

# **Building the Urban Bioregion**

## Governance scenarios for urban and territorial planning

Edited by

Anna Maria Colavitti and Sergio Serra



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# RST

## RICERCHE E STUDI TERRITORIALISTI

COLLANA DIRETTA DA

Filippo Schilleci

La Collana *Ricerche e Studi Territorialisti*, pubblicata dalla SdT Edizioni, nasce da una precisa volontà della Società dei territorialisti e delle territorialiste. Le ragioni che hanno portato a questa scelta sono molteplici.

In primo luogo poter pubblicizzare, attraverso una corretta diffusione, i lavori della SdT. Anche se di recente costituzione, la Società ha già avviato molti studi e prodotto materiali che nella maggioranza dei casi non hanno avuto, ancora, una adeguata divulgazione nonostante gli incontri, locali e nazionali, abbiano richiamato studiosi che, con le loro testimonianze, hanno dato un valido contributo al dibattito scientifico.

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# **Territorial dynamics and settlement development in low-density areas. The case of Ogliastra in Sardinia**

*Alessio Floris, Sergio Serra*

## **Abstract**

The processes of marginalization and socio-economic depression strongly affect the inner areas of Italy, far from the main centres of agglomeration and delivery of essential services, but at the same time characterized by important environmental, landscape and cultural resources that are the result of long-term processes of territorialisation. In the Sardinian regional context, the case study of Ogliastra is selected in order to investigate the issue of territorial dynamics and settlement development of low-density territories. It is an example of the critical balance between internal and coastal areas, where settlement development has encouraged the polarization of economic activities and the concentration of the population near the coast, leading to a gradual and apparently inevitable depopulation of the mountain villages. The geographical conditions and the infrastructural deficit have determined a situation of insulation for long centuries, which has deeply affected the economic development of the territory and has marked some features difficult to erase in the social and productive structure. At the same time, it has also made communities less disposed to accept the changes imposed by globalization trends, preserving environmental and historical-cultural resources and the territorial heritage from economic pressure. The paper analyses the territorial context and the polycentric settlement system of Ogliastra focusing on processes related to the development of the tourist industry, based primarily on coastal heritage as an attractor of seaside tourism. In particular, it proposes a territorial interpretation of the elements that represent the local identity and environmental and cultural features in a bioregionalism perspective. The final reflections focus on the need to define local development strategies that integrate the social, economic and territorial components in a project based on the principles of co-evolutionary balance and territorial equity.

KEYWORDS: low density areas, territorial dynamics, depopulation

## 1. Introduction

According to the bioregionalist perspective, the territory is “a living system of high complexity”, the result of dynamic and long-term relationships between the human and natural components (MAGNAGNI, 2010). In line with the ideas of Patrick Geddes, the territorial project takes as a priority the enhancement of the uniqueness of each region and each city, the result of a co-evolutionary process between place, work and folk (GEDDES, 1970).

An analytical and knowledge framework that highlights the specificities of the context should support the bioregionalist project, which is also based on the forms and relationships of all components of the territory. In particular, it is necessary to overcome the principle of identification of the territory on the basis of purely economic and administrative criteria to move to the interpretation of the territory as a set of bioregions, unique and homogeneous areas where the morphology, the spaces and the inhabitants are integrated. These are spatial units characterized by functional, urban and ecological complexity, due to the presence of different environmental, hydrographic, settlement and landscape systems and consolidated relationships between plains, hills and mountain valley systems (SCHILLECI, 2018).

The development of urban, infrastructural and rural systems has historically involved orographic nodes and river valleys, following territorial accessibility. The interpretation of historical processes of territorialisation provides the framework for the application of models of self-sustainable development and self-determination of local communities (MAGNAGHI, 2020; SCHILLECI, 2018).

The contribution reconstructs and analyses the settlement process of the region of Ogliastra, on the eastern coast of the island, characterized by historical phases of territorialization and deterritorialization that have partly broken some established balances between the coast and the inland mountains.

Finally, it discusses the issue of the relationship between inner and coastal areas affected by tourism flows that lead to significant changes in the socio-economic structure and in the identity features of the territory.

The knowledge and interpretative framework defines some key issues to recognise the co-evolutionary process that links the human settlement and the environment, integrating the natural, human and social components within bioregionalist scenarios of territorial rebalancing and sustainable local development.

## 2. Ogliastra and the territorial insulation. An island within an island

The region of Ogliastra, as well as most of the Sardinian territory, has historically been characterized by a condition of strong insulation, described as a sunken area that looks like a circular amphitheater, separated from the central parts of the island by a crown of mountains of more than 1300 meters (Fig.1). The French geographer Le Lannou describes the eastern coast as “[...] of the least accessible. The entire southern part [...], drawn by a large fracture line, is constituted, on the front of a rigid wall, by a discontinuous fringe of thin marshy plains, where the mouths of the watercourses are lost.” (LE LANNOU, 1979, p.54).



Fig.1 - The morphology of the territory (Authors' elaboration).

Fernando Clemente suggests a delimitation of the territorial unit of Ogliastra, by identifying strong relationships with the south-eastern part of the island (Sarrabus) that have partially affected the territorial structure (CLEMENTE, 1964). The Gennargentu mountain range, which constitutes the center of the territorial unit, encloses a settlement system which has been preserved almost unaltered over time, extending southwards to the shore of the Tyrrhenian Sea. The delimitation of the territorial unit is based on the geographical limit, rather than following the administrative limits of the municipalities or of the historical regions. To the north, the mountainous crown, which reaches the sea in the municipalities of Urzulei and Baunei, joining the peaks of the Gennargentu mountain range, rises above the sea up to the 1834 meters of Punta Lamarmora.

The conformation of the Ogliastra territory can be compared to a cavea opened towards the eastern coast on the plain of Tortolì and enclosed by a very irregular mountainous layout. The valleys of the inhabited centers, for long stretches deeply embedded in the mountains, are so narrow as to allow only the passage of their watercourse, generally of torrential character. The basin of the Flumendosa River is the center of the mountain summer grasslands district of Ogliastra and is the hub of sorting and confluence of flocks. To the south, the altimetry results in a further closure above Tertenia and continues on to the Quirra plateaus (CLEMENTE, 1964).

The deep geographical separations, due to the morphology of the territory and to valleys embedded between mountains, are factors of fragmentation and closure, strongly limiting the territorial accessibility. Even today, some urban centers, separated by morphological limits (a mountain, a cliff, a river), are independent communities, with different customs, traditions, dialect forms, although not very far from each other. The structure of the village is almost self-sufficient to allow it to survive the condition of isolation, without being dependent on any neighboring commercial villages. Neither the coming of the motor vehicle at the beginning of the century has deleted the archaic characters, which reflect the territorial fragmentation and the general insulation of the island in the Mediterranean.

In the second half of the XIX century the internal movement was extraordinarily limited, also because of the difficulties offered by the mountains to the infrastructuring of the island. If the use of more modern transportation has partially reduced the insulation, it has not affected the consolidated conditions such as the distribution and structure of the population, the archaism of agricultural methods, the mediocrity of commercial trade (LE LANNOU, 1979).

The maritime transportation, given the presence of harbour structures on the coast of Arbatax since the Roman age, has always represented an effective system of connection with the external world, both from the commercial and touristic point of view (PORCU, 2002).

The construction of the current harbour of Arbatax dates back to 1861 and was completed in 1893. Another important step for the improvement of the accessibility to Ogliastra is represented by the realization of the railway connection from Cagliari to Tortolì, completed in the 1894, which aimed to overcome the condition of insulation of the settled communities, connecting them with the whole island. The project of the secondary railways, as an integration of the main network to connect the main cities of the island and the harbors, provided for narrow gauge lines with a reduced width of the railroad track that enabled to cross the mountains more easily.

When the train was first launched, it represented for Ogliastra a remarkable opportunity for progress but, in the Fifties, the government focused on investment in road infrastructure for private transport, and for this purpose long stretches of railway track were dismissed. At the end of the Nineties, the railway network of Ogliastra was closed to local public transport and converted into a service for tourism with the creation of the Trenino Verde (little green train), which takes its name from the small size of the line and vehicles and the way it passes through an uncontaminated environment which has made it one of the main components of the regional tourist attraction (BOCCONE, 2009).

The line of the green train allows slow excursions following routes that offer a unique landscape through endless climbs or dizzying descents along the sides of steep valleys. It has attracted over time flows of visitors, even on a daily basis, to marginal inland villages and has stimulated the birth of several economic activities, such as guide companies, trips, accommodation, catering and crafts. The road infrastructure system is essentially based on the national road 125 “Orientale Sarda”, established in third decade of Nineteen to connect the centers of the eastern coast, from Cagliari to Olbia. The original route is particularly tortuous, adapting the road scheme to the territorial morphology, in some cases going close to the coast, with panoramic views of remarkable landscape interest, in other cases crossing more inland areas. Starting from the 2000s, some sections have been replaced by the new 125, with a more regular route and a wider road section, which is progressively decreasing the traffic crossing urban centers, reducing journey times and greatly improving accessibility to the Ogliastra territory. In 1923, the journey time by public transport of the Cagliari-Muravera- Tortolì route, 145 km long, had a duration of 8 hours (RUJU, 2015).

### 3. The territorialisation process: the balance between coast and mountain

The number of archaeological sites confirms that the territory of Ogliastra has been populated since the Neolithic. The transition from a dispersed habitat to a cluster of structures in the form of typical Nuragic villages took place already in the pre-Roman era, but over time the population has remained extremely dispersed with rare urban centers of modest size. A large part of the territory has not undergone anthropization processes, with large natural areas consisting of grasslands and uncultivated productive land, as well as forests of holm oaks, on the east of Gennargentu in the municipalities of Villagrande and Baunei. In the phase from the Ancient to the Medieval period, there was no reorganization of the rural society, which is based on the isolation and productive autonomy of the villages. The concern for security had a decisive influence on the structure of the Sardinian rural habitat, with a preference for the hills and mountains, far from the sea, perceived as an element of vulnerability and danger. Between the XI and XIV centuries, community uses constituted the main defense of the settled populations against the insecurity of place and time (LE LANNOU, 1979).

The morphology of the territories has greatly influenced the organization of the road network and the development of settlements. The crown of centers, which follows the mountain ridge, is affected in part by mountain pastures (Baunei, Urzulei, Talana, Villagrande and Villanova, Arzana, Gairo, Osini and Ulassai), and in part by cultivation carried out around the settlements and in the valleys facing the coast (as is still the case for Gairo, Osini, Jerzu and Lanusei). The high mountain area, above an altitude of 700 m, is mainly used for summer pastures and has historically established relationships with the valley areas of the plain of Tortolì and Sarrabus in relation to the phenomenon of transhumance of the flocks (Fig.2).

The settlements often found their location at high altitudes, in accordance with the pastoral tradition of the population interested in mountain pastures and with the greater safety offered by the mountain compared to the coastal valleys, where summer pastures were located. In the hills and plains of the coast other settlements were formed, which had more accentuated alternatives of malaise and well-being but which in recent times have become increasingly important (Loceri, Bari Sardo, Tortolì, Arbatax, Lotzorai, Girasole and Triei) (CLEMENTE, 1964).



but one-way direction: the shepherds of the villages in the plains do not move their flocks to the mountains but associate the livestock farming with the extensive cultivation of wheat (LE LANNOU, 1979).

The map of municipal districts emphasises the link between mountains and the coast. The territory of the mountain municipalities appears particularly stretched towards the coast. The conformation of Gairo is singular because it presents a narrowing in the center to reach the sea with a very extended front. Other municipalities are close to the coast but cannot reach it, with the exception of a few administrative enclaves in the Salto di Quirra area, shared between several inner municipalities (Fig.3).

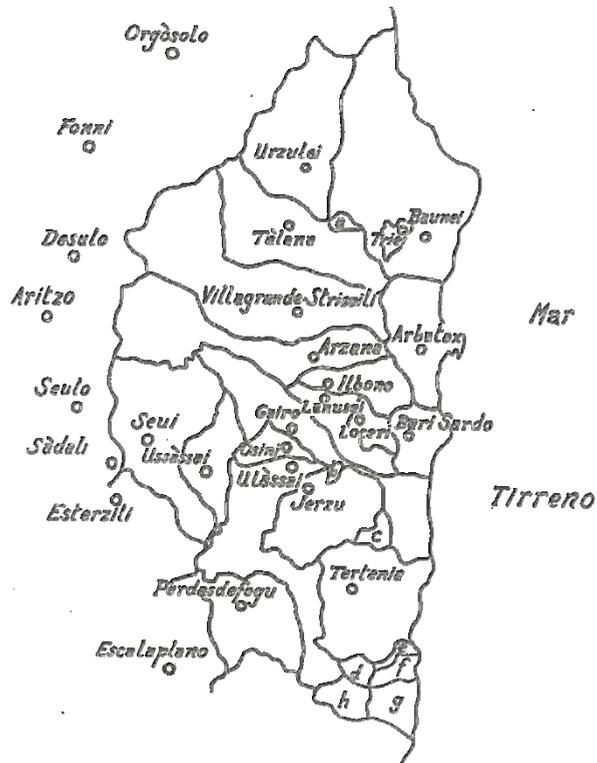


Fig. 3 - Municipal districts on the east of the Gennargentu mountain range. Municipal territories stretched from the central mountain ridges to the Tyrrhenian coast. The letters refer to enclaves. (Source: Le Lannou, 1979, p. 219)

The settlement structure was strongly influenced by the sea, which pushed the population towards the inland and created a dispersed habitat where, still today, the population density in the territory is particularly low (from 275

inhabitants per square kilometer in Tortoli to less than 9 inhabitants per square kilometer in Talana). Poor communities, withdrawn on themselves, confined until today in an isolation that resists to the actions of our time.

Around the XIV and XV centuries, the island experienced a drastic reduction in population and a settlement catastrophe with substantial losses of villages, from which Ogliastra remained unscathed (DAY, 1987; ORTU, SANNA, 2009). The relationships between lowland villages and mountain centers are the representation of the historical opposition between two deeply hostile worlds, that of pastoral nomadism and that of village agriculture. As in the rest of the coastal strip of the island, with the exception of Cagliari and the rare seaside villages, also in the east coast there are no major urban agglomerations in the more than 200 km from Olbia to Cagliari. The plains on the coast are usually dependent on the villages of shepherds in the center, with the exception of some cultivated areas such as the vineyards of Lanusei and Jerzu or the orange groves of Tortoli and Muravera.

In the XIX century Lanusei represented an important administrative center, capital of the province, with a territory of about 2270 square kilometers, which included the eastern slopes of the mountains of Barbagia and reached those of the Sette Fratelli, not far from Cagliari. It was composed of three departments called Agugliastra, Cirra and Sàrrabus (ANGIUS, 2006), of which the first corresponds to the region of Ogliastra. Since 1927 the territory of Ogliastra is included in the province of Nuoro and we had to wait until 2001 to see the recognition of administrative autonomy, with the establishment of two provincial capitals, Tortoli and Lanusei. In 2016 the territory came back under the management of the province of Nuoro but, with the reform of local governments in 2021, it is expected the re institution of the intermediate institution.

In the first decades of the twentieth century, the economy of the territory was based exclusively on the primary sector, in particular sheep breeding and agriculture. Also the economic sectors showed remarkable differences between the coastal areas, where the sheep breeding prevailed, and the mountain centers, devoted to the breeding of goats and pigs. Less relevant is the cattle breeding, limited to some difficult pastures.

Ogliastra is mentioned among the areas of specialized cultivation of olive trees, which has a wide spread in the rest of the island, particularly around the town of Lanusei. Greater importance assumed instead the cultivation of wheat and, to a lesser extent, of barley, practiced in the upper parts of the territory. Viticulture characterizes very vast areas of the hills between Lanusei, Bari Sardo and Jerzu, although the total surface reserved to vines is quite modest. In fact,

usually the cultivation of the vine is associated with fields of cereals, orchards, olive groves and almond groves, which are located on the first slopes of the villages of the plains and hills enclosed by the pastoral mountains (LE LANNOU, 1979).

#### **4. Experiences of modernization and deterritorialization**

The settlement system of Ogliastra has maintained, at least until the second post-war period, a situation of substantial stability, characterized by a low population density and by a prevalent concentration of the population in the high areas, with some poles providing services, among which emerges the town of Lanusei that, until the Sixties, exceeds Tortoli in the number of residents (in 1961 Lanusei 5449 inhabitants, Tortoli 4588 inhabitants).

Despite the still strong condition of isolation, in the early sixties, there were some attempts to modernize the local economic system, with the application of the industrial model. In 1962, the President of the Republic established the first industrialisation center of Tortoli Arbatax, later named the Industrial Consortium of the Province of Ogliastra. The construction of the Arbatax Paper Mill in 1963 was the most important industrial experience in the history of Ogliastra. Located in a flat area close to the port of Arbatax, at that time it represented the second largest paper industry in Europe. At the peak of its production growth, it was able to cover 60% of the national demand for newsprint and had over 1000 employees. In 1972, the Intermare Sarda of Arbatax was founded, a specialized engineering company of the ENI Saipem group, which is still active in the industrial area of Tortoli.

In connection with industrial activities, the port is also involved in a project for the development and strengthening of the structures related to the sea transport of materials produced by the factories, in addition to the activation of the Genoa-Olbia-Arbatax line (PORCU, 2002). Also the subsequent construction of Arbatax Tortoli airport was aimed at the development of the paper mill which, in 1973, passed to a new management and, after several failures and recovery attempts, ceased production in 1989. After the last unsuccessful attempt to restart, in 2005, the Arbatax Paper Mill was definitively dismissed and all components removed, with the partial reuse of the area.

The radical political and economic transformations that have affected the territory of Ogliastra and the entire region in the last seventy years have modified the ancient and consolidated systems of life and relationships and have had a significant impact on the territorial and landscape structures, particularly in the coastal strip. Until the 1950s, the coastal landscape of Sardinia presented limited

episodes of urbanization, which testified to a low propensity for the sea by the population, for historical and geographical reasons, but also a limited fruition from the outside. The advent of industry and the introduction of innovative practices related to the tourist economy, through the adoption of development models unrelated to the local context, led to a rupture of the historical balance between coast and inland that had until then guided the settlement development (PRICE, 1983). The lack of attention to the sea had allowed the preservation of coastal landscapes that, in the second half of the XX century, are sometimes transformed to give rise to new places, often artificial and impersonal, such as those of production, vacation residence and low-cost tourism (MADAU, 2009).

The development of new economic, productive and touristic activities, has resulted in important flows of population that, from the mountain centers, have moved towards the plain, in particular in the area of Tortoli, which becomes an important node of the polycentric settlement system of Ogliastra. The strategic and barycentric position, in relation to the territorial context and to the infrastructural system, made it more accessible and suitable to assume the role of regional trade center and to gradually absorb the migratory flows.

The progressive abandonment of the mountain, clearly appreciated by its inhabitants, determines the consequent loss of some traditional economic activities, such as sheep-breeding and agriculture (CLEMENTE, 1964). Lanusei continues to represent an important pole for the provision of services, such as the hospital and the courthouse, but undergoes a remarkable demographic decline. While Tortoli registered 10,743 inhabitants, in the last census of 2011, Lanusei has little more than half of them (5,492 inhabitants).

The modification of the territorial equilibrium also has repercussions on the urbanization of the territory, as shown in Figure 4. The centers of ancient and first formation are affected by a significant growth of urban fabrics, especially from the Fifties to today, mainly located in coastal centers, especially in the conurbation of Tortoli, where urbanization reaches the coast with the tourist and industrial settlements.

In 2006, the Regional Landscape Plan (RLP) introduced restrictive measures to contrast the anthropization processes along the coast, in particular the construction of accommodation facilities and tourist settlements.

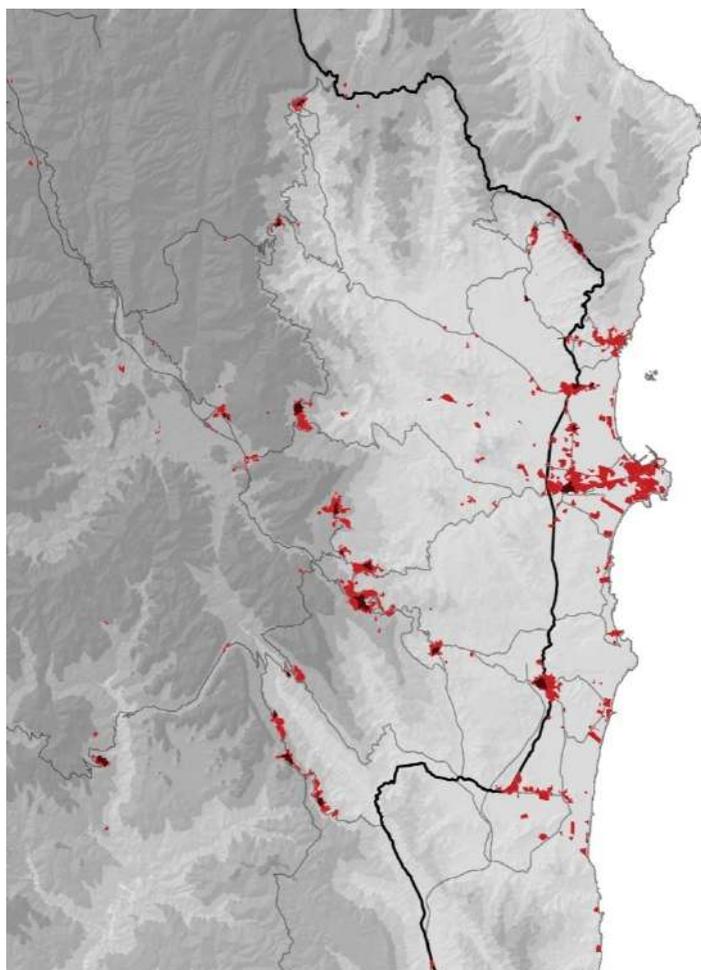


Fig. 4 - The settlement system. In dark red the centers of ancient and first formation, in light red the expansions from 1930 to the present (Elaboration of the authors on RLP data)

There is a strong relationship of interdependence between landscape and tourism. On the one hand, tourism benefits from landscape and environmental resources to attract flows of visitors but, at the same time, subjects to anthropic pressure a limited resource, whose exhaustibility compromises the strategic tourism project. The consistency of hotel and non-hotel accommodation in Sardinia for 94% of the number of beds is located in coastal areas. A survey conducted on 27 areas of coastal landscape of the RLP shows that, in Ogliastra, the supply of accommodation represents 6.5% of the total number of beds in the coastal strip of the island, of which almost 58% is made up of an extra-hotel offer, vacation homes, bed and breakfast and campsites (MADAU, 2009).

In summary, since the Second World War, the territory of Ogliastra, like the rest of the island, has experienced socio-spatial imbalances, the result of heterogeneous processes of deterritorialization, linked in particular to the progressive and constant displacement of populations from the inland areas towards the coastal and urban centers, the crisis of the primary sector that fed the economy of small inland centers, the gradual failure of attempts at industrialization promoted in the sixties (STRINA, 2021).

## **5. Conclusions. Bioregionalist approaches to territorial rebalancing**

The case study of Ogliastra is a paradigmatic example of the settlement and socio-economic dynamics characteristic of low population density contexts that are facing phenomena of deterritorialization, economic and demographic decline combined with a crisis of identity, cultural and landscape values. The interpretative framework of the polycentric settlement system highlights the direct link with the morphological and environmental components and with the hydrographic structure (Figure 5). The infrastructural element constitutes a factor that catalyses the settlement development, with direct effects on the accessibility inside and outside the territorial area.

The contemporary dynamic linked to the growth polarization in the area of Tortolì, a privileged area of attraction of tourist flows, does not necessarily have to be contrasted, in an attempt to reverse the trend of depopulation of the minor mountain centers. Tortolì provides space for a range of different economic activities, most of which are located near the coast, in an industrial area which integrates manufacturing, commercial activities and other economic sectors linked to fishing and tourism. On the mountain side, on the other hand, traditional local productions are progressively being lost and a patrimony of agricultural land, mostly for public use, is being abandoned and underutilized. It is necessary to redefine an economic network which is able to connect tourist flows and receptive activities with a renewed and quality agricultural production, which can be integrated with the enogastronomical sector.

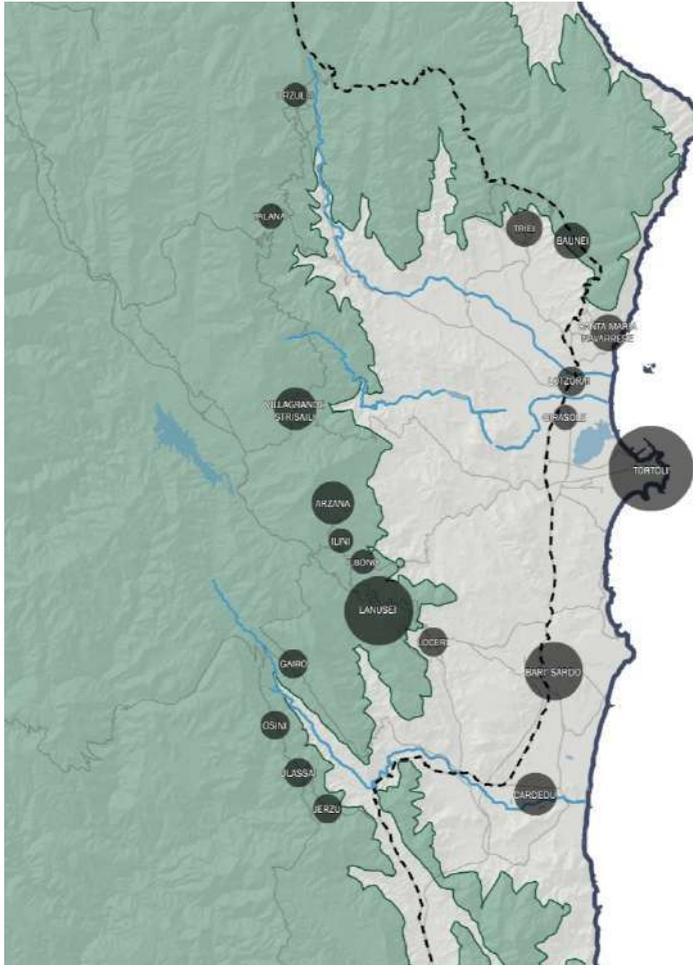


Fig. 5 - Polycentrism and territorial features (Authors' elaboration)

In this direction, the bioregional paradigm allows to interpret in an innovative way the relationship between territorial heritage and local production system, promoting a new pact between city and countryside that can support the reorganization of contemporary urbanization in a polycentric system characterized by less dependence on the outside. The development of locally based economic systems are functional to the reproduction of its life cycle through productive activities that enhance the specific qualities of the territorial assets peculiar to each bioregion (MAGNAGHI, 2020). The urban policies of conservation and protection of the landscape, the environment and the historical and cultural heritage should be oriented towards active policies to promote processes of reterritorialization. It is no longer acceptable to simply

impose restrictions, but it is necessary to involve local residents and producers in the reconstruction of territorial values according to an integrated vision of the territory that connects agroforestry spaces to productive and settlement systems, according to models of self-sustainable local development (MAGNAGHI, 2012; 2020).

An attempt to define some planning guidelines for the landscape of Ogliastra has been carried out by the Regional Landscape Plan to be integrated in the adaptation of the local urban planning. The settlement crown of the slope centers (Lanusei, Ilbono, Elini, Arzana, Villagrande Strisaili, Talana, Urzulei, Triei and Baunei) represents a central element in the landscape project for the fruition and the reorganization of the relationships between the internal areas and the coastal strip.

The requalification of the environmental and road connections between the centers of the settlement crown on the eastern side of Gennargentu and the coastal plain has the aim of strengthening the perception of the system of relationships that structure the landscape area. The strengthening of the tourist and accommodation system must be combined with the objectives of environmental protection, urban sprawl containment and historic buildings recovery.

The touristic development of the mountain centers must be integrated with the local productive activities and with the traditional characters of the area. For the centers of the coastal plain, located along the state road 125 Orientale Sarda, it is expected the strengthening and integration of services of local interest through interventions on an inter-municipal scale for the redevelopment of the road corridor of connection. In particular, for the settlement system of the plain of Tortoli, integrated inter-municipal interventions of environmental and urban regeneration are foreseen, which allow to enhance the system of wetlands of Tortoli, consisting of the pond, the rivers (Riu Girasole, Riu Primaéra) and the neighboring coasts.

The development of the touristic potentialities of the territory involves the enhancement of urban and touristic services and of the activities related to the harbour of Arbatax. The landscape project also requires the promotion of local productions and rural agricultural and zootechnical activities typical of mountain and coastal areas, through a sustainable use of environmental and natural resources which guarantees the regeneration and the functionality of ecosystem services.

The preservation of crop diversity allows to ensure the environmental quality of the area, to preserve a habitat suitable for wildlife survival, and to maintain the orographic conformation and hydrogeological balance of the area.

However, these strategies are ineffective if not implemented through a detailed knowledge and design framework in the municipal plan (COLAVITTI ET AL., 2018; 2019).

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The book focuses on bioregionalist theories and experiences as an alternative way of reading and designing local contexts, based on the recovery of the co-evolutionary relationship between human settlements and territories to achieve a self-sustainable and non-hierarchical system of urban and rural centers, according to Alberto Magnaghi's vision. The work has developed a broader discussion among researchers from different European backgrounds about the ways in which processes related to bioregionalism, looked at in a transdisciplinary way, can lead to interesting applications and analytical insights, that are useful for reviewing and strengthening community self-organization and reflecting on the constitutive foundations of the relationship between communities and their territories. The collaboration between the French school of Bordeaux, the Tuscany school and the Cagliari school gives back a diversified overview of materials and references for the possible application of the bioregionalist model. The contributions discuss many issues related to the governance of metropolitan areas and the management of the urban-rural relationship with suggestions for interpretation and design in a bioregionalist perspective, the themes of urban green, land vulnerability, and agricultural supply chains in rural and peri-urban spaces and new food economies in metropolitan areas.

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