Coastal Land Use Planning. An Integrated Approach Between Environmental Protection, Economic Competition and National Defense

The Case of Quirra, Sardinia (Italy)

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Abstract. The integrated management of marine and coastal areas is considered one of the main components of the concept of sustainable development, capable of increasing the well-being of coastal communities and maintaining ecological integrity and biological diversity. In particular, Chapter 17 of Agenda 21 (UN 1992) relating to the protection of the oceans, all types of seas including closed and semi-enclosed seas and coastal areas and the protection, rational use and valorisation of their living resources, directs towards new integrated management approaches of coastal areas at different scales, through interdisciplinary, participatory and responsible methods and tools. The marine environment, including adjacent coastal areas, therefore, constitutes an essential component of the global life support system, offering sustainable development opportunities for communities. This is contrasted by extensive technical and scientific literature, which contributes to forming the "right to the sea", understood as the right to freely enjoy the sea and the beaches according to the "common good" approach. Specifically, the Autonomous Region of Sardinia recognized the Coastal Land Use Plan (PUL) as the main implementation tool through which the Municipalities, within the framework of the powers conferred pursuant to Article 41 of the Regional Law. 9/2006 (Conferral of functions and tasks to local authorities) can plan in the Maritime State Property for tourist-recreational purposes. The present manuscript is inserted into this concise framework, with which it is intended to represent the integrated and systemic approach conducted by the authors for the drafting of the PUL of the Municipality of Villaputzu (Sardinia, Italy) between environmental protection, economic competition and national defense.

Keywords: Coastal Land Use Planning · Integrated Coastal Planning · Sardinia (Italy)

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1 Introduction

The Italian territory covers about 35% of the European continent, with 4,921 bathing sites out of 13,741 European countries [17]. The bathing marine coastline represents 66.5% of the total length of the Italian coast [12].

With Council of Europe Resolution No. (73) 29 of October 26, 1973, integrated coastal zone management has been given increasing prominence within the theoretical scientific-planning debate, so much so that it has been placed at the center of European spatial policies. Specifically, integrated management involves an approach that succinctly includes data collection and interoperability, the active participation of the various actors involved, and the development of consonant policies [13, 15] designed to enhance the well-being of coastal communities and maintain ecological integrity and diversity.

In particular, Chapter 17 of Agenda 21 [24] on the protection of oceans, seas (including enclosed and semi-enclosed), and coastal zones, directs toward new integrated management approaches at different scales through interdisciplinary, participatory, and accountable methods and tools [18]. The marine environment, including adjacent coastal areas, is confirmed as an essential component of the global life-support system, providing sustainable development opportunities for communities.

The International Law of Coastal States [25] provides the main elements for protecting and conserving the marine and coastal environment and its resources. Anthropogenic and natural changes are the focus of the most recent international policies to accelerate the ecological, digital, and energy transition. These require new integrated approaches, including strengthening cooperation among institutions [26] for sustainable management of the marine-coastal environment and for reconciling use with climate change. Integrated coastal zone management/planning is a tool recognized in European environmental legislation for pursuing economic, social and environmental sustainability [20], resulting in the containment of impacts from the interaction between marine and terrestrial uses [22].

Coastal planning in Italy remains highly contradictory and fragmented due to the division of responsibilities among the state, regions, and municipalities. Law No. 979 of December 31, 1982, which mandated a "General Merchant Plan for the Defense of the Sea and Coasts," drafted by the Ministry of the Navy in cooperation with the regions, was supposed to represent a significant shift in marine and coastal environmental protection policies. However, the establishment of marine reserves, as stipulated in the law, has made gradual progress, even though the actual management of these areas remains challenging. Regarding the coastal land area, beyond the generic designation of the first 300 m as a landscape-protected zone, as established by the Galasso Decree, Italy lacks proactive protection guidelines or measures to counter the increasing pressure to transform coastal land, unlike in other countries. The progressive occupation of the maritime domain is further complicated by the absence of effective management criteria that protect public use and sensitive areas. Recent changes to the legal framework, transferring primary coastal responsibilities from the state to the regions, position the regional level as optimal for implementing integrated coastal planning and management policies.

Moreover, the issue of integrated coastal planning also intersects with the complex issue of Maritime State Property linked to the concept of competition and competitiveness for the allocation of concessions [6]. This is countered by a wide range of scientific

and administrative sector literature, which contributes to the formation of the "Right to the Sea," understood as the right to freely enjoy the sea and beaches according to the shared approach of "Common Good" [2].

Common goods are described as "shared ownership" resources, implying that they belong to everyone and no one simultaneously. This definition emphasizes that access to these resources should be open to all, avoiding any form of exclusivity. Their management must be based on the principle of solidarity. Since these goods are outside the scope of the market, they serve as an essential tool to ensure the practical application of civil rights, i.e., those rights that every individual has by being a person. However, addressing the topic of common goods as a category distinct from conventional notions of property implies the need for a preliminary investigation into the connection between certain resources and specific rights. Such analysis helps understand how this "collective good" is organized and what internal differences exist.

As Etzioni argues:

The idea of the common good (or public interest) might seem straightforward. It refers to things that benefit everyone and the institutions we value and support together, like national defense or maintaining a clean environment. The common good isn't just a sum of individual benefits; it encompasses aspects that may not directly benefit anyone at the moment, such as protecting national monuments, or that may benefit future generations, like conducting fundamental research. Contributing to the common good might not yield immediate rewards, and it's often uncertain who will benefit from these contributions in the long term. However, we support the common good not necessarily because we expect a direct benefit for ourselves or even our children, but because we see it as something inherently valuable. In simple terms, we do it because it's the right thing, for its own sake—a concept that might only seem surprising to those who believe every action is driven by self-interest [10].

Arena and Iaione describe the Italian context as the opposite of the Italy outlined centuries ago by Guicciardini, which was characterized by a sole focus on personal interest and the belief in the possibility of surviving independently, even at the expense of others. In contrast, there exists a less visible Italy that has been active for years, committed to improving collective life through the management and care of common goods. These include natural resources like water and air, the environment at large, cultural assets, infrastructure, urban spaces, green areas, and extend also to legality and other similar aspects. This approach emphasizes the importance of collaboration and collective responsibility in preserving and enhancing resources that benefit the entire community, reflecting a significant shift towards a more inclusive and sustainable approach in dealing with common goods [1].

Mattei emphasizes their role, highlighting them as integral to a political and cultural approach rooted in collective living. Common goods are seen as a means to reclaim public spaces through a democratic process, prioritizing the quality of human relationships over the accumulation of material goods. This perspective positions common goods not just as physical resources, but also as vehicles to promote a sense of community and to foster richer and more meaningful social interactions, emphasizing the importance of values such as cooperation and sharing in society [16].

Within this synthetic framework is the present research, which aims to represent an integrated approach between environmental protection, enjoyment of the commons between economic competition and national defence, conducted by the same authors within the drafting of the PUL of the Municipality of Villaputzu, Quirra beach (Sardinia, Italy).

2 The Use of Coastal Landscapes in Sardinia

The coastline of Sardinia is about 1,849 km in total length, extending to about 2,400 km, counting the smaller islands. The analysis of the relevant scientific literature, also formalized in the legislation (Regional Landscape Plan-PPR and PUL) of regional reference [14, 19, 23], allows for the classification of three main categories of coastal landscape: natural; historic cities and coastal metropolises; and shores and tourist-bathing conurbations.

Moreover, the coastal landscapes of Sardinia are characterized by significant anthropogenic pressure, accentuated during the summer due to the significant concentration of tourist flows. This is compounded by erosion phenomena, with obvious signs of environmental stress, such as the acceleration of modification of coastal settings and shoreline retreat processes, and reduction/fragmentation of dune habitats, often attributable to inadequate coastal management practices [8]. The Autonomous Region of Sardinia, with the PPR(2006) [21] for the first time made explicit (Art. 43) the regulation of coastal management and the regulation of dunes and sandy shorelines subject to tourist use to ensure the protection of the ecological and landscape structure, accessibility and enjoyment compatible with the widest conservation of natural resources. According to the PPR, the main preparatory actions to ensure the protection and enhancement of the coast [4] consist of the classification of beaches to associate specific objectives with distinct management rules to ensure minimum services, such as accessibility and rest, points for refreshment, sports and leisure, etc., provided by private parties following state concession for the possible installation of temporary architecture consistent with the landscape. The Autonomous Region of Sardinia has therefore recognized in the PUL the main implementation tool through which municipalities, within the framework of the delegations to the Municipalities of Sardinia under Article 41 of Regional Law 9/2006 (Transfer of functions and tasks to local authorities), can plan within the Maritime State Property for tourism and recreation purposes.

3 Coastal Use Plan in the Island Context of Sardinia

Regional Law 9/2006 gave Sardinia's municipalities the task of managing and approving PULs, and granting permits for tourist-recreational activities in Maritime State Property or inland navigation areas, provided these activities are carried out in open areas or with easily removable structures. This law also assigns other administrative responsibilities related to the maritime state property and the territorial sea to municipalities that the region or the state does not exclusively manage. The PULs are also intended to organize the areas close to the coastline, including road and pedestrian access and the use of places of interest, consistent with Article 29 of Regional Law 23/1985 and its subsequent amendments and additions.

The guidelines contained in the "Guidelines for the drafting of the PUL and the exercise of administrative functions in the field of Maritime State Property and areas of the territorial sea" appear to be aimed at:

1. ensure the conservation and protection of local coastal ecosystems, with particular reference to areas protected by Presidential Decree 357/1997 (implementing Directive 92/43/EEC on the conservation of natural and semi-natural habitats and of wild flora and fauna) and individual marine protected areas;
2. harmonize actions on the territory for sustainable development, in particular by encouraging measures to reduce the processes of degradation and indiscriminate land consumption;
3. promote and encourage environmental redevelopment through projects for the renaturalization of bathing establishments, with the replacement of fixed structures with structures in precarious, and in any case with low environmental impact, and their removal from the shoreline;
4. ensuring continuity between the shoreline, dune cordon and ecological corridor by improving the accessibility of state-owned maritime areas;
5. encourage innovation and diversification of tourism offerings;
6. regulate the different activities for integration and complementarity between them;
7. constitute a framework aimed at harmonizing the actions of public and private entities on the coastal strip.

The case study of the PUL of the Municipality of Villaputzu (Sardinia) fits into this concise framework.

4 Material and Method

4.1 The PUL of the Municipality of Villaputzu. Quirra Beach as a Case Study

The municipal territory of Villaputzu is located in the Province of South Sardinia, in the historical subregion of Sarrabus, located in the southern eastern coastal slope of Sardinia (Fig. 1). It occupies an area of about 181 km^2 with a resident population of 4,509 [11].

A linear development of 24 km characterizes the coastal portion of the territory. The Maritime State Property insisting in the Municipality of Villaputzu extends from Cape Sferracavallo to the south of the Flumendosa mouth, at Flumini Mannu. The urban settlement of Villaputzu, is articulated of three portions: the urban center characterized mainly by the historic core and expansions before the 1960s, the settlement of Santa Maria and the recent coastal tourist settlement of Porto Corallo with its namesake and nearby marina.

In this multipolar urban layout, the PUL of the Municipality of Villaputzu fits into six areas: beach de Is Santuidedus; Foce del Flumendosa; First beach-Prumari; Porto Corallino Beach; Porto Tramatzu beach; and Murtas or Quirra beach (Fig. 2).

The presence of the vast military area (about 120 km^2), which occupies about one third of the entire territory in the Municipality of Villaputzu, required an innovative approach, especially in the beach of Quirra, to reconcile protection and conservation needs with military uses (exercises) and civilian uses (recreational bathing).

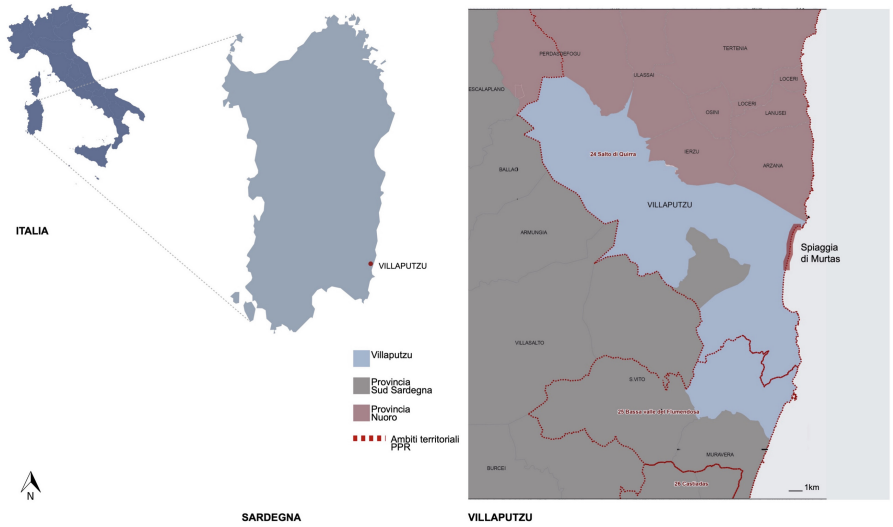

Fig. 1. Spatial setting.

Quirra Beach, the subject of this case study, is located in the Capo San Lorenzo stretch of coastline. From the Directory of Sandy Coasts of Sardinia, annexed to the PPR, it can be seen that the sandy compendium of Quirra beach has a length of about 12,914 m and an area of about 29.3 hectares and is all under military constraint. This beach can only be reached by land, for vehicle parking there are a total of 250 parking spaces.

For decades, access to Quirra beach has been barred due to the insistence of the Interforce Experimental Military Polygon of Salto di Quirra.

However, in 2017, a special agreement was reached between the municipality of Villaputzu and the unique military polygon that allows the beach to be open to the public during the summer (June to September) without military exercises. Only a portion is still interclosed due to stricter military restrictions.

In addition, Quirra beach is included in a Site of Community Interest - SCI (Stagni di Murtas e s'Acqua).

In this concise framework, the methodology proposed in the Quirra beach PUL aims to promote the transition "*from Anti-commons to Semi-commons*" through an integrated approach between environmental protection, military constraints and competitive private economic development under the Bolkestein Directive 2006/123/EC through temporary state concessions. More generally, Villaputzu's PUL outlines a model of sustainable beach management and enjoyment, regulating uses and defining their spatial distribution in detail (Fig. 3).

As result of the subsistence of two conflicting regulatory apparatuses, namely the one related to the military and environmental polygon of the SCI required how the elaboration of the PUL was supported by both the Environmental Impact Assessment and the Strategic Environmental Assessment, allowing for the identification of mitigation actions, such as contingent use. Moreover, the contextual persistence of competing interests [28]

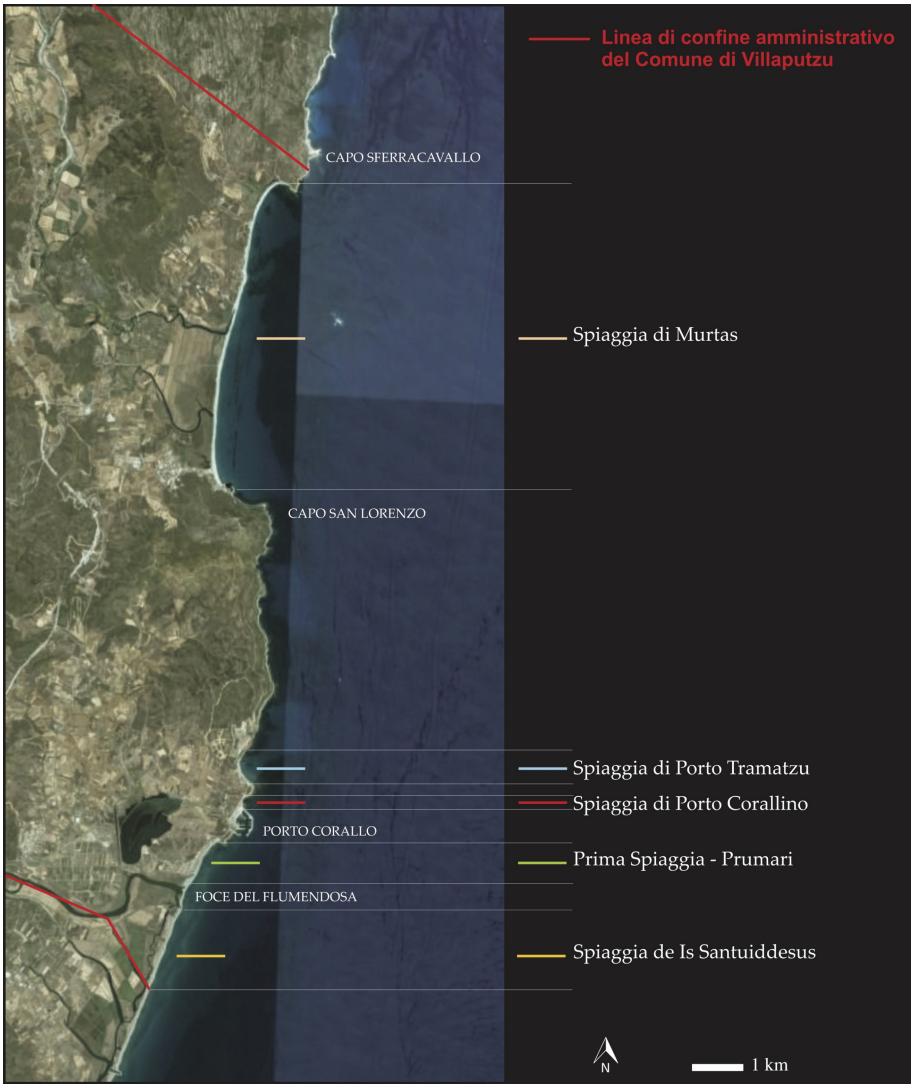

Fig. 2. Beaches of the Municipality of Villaputzu Source: PUL of the Municipality of Villaputzu.

required participatory planning with the local community, achieving greater awareness of the coastal environmental resource's gradual transition of use, from military to civilian [1, 2].

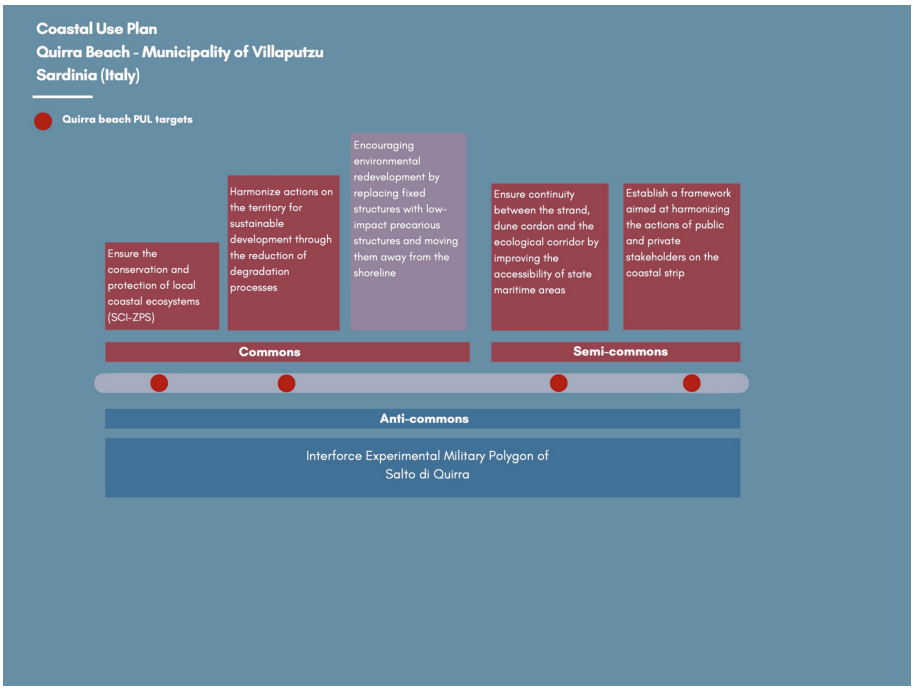

Fig. 3. Objectives of the Quirra Beach PUL. (from Anticommons to Semicommos - Commons)

5 Discussion and Conclusions

The specificity of the coastal zone as a sensitive area, as an irreproducible and increasingly reduced resource directs coastal planning and management towards models of land management and land use capable on the one hand protecting the environmental heritage, and on the other hand allowing a conscious use of the territory. Development in these directions does not coincide with physical growth, even more so in the coastal territory, so the guiding principle of coastal planning, which directs the transformation of the territory supported by adequate measures to control growth and direct development, is affirmed.

A strong seasonal tourism pressure persists in the coastal landscape of Sardinia [7], although radical changes in digital innovation in favor of sustainable tourism have occurred, the PUCs are still strongly rooted in the static approach of zoning and have little impact on the important problems arising from the spatial distribution of seaside tourism [27].

The PUL represents the operational tool for a renewed vision and strategic planning capable of fully implementing the Bolkestein Directive 2006/123/EC, which in the case of the case of Quirra provides for the allocation of beach concessions by public tender, able to ensure environmental protection and socio-economic enhancement through public-private partnership (art. 174, paragraph 1, of Legislative Decree no. 36/2023).

Adopting sustainable development policies, preserving the natural and cultural environment and promoting cultural and socio-economic initiatives contribute to preserving the identity and well-being of communities [5].

The transition of Quirra beach from military to civilian (temporary) use, i.e., from "Anticommons" to "Semicommons or Commons," represents a case of significant relevance in the Italian scenario. In particular, the configuration as "Semicommons" incorporated the private tourism and beach services sector; the "Commons" configuration is based on environmental protection in line with the Management Plan of the Sic of Villaputzu, which limits the overuse of the coastline by contingenting the use.

The case of Quirra beach was a precursor of a gradual demilitarization process recently initiated (December 2023), which involves other stretches of coastline in Sardinia. In this sense, the PUL guides the aforementioned transition, proposing a tourism scenario compatible between the conservation and enhancement of the natural heritage and superordinate national-level interests (military defense), through careful monitoring proper to integrated planning [9].

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