked to provide a ranking of the decision criteria using the sets of “criterion cards” and “white cards” according to the SRF method.

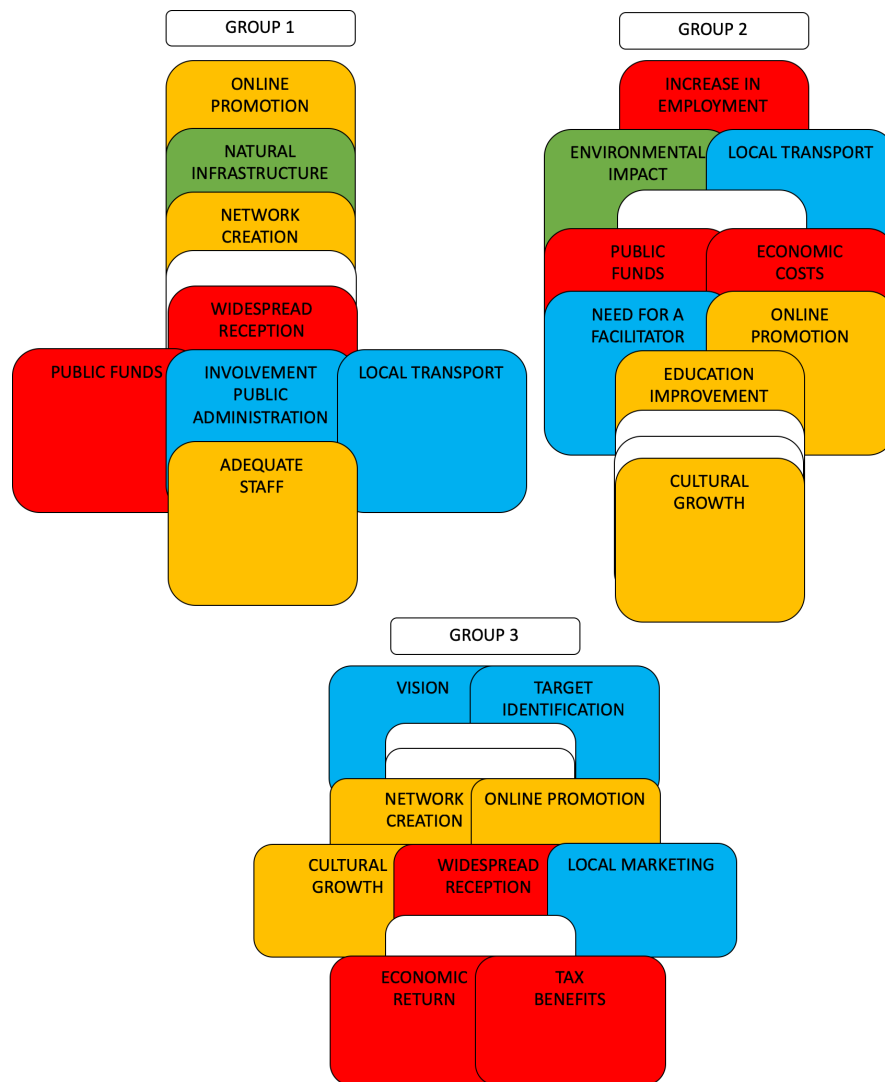


Figure 3. The rankings provided by the three groups with SRF

In Figure 3, the yellow cards refer to the social aspects, the green cards refer to the environmental, the blue cards refer to the technical while the red cards refer to the economic aspects. As it is possible to notice, the overall social aspects identified by the three groups are 5, the environmental aspects are 2 while the technical and economic aspects are 6.

Accordingly, the number of criteria related to each aspect is quite balanced with the exception of the environmental aspect. With this respect the three groups are aligned in affirming that the environmental aspects are fundamental for the valorization strategies of the CollinaPo reserve. However, since the stakeholders are expert connoisseurs of the territory in exam, they affirmed also that the environmental conditions of the CollinaPo reserve are very good since they are widely taken into account by the UNESCO and therefore it does not constitute a criterion for the decision problem in exam.

CHAPN.4 Discussion of the results

In order to properly discuss the results, we first analyzed the decision criteria that the 3 groups have in common.

In details, the decision criterion “online promotion” has been indicated by each group. This criterion refers to the need to define a promotional strategy of the territory that should be shared among the municipalities involved. This aspect could be solved by an effective website or a promotional campaign conducted via social networks. Moreover, the group 1 considers this criterion as the most important one, highlighting it as an actual promotional strategy (Figure 3).

The groups 1 and 3 identifies the “network creation” as a social criterion affirming that one of the main weaknesses of the CollinaPo reserve is the lack of communication among the involved municipalities and a vague synergy of the Public Administrations. Those two groups advocate the need for a transition from a hierarchical organization model to a relational one. This could help in implement the tourism enhancement.

The group 1 and 2 highlighted the criteria “public funds”, “widespread reception” and “local transport”, even with different priority orders. The criterion “public funds” calls for more public funds in terms of money. In particular, the Public Administration would need participate to national and international financing programs in order to acquire new financial resources to be invested on the CollinaPo reserve.

The criterion “widespread reception” is related to the need of defining a shared receptive strategy diffused on the territory (as: AirBnB or Bed and Breakfast). In fact, currently in many of the CollinaPo municipalities there are no hotels and the receptive options are underdeveloped compared to the increasingly growing

number of tourists. Improving this aspect would be strategic for the territory since it could lead to attract more tourists and, consequently, to grow monetary income. At the same time, the “local transport” is perceived as a huge problem for the CollinaPo reserve. The CollinaPo is in fact well connected with external territories mainly thanks to different high-speed railway lines crossing Turin. However, the local transports are scarce and inefficient both from the bus and train point of view. The frequency of bus and train passages is not appropriate and the same is the timing. This makes very difficult to the users of the territory to move without a private car.

Both group 2 and 3 identified the criterion “cultural growth” even if with a low importance: group 2 positioned this criterion at the last place while group 3 at the penultimate. This criterion advocate for a more consciousness of the residents about the CollinaPo reserve potentiality. This aspect should be implemented starting from schools and families that should teach the culture of the territory. The reason for which the groups decided not to attribute a high importance to the “cultural growth” criterion is because they affirmed that this aspect can be considered as a consequence of other criteria: improving for example the “online promotion” could lead to an improvement also in terms of culture and consciousness.

From Figure 3, it is possible to notice also the most important decision criteria according to the SRF ranking provided by the groups.

Group 1 has indicated “online promotion” as the most important aspect followed by the “nature infrastructure”. This group is the only one having focused the attention on the environmental and natural aspects, recalling the need to maintain and implement natural infrastructures including pedestrian and cycle paths.

The most important criterion according to the reasoning of Group 2 is the “increase in employment”. During the discussion among the stakeholders it emerged that a great responsibility about the CollinaPo activities is delegated to voluntary people. This is a huge social and economic risk since the volunteers are often exploited. It is therefore necessary to implement strategies to relieve volunteers and to create jobs.

Always talking about Group 2’s ranking, from our point of view a very interesting criterion is “need for a facilitator” understood as the need for a strong direction of the territory. In fact, big territories as the CollinaPo reserve lack of effective valorization strategies because of the lack of a figure or entity able to coordinate them.

Finally, group 3 identified two different criteria as the most important ones: “vision” and “target definition”. According to the logic expressed by group 3, it is necessary to have a strong overall vision as well as clear objectives in order to propose effective valorization strategies. Those objectives may be few but they

have to be feasible. The decision criterion “target definition” is strongly related to the previous one: to define a vision, it is necessary to identify a target to which the vision is addressed. The identification of a specific target (tourists, residents etc.) is in fact essential for a good project.

CHAPN.5 Conclusions and future development

Many territories started to define future valorization strategies. One of the main problems in proposing new strategies is the lack of proper data and relevant decision criteria able to address the design. Hence, this paper illustrated a stakeholders-oriented approach for defining and ranking the decision criteria required for assessing territorial valorization strategies. In particular, the paper investigates the combined use of storytelling and the Simos-Roy-Figueira (SRF) method (Figueira and Roy, 2002), to support the discussion around the UNESCO’s MaB reserve “CollinaPo” for identifying the most important decision criteria able to support a valorization strategy of the aforementioned reserve. It is important to stress that this paper reports the partial results of an ongoing research. The method proved to be a flexible and participative approach able to consider social and urban planning aspects and suitable to support decision processes in the absence of open-data or sensible and complete information (Pfenninger et al., 2017). The choice of a combination of storytelling and SRF was also induced by the very varied composition of the workshop participants: the two methods are intuitive and entertaining, the latter in particular allow to select and weight the criteria on a subjective scale that stimulate the stakeholders’ acceptance (Lombardi et al., 2017).

The fact that several common criteria arose across of different groups (“online promotion”, “network creation”, “public funds”, “widespread reception” and “local transport”) despite the limited time and the variety of the participants, seemed to us a very positive indicator of the goodness of choice. The participants pointed out this sense of “belonging” to UNESCO’s MaB reserve “CollinaPo” beyond the division into individual municipalities, expressing a clear vision of the need to act as a “network” on the territory to reinforce the attractiveness, otherwise the marginal points of interest would be too dispersed (Ingaramo et al., 2017).

Finally, we recognize that the paper presents the limitation of illustrating the results of a single case, reducing the generalizability of the conclusions with respect to the applicability of these tools to territorial decision-making processes. But, even if the article illustrates one specific experimentation, it incorporates a series of reasoning related to three workshops already done in the same project, and other applications are scheduled. The opinions gathered in the focus group, the enthusiastic and proactive response of the participants seem encourages the

impression that the method is suitable for the context and the objective of the research.

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