Strategic Guidelines to Increase the Resilience of Inland Areas: The Case of the Alta Val d'Agri (Basilicata-Italy)

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Abstract. The following paper illustrates an integrated strategy proposal to increase the resilience of an internal area of Basilicata region. The strategy for this area moves on several pillars: on the one hand the need to network small municipalities to strengthen the inter-municipal system and cooperation practices, on the other hand, the need to develop an effective integration covering all the main systems in strategic design; finally, the duty to use consolidated and effective methodological tools, such as the Logical Framework Approach (LFA). The synthesis phase of the study was based on the construction of the Logframe matrix, where the conclusions of the analysis phase are summarized and the general objectives and specific objectives of the strategy, the actions to be undertaken, the products and the economic resources are indicated. Finally, the strategic actions have been specified in the map for each municipality in the case study area, to have a useful spatial framework supporting decision making and implementation phases.

Keywords: Inland area · Resilience · Local strategy

1 Introduction

In drafting an integrated strategy proposal to increase the resilience of an internal area, such as the Agri Valley, particular importance was attached to the analysis, interpretation and evaluation of the reference territorial context. Attention was paid to the integration of cognitive aspects from different sources, in order to identify resources and potential that can generate processes of recovery and resilience of the territory, in the desire to consolidate the relationship between knowledge and action [1].

The integrated strategy, which starts from a strategic vision of the territory, is the result of a set of intersectoral operations, strictly coherent and explicitly linked to each other, aimed at a common development objective and capable of creating an additional added value compared to individual disconnected operation. The same reasoning is what promotes the area as a strategic inter-municipal area [2], in which effective local development policies and an efficient organization of services can be favoured. The strengthening of inter-municipal systems and cooperation practices can lead the areas to

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develop a new strategic capacity in the construction of shared future scenarios and the identification of further development opportunities over a large area. In many contexts, the inter-municipal system has been indicated as the privileged place to develop and find common and more effective solutions. At the same time, there was an awareness of the need to create a real inter-municipal competence centre through which to intercept and internalize new professionals capable of supporting the processes of technological, but also social and economic innovation [3].

The effectiveness of the results and the quality of the interventions are the fundamental prerequisites of the strategy that needs to implement synergistic actions - between categories of economic, social and tourism operators, institutional levels, companies - both in terms of planning and implementation.

The territorial area of reference is the Alta Val d'Agri, upstream of the artificial dam of the Pertusillo dam which falls in the south-western quadrant of Basilicata. From an administrative point of view, this territory belongs entirely to the province of Potenza. The Alta Val d'Agri constitutes a particularly articulated territorial reality, since the considerable heritage of environmental, historical and cultural resources that characterize it is affected by numerous critical elements; among the most relevant problems are the abandonment of historic centres - which generates a widespread degradation of the architectural and landscape heritage - and issues related to social and economic factors, such as unemployment, population decline and the ageing of the same. The desire to increase the resilience of the territory is due to the awareness that the territorial system is in a phase of decline, with respect to its evolutionary cycle. Socio-ecological systems, of which territorial systems are second expression, tend to develop evolutionary cycles structured in four phases: use, conservation, release and reorganization that lead to the triggering of a new evolutionary cycle, composed of new system solutions [4]. The transition phase of the system - from decline to reorganization - requires high potential and high resilience. Therefore, in the face of a high potential, we intend to act to increase the resilience of the territorial system.

In recent decades, a critical element has been added, represented by the massive presence of oil extraction activities. In the collective imagination of the inhabitants of the valley, the presence of the deposit represented the engine of the recovery of a strong local economy and a reversal of the depopulation trend; however, about twenty years after the beginning of the exploitation of the oil resource, the hoped-for objectives have not yet been achieved. The industrial presence with such invasive characteristics is undoubtedly a foreign element in an inter-mountain valley dedicated above all to agriculture and animal husbandry, with an exceptional water resource that is constantly threatened. Therefore, for an integrated enhancement and sustainable development [5, 6] of the Alta Val d'Agri, which focuses on the existing cultural and architectural heritage and the naturalistic-environmental system as a driving force for recovery, the strategy indicates as a fundamental prerequisite that of a gradual decrease in extractions, in favour of RES devolpment [7–10].

The debate on the oil industry makes the case study a complex challenge that was intended to be addressed with a rational planning approach, based on three safeguard planning principles [11] that are considered to be the basis for implementing the proposal:

1. Efficient allocation of resources
2. Equity in the distribution of opportunities

3. Protection of non-renewable resources

The methodological approach of the research relies on a logical ordering procedure, in which general objectives, specific objectives, expected results, actions, indicators, means of verification, assumptions and inputs are compared through the implementation of the Logical Framework Approach (LFA) [11, 12]. The European Commission has adopted the LFA which is part of the integrated system of Project Cycle Management (PCM) [13]. It is a complex procedure that goes through the phases of interrogating the subjects actively involved (stakeholders) and arranging the basic needs, organized in the form of a hierarchical structure of problems (problem tree) to identify a program structure that links investments, actions and expected results. The construction of the Logical Framework is presented as a tool for the implementation and control of the design process and as a tool to aid in the evaluation of decisions. This program intends to develop an integrated procedure that sees the consequentiality between the contents of the participation tool and those of the program structure (Problems Tree and Objectives tree). The LFA is therefore a structured and logical approach to prioritize and determine the expected results of a strategic project.

2 The Territorial Context

Agri Valley falls in the south-western quadrant of Basilicata, between the Tyrrhenian and Ionian coasts; the name refers to the Agri river that has crossed the basin and originates from the western offshoots of *Serra di Calvello*, where the *Capo d'Agri* spring group is located. The Agri river basin has a very large area (1,686 sq km) and - from the point of view of morphotectonic evolution - it can be divided into three sectors, generally referred to as *Alta, Media* and *Bassa Val d'Agri*. This work intends to deepen the research on the area of the Alta Val d'Agri (see Fig. 1), upstream of the artificial limit of the Pertusillo dam which, from an administrative point of view, includes ten municipalities in the province of Potenza.

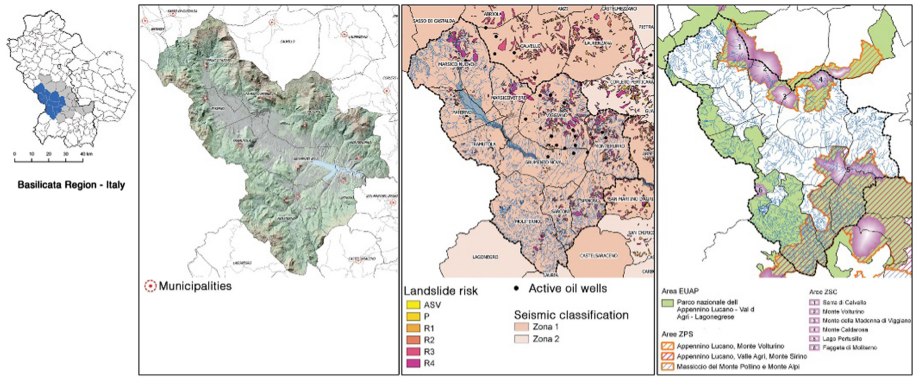

Fig. 1. The figure frames the Agri Valley in the Basilicata Region, underlining some aspects: the morphological characteristics (a), some natural and anthropic risks (b) and the strong naturalistic connotation of the area (c).

The field of study, due to the multiplicit of different environments that make possible the coexistence of a large number of plant and animal species, is almost entirely included in the perimeter of the *Appennino Lucano - Val d'Agri Lagonegrese* National Park, an area protected established in 2007.

Urban and rural settlement are complementary and contribute, together with the road network, to generally define the anthropic transformations in the landscape. The current urban settlement, and with it we refer to the smaller towns of the Alta Val d'Agri, is composed of a network of cores mostly located in the hills following a period of instability during the Middle Ages. The main road system is represented by the SS 585 (Strada di Fondovalle Agri) which, originating from the Atena Lucana motorway junction, crosses the valley and arrives on the Ionian Sea, connecting to the Ionian SS 106. Starting from this primary infrastructure, a system of roads classified of local interest is developed, which perform the function of connecting centres located on neighbouring slopes, connecting the individual centres to higher-level roads, allowing access to extra-urban areas and agricultural land.

The Alta Val d'Agri is characterized, from a demographic point of view, by the constant reduction of the resident population since the 1950s; currently, there are about 30,000 inhabitants.

The structure of the economic system of the study area shows a prevalence of agricultural enterprises (equal to about 32% of the total), of the trade sector (25%) and the tertiary sector (21%). The prevalence in the absolute value of the agricultural sector does not correspond to an employment structure consisting in terms of employees and employees of the companies. This denotes a system linked to individual and family businesses with a low level of industrialization of production processes. The fragmented agriculture is flanked by an industrial production system, which absorbs 29% of the employed and which balances employment in the more traditional sectors of construction (18%) and the tertiary sector (26%).

These parameters, updated to 2012, include the effects of the recent industrialization of the territory linked to the development of oil extraction. Trade, which is polarized in terms of supply in the urban centre of Villa d'Agri (Marsicovetere), maintains an important role even if the disproportion between the number of companies and employees/employees returns a fragmented picture with a marginal role of large-scale distribution and consequentlyt low levels of competitiveness [14].

The Agri valley is an area of Basilicata with a very high seismic risk, placing itself on the highest levels of regional danger because it is a tectonic depression bounded by faults in the Apennine direction and faults that interrupt the previous ones with an anti-Apennine trend. The seismicity of the valley is basically attributable to the active faults present in the area [15].

3 Methodology

The logical ordering procedure of the Logical Framework Approach (LFA), which is part of the Project Cycle Management (PCM), refers to the cyclical nature of planning and is organized in an Analysis phase and a Synthesis phase [16]. In the beginning of it provides for the organization and design of all activities, each context is different

from the others and provides for a specific strategic plan. A second activity focuses on the assessment of the context, through an internal and external diagnosis, which is usually carried out through the SWOT analysis technique. In the third part, the most important decisions are made; in fact, the previous diagnosis makes it possible to define the strategic objectives as strong ideas to be placed at the base of the intervention plan and from which to infer the corresponding strategic lines that are intended to be adopted. In this phase, the techniques of the Problem tree and the Objective tree are prepared, to organize problems from causes to effects and objectives from means to ends. The last activity, which is part of the Synthesis phase, deals with the definition of the objectives for each strategic theme and the identification of the actions to be developed, in the management structure of the Logical Framework Matrix (LFM).

3.1 Context Evaluation

Through an analytical and support tool, for example, the SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis, it is possible to detect all the spatial or social situations in which there is an incorrect use of resources, in the sense of the three principles of efficiency, equity and conservation of resources.

The use of this analysis, in the process of constructing intervention proposals and to encourage participation in the process of analysis, interpretation and evaluation of territorial phenomena [17–19], aims to systematically accompany the identification of problems and objectives. This practice has the strong logical limit of being a tautological tool in itself. That is, it repeats what is known from another source. This tool allows you to carry out control operations on multiple dimensions, precisely the dimensions of strengths, weaknesses, opportunities and threats.

The evaluation was made concerning topics of interest and, above all, to the various systems in which the territory under examination was considered:

– naturalistic-environmental system;
– tourism and historical, architectural and cultural heritage[20];
– settlement system and territorial armour;
– infrastructure system (see Fig. 2);
– economic system.

For each system, the strengths and weaknesses that characterize the present situation were first highlighted; subsequently, the analysis highlighted the opportunities and threats.

3.2 Problems and Objectives of the Alta Val d'Agri

At the basis of the strategic planning process is the identification of objectives, which are defined as the removal of problems which, in turn, are defined as everything that opposes the achievement of the objectives themselves.

In particular, the Problem Tree technique acquires the problems that have been reported or inferred, identifies the main problem and organizes all the problems, dividing them into problems that cause the main problem and problems that are effects of the

	S(STRENGTHS)	W(WEAKNESSES)	O(OPPORTUNITIES)	T(THREATS)
INFRATRUCTURAL SYSTEM	Presence of the S.S. 658 of the Agri valley floor of interregional interest which ensures accessibility to most of the inhabited centers and the productive areas of the valley, and connects the area to the west to the motorway network (SA-RC) to the east to the Ionian coastal area (SS 106).	Inadequacy of both local public transport and connection with the Ionian coast	The area is the subject of development programs and special financing that could affect the construction of connecting infrastructures with the Vallo di Diano	Marginalization of the territory with respect to road and railway infrastructures of national significance
	Presence of an extended secondary road network in good condition which also allows adequate accessibility to internal areas	Under-dimensioning of the Fondovalle dell'Agri road compared to the current flow of vehicles and vehicles	Use of public buildings at the busiest stops or exchanges to ensure a safe and adequate stop (services, waiting rooms, catering)	Cultural and commercial isolation due to poor accessibility
	Location of an airfield in the territory of Grumento	Absence of a railway line serving the area that reaches the Ionian coast	Modernization of existing road networks	
		Inadequate public transport for school commuting		
		Excessive distance from airports of international importance		

Fig. 2. SWOT analysis for the infrastructural system.

main problem. The same thing is done with the Objective Tree, which is to put the tree of problems in a positive way; it is necessary to express the problems in the form of an objective in which the main problem becomes the main objective, the problems-causes become the means to achieve the main objective and those that are the effects problems become the objectives that are to be achieved with the objective. For the different systems identified in the SWOT analysis, a Tree of Problems and a Tree of Objectives were respectively organized.

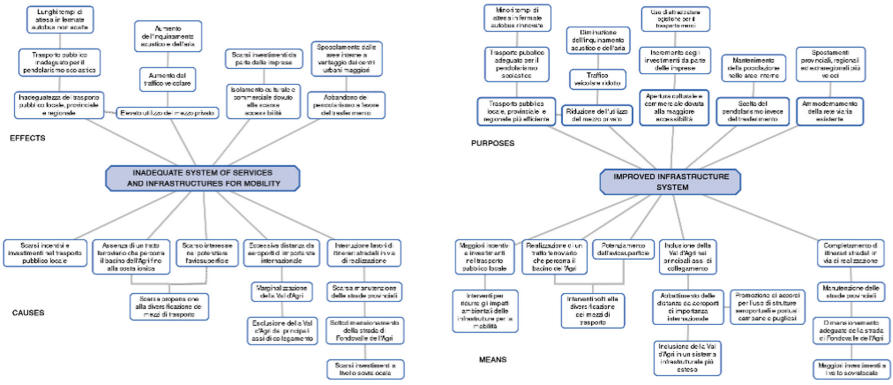

Fig. 3. The Problems tree (from causes to effects) and the Objectives tree (from means to ends) for the infrastructural system of the study area.

Figure 3 shows the organization of the Problem tree and the Objective tree for the infrastructural system, including traditional mobility and active mobility [21–23]. From the analysis of a branch of the Problem tree, it is observed that starting from the "*low incentive and investment in local public transport*", for example, the effect "*of the high use of private vehicles*" is produced.

3.3 The Definition of the Strategy to Increase the Resilience of the Territory

The synthesis phase, therefore, continuing from the results that emerged from the analysis phase, develops the strategy into an operational program. In this phase, the actions to be taken, the resources available and to be found in relation to the objectives, the link between specific objectives and general objectives are defined in the Logframe matrix (or logical framework) [14].

From the organization of the Thematic Objective Trees - which present a general objective for each system considered - it was possible to identify and extrapolate eight specific objectives, they are:

1) Promote recovery strategies for public and private buildings for hospitality and tourist accommodation;
2) Risk mitigation at the urban and territorial scale;
3) Redevelopment of public areas and spaces in built-up areas, recovery and reuse of disused public buildings, restoration and reuse of buildings of historical and monumental value;
4) Rationalize and enhance services to individuals and businesses according to polycentric arts;
5) To improve the road infrastructures connecting the inhabited centres;
6) Improve the local public transport offer;
7) Develop productive chain activities to support tourism (agriculture and handicrafts);
8) Develop territorial marketing initiatives to promote the territory and slow tourism.

The strategy to be adopted concerns "*increasing the resilience of the territory of the Alta Val d'Agri*" and consists of two specific priority objectives: the mitigation of risks at the urban and territorial scale (OS2) and promotion of strategies for the recovery of public and private buildings for hospitality and tourist accommodation (OS1). The two objectives are closely related to the concept that the recovery of the properties must be aimed at the subsequent reuse of the same.

The synthesis phase is realized with the construction of the Logframe matrix - in which the conclusions of the analysis phase are summarized and the general objectives and specific objectives of the strategy, the actions to be undertaken, the products and the economic resources are thus indicated (Table 1).

Following the results of the Logframe matrix, the overall vision of the proposed strategy and the priority interventions are represented in two summary documents (see Figs. 4 and 5) for the entire area.

Table 1. The Logframe Matrix of the strategy in the Alta Val d'Agri

TERRITORY SECURITY AND ENHANCEMENT OF MINOR HISTORICAL CENTRES OF THE INLAND AREAS			
	Intervention logic		
General objective	Increase in the resilience of the territory of the Alta Val d'Agri: security and enhancement of historical centres		
Specific objectives	**OS 1 - Promote recovery strategies for public and private buildings for hospitality and tourist accommodation** **OS 2 - Risk mitigation at the urban and territorial scale**		
Products	1.1 Development of local economies linked to tourism 1.2 Revitalized historic fabrics 1.3 Increased safety and sustainability 1.4 Raise of the construction sector ----- *omitted* ----- 2.5 Consolidated and reusable buildings		
Actions	1.1.1 Incentives for tourism activities 1.1.2 Processes of innovation and reorganization of local activities 1.1.3 Public-private participation processes for the reuse of land plans 1.1.4 Training workshops involving specialized artisans, the elderly, young entrepreneurs to pass on local traditions 1.1.5 Promotion of experiential tourism through workshops in companies and / or in artisan shops 1.1.6 Promotion of services connected to naturalistic and cultural places located in public buildings, such as shelters and farmhouses 1.2.1 Reclamation strategies for unoccupied private buildings 1.2.2 Incentives and / or tax exemptions for those who reside in historic fabrics 1.2.3 Activation of services of collective utility 1.2.4 Development of marketing initiatives to promote smaller towns 1.3.1 Promote seismic adaptation and improvement interventions of the public building heritage ----- *omitted* ----- 2.5.3 Promote public / private participation in order to identify new uses that are compatible with the typological characteristics of the properties		
indicators		*Means of verification*	*Assumptions*
• n. di interventions • n. housing units recovered • m^2 sup. recovered		• Municipal Technical Office documents (UTC)	Gradual reduction of mining activities and definitive closure
• n. of interventions following studies • n. of urban planning instruments with actions for mitigate risks		• Municipal Technical Office documents (UTC)	
--- *omitted*---		---	
• n. consolidated buildings		• UTC	
Input	• Public and private financial resources; • Fund for the prevention of seismic risk (€169.709.059); • Agri Valley Operational Program > Axis 3 "Competitiveness" (€99.600.000) Specific goals: 3A.3.5, 3B.3.2, 3C.3.1, 3C.3.7, 3D.3.6 > Axis 4 " Energy and urban mobility " (€84.196.896) Specific goals: 4B.4.2, 4B.4.6 ---omitted--- > Axis 7 "Social inclusion" (€41.750.520) Specific goals: 9A.9.3, 9B.9.4		

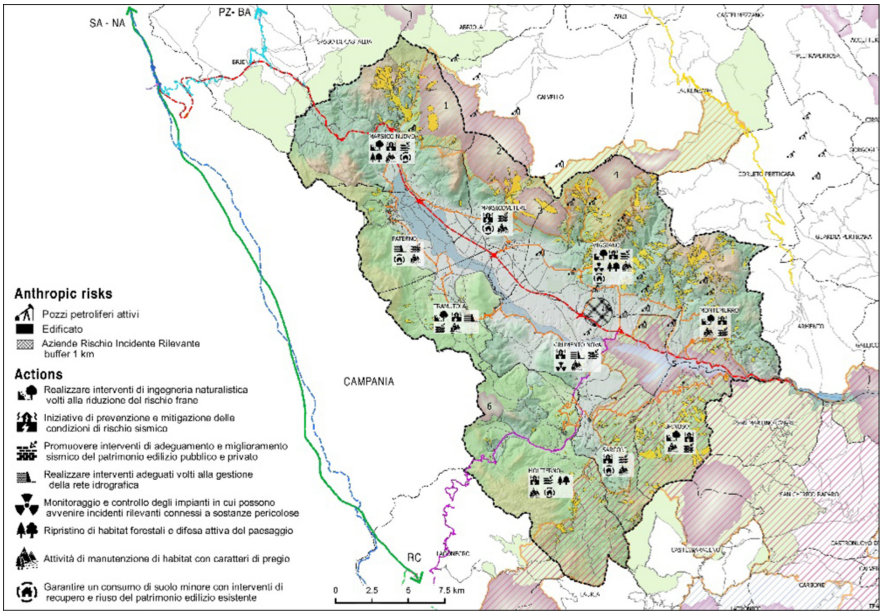

Fig. 4. The map shows the actions of the strategy for each municipality to increase the resilience of the entire area, in the theme of risk mitigation.

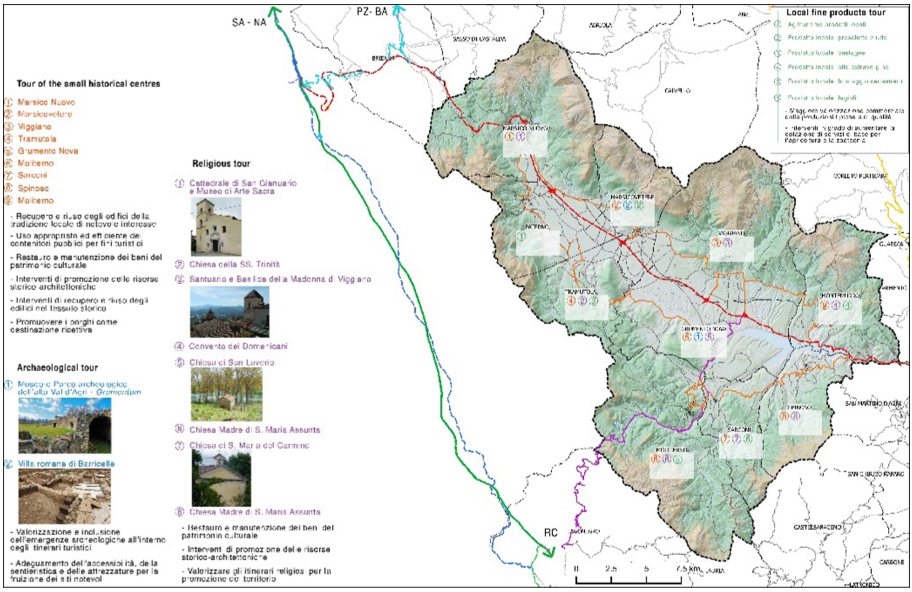

Fig. 5. The map shows the actions of the strategy to for each municipality to increase the resilience of the entire area, in the theme of enhancement of minor historical centres.

The first map (see Fig. 4) summarizes the actions for the territorial security and risk mitigation; the second map (see Fig. 5), focused on the recovery and tourist enhancement of the minor historic centres. These two graphical representations focus on only two aspects of the whole strategy. However, the concept that emerges strongly is that only by systematizing resources in an organized network between minor historic centres can resilience be increased.

4 Conclusions

The Alta Val D'Agri is experiencing a phase of decline, which emerges in particular in the population decrease, in the high rate of seniority and in the abandonment of housing, even of a certain historical value. However, it is also an area with considerable potential, both from a naturalistic and cultural point of view and in the production of local products.

The transition phase of the territorial system - from decline to reorganization - requires high potential and high resilience. Therefore, with high potential, action has been taken to increase the resilience of the territorial system through the proposal of an integrated strategy. This strategy retraced the main stages of the logical framework approach (LFA):

i. the evaluation of the context, through an internal and external diagnosis, carried out with the SWOT analysis technique;
ii. the definition of eight strategic objectives from which the main strategic line has been deduced, with the Problem tree and the Objectives tree technique;
iii. the Synthesis phase, in which the objectives for each strategic theme were defined and actions identified, in the logical structure of the Logical Framework Matrix (LFM).

Downstream of the logframe matrix results, the overall vision of the proposed strategy and the priority actions were represented in two synthesis maps for the whole area: the first, which concerns territorial security and risk mitigation, both anthropic and natural; the second, which focuses on the recovery and tourist enhancement of the smaller historic centres, as a starting point for the raise.

When all municipalities in the case study area are considered as a single system and have a common strategy that points to a common vision, their resilience can be increased, that is, the ability to adapt to change and reorganize. The actions reported in the LFM are clear and organic because they meet the needs of the territory and maintain their systemic character. They are also a starting point for strengthening the integrated management of planning and service activities - as the only possible way - to aspire to become a fully-function inter-municipal system. Strengthening inter-municipal systems, cooperation practices and integrated strategy proposal can lead areas to develop a new strategic capacity in building shared future scenarios and identifying further development opportunities [24–26].

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