



SALINE DI SICILIA

MAB BIOSPHERE RESERVE

NOMINATION FORM

2026





..whoever really wants to talk about salt pans must come here, to the west of Sicily, to this coastal plateau...; old, very old salt pans, founded by the Phoenicians

(Voltaire)



Ph: Patrizia Galia

PREFACE

The candidacy of the 'Saline di Sicilia' as a Biosphere Reserve under the UNESCO MAB programme is coordinated by the Nomination Promoting Committee, composed of the Municipalities of Trapani, Marsala, Misiliscemi and Paceco, the WWF of Trapani (as managing body of the Saline di Trapani and Paceco Oriented Nature Reserve) and the Free Municipal Consortium of Trapani (as managing body of the Stagnone Oriented Nature Reserve), and the Regional Department of Territory and Environment of the Sicilian Region, and coordinated by the Chamber of Commerce, Industry, Crafts and Agriculture (CCIAA) of Trapani (https://www.tp.camcom.it/).

The candidacy process was completed under the supervision of the Italian MAB National Technical Committee, Ministry of the Environment and Energy Security – General Directorate for Natural Heritage and the Sea - Division II, Protected Areas, with responsibility for the MAB Program.

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1. PROPOSED NAME OF THE BIOSPHERE RESERVE



Saline di Sicilia



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2. COUNTRY NAME

Italy

The candidate area is located in the western part of the Sicily Region, as shown in fig. 1.

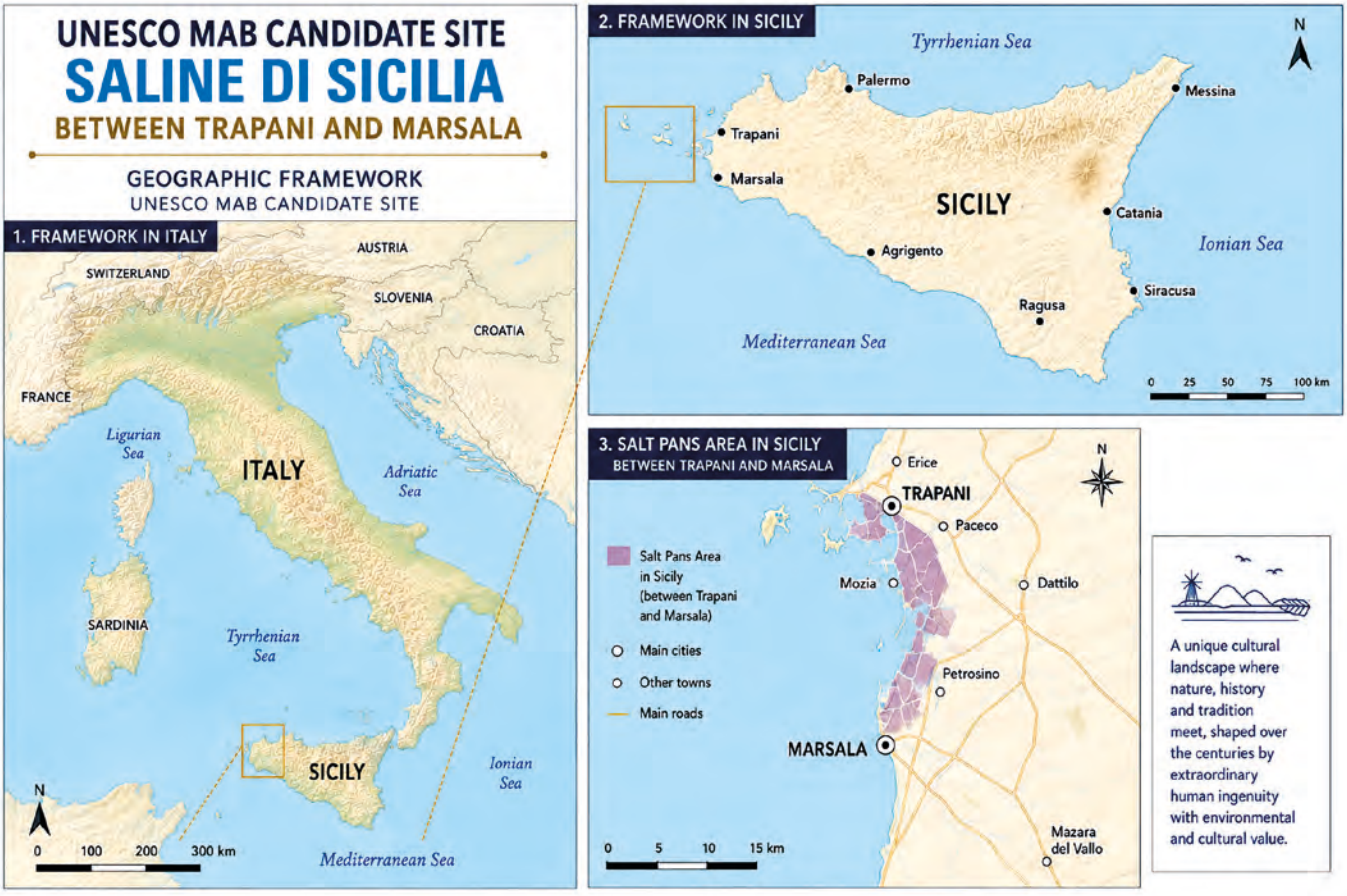


Fig.1. Geographical location of the candidate area
(illustration generated with artificial intelligence based on data from Sicily Region)



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3. FULFILLMENT OF THE THREE FUNCTIONS OF THE BIOSPHERE RESERVES

3.1 "Conservation - contribute to the conservation of landscapes, ecosystems, species and genetic variation"

The nominated territory is mainly composed by the biocultural landscape of the Saline di Sicilia (Sicilian Salt Pans) (see fig. 2), a socio-ecological system of exceptional importance that developed through a dynamic and continuous relationship between natural processes and human activities. Over the course of about two millennia, traditional sea salt production has shaped a mosaic of coastal and lagoon ecosystems that today represent one of the most significant brackish wetland complexes in the central Mediterranean.

Salt pans are a prime example of how traditional production practices can contribute to biodiversity conservation and ecological value generation. Water management, based on historical systems of circulation and salt concentration, has led to the formation of an extraordinary variety of habitats characterized by different salinity gradients, depths, and hydrological dynamics. This environmental mosaic includes evaporation ponds, connecting canals, artificial islands, land-sea transition areas, and lagoon environments that support remarkable biological diversity.



Fig. 2. The landscape of the Sicilian salt pans

These habitats support highly specialized communities, adapted to extreme environmental conditions, including numerous halophilous plant species, aquatic organisms characteristic of hypersaline environments, and habitats of high conservation importance. Of particular interest is the presence of endemic Mediterranean flora species, as well as submerged meadows of *Ruppia maritima*, *Cymodocea nodosa*, and *Posidonia oceanica*, which contribute to maintaining the ecological functionality of the entire coastal system.

The area also plays a strategic role along the main Euro-African migratory routes (see fig. 3), representing a fundamental site for the stopover, feeding, nesting, and wintering of numerous aquatic bird species. The salt marshes and coastal lagoons provide essential habitats for species of high conservation interest, including the greater flamingo (*Phoenicopterus roseus*), the avocet (*Recurvirostra avosetta*), the black-winged stilt (*Himantopus himantopus*), and numerous other migratory species that depend on the continuity and ecological quality of these environments.

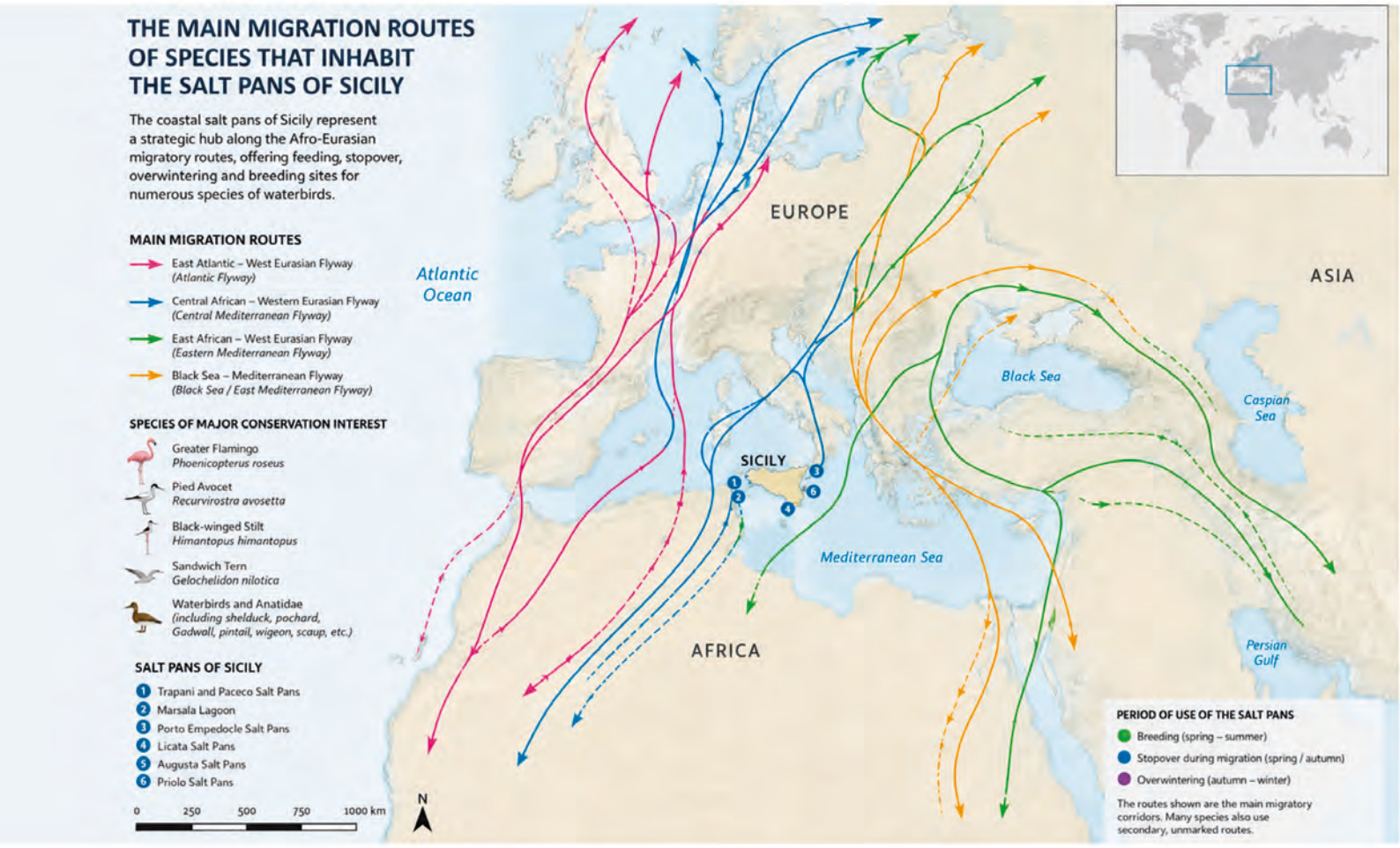


Fig. 3. The main migratory routes of the species passing through the Sicilian salt pans
(illustration generated with artificial intelligence based on data from Birdlife International)



Ph: Luigi Barraco

The conservation importance of the area is recognized by a complex system of protection regimes at regional, national, and international levels. Specifically, the proposed core and buffer zones fall within the perimeter of the Natura 2000 site 'Saline di Trapani e Marsala', which includes the Stagnone Nature Reserve (SAC ITA 010001 Stagnone di Marsala Islands and SPA ITA010028 Stagnone di Marsala and Saline di Trapani – Marine and Terrestrial Area) and the Saline di Trapani e Paceco Nature Reserve (SAC ITA010028 Stagnone di Marsala and Saline di Trapani – Marine and Terrestrial Area, SPA ITA010007 Saline di Trapani).

This protection system ensures the long-term conservation of the area's ecological values and promotes integrated management aimed at maintaining ecosystem functions, protecting species of conservation interest, and enhancing the resilience of coastal ecosystems to human pressures and climate change.

The core and buffer areas of the proposed Biosphere Reserve fall within the Sicilian Ecological Network (see the specific box for details).

Sicilian Ecological Network

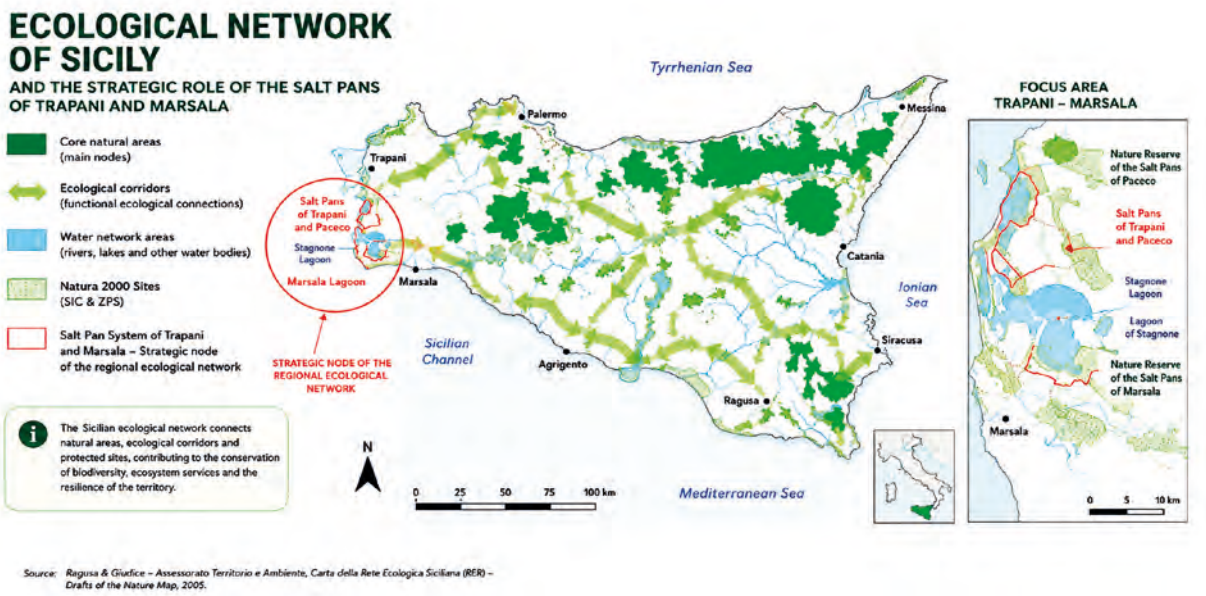
The Sicilian Region, with Regional Law No. 98 of 6 May 1981 (amended and supplemented by Regional Law No. 14 of 9 August 1988), was one of the first Italian regions (the national framework law on protected areas No. 394 would not arrive until 1991) to establish regulations for the protection of the natural environment, providing, as an implementing instrument, the establishment of parks and nature reserves (first and foremost that of Zingaro). The reasons for establishing these parks and nature reserves, for the conservation of land, river, lake, or even marine areas bordering the protected area, are botanical, zoological, geological, geomorphological, and even landscape-related in nature, including one or more ecosystems whose conservation is essential for the protection of biodiversity.

The system of protected natural areas in Sicily today represents approximately 20% of the regional territory, a heritage of biodiversity protected by 4 Regional Parks, 1 National Park, 74 Regional Nature Reserves, 7 Marine Protected Areas, 93 Geosites, 245 Natura 2000 sites. The Sicilian Network protects 72 habitat types listed in Annex I of the Habitats Directive, 17 of which priority, 23 plant species and 75 animal species, included in Annexes II, IV and V.

The Natura 2000 network is the main instrument of the European Union for the biodiversity conservation, is made up of Special Areas of Conservation (SACs), established by the Member States in accordance with the provisions of Directive 92/43/EEC "Habitats" and from Special Protection Areas (SPAs) established pursuant to Directive 147/2009/EC "Birds".

The Sicilian Ecological Network (see Fig.4), as a natural and environmental network that pursues the goal of interrelate areas with a high naturalistic value, is the system in which the strategy of combining protection and conservation is best explained; environmental resources with economic and social development, using the quality of these resources as a key competitive asset and fostering the long-term engagement of local communities in the conservation, stewardship, and sustainable management of the territory.

With Decree 970/91 of the Regional Councillor for Land and Environment, the Regional Plan for Parks and Nature Reserves was approved, pursuant to Article 3 of Regional Law 14/88, and the managing bodies (currently 17 different bodies) to which the management of the nature reserves will be entrusted were identified: public entities such as the former regional provinces, the Regional Department of Rural and Territorial Development (formerly the Regional State Forestry Company), and the University; and private entities such as several environmental associations (CAI, GRE, Italia Nostra, Legambiente, LIPU, Rangers d'Italia, WWF).



Source: Ragusa & Giudice – Assessorato Territorio e Ambiente, Carta della Rete Ecologica Siciliana (RER) – Drafts of the Nature Map, 2005.

Fig. 4. The Sicilian Ecological Network with the location of the candidate area
(illustration generated with artificial intelligence based on data from Sicily Region)

The Saline di Sicilia candidacy recognizes that biodiversity conservation cannot be separated from the preservation of the cultural and productive processes that have contributed to the formation of current ecosystems. The salt pans represent a living cultural landscape in which the continuity of traditional salt-farming practices is essential for maintaining the habitats, species, and ecological functions of the area.

From this perspective, the proposed Biosphere Reserve aims to strengthen the integrated conservation of natural and cultural heritage through an approach based on adaptive management, stakeholder participation, and the valorization of traditional and scientific knowledge.

The Committee for the Promotion of the "Saline di Sicilia" Biosphere Reserve nomination (hereinafter referred to as the "Promoting Committee"), through the participatory planning process (see section 17 for details), has produced a shared vision for the nominated territory, containing three strategic areas of action, each linked to one of the three functions of the Biosphere Reserve. Regarding nature conservation, the following aspects were emphasized:

- **the conservation of natural biodiversity**, in its peculiar characteristics, in the structural arrangements and functional processes of ecosystems, through (a) the conservation and restoration of coastal, lagoonal and brackish habitats, (b) the protection of species of conservation interest and Mediterranean migratory routes; (c) the strengthening of the climate resilience of coastal ecosystems;

- **the conservation and enhancement of the cultural landscapes of the salt pans,** which support functioning ecosystems, in harmony with quality human activities, as key elements for the local population and potentially for territorial development policies. At the same time, we also explore, study, and observe situations where the relationship between humans and the biosphere is disharmonious, with the aim of restoring balance;

- **the conservation and enhancement of traditional architectural elements** (e.g., mills and bagli) and the intangible culture associated with the salt pan environment, protecting, conserving, and restoring them, including through awareness-raising and participation by local communities, and renewing their value, including in relation to contemporary use, while respecting the typological, morphological, locational, formal, and structural characteristics that represent the sites' cultural and landscape aspects, while simultaneously renewing their value and functionality through their insertion into the urban context;

- **Climate resilience, developing climate change mitigation and reduction strategies** specifically tailored to the Sicilian Salt Pans system, promoting coordination between stakeholders responsible for mitigation and prevention efforts, including anticipating and adapting to extreme events resulting from climate change.

The proposed Biosphere Reserve considers conservation not as an isolated objective, but as an integrated process that connects biodiversity, landscape, cultural identity, and the well-being of local communities. In this sense, the Saline di Sicilia represent a particularly significant example of coevolution between humans and nature (see fig. 5) and a regional laboratory to test innovative strategies for biodiversity conservation and the sustainable management of Mediterranean coastal wetlands.



Ph: Giovanni La Francesca

Fig. 5. Flamingos in the area of the Trapani Salt Pans Reserve

3.2 "Development - foster economic and human development which is socio-culturally and ecologically sustainable "

The proposed Saline di Sicilia Biosphere Reserve is based on the assumption that ecosystem conservation and the well-being of local communities are closely interdependent and mutually reinforcing objectives. The proposed territory represents a socio-ecological system where traditional production activities, cultural heritage, biodiversity, and innovation coexist and influence each other, offering a particularly favourable context for experimenting sustainable development models consistent with the principles of the MaB Program.

The historic saltworks are the defining and functional element of the area. Sea salt production, based on natural processes powered by solar and wind energy, continues to be a vital economic activity for local communities and a concrete example of the sustainable use of natural resources. The persistence of traditional salt cultivation not only guarantees employment opportunities and economic value (see fig.6), but also directly contributes to the preservation of the cultural landscape, the maintenance of biological diversity, and the transmission of knowledge and skills developed over generations.



Fig. 6. Salt harvesting using traditional techniques

The candidacy recognizes the role of traditional economic activities as essential components of territorial sustainability.

In addition to sea salt production, the area includes Mediterranean agricultural systems characterized by the cultivation of vines and olives, fishing activities, distinctive agri-food production, and forms of local entrepreneurship closely linked to the area's environmental and cultural resources. These activities contribute to the preservation of the landscape mosaic and strengthen the communities' ability to maintain a balanced and lasting relationship with local ecosystems.

The proposed Biosphere Reserve aims to support the transition to more resilient, inclusive, and low-carbon economic models, fostering the integration of innovation, traditional knowledge, and environmental sustainability. From this perspective, the region promotes the enhancement of local supply chains, the dissemination of certified and quality products, the strengthening of the circular and blue economy, and the development of entrepreneurship geared toward sustainability and environmental responsibility (see fig.7).



Fig. 7. Kitesurfing activity

Sustainable tourism plays a particularly important role as a tool for enhancing natural and cultural heritage. Salt pans, coastal lagoons, archaeological sites, historic centres, and traditional productions offer opportunities for the development of slow, experiential, and seasonally diverse forms of tourism, capable of generating widespread economic benefits while simultaneously strengthening awareness of the area's natural and cultural values. Activities such as birdwatching, hiking, cycling, visits to salt museums, food and wine tourism, and the sustainable use of coastal environments represent concrete examples of integrating conservation and local development.

The region is also characterized by the presence of economic and institutional activities committed to sustainability-oriented innovation: a virtuous example is the Management Body of Trapani-Birgi Civil Airport and the environmental certification it recently obtained (see section 15.4.1). Investments aimed at energy efficiency, the reduction of climate-altering emissions, sustainable mobility, and the adoption of environmental management systems contribute to strengthening the region's ability to address the challenges of ecological transition and climate change adaptation.

Saltworks also provide a wide range of ecosystem services that support the well-being of local communities and the resilience of the region. In addition to the production of material goods, they contribute to hydrological regulation, mitigation of coastal erosion, protection from extreme weather events, biodiversity conservation, and maintenance of the ecological functions of coastal wetlands. These benefits constitute a fundamental component of the natural capital on which the sustainable development of the area is based.

The proposed Biosphere Reserve also places particular emphasis on the cultural heritage associated with the salt civilization. Traditional production techniques, local ecological knowledge, salt museums, historic mills, production architecture, and the intangible heritage associated with the life of salt-making communities constitute strategic resources for territorial development based on local identity and the valorization of biocultural heritage.

In a context characterized by the increasingly evident effects of climate change on Mediterranean coastal ecosystems, the application aims to promote the Saline di Sicilia as a regional laboratory for innovation in climate adaptation, nature-based solutions, and sustainable wetland management. The combination of conservation, traditional production activities, innovation, and stakeholder participation offers particularly favourable conditions for developing and testing models that can be replicated in other Mediterranean coastal areas.

Through this integrated approach, the proposed Biosphere Reserve aims to strengthen the capacity of local communities to generate economic prosperity, social cohesion, and collective well-being while respecting the ecological limits of the territory.
Development is therefore conceived not only as economic growth, but as a long-term process aimed at ensuring the resilience of ecosystems, the quality of life of resident populations, and the conservation of natural and cultural heritage for future generations.

3.3 "Logistics support - support for demonstration projects, environmental education and training, research and monitoring related to local, regional, national and global conservation and sustainable development"

The proposed Saline di Sicilia Biosphere Reserve aims to provide logistical support as a permanent territorial platform for the generation, sharing, and application of knowledge, promoting the integration of scientific research, environmental monitoring, education, training, and innovation to support biodiversity conservation and sustainable development.

The nominated area constitutes a living laboratory, particularly suited to studying the interactions between ecological processes, traditional economic activities, and environmental change. The coexistence of coastal and lagoon ecosystems, historic cultural landscapes, and active production systems offers exceptional conditions for developing interdisciplinary approaches to sustainable ecosystem management and climate change adaptation.

The Saline di Sicilia represents a unique context for observing globally significant phenomena such as sea level rise, the vulnerability of coastal wetlands, the transformation of Mediterranean ecosystems, the resilience of socio-ecological systems, and the role of traditional practices in biodiversity conservation. The future Biosphere Reserve intends to foster the co-production of knowledge through collaboration between scientific institutions, management bodies, economic operators, local communities, and civil society organizations.

The area already has a consolidated tradition of research and monitoring thanks to the activities carried out by the Sicilian Region, universities, research institutions, protected area management bodies, and scientific associations. The Sicilian Region's environmental monitoring system is primarily managed by ARPA Sicilia (Regional Agency for Environmental Protection), which uses a modern Control Room in Palermo (inaugurated in June 2026). This centre unifies satellite data, artificial intelligence, and local sensor networks for real-time monitoring of the territory. Furthermore, as part of the 2007-2013 Rural Development Program, an Environmental Monitoring Plan (see chapter 14 for details) was adopted, which includes specific activities for the various territorial areas, definition of indicators, and reporting. In 2022, a specific Monitoring Plan for the Sicilian Ecological Network (PRM) was adopted, further specifying approaches, methodologies, indicators, and timelines.

For over thirty years, systematic monitoring of migratory and wintering birds, wildlife censuses, studies of brackish habitats, and conservation programs for species and ecosystems of community interest have been conducted. These activities contribute to the understanding of the ecological dynamics of the central Mediterranean and support national and international networks for monitoring wetlands and aquatic birds.

The proposed Biosphere Reserve aims to further strengthen this function through the creation of an integrated ecological, climate, and socioeconomic monitoring system capable of supporting evidence-based decision-making processes. Particular attention will be paid to defining indicators relating to biodiversity, ecosystem services, climate resilience, the sustainability of production activities, and the well-being of local communities, consistent with the objectives of the MaB Program and the 2030 Agenda for Sustainable Development.

The presence of the University of Palermo, through its Trapani Campus, is a strategic asset for strengthening training, applied research, and innovation activities. The expertise developed in the fields of biodiversity, marine sciences, Mediterranean agriculture, sustainable tourism, and natural resource

management provides an important foundation for building national and international scientific partnerships and developing higher education programs related to the Biosphere Reserve's priorities.

Particular emphasis is also placed on education and lifelong learning. Visitor centres, salt museums, environmental education centres (see fig. 8) school programs, and scientific outreach initiatives already active in the area constitute a network of educational infrastructures capable of fostering awareness of the salt pans' natural and cultural heritage and promoting responsible environmental behaviour.



Fig. 8. The CEA Lilibeo hosts school groups from the area

The application aims to strengthen this educational dimension through structured programs aimed at students, citizens, businesses, and visitors, promoting participatory approaches, citizen science activities, and landscape interpretation courses. The goal is to foster greater awareness of the value of coastal wetlands, and the role communities can play in their conservation and sustainable management.

Another key aspect of the logistical support function is the preservation and transmission of traditional knowledge associated with the salt civilization (see fig. 9). Historic salt-farming practices, technical skills related to water management, the memory of salt-making work, and the tangible and intangible cultural heritage constitute an essential component of the area's knowledge capital. The future Biosphere Reserve intends to enhance this knowledge as a complementary resource to contemporary scientific research, promoting forms of dialogue between traditional knowledge and innovation.



Ph: Salvatore Sinatra

Fig. 9. Salt Museum of the Ettore and Infersa Salt Pans

The candidacy also supports the development of demonstration projects and pilot initiatives aimed at testing innovative solutions for the sustainable management of coastal wetlands. Key areas of interest include nature-based solutions, the ecological restoration of degraded habitats, climate change adaptation, sustainable water resource management, the circular economy, renewable energy, and the promotion of low-impact local supply chains.



By strengthening research, monitoring, training, education, and experimentation, the proposed Saline di Sicilia Biosphere Reserve intends to play the role of centre of excellence for the study and sustainable management of Mediterranean coastal wetlands, contributing to the dissemination of knowledge, practices, and models that can be replicated at regional, national, and international scales. In this way, its logistical support function becomes an essential tool for connecting the needs of local communities to the major global challenges of biodiversity conservation, climate resilience, and sustainable development.



Ph: Giovanni La Francesca

4. CRITERIA FOR DESIGNATION AS A BIOSPHERE RESERVE

4.1 "Encopass a mosaic of ecological systems representative of major biogeographic regions, including a gradation of human interventions."

The proposed area includes a complex mosaic of Mediterranean coastal ecosystems representative of the Mediterranean Biogeographic Region (see fig. 11), characterized by a close interaction between natural components, semi-natural systems, and historically anthropized landscapes. According to the Udvardy Classification (1975), the designated area falls within the Terrestrial Region called the "Palearctic Ecozone" (Palearctic ecozone non-tropical Eurasia and northern Africa) (see fig.10).

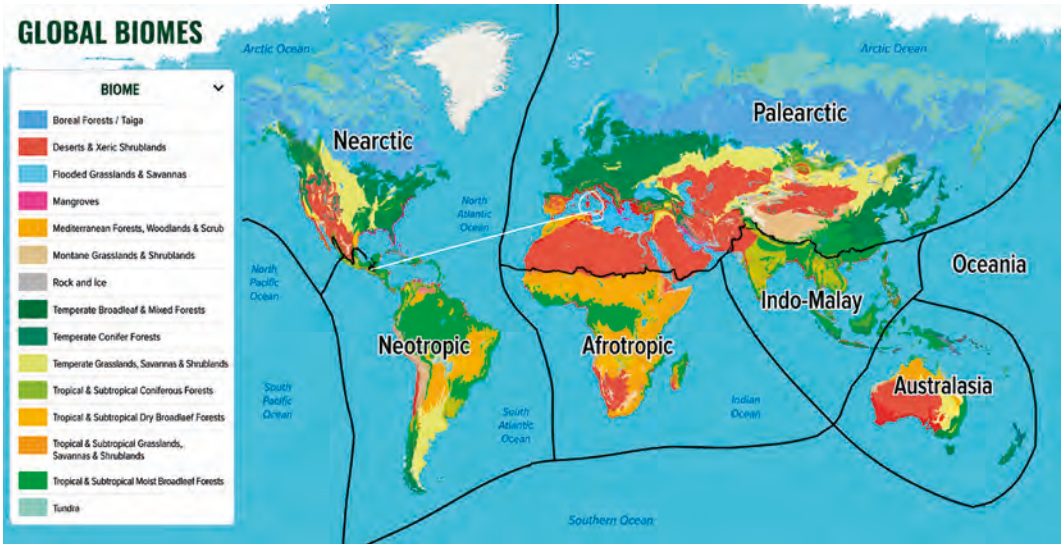


Fig.10. Distribution of biomes with the Palearctic Ecozone highlighted

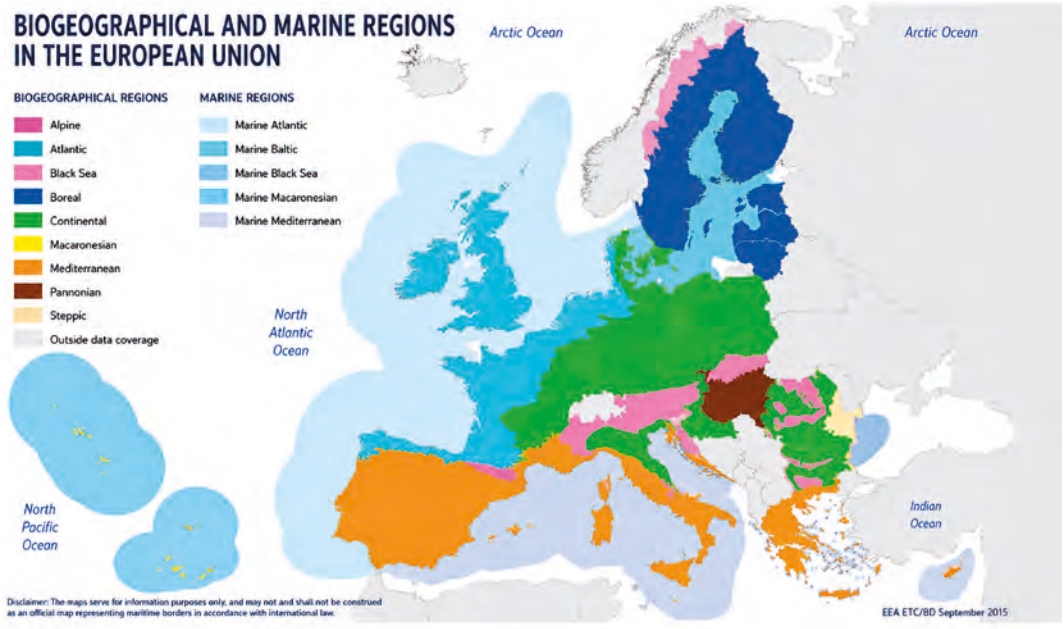


Fig.11. The main biogeographic regions of Europe

Located at the heart of the Mediterranean basin, the Sicilian Salt Pans nomination encompasses a territorial system in which natural ecosystems, semi-natural environments, and productive cultural landscapes are closely integrated and mutually dependent. The territory includes coastal lagoons, historically active salt pans, evaporation basins, tidal channels, dune and retrodune systems, Mediterranean halophilous vegetation, coastal arid grasslands, traditional agricultural environments, and urban centers historically connected to maritime and salt-mining activities.

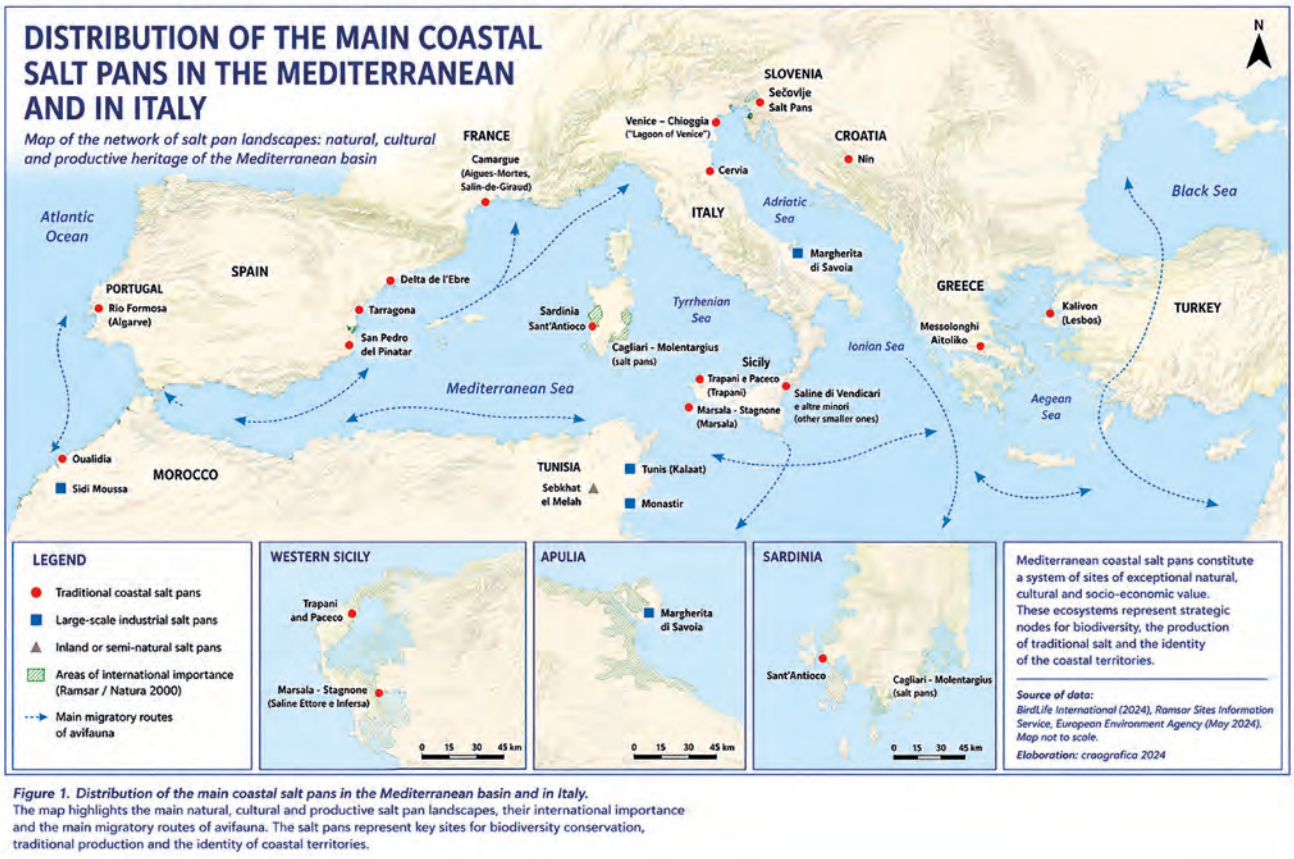


Figure 1. Distribution of the main coastal salt pans in the Mediterranean basin and in Italy.
The map highlights the main natural, cultural and productive salt pan landscapes, their international importance and the main migratory routes of avifauna. The salt pans represent key sites for biodiversity conservation, traditional production and the identity of coastal territories.

Fig. 12. The distribution of the main coastal salt pans of the Mediterranean
(illustration generated with artificial intelligence based on data of the MedArtSal Project)

This territorial mosaic reflects a high level of ecological and functional diversity and emblematically represents the variety of Mediterranean coastal ecosystems subjected to different levels of human influence. The simultaneous presence of natural habitats, managed ecosystems, and historical productive landscapes allows us to observe a continuous gradation of human intervention, a crucial characteristic for the designation of the future Biosphere Reserve.

The Sicilian salt pans are the structural element of the entire territorial system and represent an example of an evolving biocultural landscape in which traditional salt production practices have contributed, over the centuries, to the formation of secondary habitats of high ecological value. By regulating water flows and salinity gradients, salt production has generated a diversity of environmental conditions that today host numerous specialized plant and animal species and contribute to the maintenance of important ecosystem functions.

The area hosts habitats of Community interest recognized by the Habitats Directive and included in the Natura 2000 network, including coastal lagoons, submerged meadows, Mediterranean salt steppes, glassworts, and plant communities adapted to brackish and hypersaline environments. The complexity of these habitats fosters high levels of biodiversity and strengthens the nomination's role as a significant component of the Mediterranean ecological network.

The degree of human intervention is clearly visible through the presence of:

- **areas with a predominantly natural character, characterised by coastal, lagoon and marine habitats of high conservation value;**
- **managed semi-natural ecosystems, represented by the historic salt pans and the humid environments regulated by man;**
- **traditional agricultural landscapes in which production practices compatible with the conservation of natural resources persist;**
- **urban centers and infrastructure historically connected to economic and cultural activities linked to the sea and salt production.**

This spatial and functional structure effectively represents the interaction between biodiversity conservation, sustainable use of natural resources, and territorial development. The proposed area therefore offers a concrete example of a socio-ecological system in which biological diversity, ecological processes, traditional production activities, and local communities continue to coevolve within an integrated territorial framework.

The Sicilian salt pans also have a significance that transcends the local and regional context. Located at the heart of the Mediterranean's main ecological connections (see fig. 12), they represent a strategic hub for the conservation of coastal wetland ecosystems and for maintaining the Euro-African migratory routes of aquatic birds. The area therefore contributes to the conservation of natural values of international interest and the ecological resilience of one of the planet's richest and most vulnerable biogeographical regions.

Taken together, the natural ecosystems, semi-natural habitats, traditional rural landscapes, and historic settlements that form the candidate area constitute a representative mosaic of the Mediterranean region and fully meet the criterion of including representative ecological systems characterized by a degree of human intervention, offering a privileged context in which to test and demonstrate integrated approaches to conservation and sustainable development.

4.2. Be significant for biological diversity conservation

The area proposed as a Biosphere Reserve is of international ecological importance for the conservation of biodiversity in the central Mediterranean. Thanks to its geographic location, the diversity of its habitats (see table 1), and the continuity of traditional saltworks management practices, the area constitutes one of Sicily's most important coastal wetland systems and a strategic hub in the Mediterranean ecological network.

Table 1. List of the main habitats present in the areas of the proposed Biosphere Reserve

Core Area

No	Area (ha)	Habitat Code	Habitat Type
1	**79.09**	**1150***	*Coastal lagoons*
		1420	*Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)*
2	**97.56**	**1150***	*Coastal lagoons*
3	**70.56**	**1150***	*Coastal lagoons*
		1210	*Annual vegetation of drift lines*
		1410	*Mediterranean salt meadows (Juncetalia maritimi)*
		1420	*Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)*
		1510*	*Mediterranean salt steppes (Limonietalia)*
		6220*	*Pseudo-steppe with grasses and annuals of the Thero-Brachypodietea*
4	**20.94**	**1150***	*Coastal lagoons*
		1420	*Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)*
5	**664.38**	**1120***	*Posidonia oceanica meadows (Posidonion oceanicae)*
		1150*	*Coastal lagoons*
		1240	*Vegetated sea cliffs of the Mediterranean coasts with endemic Limonium species*
		5330	*Thermo-Mediterranean and pre-desert scrub*
		6220*	*Pseudo-steppe with grasses and annuals of the Thero-Brachypodietea*

Buffer Area

No	Area (ha)	Habitat Code	Habitat Type
1	**796.49**	**1130**	*Estuaries*
		1150*	*Coastal lagoons*
		1210	*Annual vegetation of drift lines*
		1310	*Salicornia and other annuals colonising mud and sand*
		1410	*Mediterranean salt meadows (Juncetalia maritimi)*
		1420	*Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)*
		1510*	*Mediterranean salt steppes (Limonietalia)*
		6220*	*Pseudo-steppe with grasses and annuals of the Thero-Brachypodietea*
2	**2,489.35**	**1120***	*Posidonia oceanica meadows (Posidonion oceanicae)*
		1150*	*Coastal lagoons*
		1210	*Annual vegetation of drift lines*
	664.38	**1240**	*Vegetated sea cliffs of the Mediterranean coasts with endemic Limonium species*
		1310	*Salicornia and other annuals colonising mud and sand*
		1410	*Mediterranean salt meadows (Juncetalia maritimi)*
		1420	*Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)*
		1510*	*Mediterranean salt steppes (Limonietalia)*
		2110	*Embryonic shifting dunes*
		3170*	*Mediterranean temporary ponds*
		5330	*Thermo-Mediterranean and pre-desert scrub*
		6220*	*Pseudo-steppe with grasses and annuals of the Thero-Brachypodietea*

Transition Area

Area (ha)	Habitat Code	Habitat Type
0.597**	**5330**	*Thermo-Mediterranean and pre-desert scrub*
	6220*	*Pseudo-steppe with grasses and annuals of the Thero-Brachypodietea*

** Source: **Sicilian Regional Habitat Mapping Project – Habitat Mapping and Management Plans for Natura 2000 Sites.***
*** Only the portion of SAC ITA010012 Marausa: Quercus calliprinos Maquis falls within the proposed Transition Area.*

The nominated area encompasses an integrated complex of lagoonal, coastal, and brackish ecosystems characterized by high levels of biological and functional diversity. The coexistence of natural, semi-natural, and human-managed habitats generates significant ecological heterogeneity, favouring the presence of highly specialized species and biological communities closely adapted to the specific environmental conditions of saline and lagoon ecosystems.

The area's importance for biodiversity conservation derives not only from the richness of its habitats and species, but also from the ecological function it plays at regional and international scales. The Trapani and Paceco salt pans and the Stagnone lagoon represent an important connection between terrestrial, lagoonal, and marine ecosystems, contributing to the maintenance of the ecological functionality of the entire western Sicilian coastline and strengthening the resilience of Mediterranean ecosystems under growing environmental pressures.

The role played by the territory along the main Euro-African migratory routes is particularly significant. Coastal wetlands, evaporation ponds, and brackish environments are key resting, feeding, nesting, and wintering sites for numerous aquatic bird species (fig. 13). The availability of diverse habitats (and trophic resources throughout the annual cycle) makes the Sicilian salt pans an essential component of the ecological network that supports bird migrations along the Mediterranean.



Fig.13. Herons in the Trapani Salt Pans Reserve

The area hosts habitats of community interest and priority recognized by the European Union Habitats Directive, including coastal lagoons, submerged meadows, Mediterranean salt steppes, glassworts, and other specialized plant communities of halophilous environments. These habitats represent ecosystems of high conservation value, often vulnerable to land transformation, abandonment of traditional practices, and the effects of climate change.

The local flora includes numerous rare species, endemic to, or closely associated with, Mediterranean brackish environments (see table 2). Halophilous plant communities, which have developed along particularly diverse salinity gradients, constitute a distinctive component of local biodiversity and contribute to the conservation of the Mediterranean's genetic and biogeographical heritage.

Table 2. Main Flora Species and Their Habitats

Species	Associated Habitat
Calendula maritima	*Mediterranean salt steppes and halophytic coastal environments*
Limonium avei	*Sea cliffs and Mediterranean salt steppes*
Limonium lilybaeum	*Rocky coasts and halophytic habitats of the Stagnone Lagoon*
Limonium ferulaceum	*Halophytic scrublands and salt steppes*
Sarcocornia perennis	*Halophytic scrub and periodically inundated salt pans*
Halocnemum strobilaceum	*Hypersaline halophytic communities*
Halopeplis amplexicaulis	*Mediterranean salt steppes and hypersaline soils*
Cressa cretica	*Back-dune and brackish habitats*
Aeluropus lagopoides	*Halophytic grasslands and salt-pan margins*
Ruppia drepanensis	*Brackish lagoon waters and internal channels*

The Stagnone Lagoon and salt-pan system constitute one of the most important breeding, stopover, and wintering areas for waterbirds in the central Mediterranean, owing to the high availability of food resources and the diversity of saline wetland habitats.

Similarly, the area's fauna is of great conservation interest. Numerous aquatic bird species find favourable conditions in the salt marshes and coastal lagoons for completing the various stages of their biological cycles (see table 3). The regular presence of species of community and international interest confirms the area's role as a priority site for the conservation of migratory birds in the Mediterranean basin.

Table 3. Main Faunal Species and Their Habitats

Species	Associated Habitat
Phoenicopterus roseus **(Greater Flamingo)**	*Coastal lagoons, evaporation ponds, and brackish basins*
Himantopus himantopus **(Black-winged Stilt)**	*Salt pans, salt marshes, and shallow brackish waters*
Recurvirostra avosetta **(Pied Avocet)**	*Salt ponds and coastal lagoons*
Charadrius alexandrinus **(Kentish Plover)**	*Sandy shores, islets, and back-dune habitats*
Sterna hirundo **and** ***Sternula albifrons***	*Islets and coastal salt pans*
Migratory herons and waders	*Lagoons, channels, and tidal flats*
Juvenile lagoon fish communities	*Posidonia oceanica meadows and the waters of the Stagnone Lagoon*

The current biodiversity is the result of a long coevolution between natural processes and sustainable human activities. Traditional salt-farming practices have contributed to the creation and maintenance of secondary habitats that support highly specialized biological communities. The continuity of traditional hydraulic management is therefore fundamental to the long-term conservation of biodiversity and the ecosystem functions of the area.

The area's biological importance is recognized by a complex designation and management system that includes the Natura 2000 network, the Trapani and Paceco Salt Pans and the Stagnone di Marsala Nature Reserves, as well as the Ramsar designation (for the Trapani and Paceco Salt Pans) as a wetland of international importance. These regimes confirm the territory's value as a key component of biodiversity conservation strategies at the Italian and Mediterranean levels.

In a context characterized by increasing pressure on coastal ecosystems, the proposed Biosphere Reserve intends to further strengthen the conservation of biological diversity through integrated approaches that combine habitat protection, adaptive management, scientific monitoring, valorization of traditional knowledge, and active involvement of local communities. This approach recognizes biodiversity as a foundational element of the resilience of socio-ecological systems and as a strategic resource for the future of the region.

4.3 "Provide an opportunity to explore and demonstrate approaches to sustainable development on a regional scale."

The proposed Saline di Sicilia Biosphere Reserve offers a particularly favourable context for experimenting, demonstrating, and disseminating innovative sustainable development models applied to Mediterranean coastal ecosystems. The coexistence of areas of high natural value, active traditional production activities, historic rural landscapes, urban centers, and regional infrastructure makes the region a privileged laboratory for developing integrated solutions capable of reconciling biodiversity conservation, economic prosperity, and the well-being of local communities.

The candidacy is based on the understanding that territorial sustainability depends not solely on protecting ecosystems, but on the ability to build balanced and lasting relationships between natural assets, economic activities, cultural heritage, and local governance. In this context, the Saline di Sicilia represents a concrete example of a socio-ecological system in which the continuity of traditional production activities directly contributes to the maintenance of the ecological functions and landscape values of the area.

One of the most significant elements of the candidacy is salt cultivation, which represents a historic model for the sustainable use of natural resources. Sea salt production relies on natural processes powered by solar energy, wind, and the circulation of marine waters, minimizing the use of external resources while contributing to the conservation of coastal wetland habitats. This system (see fig. 14) demonstrates how an economic activity can generate environmental, social, and cultural benefits, strengthen the resilience of the territory and maintaining biodiversity.

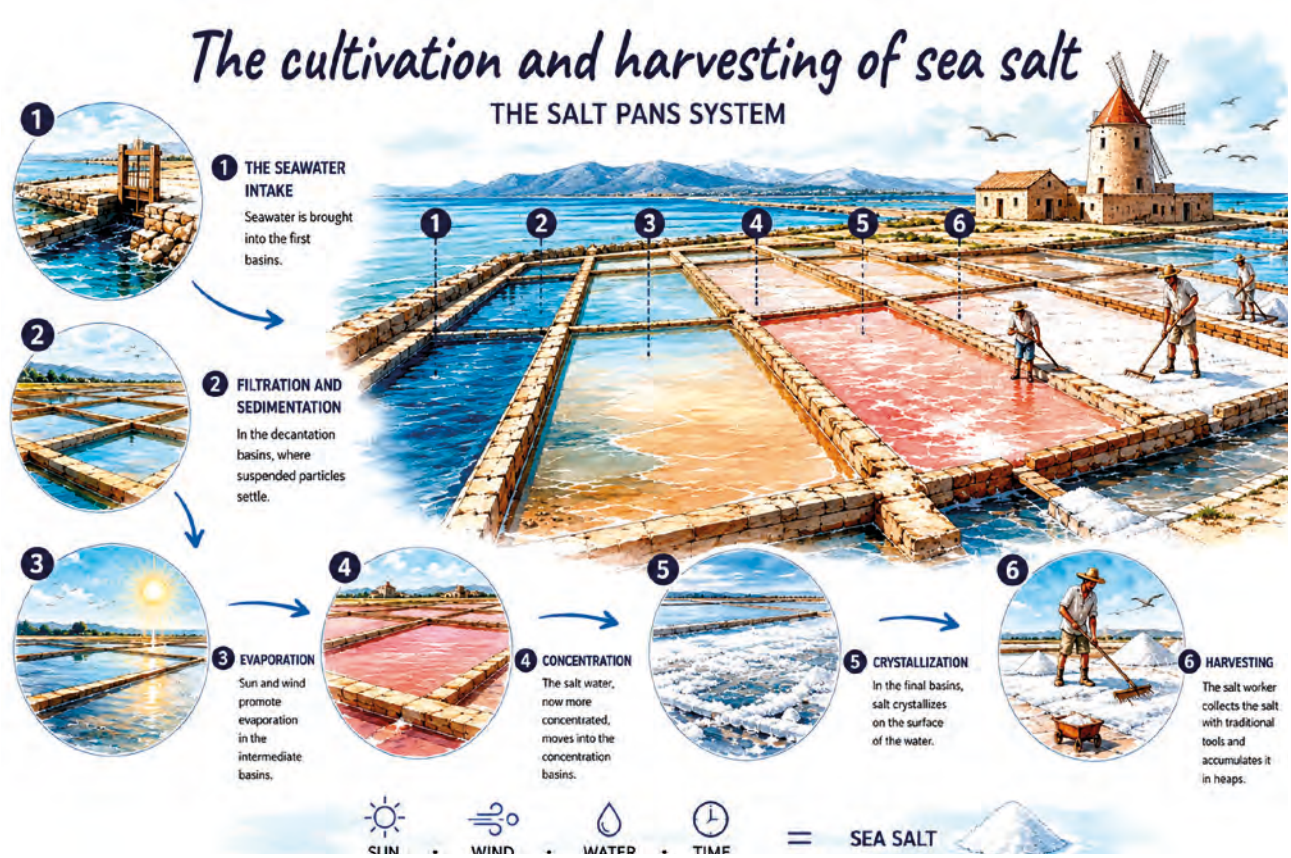


Fig. 14. The cultivation and harvesting of sea salt
(illustration generated with artificial intelligence based on data provided by Sosalt)

The Biosphere Reserve intends to leverage this experience by promoting circular local economic models that integrate tradition and innovation. Particular attention will be paid to strengthening local production chains, promoting distinctive products, disseminating sustainable agricultural practices, and fostering economic activities compatible with conservation objectives. The area offers important examples of innovation applied to the sectors of salt cultivation, viticulture, olive growing, and quality agri-food, where traditional knowledge and new technologies jointly contribute to environmental sustainability and economic competitiveness.

The candidacy also promotes the area as a demonstration model of sustainable tourism (see fig.15) based on its biocultural heritage. The salt pans, coastal lagoons, rural landscapes, archaeological sites, salt museums, and historic centres of Trapani and Marsala constitute an integrated system of attractions capable of generating widespread economic opportunities and encouraging responsible use of the area's resources. From this perspective, tourism is considered not only as an economic sector, but as a tool for strengthening environmental awareness, enhancing local identity, and engaging communities in sustainable land management.



Fig.15. Nature-based tourism

Another distinctive element of the candidacy is the desire to develop innovative approaches to territorial governance. The candidacy process has already fostered partnerships between public authorities, protected area management bodies, businesses, scientific institutions, civil society organizations, and local communities. This experience forms the basis for the creation of a collaborative, multilevel governance model geared toward the integrated management of natural resources and sustainable territorial development.

The proposed Biosphere Reserve also aims to strengthen the role of the Sicilian salt pans as a laboratory for climate change adaptation and the resilience of Mediterranean coastal areas. Brackish and lagoon ecosystems play key roles in hydrological regulation, biodiversity conservation, and coastal protection from the effects of erosion and extreme weather events. The candidacy therefore offers the opportunity to develop, test, and disseminate innovative ecosystem-based strategies, contributing to the definition of models that can be replicated in other coastal areas.

Particular attention will be paid to the application of nature-based solutions, sustainable water management, the preservation of ecosystem services, the reduction of climate-altering emissions, and the promotion of circular and low-impact economic models. The knowledge and experience gained in the area will thus contribute to addressing challenges affecting numerous coastal areas of the Mediterranean and other regions around the world.

The proposed Biosphere Reserve also recognizes the central role of knowledge, education, and innovation in promoting sustainable development. Through collaboration between local communities, scientific institutions, schools, businesses, and territorial governance bodies, the future Biosphere Reserve intends to foster collective learning and knowledge co-production processes capable of supporting the transition to more resilient, inclusive, and sustainable development models.

Taken together, the ecological, cultural, economic, and institutional characteristics of the area make the Saline di Sicilia a particularly suitable context for exploring, experimenting, and demonstrating integrated approaches to sustainable development. The proposed Biosphere Reserve therefore serves as a territorial platform where the relationships between biodiversity conservation, local development, innovation, and participation can be observed, strengthened, and transferred to other regional and Mediterranean contexts, contributing to the objectives of the MaB Program and the 2030 Agenda for Sustainable Development.

4.4 “Have an appropriate size to serve the three functions of biosphere reserves.”

The zoning was defined through a process of ecological and territorial analysis and participatory planning that considered the natural, cultural, and socioeconomic values of the area, as well as existing protection and planning tools. The proposed configuration reflects the functional structure of the socio-ecological system of the salt pans and associated coastal areas, enhancing the ecological, economic, and cultural relationships that connect the various components of the territory.

The proposed Saline di Sicilia Biosphere Reserve has a territorial dimension and spatial configuration suitable for ensuring the effective implementation of the three fundamental functions envisaged by the MaB Programme: (a) biodiversity conservation, (b) promotion of sustainable development, and (c) logistical support for research, training, and education.

Despite its relatively small size compared to other Biosphere Reserves in the World Network, the proposed area represents a highly coherent territorial system from an ecological, functional, and socio-economic perspective. Its configuration reflects a well-defined landscape unity, organized around the complex of historic salt pans, coastal lagoons, and associated wetland ecosystems, which represent the ecological core and defining identity of the entire nomination. These are surrounded by plots of land dedicated to traditional crops. All this is nestled between the two major historic centres of Trapani and Marsala.



The proposed area is sufficient to ensure the long-term conservation of the habitats, species, and ecological processes that constitute the main value of the application.

The core areas encompass the ecosystems of greatest conservation importance and ensure suitable conditions for the protection of biodiversity, brackish wetlands, and species of community and international interest. Their distribution throughout the saltworks system also effectively represents the ecological diversity of the area and maintains functional connectivity between the different components of coastal ecosystems.

Buffer areas strengthen this conservation function by creating a space for ecological and management transition within which activities compatible with the protection of habitats and species can develop. They help reduce external pressures on the most sensitive ecosystems and foster the integration of conservation objectives, scientific research, environmental education, and sustainable land use.

The size and structure of transition areas, in turn, allow for the development of policies and initiatives aimed at territorial sustainability on an appropriate scale. These areas accommodate the main economic, agricultural, tourism, cultural, and residential activities that characterize the region and provide the framework for promoting innovative models of sustainable development, local community participation, and climate change adaptation.

The overall size of the nominated territory also allows for the integration of a variety of ecosystems, institutional actors, and local communities within a shared management framework. From a functional perspective, the geographic proximity between the various components of the Biosphere Reserve fosters cooperation between institutions, management bodies, local communities, economic operators, and research organizations. This facilitates integrated governance, ecosystem monitoring, the implementation of shared projects, and the dissemination of innovative practices geared toward sustainability.

The Biosphere Reserve's size (see table 4) is also adequate to support applied research, ecological monitoring, environmental education, and territorial experimentation. The concentration of significant ecological, cultural, and productive values within a relatively compact area offers particularly favourable conditions for developing demonstration initiatives and building partnerships between scientific institutions, public administrations, and civil society.

Finally, the candidate area is part of a broader Regional and Mediterranean Ecological Network, contributing to the connectivity between terrestrial, coastal, and marine ecosystems and strengthening Western Sicily's role as a strategic hub in Mediterranean ecological networks. Thus, while maintaining a manageable and operationally effective territorial dimension, the candidacy is capable of generating benefits and positive impacts that extend well beyond its administrative boundaries.

Taken together, the size, territorial configuration, and functional organization of the proposed Biosphere Reserve ensure fully adequate conditions for achieving the objectives of the MaB Program, offering a territorial framework in which biodiversity conservation, sustainable development, and knowledge production can be pursued in an integrated and lasting manner.

4.5 Through appropriate zonation

The proposed MaB zoning is shown in fig. 16.

The detailed map of the area of the harbour of Trapani is included in the Annexes.

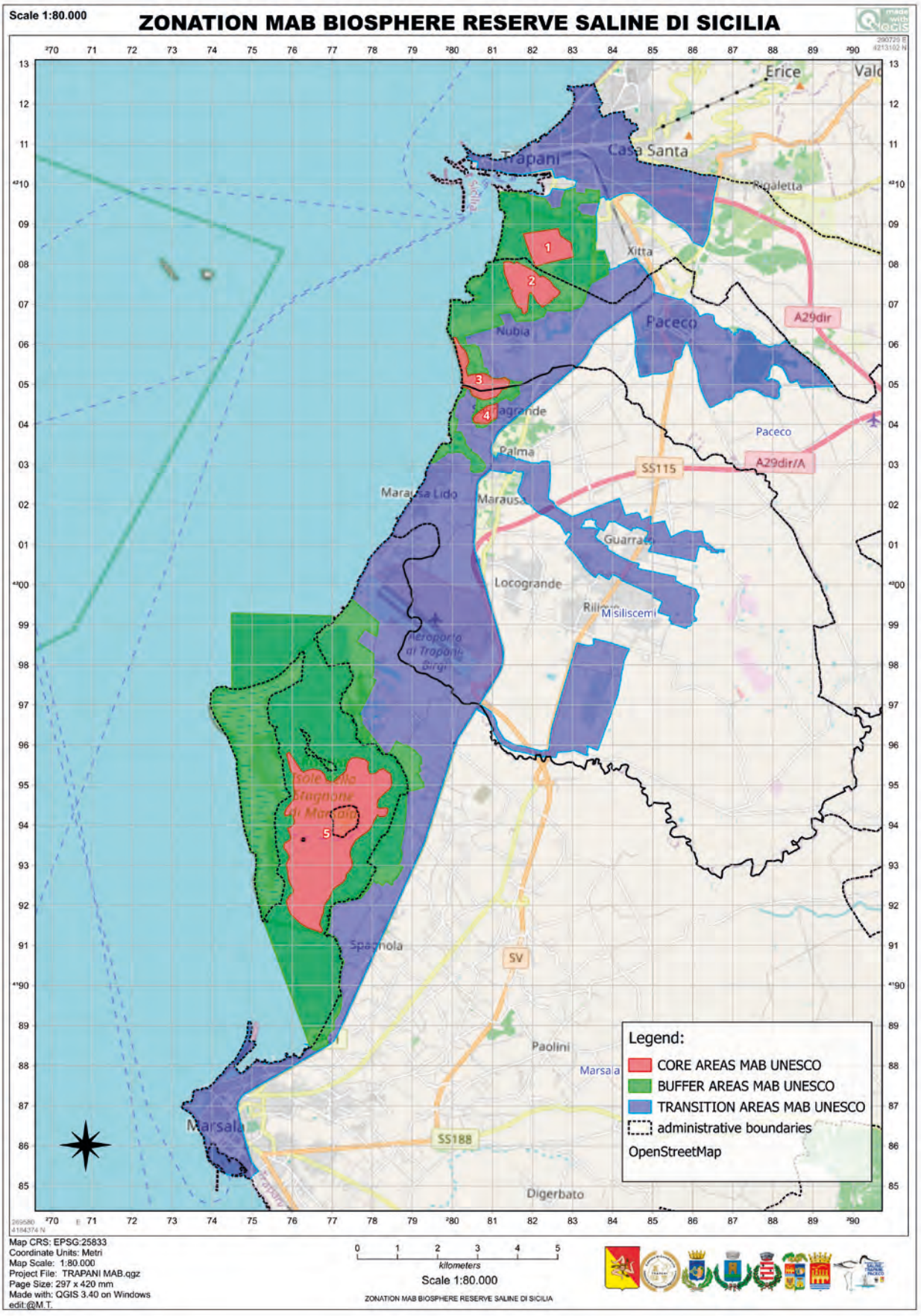


Fig. 16. Proposed MaB zoning

In the Table 4, the surfaces of the MaB zones and the total surface area of the proposed Biosphere Reserve are shown.

Table 4. Surface Area of the Proposed Biosphere Reserve

Zone Type	Terrestrial Area (ha)	Marine Area (ha)
Core Area	**310.50**	*622.26*
Buffer Area	**1,791.05**	*1,497.02*
Transition Area	**5,951.77**	–
Subtotal	**8,053.32**	**2,119.28**
Total Area of the Proposed Biosphere Reserve	**10,172.60 ha**	

Note: The total area corresponds to the sum of terrestrial and marine components included within the proposed Biosphere Reserve.

(a) a legally constituted core area or areas devoted to long term protection, according to the conservation objectives of the biosphere reserve, and of sufficient size to meet these objectives.



Ph: Salvatore Sinatra

The core areas include ecosystems of greatest ecological and conservation importance, characterized by the presence of priority habitats, species of community and international interest, and ecological processes fundamental to maintaining biodiversity.



Ph: Giovanni La Francesca

Along the approximately thirty kilometres of coastline characterized by salt pans between Trapani and Marsala, five different "Core Areas" have been identified. Four of them, are smaller and are located in the "Saline di Trapani e Paceco" Nature Reserve. One larger area, designated as nr.5, is located further south in the Marsala area. The following are the criteria/guidelines used to identify the Core Areas (red colours in fig. 16).

Core Areas 1 and 2 (northern area of the RNO Saline di Trapani and Paceco):

- Areas where salt marshes are located, and where sustainable salt cultivation is used to minimize human activity. These areas are characterized by priority habitat 1150 (coastal Lagoons), the most important in the entire Reserve.

Core Areas no. 3 and 4 (northern area of the RNO Saline di Trapani and Paceco):

- correspond to zone A "reserve area" of the RNO Saline di Trapani and Paceco, also characterised by priority habitat 1150 (coastal lagoons).

Core Area n. 5 (RNO Islands of the Stagnone of Marsala):

- The area includes the entire island of San Pantaleo (on which Mozia is located) and the area of priority habitat 1120* "Posidonian seagrass meadows (Posidonion oceanicae)". It also includes the island of Mozia, which is completely uninhabited.



Ph: Salvatore Sinatra

These areas are primarily designated for the conservation of wetland habitats and species of community interest. Salt cultivation, maintenance and restoration of existing buildings (especially mills), renaturation projects, and authorized scientific research are permitted. New construction, industrial activities not related to salt cultivation, hunting, intensive aquaculture, the introduction of non-native species, landfills, and uses that permanently alter habitats are expressly prohibited.

The core areas play a vital role in conserving the habitats and species that characterize the territory and represent the ecological core of the nomination. They also serve as reference points for long-term scientific monitoring and assessment of the effects of climate change on Mediterranean coastal ecosystems.

While primarily oriented toward conservation, these areas retain the character of a living cultural landscape that distinguishes the historic saltworks. Traditional salt-farming activities, compatible with conservation objectives, contribute to maintaining the ecological conditions that support biodiversity and are an integral part of the area's identity.

(b) a buffer zone or zones clearly identified and surrounding or contiguous to the core area or areas, where only activities compatible with the conservation objectives can take place.

Two different buffer areas were then identified around the core areas mentioned above. In this case, the criterion for their delimitation was facilitated by the presence of the two Nature Reserves where most of the protected territorial areas are concentrated (green areas in the fig. 16). This is the area defined as "nodes" within the Sicilian Ecological Network Map, i.e., the set of territorial areas with high naturalistic value.

In these areas, activities consistent with conservation objectives are developed, including sustainable saliculture, scientific research, environmental education, responsible tourism, and initiatives to enhance natural and cultural heritage. Buffer areas represent a privileged space for promoting the positive interaction between conservation and sustainable use of natural resources.

Their boundaries largely coincide with the system of protected areas and Natura 2000 sites that characterize the nominated territory, ensuring ecological continuity and management coherence between the different forms of protection already in place. In this context, the buffer areas help reduce pressure on the most sensitive ecosystems and encourage the spread of practices compatible with the objectives of the Biosphere Reserve.

Sustainable salt cultivation is permitted in these areas, while greenhouses, intensive aquaculture, hunting, and landfills are prohibited.

Restoration of historically important buildings can be taken into consideration only if strictly connected to the management or use of the reserve (Trapani) or if foreseen by a specific use plan (Marsala).

Management measures common to both areas are:
- incentives for saliculture and organic farming.
- compensation for damage caused by wildlife.
- special wildlife management plans and protection measures for priority species and habitats.



Ph. Patrizia Gallia

(c) an outer transition area where sustainable resource management practices are promoted and developed

A transition area was identified around the Buffer Areas. This area included the historic centres of Trapani and Marsala, as well as Paceco and Misiliscemi: their inclusion in the transition meets the goal of enhancing the relationship between the historic urban landscape, cultural heritage, local economies, and sustainable development.

The transition area encompasses the core and buffer zones, incorporating portions of land characterized by small urban settlements (mainly within the municipalities of Paceco and Misciliscemi) and the Trapani-Birgi Airport. As highlighted by the fig. 16, the proposed transition 'extroverts' inwards in correspondence with three areas designated for as many projects based on ecological planning.

Starting from the south, within the municipality of Misciliscemi, the Chinisia area represents one of the most unique and significant ecological contexts in the hinterland, encompassing the remains of the former military airport (small sections of the runway) immersed in a vast area free from urbanization and intensive agricultural activities. The military zone restriction has allowed the preservation of rare semi-natural habitats, making the area an important refuge for flora and fauna.

The Chinisia area hosts some of the rarest habitats in the entire municipality. These include garrigues with dwarf palms, primarily located around the former airport, as well as in the Rocche Draele and Ballottella areas. The most important woody species are dwarf palm (*Chamaerops humilis*), pistachio plant (*Pistacia lentiscus*), willow (*Rhamnus lycioides subsp. oleoides*), phillyrea (*Phillyrea latifolia*), wild olive (*Olea europaea var. sylvestris*), and fruit-bearing germander (*Teucrium fruticans*). The garrigues of the former Chinisia airport and the surrounding arid areas also host some orchids of naturalistic importance, such as *Ophrys tenthredinifera* and *Orchis italica*.

Between Chinisia and Marcanzotta lies the most important cluster of Mediterranean arid grasslands and pseudo-steppe (Priority Habitat 6220), recognized as a priority by the Habitats Directive. It is home to species of high conservation value, including *Anemone palmata*, *Anacamptis collina*, *Daucus carota subsp. drepanensis*, *Eryngium tricuspidatum subsp. bocconei*, *Serapias cordigera, S. lingua*, *S. parviflora*, and *S. vomeracea*.

The most ecologically significant features, however, are the ephemeral wetlands, located primarily around the former Chinisia military airport. These are a series of small inland depressions that flood in the winter and dry up completely in the spring, hosting highly specialized hydrophilic flora such as *Limonium dubium*, *Damasonium alisma*, *Juncus hybridus*, *Plantago crassifolia*, *Romulea ramiflora subsp. ramiflora*, and *Trifolium lappaceum*. These rare species have been eliminated from the rest of the Misiliscemi area by land reclamation projects over time.

Another important feature of the area is the Kermes oak (*Quercus coccifera*), one of the rarest and most relict natural vegetation types in western Sicily. In Misiliscemi, the Kermes oak (synonym of *Quercus calliprinos*) is present only in small fragments of scrubland in Marausa and is considered a remnant of the original forest vegetation of the Trapani coastal plain.

Its naturalistic value has led to the establishment of the ZSC ITA010012 ("Marausa: scrub with Quercus calliprinos), the smallest Sicilian site of the Natura 2000 Network.

A total of 623 taxa have been recorded in the municipality of Misiliscemi, of which 16 are endemic. Of these, 4 are strictly Sicilian endemics (*Allium obtusiflorum*, *Echium italicum subsp. siculum*, *Romulea linaresii subsp. linaresii*, *Silene crassiuscula*), 2 are subendemics (*Carlina sicula subsp. sicula*, *Crocus longiflorus*), and 10 are Italian endemics.

The combination of these elements - fragments of semi-natural vegetation, vulnerable habitats, rare species, and endemic species - gives Misiliscemi significant naturalistic value, exceeding what might be expected from a territory so intensively used by humans over time. The Municipality has included the protection of these areas' biodiversity as a priority in its strategic planning documents.

Further north in the territory of the Municipality of Paceco, several stakeholders interested in biodiversity conservation originally designed the project (the first version of which dates back to 1994) of a suburban park around the Baiata reservoir (see fig.17).



Fig.17. The territories of the Baiata reservoir included in the transition zone

The park idea was later (in 1996) included in the "General Master Plan," which envisioned "a large lakeside park around the Baiata reservoir, extending as a linear park along the course of the eponymous stream until it reaches the sea after flowing through the Reserve." The park idea was defined as "the proposal of greatest landscape significance," and in 1998, the report to the General Master Plan stated: "*The most significant territorial provision, which characterizes the entire General Master Plan, concerns the creation of a large suburban park around the artificial Baiata reservoir. The fundamental choice consists in extending the reservoir's role, beyond its merely functional function of water storage, to become a new element of environmental and landscape significance, broadening its use and significance.*"

The executive project was submitted to the "Functional Urban Area" (FUA), an association of eleven municipalities in the Trapani area that collaborates to implement territorial development projects using European funds. The Baiata Park project ranked first, so its construction will most likely be funded.

The new Baiata park project covers a relatively small area; the decision to reduce the size of the park facilitates its management, as well as underscoring the project's environmental value.

The park area will feature Mediterranean scrub plants, such as the holm oak, an evergreen oak capable of defending itself from fire by producing numerous shoots. In the areas closest to the body of water, hygrophilous tree species typical of Sicilian aquatic environments, belonging to the *Tamarix sp.* species, which is resistant to waterlogging, high temperatures, and heavy soils, will be planted. The outer part of the park will be screened by a hedge composed primarily of mastic trees (*Pistacia lentiscus*). The hedge's green corridor, in addition to its screening function, will serve an ecological and environmental purpose. The path connecting the various areas, along with the parking lots and ancillary roads, will also feature plant populations (hedges, shrubs, and trees) typical of the Mediterranean scrub.



Fig.18. Olive trees

In addition to these portions of high environmental value, the remaining part of the territory included in the transition between the urban centres of Trapani and Marsala is characterized by traditional crops: the vine (the cellars of Marsala represent a unique example in the Italian and international wine-growing panorama), the olive tree (see fig. 18) (which doesn't suffer from any particular diseases here) and, in the specific case of the Nubia area, red garlic, as well as the yellow Cartigliaro melon from Paceco, and the Pizzutello tomato from the Erice valleys; three of the most important *Slow Food Presidia* in the area as well as examples of an iconic agri-food identity. The local populations are deeply connected to these crops, and knowledge is being passed down to the younger generations.

(d) Provide some additional information about the interaction between the three areas.

The three territorial components of the proposed Biosphere Reserve - core area, buffer zone, and transition area - form a highly integrated system from an ecological, landscape, socioeconomic, and cultural perspective. Their interaction ensures the maintenance of the environmental balance of the historic saltworks and, at the same time, the continuity of traditional production activities and the territory's settlement functions.

The core areas include ecosystems of greatest naturalistic and conservation value, represented by historic saltworks, coastal and lagoon wetlands, and nesting, resting, and feeding areas for migratory birds. These areas preserve the most sensitive habitats and represent the ecological core of the nomination. Biodiversity conservation is closely linked to the persistence of minimally invasive salt cultivation practices, which have historically shaped the landscape and contributed to the creation of current salt habitats. Those involved in the sector are still families from the local areas, ensuring the transmission of expertise from generation to generation.

Buffer zones serve both ecological protection and functional connections between the most protected areas and the surrounding built environment. Activities compatible with conservation objectives are developed in these areas, including salt cultivation, scientific research, nature and cultural tourism, environmental education, and outdoor recreational activities (e.g., sailing and kitesurfing). Many tourism operators live and work in neighbouring municipalities, thus fostering a circular economy that has enabled many young people to find employment without having to travel far.

The transition areas include the urban centres of Trapani and Marsala (and the smaller ones of Paceco and Misiliscemi) and the surrounding areas characterized by the most sustainable and innovative activities. They represent the framework for promoting sustainable development models consistent with the principles of the MaB Program. These areas are home to the main socioeconomic dynamics, including tourism, agriculture, artisanal production, and services, which are called upon to actively contribute to the Biosphere Reserve's objectives through participatory governance tools and shared territorial sustainability strategies. These areas still have a strong vocation for primary economies, linked to the traditional cultivation of vines, olives, and excellent local products.

The interaction between the three areas is characterized by: (a) ecological relationships, linked in particular to the cycles and flows of water (especially surface water) and nutrients; (b) economic and social relationships, linked in particular to the daily mobility of economic operators from their homes to their places of work (all within a short radius of a few kilometres); and (c) cultural relationships, linked in particular to the perpetuation of knowledge linked to salt cultivation - and the cultural landscapes it generates - as a common heritage of identity, and which sees a great involvement of local communities.

Traditional human activities, particularly salt production, constitute an essential link between environmental protection and local development, confirming the entire territorial system's character as a "living cultural landscape."

The Biosphere Reserve therefore promotes an integrated territorial management model based on the complementarity of nature conservation, cultural heritage enhancement, and sustainable economic development. This approach is supported through multilevel participatory processes involving local authorities, businesses, salt farmers, environmental associations, scientific institutions, and resident communities, fostering shared governance of the nominated area.

4.6 Organizational arrangements should be provided for the involvement and participation of a suitable range of inter alia public authorities, local communities and private interests in the design and the carrying out of the functions of a biosphere reserve.

From the earliest stages of the candidacy, particular attention was paid to defining a governance system capable of ensuring the active participation of institutions, local communities, economic operators, associations, and other stakeholders in the area. Consistent with the principles of the MAB Program, the candidacy process was designed as a common path of territorial development, aimed at promoting a shared vision for the conservation of the salt pans' natural and cultural heritage and for the sustainable development of the area.

4.6.1 Describe arrangements in place or foreseen

Given the lack of a single body with administrative jurisdiction over the entire territory covered by the proposed Biosphere Reserve, the "MaB UNESCO - Saline di Sicilia" Promotion Committee was established as a platform for institutional coordination and territorial partnership to promote the nomination and support the future management process of the Biosphere Reserve.

The promoters of the Committee represent the main institutions responsible for the protection, management and development of the territory and include:

- Chamber of Commerce, Industry, Crafts and Agriculture (CCIAA) of Trapani, acting as permanent secretariat;
- Municipality of Marsala;
- Municipality of Misiliscemi;
- Municipality of Paceco;
- Municipality of Trapani;
- WWF Italy, managing body of the "Saline di Trapani e Paceco" Oriented Nature Reserve;
- Free Municipal Consortium of Trapani, managing body of the "Isole dello Stagnone di Marsala" Oriented Nature Reserve;
- Sicilian Region, Department of Territory and Environment.

The Promotion Committee played a key role in ensuring institutional continuity, operational coordination, and financial support throughout the entire candidacy. The Trapani Chamber of Commerce provided the technical and organizational secretariat, providing space, resources, and coordination capabilities to serve the partnership.

Particular attention was paid to engaging local youth, recognized as strategic stakeholders for the future of the Biosphere Reserve. In this context, a Youth Group was established to support the candidacy (hereinafter referred to as the "Youth Group"), which participated in candidacy activities and was invited to participate in the 2026 MAB Youth Forum (fig. 19). The delegation from the Saline di Sicilia thus benefited from the preparation phase and subsequent direct contact with their counterparts from all participating countries. This experience represents an important foundation for fostering future youth involvement in the decision-making processes, monitoring activities, and sustainable development initiatives of the Reserve.



Fig. 19. Participation of the Youth group at the MAB Youth Forum 2026

The Youth Forum



The MAB Youth Forum is the main international forum for youth participation in the UNESCO Man and the Biosphere (MAB) Programme. Created with the aim of strengthening the role of younger generations in the management of Biosphere Reserves and in the MAB Programme's decision-making processes, the Forum fosters dialogue between young people, reserve managers, researchers, institutions, and international partners. The first edition was held in 2017, hosted by the Po Delta Biosphere Reserve in Italy, while the second was held in 2019 in China. Over the years, the Forum has established itself as a global platform for sharing experiences, developing proposals, and strengthening an international network of young people committed to biodiversity conservation, sustainable development, and climate action.

The third edition of the Global MAB Youth Forum took place from May 18 to 22, 2026, in the Po Delta and Euganean Hills Biosphere Reserves in Italy, with the theme "Committed to the Future We Want." The event represented a key step in strengthening youth participation in the MAB Program, particularly following the adoption of the Hangzhou Strategic Action Plan 2026-2035. The Forum brought together young people from numerous Biosphere Reserves around the world, along with the new National MAB Youth Focal Points, to discuss priorities, opportunities, and concrete actions related to biodiversity protection, the well-being of local communities, and sustainable development. Through plenary sessions, working groups, field trips, and peer-learning activities, participants contributed to the definition of a shared vision for the future of the global MAB youth network.

Among the Forum's key outcomes are the MAB Youth Declaration 2026 and the MAB Youth Roadmap 2026-2035. The Declaration brings together the priorities, recommendations, and demands expressed by young participants for the future of the MAB Programme, while the Roadmap constitutes the strategic framework intended to guide youth engagement and action within the World Network of Biosphere Reserves over the next decade. Both documents represent a benchmark for strengthening participatory governance, international cooperation, and youth-led initiatives, and demonstrate the growing recognition of their role as key actors in achieving the sustainability goals promoted by UNESCO. The MAB Youth Declaration 2026 was subsequently presented at the 38th session of the International Coordinating Council of the MAB Programme, held in Paraguay in June 2026.

The Saline di Sicilia candidacy Youth Group selected two representatives from among its members (a male and female) who were accepted by the Italian National MaB Committee and were thus able to benefit from the preliminary training phase and, above all, from the very important exchange with their counterparts from around the world during the Forum itself.

All this experience was immediately made available to the Promotion Committee in the form of reporting but also in concrete activities, such as those related to communication (e.g., the design of the candidacy website and related social media) and support for several local community outreach meetings. The Youth Group will have a specific role in the proposed governance structure of the future Biosphere Reserve (for details, see section 17).

The current governance structure, envisaged for the candidacy phase, will remain in place until December 31, 2026. Subsequently, the Promotion Committee will define the permanent structure responsible for managing the Biosphere Reserve. Among the options currently under consideration, the Participatory Foundation model appears particularly consistent with the candidacy objectives, as it can ensure balanced representation of public and private stakeholders, foster inclusive decision-making processes, and ensure long-term organizational and financial stability.

Over the last two years the participatory process has involved a wide variety of subjects through over fifty public meetings, working groups, moments of thematic discussion and listening initiatives spread throughout the territory (fig. 20). This process helped build relationships of trust, share local knowledge and needs, and identify the main strategic priorities for the future of the Biosphere Reserve.

To ensure continuity of this process, the Promotion Committee plans to establish the *MaB Lab*, a permanent framework for dialogue and co-planning dedicated to developing the Management Plan and supporting the Reserve's future activities. The *MaB Lab* will be an operational framework to foster a collective co-planning approach, broad stakeholder participation, and the shared definition of strategies and actions for biodiversity conservation, enhancement of biocultural heritage, and sustainable development of the territory.



Ph: Nina Danilovic



Fig. 20. Summary of the activities held so far in the area and the topics covered (illustration generated with artificial intelligence based on data of the Nomination Form).

4.6.2 Have any cultural and social impact assessments been conducted, or similar tools and guidelines been used?

No formal cultural and social impact assessments based on the Akwé:Kon Guidelines of the Convention on Biological Diversity (CBD) have been conducted, nor have tools such as Free, Prior, and Informed Consent (FPIC) or Community Biocultural Protocols been applied. These approaches generally refer to contexts characterized by the presence of indigenous peoples or communities holding specific recognized customary rights, conditions that do not exist in the area covered by this nomination.

Despite the absence of such formal tools, the application process was developed according to principles fully consistent with the participatory approach promoted by the MAB Programme, enhancing the active involvement of local communities and key stakeholders in defining the strategic vision of the future Biosphere Reserve.

The consultation process involved a wide range of local stakeholders, including public institutions, protected area management bodies, schools and educational organizations, salt supply chain operators, cultural and environmental associations, research institutes, local businesses, and civil society

organizations. Through public meetings, thematic roundtables, and dedicated discussions, the various stakeholders contributed to the identification of conservation priorities, sustainable development opportunities, and governance methods for the future Biosphere Reserve.

Particular attention has been paid to recognizing and enhancing the area's biocultural heritage, understood as the set of historically developed relationships between local communities and the saltworks ecosystems. In this context, traditional knowledge and local practices related to sea salt production, lagoon and coastal management, traditional agricultural and fishing activities, as well as the conservation of the historic landscape and artifacts associated with the saltworks culture, have been recognized as strategic resources.

The candidacy recognizes these knowledge systems as essential components of the territorial identity and as significant contributions to the conservation of biodiversity, socio-ecological resilience, and the intergenerational transmission of local cultural heritage.

The future governance of the Biosphere Reserve (for details see section 17) will be based on permanent mechanisms for participation, consultation, and co-planning, ensuring the ongoing involvement of local communities, economic operators, institutions, and civil society organizations in the definition, implementation, and evaluation of management strategies. In this way, the Biosphere Reserve intends to become a platform for territorial cooperation aimed at integrating nature conservation, biocultural heritage protection, and sustainable development, fully consistent with the objectives and principles of the MAB Program (for details see section 4.7. (c).

4.7. Mechanisms for implementation

The proposed biosphere reserve has:

"(a) mechanisms to manage human use and activities in the buffer zone(s)"?

Human activities taking place in the buffer zone of the proposed Biosphere Reserve are subject to a complex system of protection regimes relevant to the various territorial scales, as summarised in table 5.

Table 5. Protection regimes and related legal frameworks

Level	Protection Instrument
International	*Ramsar Convention*
European	*Natura 2000 SACs and SPAs*
National	*Landscape protection under Legislative Decree No. 42/2004*
Regional	*Oriented Nature Reserves*
Local	*Landscape Plans and Municipal Master Plans*
Sectoral	*Maritime State Property Regulations, Hydrogeological Asset Plans (PAI), Cultural Heritage Protection Measures*

Each of these protection regimes results into a series of constraints and limitations on human activities, as summarised in Table 6.

Table 6. The conservation regimes and their main characteristics

Protection Type	Designation	Competent Authority	Legal Basis	Territorial Scope	Main Effects Restrictions
Regional Protected Area	*Trapani and Paceco Salt Pans Nature Reserve*	Sicilian Region Department of Territory and Environment; Management Body: WWF Italy	Regional Decree No. 257/44 of 11 May 1995	Trapani and Paceco Salt Pans	Habitat protection, management regulations, restrictions on land-use change, control of incompatible activities
Regional Protected Area	*Stagnone Islands of Marsala and Stagnone Seabed Nature Reserve*	Sicilian Region Department of Territory and Environment; Management Body: Free Municipal Consortium of Trapani	Regional Decree No. 257/44 of 11 May 1995	Stagnone Lagoon of Marsala	Habitat protection, management regulations, restrictions on land-use change, control of incompatible activities
Natura 2000	*SAC ITA010007 "Trapani Salt Pans"*	Sicilian Region European Commission	Habitats Directive 92/43/EEC	Salt-pan system	Appropriate Assessment (VINCA) required for plans and projects likely to affect habitats or species
Natura 2000	*SPA ITA010028 "Marsala Stagnone and Trapani Salt Pans"*	Sicilian Region European Commission	Birds Directive 2009/147/EC	Trapani-Marsala coastal belt	Protection of migratory and breeding bird populations; restrictions on disturbance-generating activities
International Convention	*Ramsar Site "Trapani and Paceco Salt Pans"*	Italian Ministry for the Environment	Ministerial Decree of 4 April 2011 (Ramsar Convention)	Salt-Pan wetlands	Conservation of wetland ecosystems and habitats of international importance
Landscape Protection	*Protected Landscape under Articles 136 and/or 142 of Legislative Decree No. 42/2004*	Sicilian Region Trapani Cultural Heritage Authority	Code of Cultural Heritage and Landscape	Coastal system and salt pans	Landscape authorization required for interventions modifying the character of the area
Landscape Plan	*Landscape Unit of the Province of Trapani*	Sicilian Region	Current Landscape Plan	Trapani, Paceco, Marsala, Stagnone	Land-use prescriptions, conservation of the historic salt-pan landscape, protection of traditional structures and scenic views
Cultural Heritage	*Historic windmills, traditional rural estates (bagli), and historic salt-production infrastructure subject to protection*	Cultural Heritage Authority	Legislative Decree No. 42/2004	Individual heritage assets	Prohibition of alteration without authorization; conservation obligations
Urban Planning	*Municipal Master Plans and local planning instruments*	Municipalities of Trapani, Paceco, and Marsala	Municipal Planning Instruments	Municipal territories concerned	Building restrictions and compatible land-use designations

Protection Type	Designation	Competent Authority	Legal Basis	Territorial Scope	Main Effects Restrictions
Maritime Public Domain	*Coastal and lagoon state-owned maritime areas*	Sicilian Region Maritime Authority	Italian Navigation Code	Coastal strip and water bodies	Concession-based regime and restrictions on occupation and transformation
Hydrogeological Protection	*Areas subject to Hydrogeological Asset Plans (PAI), where applicable*	Sicilian Basin Authority	Current PAI	Relevant portions of the territory	Restrictions on development in flood-risk and geomorphological risk areas
International Inventory	*Important Bird Area (IBA)*	BirdLife International	IBA Designation	Salt pans and Stagnone Lagoon	Scientific recognition and guidance for bird conservation

This complex system of rules and related constraints results in the main types of activities that are permitted in the two main salt pan systems, as summarised in the tab. 7.

Table 7. Types of activities permitted in the two salt pan systems

Activity Type	Trapani-Paceco	Stagnone di Marsala
Access and Public Use	*Access permitted on foot and by bicycle; bathing regulated*	*Access to islands only on foot; bicycles explicitly prohibited; sea access regulated; more restrictive bathing regulations; motorized navigation and unrestricted mooring prohibited*
Fishing and Aquaculture	*Recreational and commercial fishing prohibited; only traditional extensive aquaculture permitted*	*Commercial fishing prohibited; regulated recreational fishing permitted; extensive aquaculture allowed provided it does not alter seabeds or deplete fauna*
Transport and Circulation	*Motorized traffic prohibited on embankments and paths, except for salt workers, emergency services, and authorized access for persons with disabilities*	*Vehicle circulation permitted only on the existing road network; the management authority may impose total or partial restrictions*
Agricultural Activities	*Agriculture permitted and supported through incentives for organic farming*	*Agriculture and livestock farming permitted, subject to compliance with pollution-prevention regulations*

The management of human activities is based on the principle of compatibility between land use and ecosystem conservation. Traditional activities, such as salt production, agriculture, fishing, and tourism, are considered integral elements of the biocultural landscape and are promoted to the extent that they contribute to maintaining the ecological functions of coastal and lagoon environments.

(b) a management policy or plan for the area as a biosphere reserve

A Management Plan specifically addressing the entire proposed Biosphere Reserve is not yet available. However, the territorial participation process developed during the candidacy has already enabled the identification of a shared vision and a set of strategic priorities that will form the basis for its development.

The future Management Plan will be conceived as an integrated territorial coordination framework, aimed at linking biodiversity conservation objectives with the sustainable development needs of local communities. In line with the Hangzhou Strategic Action Plan (2026–2035) of the MAB Program, it will promote the integration of the Biosphere Reserve's three fundamental functions: conservation, development, and logistical support.

The strategic lines that emerged from the discussions with the various stakeholders are the following:

1. Implementation of the governance model for the future Biosphere Reserve as outlined by the Promotion Committee, ensuring continuity over time and space of the current collaboration methods between the various local authorities;

2. Facilitate the harmonization of current management tools (see section 15 for details) for better synergy across the territory;

3. with regards to the management of the Natura 2000 site, contribute to the creation of a single management authority (instead of the current two) and support the updating of the nature conservation measures;

4. Regarding salt production and harvesting, contribute to the ongoing experiments being conducted by the owners to improve business and environmental performance. The abandonment of salt pans is considered detrimental to the local salt culture and biodiversity, thus accelerating the further loss of cultural and natural heritage;

5. With regard to traditional knowledge linked to the territory (salt cultivation, agriculture, viticulture, fishing), create training opportunities for young people and job placement, also to prevent the phenomenon of abandonment of the territory;

6. as regards the building heritage (mills, farmhouses), promote their recovery and reuse, as elements characterising traditional landscapes that need to be repurposed;

7. test new methods of integrated coastal management in identified areas to increase the resilience of territories to climate change;

8. creation of a permanent observatory to serve the Biosphere Reserve, in collaboration, first and foremost, with the University of Palermo and its University Campus in Trapani and with the Sicilian Region and other interested parties;

9. strengthen existing environmental education activities (conducted by WWF and the Marsala Environmental Education Centre), expanding them beyond the traditional scope of schools to reach private operators (e.g. kitesurfing schools);

10. support experimental projects in the viticulture and olive growing sectors to improve their environmental performance;

11. support pilot initiatives by major local players (e.g., the environmental certification of Trapani-Birgi Airport);

12. support initiatives to improve the management of historic centres (e.g., sustainable mobility, reduction of land consumption, energy efficiency, etc.);

13. promote initiatives aimed at promoting sustainable and responsible forms of tourism;

14. Promote the involvement of young people through training and facilitation of jobs functional to the future reserve (environmental guides, local animators, etc.).

The Promotion Committee is committed to immediately initiating the process of preparing the Management Plan for the future "Saline di Sicilia" Biosphere Reserve, as a tool for planning, coordinating, and sharing strategies for the protection, enhancement, and sustainable development of the territory. This process will ensure the involvement of interested local authorities, as well as professional associations, trade associations, social, cultural, environmental, and economic organizations, citizens, economic operators, and public and private stakeholders, in order to ensure transparency, participation, and consistency between the MaB application and the needs of the territory.

In this process, the Natura 2000 site 'Saline di Trapani e Marsala' (which includes the Trapani and Paceco salt pans and the Stagnone lagoon) is particularly important. Its Management Plan (adopted in December 2011) recognizes the role of sustainable economic activities as active conservation tools. From this perspective, the continuity of traditional production practices and the sustainable development of local resources are considered essential for the conservation of biodiversity and the historic landscape.

The management bodies of the two nature reserves are currently updating the Natura 2000 site's conservation objectives and measures. This process represents an important opportunity to strengthen coordination between existing protection tools, harmonize management guidelines, and develop a shared vision of the area. The updated measures will subsequently be subject to consultation with local communities and stakeholders, in line with the principles of participatory governance promoted by the MAB Program.

The future Biosphere Reserve will therefore act as a platform for coordination and integration between existing management tools, promoting greater coherence of territorial policies and strengthening the territory's capacity to respond to environmental, economic, and social challenges, including those arising from climate change.

(c) a designated authority or mechanism to implement this policy or plan

At the end of this initial territorial coordination process, the Promotion Committee approved a governance system (fig. 21) that will govern the operation of the future Biosphere Reserve, once designated. The legal form this system will adopt is currently under discussion: the preferred model is a Participatory Foundation, which in Italy guarantees the participation of all interested stakeholders, while also ensuring the smooth functioning of the management component. The first planned activity is the preparation of a Management Plan informed by the strategic proposals emerging from the Working Groups thus far.

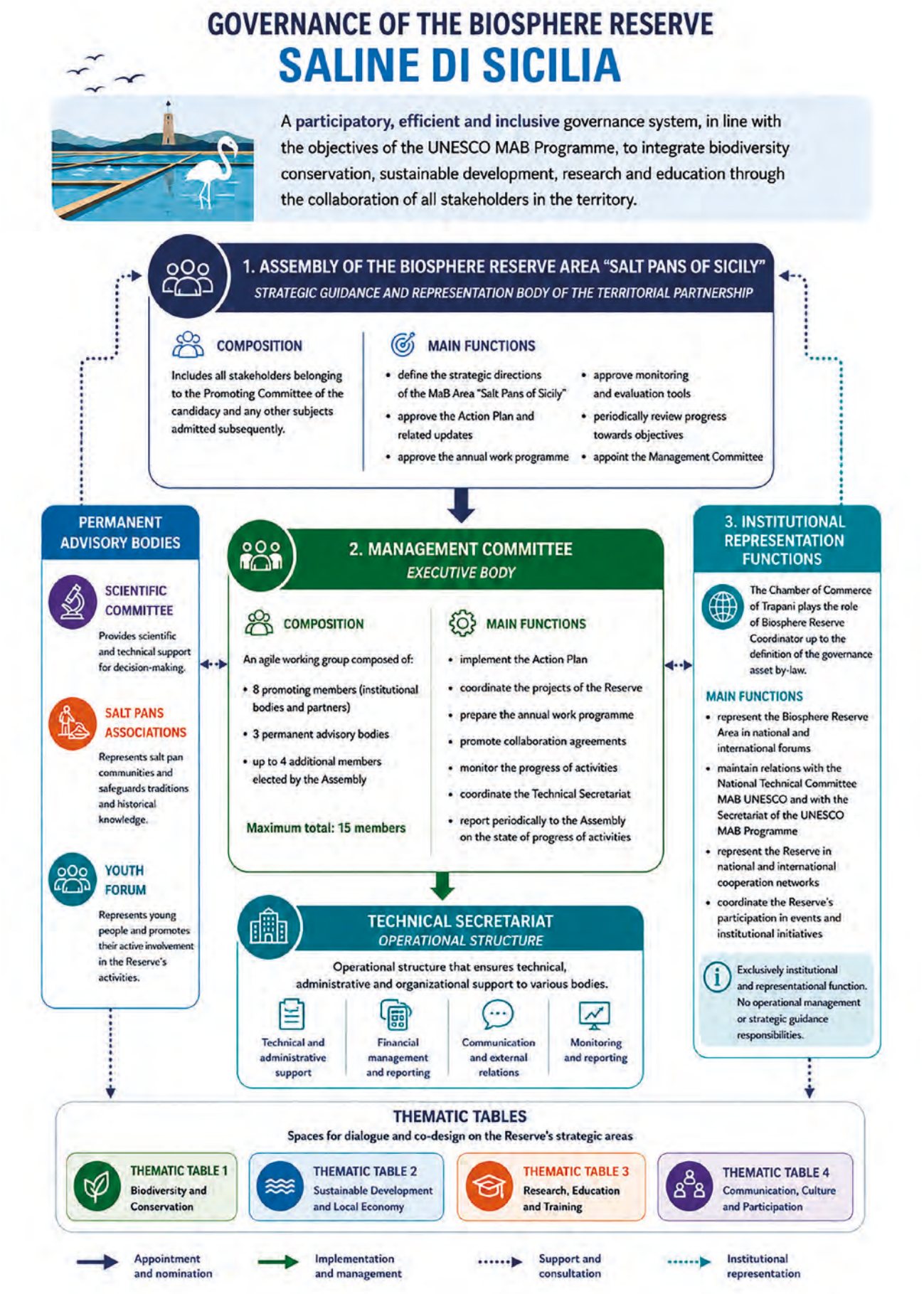


Fig. 21. The proposed governance system
(illustration generated with artificial intelligence based on data of the Nomination Form).

The proposed governance system is based on a participatory approach, with the Assembly as the strategic steering body and the Management Committee as the executive arm. The Trapani Chamber of Commerce will temporarily assume the role of institutional representation, supported by a Technical Secretariat for day-to-day operational activities. The system also integrates several advisory bodies, including a Scientific Committee, the Salt Workers' Legation, and a Youth Forum, to enhance technical expertise and youth engagement. Finally, thematic roundtables open to local stakeholders are envisioned to promote sustainable development, education, and tourism, consistent with the values of the MaB program. The various governance aspects are described in the following paragraphs.

1. Maintain a bottom-up and participatory approach.

To this end, a General Assembly of the "Saline di Sicilia" Biosphere Reserve (hereinafter referred to as the "Assembly") will be established, as the body responsible for strategic direction and representation of the territorial partnership. It will ensure institutional representation of the territorial partnership, define strategic directions, and ensure the integration of biodiversity conservation policies, sustainable development, and support for research and education, consistent with the objectives of the MAB Programme.

Composition
The Assembly will include all current members of the Promotion Committee, the signatories of any endorsement letters, and any additional individuals who request them and are subsequently admitted by the Assembly itself.

Functions
- define the strategic directions of the MaB Area "Saline di Sicilia";
- approve the Action Plan and its updates;
- approve the annual program of activities;
- approve monitoring and evaluation tools;
- periodically check the achievement of objectives;
- appoint the Management Committee.

2. Having an efficient management coordination

For this purpose, a Management Committee will be established, which will be the executive body responsible for implementing the guidelines defined by the Assembly and for the ordinary management of the Biosphere Reserve.

Composition
The Management Committee will be formed by a flexible working group composed of the current members of the Promotion Committee (Municipalities of Trapani, Marsala, Misiliscemi and Paceco, by the WWF of Trapani, by the Free Municipal Consortium of Trapani, by the Regional Department of Territory and Environment of the Sicilian Region, and by the Chamber of Commerce of Industry, Crafts and Agriculture (CCIAA) of Trapani), supported by representatives of the three advisory bodies (Scientific Committee, Legation of the Salt Workers, and Youth Forum). The Assembly may decide to integrate the 11 members mentioned above by electing up to four additional individual from among its affiliated, thus increasing the Management Committee's membership to a maximum of 15.

Functions
- implement the Action Plan;
- coordinate the Reserve's projects;
- prepare the annual operational programme;

- promote collaboration agreements;
- monitor the implementation of activities;
- coordinate the Technical Secretariat;
- report periodically to the Assembly on the progress of activities.

3. The representative function

The function of national and international institutional representation (the role of Biosphere Reserve Coordinator), which will ensure continuity in institutional relations and guarantee a single representation of the "Saline di Sicilia" Biosphere Reserve in national and international contexts (the UNESCO MAB National Technical Committee, the UNESCO MAB Programme Secretariat, the World Network of Biosphere Reserves, and other national and international cooperation networks), will be carried out by the Trapani Chamber of Commerce until the current Promotion Committee is transformed into a definitive governance structure (with the possible establishment of a Participatory Foundation, as mentioned above). This function is exclusively institutional and representative in nature and does not entail strategic direction or operational management responsibilities, which remain the responsibility of the Biosphere Reserve Assembly and the Management Committee, respectively.

Functions

- Officially represent the future Biosphere Reserve in national and international institutional relations;
- maintain relations with the UNESCO MAB National Technical Committee and with the UNESCO MAB Programme Secretariat;
- represent the "Saline di Sicilia" area within the World Network of Biosphere Reserves and the regional networks of the MAB Programme;
- romote collaboration agreements and partnerships at national and international level;
- promote the positioning and visibility of the Biosphere Area in the main institutional, scientific and cooperation contexts.

4. The operational function

In carrying out these functions, the Institutional Representation will be assisted by a Permanent Technical Secretariat, which constitutes the Reserve's permanent operational structure and ensures technical, administrative, and organizational support to the various governance bodies.

Composition

Dedicated technical and administrative staff, supported, where necessary, by professionals made available by institutional partners.

Functions

- technical-administrative support to governance bodies;
- operational coordination of activities;
- monitoring of the Action Plan;
- preparation of the Periodic Review and the documentation required by UNESCO;
- management of relations with the MAB Program Secretariat;
- project development and funding research;
- institutional communication;
- coordination of sustainable development education activities;
- organizational support for the permanent consultation tables.

5. The three permanent consultative bodies

The Scientific Committee
Appropriate technical and scientific oversight of the Biosphere Area's various actions and initiatives will be provided by the Scientific Committee, which serves as a technical advisory body. The Scientific Committee supports the governance bodies in defining strategies, evaluating the effectiveness of actions, and monitoring results.

Composition
This Committee will be composed of representatives and experts from the academic and research worlds. Specifically, the general assembly will decide the number of members of the Committee and the procedures by which they will be nominated by universities, ISPRA (Italian National Institute of Environmental Protection), CNR (National Research Council), and other accredited research institutions. The Committee may also draw upon additional experts in the fields of biodiversity, wetlands, climate change, land-use planning, and sustainable development to contribute to its operational composition.

Functions
- provide technical and scientific support to the Assembly and the Management Committee;
- define monitoring indicators;
- evaluate the effectiveness of the actions envisaged in the Action Plan;
- contribute to the preparation of the Biosphere Reserve Periodic Review;
- express opinions on the Reserve's main initiatives.



Ph: Virginia Salzedo

The Salt Workers' Legation
Fundamental support for the valorization and protection of cultural heritage (tangible and intangible) and the promotion of dissemination and outreach initiatives will be provided by the salt workers sector. These are those who, through their salt cultivation activities, contribute to the maintenance of the unique nature of the salt pans.

Composition
The legation will consist of salt pan owners and managers. They may also expand the group by co-opting other stakeholders, such as salt museum management bodies, socioeconomic operators involved in the salt cultivation sector, and historical heritage experts, with the aim of promoting traditional salt cultivation.

Functions
- provide technical and cultural support to the Assembly and the Management Committee;
- propose possible sustainable development projects for the Biosphere Reserve;
- support the drafting of the future Management Plan;
- promote relationships and collaborations with other saltworks in the Mediterranean;
- experiment with new management systems that adapt to ongoing climate change.

The Youth Forum
In line with the recent strategic documents of the MAB Programme, a dedicated space will be provided for the participation of younger generations. In this regard, the focus on young people, already demonstrated during the candidacy phase, will be continued (and expanded), as demonstrated by the formal establishment of a "Saline di Sicilia Youth Group" that supported the territorial animation activities and participated in the 3rd UNESCO MAB Global Youth Forum.

Composition
The Forum will be formed from the existing "Youth Group", eventually expanded. Specifically, the general assembly will define the number of members of the forum and the procedures for their selection, through the involvement of youth councils, students, youth associations, young researchers, young entrepreneurs, and young representatives of schools and universities.

Functions
- promotes the role of young people in the governance of the Biosphere Reserve;
- adheres to "young UNESCO" initiatives both at national and international level;
- promotes the development of territorial innovation proposals;
- proposes and supports the various communication activities of the Biosphere Reserve;
- promote relationships and collaborations with other youth groups;

6. Thematic roundtables for stakeholder participation

In addition to the three permanent consultative bodies (namely, Scientific Committee, Legation of Salt Workers, and Youth Forum), the assembly may activate additional Consultation Roundtables. These may include additional consultative bodies dedicated to specific issues related to the main areas of intervention of the future Biosphere Reserve, ensuring the involvement of the widest possible number of local stakeholders.
These roundtables represent additional and timely forums for discussion, proposals, and co-planning, operating in conjunction with the Technical Secretariat, which coordinates their work and transmits the proposals and requests that emerge to the governance bodies.

When drafting the "Management Plan for the Saline di Sicilia MAB Area," it may be suggested and indicated the need for any additional thematic working groups. For example, the following are some "thematic working groups" that could be established to support the governance of the Saline di Sicilia Biosphere Reserve;

Education, Training and Research Table
Closely related to the Scientific Committee's activity, this table could involve educational institutions, universities, training bodies and environmental education centres, and UNESCO Clubs (in Trapani and Marsala), with the aim of promoting educational programmes, training activities, scientific research and initiatives in education for sustainable development.

Third Sector Table
This forum could bring together third-sector organizations, volunteer organizations, and cultural and environmental associations to foster a culture of legality, civic participation, and the formulation of proposals for biodiversity protection, environmental awareness, and participatory monitoring.

Sustainable Economy Table
This forum could bring together the Trapani Chamber of Commerce, trade associations, businesses, and organizations related to the primary sector, with the aim of establishing an observatory on sustainable local development experiences to support business innovation and the valorization of local products.

Tourism Table
Trade associations, hotels, companies offering tourist services and more generally organisations in the tourism sector - DMO (Destination Management Organizations) – could form a thematic table to develop ideas and propose projects aimed at promoting sustainable tourism and a consequent tourist offering consistent with the values of the Biosphere Reserve.



Ph: Salvatore Sinatra



Ph: Salvatore Sinatra

7. How to connect governance and participation

While the Assembly retains the right to undertake any initiative deemed useful for the future "Saline di Sicilia" Biosphere Reserve, to ensure a structured flow of information between the various participation mechanisms and the governance bodies, it is proposed that the coordinators of the three permanent consultation panels (Scientific Committee, Legation of Salt Workers, and Youth Forum) -in addition to being members of the Management Committee -present an annual report to the Assembly on their activities, ongoing projects, and proposals for future initiatives. The Technical Secretariat will review any new project proposals, verifying their technical completeness and financial coverage, and, following approval by the Assembly, ensuring their transmission to the Management Committee for implementation.
A similar coordination will also be reserved for any thematic tables that may be set up and which were mentioned in the previous point.

(d) Programmes for research, monitoring, education and training

The Biosphere Reserve proposal identifies research, monitoring, education, and training as essential elements of the logistical support function envisioned by the MAB Program. The area offers a particularly favourable context for the development of research and experimental activities aimed at understanding the interactions between natural systems and human activities in a coastal landscape of high ecological and cultural value.
Research activities will focus primarily on the study of the biodiversity of brackish ecosystems, the dynamics of coastal wetlands, the effects of climate change, and the sustainability of traditional production activities. In this context, existing collaborations with universities (particularly the University of Palermo and its Trapani campus), research institutions (e.g., the National Research Council), and technical-scientific organizations (the Sicilian Regional Department of Land and Environment) provide an important foundation for the development of long-term interdisciplinary programs.

Monitoring will be developed through an integrated system of environmental, socioeconomic, and governance indicators (see chapter 14). This system will allow for the evaluation over time of the conservation status of ecosystems, the effectiveness of management measures, the evolution of compatible economic activities, and the degree of involvement of local communities in decision-making processes.

Educational activities will be aimed at both schools and the general public, promoting the salt pans as places of learning about the relationship between humanity and nature. Specifically, programs will be promoted focusing on biodiversity, coastal ecosystems, climate change, cultural heritage, and the Sustainable Development Goals of the 2030 Agenda.

The training will be aimed at strengthening the skills of salt industry operators, environmental and tourism guides, public administrations, and young researchers. Special attention will be paid to sustainable innovation in traditional production activities, integrated coastal zone management, participatory governance, and the valorization of local biocultural heritage.

All these initiatives will contribute to making the future Biosphere Reserve a territorial laboratory for innovation, sustainability and collective learning, strengthening the role of the Sicilian Salt Pans as a demonstration area for the implementation of the objectives of the MAB Programme and the 2030 Agenda for Sustainable Development at a national and Euro-Mediterranean scale.



Ph: Virginia Salzedo

5. ENDORSEMENTS

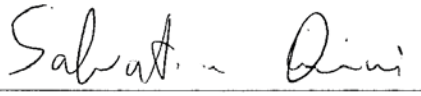
5.1 Signed by the authority/authorities in charge of the management of the core area(s):

Full name:	**Silvana Piacentino**
Title:	*Director of the Management Body of the Trapani and Paceco Salt Pans Nature Reserve (WWF)*
Subscription date:	
Contact:	via Giuseppe Garibaldi, 138 - 91027 Nubia (TP) mail: salineditrapani@wwf.it - Tel: +39 0923 867700
Signature	

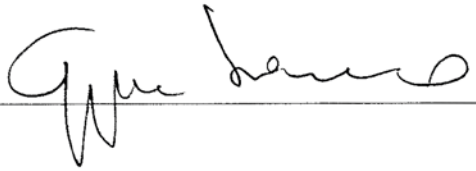
Full name:	**Quinci Salvatore**
Title	*President of the Free Municipal Consortium of T rapani, Management Body of the Stagnone Oriented Nature Reserve*
Subscription date	
contact	Via Garibaldi 89 - Trapani (TP) - mail: presidency@consorziocomunaletrapani.it Tel.+39 0923 806304 / 328 0410430
Signature	

5.2 Signed by the authority(ies) responsible for managing the buffer zone(s):

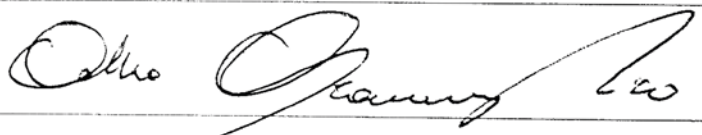
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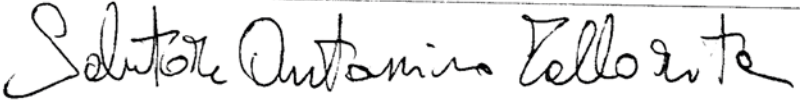
Full name:	**Quinci Salvatore**
Title	*President of the Free Municipal Consortium of T rapani, Management Body of the Stagnone Oriented Nature Reserve*
Subscription date	
contact	Via Garibaldi 89 - Trapani (TP) - mail: presidency@consorziocomunaletrapani.it Tel.+39 0923 806304 / 328 0410430
Signature	

5.3 Signed, as appropriate, by the National (or State or Provincial) administration responsible for the management of the core area(s) and buffer zone(s):

Full name:	**Hon. Giuseppa Savarino**
Title:	*Councillor*
Subscription date:	
Contact:	Department of Territory and Environment of the Sicilian Region Via Ugo La Malfa, 169 - 90146 Palermo PA mail: assessore.territorioambiente@regione.sicilia.it - Tel. +39 091 707 8545
Signature	

5.4 Signed by the authority/authority, elected local government, recognized authority or spokesperson representing the communities located in the core area(s).

Full name:	**Aldo Grammatico**
Title	*Mayor of Paceco*
Subscription date	
contact	Via Giovanni Amendola 1 - 91027 Paceco (TP) mail: protocollo@pec.comune.paceco.tp.it - Tel. +39 0923 1929111
Signature	

Full name:	**Salvatore Antonino Tallarita**
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Signature	

Full name:	**Andreana Maria Patti**
Title:	*Mayor of Marsala*
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Signature	

Full name:	**Giacomo Tranchida**
Title:	*Mayor of Trapani*
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Signature	

Full name:	**Giuseppe Pace**
Title	*Extraordinary Commissioner of the Trapani Chamber of Commerce, Industry and Craft*
Subscription date	
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Signature	

5.5 Signed on behalf of the MAB National Committee or focal point:

Full name:	**Francesco Tomas**
Title:	*General Director of the General Directorate for Biodiversity and Sea Protection* *President of the Italian MAB-IGG Technical Committee*
Subscription date:	
Contact:	Via Cristoforo Colombo, 44 - 00147 Roma - Tel: + 39 06-5722.8368-5041 mail: tbm-udg@mase.gov.it - mabunesco@mase.gov.it
Signature	



Ph. Giovanni La Francesca

6. LOCATION (COORDINATES AND MAP(S))



6.1 Provide the biosphere reserve's standard geographical coordinates:

The geographical coordinates (all projected in the WGS 84 system) of the Biosphere Reserve are reported in the table 8.

Table 8. Geographic coordinates of the Biosphere Reserve

Cardinal Points	Latitude	Longitude
Most central point	*37.9209269667738*	*12.4977492860835*
Northernmost point	*38.0341743424264*	*12.5329159517582*
Southernmost point	*37.7862216271161*	*12.444371633*
Westernmost point	*37.9676869140821*	*12.603609270351*
Easternmost point	*37.8921366257905*	*12.4294407855855*

6.2. Provide a map(s) on a topographic layer of the precise location and delimitation of the three zones of the biosphere reserve

The map with the proposed zoning is shown in fig. 16

The website where can be found detailed information is **https://www.candidaturamabsalinedisicilia.it/**



Ph. Piero Lazzari

7. AREA

The area proposedas a Biosphere Reserve is reproduced in the fig. 16.

The detailed map of the area of the harbour of Trapani is included in the Annexes.

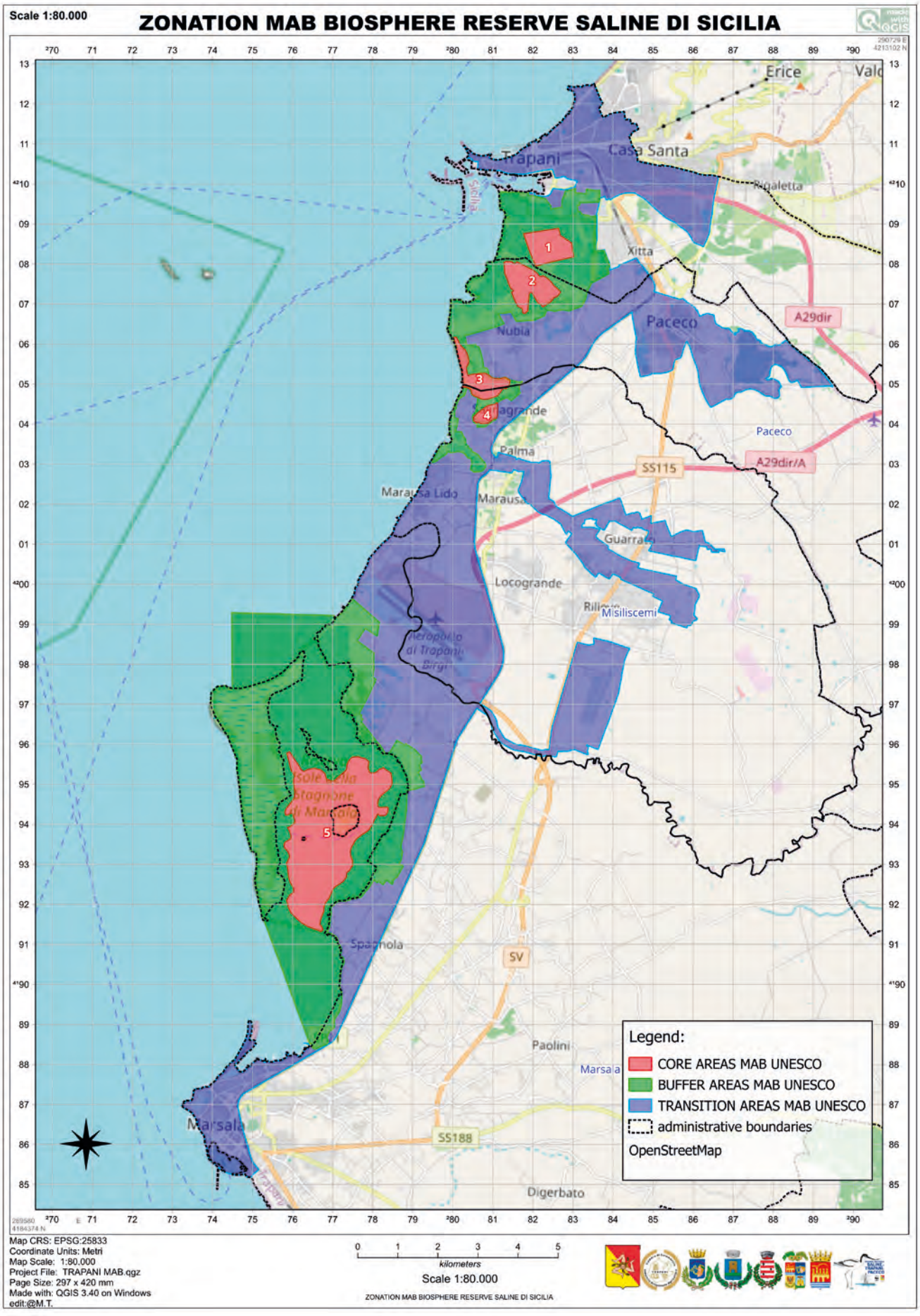


Fig. 16. Proposed MaB zoning

In the table 9 the surfaces of the various components of the Biosphere Reserve are reported.

Table 9. Surfaces of the components of Biosphere Reserve

Components	Land extension [hectares]	Marine extension [hectares]	% of Total Area
7.1 Core Area	*309,79*	*622.26*	*8%*
7.2 Buffer Area	*1,792.76*	*1,497.02*	*32.03%*
7.3 Transition Area	*5,951.75*	–	*58,5%*
Subtotal	**8.054,30**	**2.119,28**	
Total	**10,173.58**		**100%**

The total area of the proposed Biosphere Reserve places it among the small-to-medium sized in Italy. However, the primary reason for this zoning proposal is related to the geographic conformation of the proposed territory: any further extention would include areas characterized by dynamics that are currently not functionally connected to the territorial and planning dynamics of the MaB area. This approach was shared by the proponents, who organized themselves into a form of governance (see section 17.1.5) suited to the dynamics of this area.

7.4 Brief rationale of this zonation in terms of the respective functions of the biosphere reserve. If a different type of zonation also exists indicate how it can coexist with the requirements of the biosphere reserve zonation.

The proposed zoning (see fig. 16) reflects the ecological, landscape, and functional gradient of the Trapani and Paceco salt pans and the Stagnone lagoon of Marsala system, ensuring the coexistence of valuable habitat conservation, the maintenance of traditional salt-farming activities, and the promotion of sustainable development. The core, buffer, and transition zones were defined by harmonising the existing protection and planning regimes, ensuring consistency with the objectives of the MAB Program and the national and regional regulatory framework.

The core areas include territories characterised by the greatest ecological integrity and the presence of priority habitats and species of community interest, in particular brackish wetlands, historic salt pans and nesting and rest sites for migratory birds.

Specifically, the five different core areas and the surrounding buffer zones fall within the Natura 2000 site (Trapani and Marsala Salt Pans) and the "Saline di Trapani e Paceco" and "Stagnone" Nature Reserves. These areas are primarily designated for the conservation of wetland habitats and species of

community interest. Salt production, maintenance and restoration of existing buildings (especially mills), renaturalisation interventions, and authorized scientific research are permitted. New construction, industrial activities not related to salt production, hunting, intensive aquaculture, the introduction of non-native species, landfills, and uses that permanently alter habitats are expressly prohibited. The Natura 2000 site is larger than the proposed core and buffer zones, ensuring there will be no interference with the current intended uses, which are exclusively related to the conservation of nature and the bio-landscapes of the salt pans.

The transition area includes neighbouring territories directly related to the core and buffer areas, in terms of geographic proximity and various functional relationships (see fig. 23). From an environmental perspective, the transition area includes inland areas that ensure the protection of the water regimes flowing into the salt pans: for example, the Baiata River reservoir (included in the proposed transition) ensures the area's hydraulic regulation and the preservation of the surrounding green spaces, which will become a public park. From a land use perspective, the transition primarily includes areas dedicated to traditional primary production (horticulture, viticulture, and olive growing), which can generate new income for local operators. The area affected by the Trapani-Birgi airports is subject to restrictions requiring no other construction in the surrounding area. The civil airport has undertaken an environmental certification process, which is described in Chapter 15.

The planning frameworks adopted by the four municipalities (Trapani, Misiliscemi, Paceco, and Marsala) ensure that no projects will jeopardize the protected areas. Instead, good practices are being implemented by various entities (public and private) that are already geared toward increasing sustainability.



Ph: Giovanni La Francesca

From a socioeconomic perspective, the transition area plays a fundamental role: most of the operators involved in these activities live between Trapani and Marsala and maintain close ties with their territories, ensuring an important intergenerational transmission of traditional knowledge. Similarly, tourism operators and visitors travel to these areas of proximity. Finally, the planned research and training activities primarily involve the residents and operators of the future Biosphere Reserve, who will benefit by being included in the definition and implementation of the activities envisaged in the future Management Plan (for details, see chapter 17).

The proposed Biosphere Reserve zoning does not introduce new restrictions, but coordinates and integrates existing protection and planning regimes, providing a unified territorial framework for the active conservation of brackish ecosystems and the promotion of sustainable development for local communities.



Fig. 22. coastal area in the municipality of Misiliscemi

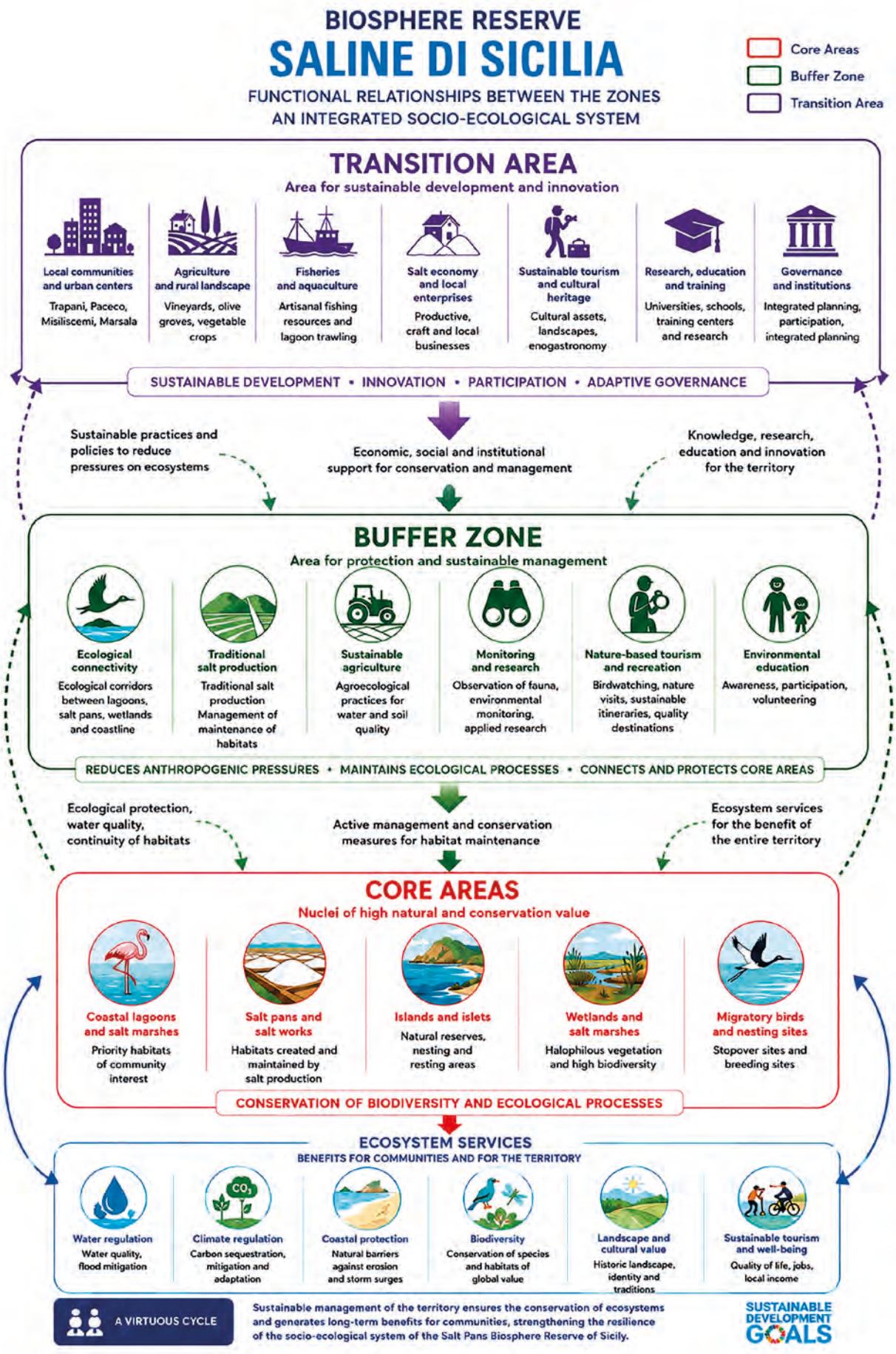


Fig. 23. functional relationships between the three zones of the proposed Biosphere Reserve.
(illustration generated with artificial intelligence based on data of the Nomination Form).



Ph: Piero Lazzari

8. BIOGEOGRAPHIC REGION

The proposed area includes a complex mosaic of Mediterranean coastal ecosystems representative of the Mediterranean Biogeographic Region (see fig. 11), characterised by a close interaction between natural components, semi-natural systems and historically anthropized landscapes.

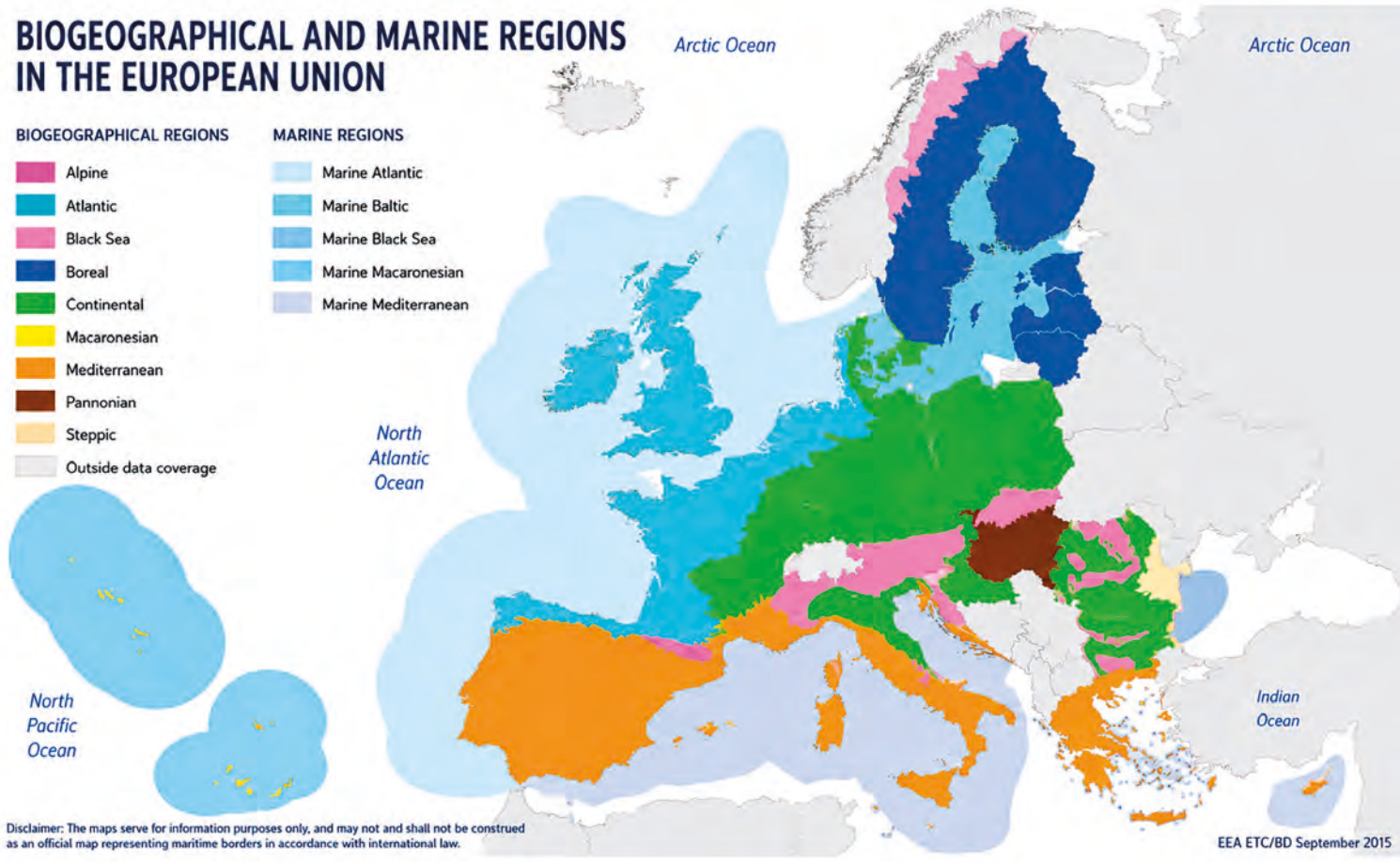


Fig.11. The main biogeographic regions in Europe.



Ph: Patrizia Galia

9. LAND USE

9.1 Historical

Origins and early developments

The salt pans of Trapani and Marsala constitute one of the oldest productive coastal landscapes in the Mediterranean. Their origin is closely linked to the geomorphological characteristics of the western coast of Sicily, where shallow waters, coastal lagoons, abundant sunlight, and constant winds have created particularly favourable conditions for the production of sea salt through solar evaporation.

The first organized forms of salt production likely date back to the Phoenician era, between the 8th and 6th centuries B.C., when the Phoenicians founded important commercial settlements along the western coast of Sicily, including Mozia (for details see the box inserted in the chapter 15.6.2), located in the centre of the Stagnone lagoon (and proposed as a core zone). Salt represented a fundamental strategic resource for food preservation, fishing, and maritime trade, contributing to the economic development of the area.

During the Roman era, salt production further increased, becoming part of the Roman Mediterranean trade networks. The coastal wetlands between Trapani and Marsala were progressively structured with embankments, evaporation ponds, and hydraulic systems to regulate seawater.

Medieval consolidation and modern age

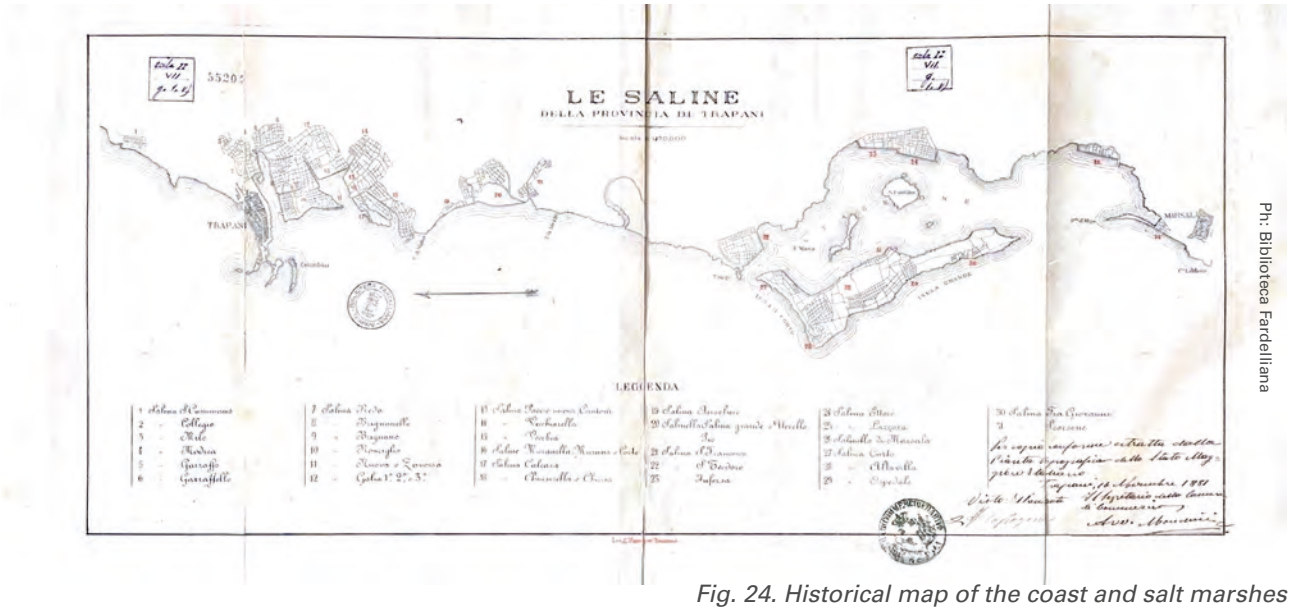
After a period of decline following the fall of the Roman Empire, salt mining activity revived during the Arab domination of Sicily (9th–11th centuries). The hydraulic knowledge introduced by the Arabs contributed to the improvement of water management techniques and the development of coastal areas. It was precisely during the Arab period that the salt pans were progressively shaped through:

- the construction of geometric evaporation tanks with the introduction of the "fractional precipitation" production method still used today;
- the construction of canals and locks;
- the construction of the characteristic windmills used for pumping water and grinding salt;
- the consolidation of embankments and coastal infrastructures.

Windmills became iconic elements of the landscape and essential components of the production system, allowing the continuous transfer of seawater between the different basins and increasing the efficiency of the entire evaporation cycle.

Beginning in the late Middle Ages, under Norman, Aragonese, and later Spanish rule, the salt pans of Trapani and Marsala assumed a key role in salt production in the central Mediterranean. The growing importance of maritime traffic and tuna fishing led to a sharp increase in demand for salt for food preservation.

Between the 16th and 18th centuries, the salt landscape underwent significant expansion and technical specialization. During this period, the salt pans represented one of the area's main economic resources and contributed significantly to the cultural and social identity of local communities.



Ph: Biblioteca Fardelliana

Fig. 24. Historical map of the coast and salt marshes

The salt industry in Trapani reached its peak during Spanish rule (15th-17th centuries). There is no single "viceregal decree" that authorised the construction of the salt pans; the expansion occurred through state concessions and royal privileges granted by the King of Aragon and the Spanish Viceroys, who favoured the Catalan aristocracy and merchants. The first documents relating to it date back to 1347, when the Trapani doctor Roberto De Naso received the *Salina Grande* as a fief from the King. In the 16th century, the activity underwent a strong acceleration. In 1504, for example, the Alfonso family asked the Spanish State for a state concession to establish the *Salina della Calcara*. Other concessions led to the creation of historic salt pans such as the Morana (1488) and the Reda (1490). The concessions for the *Ettore and Infersa* salt mines date back to 1492 and 1508, respectively. A key document is the royal and executive privilege issued on November 17, 1504, in Medina del Campo by Ferdinand the Catholic. This decree authorized the Portuguese family of Vice Admirals Alfonso (or de Alfonso) to construct and operate a salt mine in the Calcara area. Subsequently, the Viceroy of Sicily in Palermo issued executive letters (dated August 10, 1505, and July 12, 1506) sanctioning ownership and the effective commencement of construction, marking the expansion of the production of "white gold" in the province of Trapani. During the 17th century, thanks to incentives from the Spanish Crown aimed at making Trapani the hub of maritime trade, the city became the largest Mediterranean salt export hub.

Production expansion in the 19th century

The 19th century marked a period of strong economic development for the salt industry in western Sicily. The increased international demand for salt, linked to industrialization, the expansion of maritime trade, and the canning industry, fostered the expansion of production activities.

The salt pans of Trapani and Marsala became one of the main sea salt production districts in Italy. The production network became increasingly complex and integrated with the ports of Trapani and Marsala, from which salt was exported to numerous Mediterranean and European markets.

Despite the introduction of some technical innovations, production long maintained a predominantly traditional character, based on manual labour and seasonal management of the salt pans. The salt production system continued to rely on a complex balance between:

- environmental conditions;
- hydraulic engineering;
- traditional ecological knowledge;
- work organization.

The territorial layout assumed during this period largely corresponds to the landscape configuration still recognisable today.

Crises and transformations in the 20th century

During the 20th century, the salt industry underwent profound transformations. Growing competition from industrially extracted salt mines and changes in production systems led to a progressive reduction in the competitiveness of traditional sea salt.

In the post-war period, numerous salt mines suffered:

- reduction in productivity;
- abandonment of the tanks;

- degradation of hydraulic infrastructure;
- loss of skilled labor.

At the same time, urban and infrastructural expansion affected some portions of the coastal landscape, while the first signs of the effects of climate change seriously threatened the survival of production.

However, during the twentieth century, a new awareness of the ecological value of salt pans gradually emerged. Scientific studies and monitoring activities highlighted how traditional management of the basins had created habitats of exceptional importance for migratory birds and Mediterranean halophilous ecosystems.

Starting in the 1970s and 1980s, important environmental protection initiatives were launched, culminating in the establishment of the Trapani and Paceco Salt Pans Nature Reserve and the enhancement of the Marsala Stagnone area.

This has fostered a virtuous balance between environmental conservation and economic development, enabling the continued production of high-quality food-grade sea salt. The product is primarily destined for direct human and animal consumption and for use in high-value agri-food sectors, notably the cured meat, dairy and baking industries. Compliance with national and European health and production standards has required the progressive modernization of equipment and production technologies. However, these innovations have been implemented without compromising the close relationship between salt production, local cultural heritage and ecosystem conservation, which together constitute the foundation of the quality, reputation and market identity of Western Sicilian sea salt.

The contemporary phase: conservation, cultural heritage and sustainable development

In recent decades, the salt pans of Trapani and Marsala have progressively taken on a multifunctional role, evolving from exclusively productive landscapes to integrated socio-ecological systems in which the following coexist:

- salt cultivation and harvesting;
- biodiversity conservation;
- protection of cultural heritage;
- scientific research;
- environmental education;
- sustainable tourism.

Numerous historic salt pans have been restored and reclaimed, while the remaining production activities continue to employ traditional techniques based on natural, human-managed evaporation. Although manual salt harvesting is now a residual activity and remains, with increasing difficulty, a niche product and a symbol of historicity, the continuity of these practices today represents a fundamental element for preserving the ecological balance of coastal wetlands. Traditional human management contributes to the maintenance of salt-rich habitats and the hydrological conditions necessary for the survival of numerous migratory species. Currently, the landscape of the Trapani and Marsala salt pans represents one of the most significant Mediterranean examples of a living cultural landscape, in which human activity, biodiversity, and historical heritage are profoundly interconnected.

9.2 Who are the main users of the biosphere reserve?

The main users of the Biosphere Reserve and their interests are listed in table 10.

Table 10. The main categories of users and their interests

User Category	Subcategories	Main Interests Functions within the Transition Zone
Residents	*Urban and rural population of Trapani, Paceco, Marsala, and Misiliscemi*	*Quality of life, public services, mobility, employment, and enjoyment of the landscape*
Farmers and agricultural companies	*Viticulture, olive growing, horticulture, arable crops*	*Agricultural production, water-resource management, and conservation of the agricultural landscape*
Companies in the salt supply chain	*Industrial and artisanal saltworks, processing and marketing*	*Salt production and the economic and cultural valorisation of salt*
Tour operators	*Accommodation facilities, guides, tour operators, rental companies*	*Nature-based, cultural, gastronomic, and coastal tourism*
Commercial enterprises and services	*Trade, catering, business services*	*Local economic development and employment*
Fishermen and fishing operators	*Coastal fishing, small-scale artisanal fishing*	*Sustainable use of marine and lagoon resources*
Infrastructure and transport managers	*Trapani-Birgi Airport, Trapani Port, and road network*	*Mobility of people and goods and regional accessibility*
Local public bodies	*Municipalities, Free Consortium, Sicilian Region*	*Spatial planning, environmental protection, and local development*
Management bodies of protected areas	*Nature reserves, Natura 2000 sites, management bodies*	*Biodiversity conservation and environmental monitoring*
Scientific community and research institutes	*Universities, research centers, environmental observatories*	*Research, ecological monitoring, and territorial innovation*
Educational and training institutions	*Schools, vocational training institutions*	*Environmental education and promotion of local heritage*
Associations and NGOs	*Environmental, cultural, sports and volunteer associations*	*Public participation, awareness-raising, and territorial governance*
Recreational users	*Hikers, birdwatchers, nature photographers, cyclists, kitesurfers*	*Sustainable use of the territory and its natural resources*
Investors and innovative companies	*Startups, green economy and circular economy companies*	*Innovation, sustainability, and economic development*

9.3 What are the rules (including customary or traditional) of land use and access to each area of the biosphere reserve?

For the core and buffer zones, the access and usage rules are listed in table 11.

Table 11. Types of activities permitted in the various areas

Type of Activity	Trapani-Paceco	Stagnone di Marsala
Access and use	*Access permitted on foot and by bicycle; regulated bathing activities permitted.*	*Access to the islands permitted only on foot; bicycles explicitly prohibited; access by sea regulated; stricter bathing regulations; motorized navigation and unrestricted mooring prohibited.*
Fishing and aquaculture	*Recreational and commercial fishing prohibited; only traditional extensive aquaculture permitted.*	*Commercial fishing prohibited, while regulated recreational fishing is permitted; extensive aquaculture allowed provided it does not alter the seabed or adversely affect wildlife populations.*
Transport and circulation	*Motorized traffic prohibited on embankments and pathways, except for authorized salt workers, emergency services, and persons with disabilities on agreed routes.*	*Circulation permitted only along the existing road network, with the management authority retaining the right to impose full or partial access restrictions.*
Agricultural activities	*Agriculture permitted and encouraged through incentives for organic farming.*	*Agriculture and livestock breeding permitted, subject to compliance with anti-pollution regulations.*

Regarding the transition zone, the Municipal Master Plans (currently being transformed into the General Urban Plans - PUG) are in force, which regulate specific aspects such as construction, traffic, noise emissions, etc.

9.4 Describe women's and men's different levels of access to and control over resources

There are no distinctions in access to resources based on gender or other distinguishing factors (class, religion, ethnicity, etc.). The restrictions set forth in the above paragraphs apply equally to residents and visitors, with rare exceptions (vehicle access to historic city centres for residents).



Fig. 25. Salt pans



Ph: Leonardo Rallo

10. HUMAN POPULATION OF THE PROPOSED BIOSPHERE RESERVE

The number of inhabitants permanently living in the territories of the proposed Biosphere Reserve is shown in table 12.

Table 12. Population permanently living in the territories of the proposed Biosphere Reserve

Area	Population
10.1 Core areas	*0*
10.2 Buffer zone	*300*
10.3 Transition area(s)	*84,327*
Total	*84,627*

10.4 Brief description of local communities living within or near the proposed biosphere reserve.

Over the centuries, the proposed territory has hosted a mosaic of civilizations: founded by the Elymians (historically linked to the survivors of Troy) and the Phoenicians, a people of skilled merchants and seafarers between the 9th and 8th centuries BC, it later came under Roman, Ostrogothic, and Byzantine control. The year 827 marked the beginning of Arab influence, an era that left an indelible mark on the local identity, still vivid today in the agriculture, landscape, architecture, and gastronomy. In the centuries that followed, the Normans, Angevins, and Aragonese ruled, followed by the Savoy, Austrian, and Bourbon rulers. From this same coastline, Garibaldi's epic campaign that led to the unification of Italy began.

The main population live in the urban centers of Trapani and Marsala, which are the main economic and administrative hubs of the area. Smaller communities are spread throughout the municipalities of Paceco and Misiliscemi, characterized by sparse settlements and a strong connection to the rural and coastal landscape.

The population composed almost exclusively by people of Sicilian origin, with a strong cultural identity linked to maritime, salt-making, and agricultural traditions. In recent decades, there has been a growing presence of residents from other European Union countries, North Africa, and Eastern Europe, employed primarily in the agriculture, tourism, and service sectors. There are no historically recognized ethnic minorities under national law.

The communities residing within the proposed Biosphere Reserve area are characterized by substantial demographic stability, with an overall trend of slight population decline, consistent with the dynamics observed in western Sicily and southern Italy. The main municipalities affected have shown a moderate decline in residents in recent years, associated with population aging and a decline in natural change. This context reinforces the importance of sustainable development strategies capable of creating employment opportunities, enhancing traditional saltworks-related activities, and encouraging younger generations to remain in the area.

10.5 Name(s) of major settlements within and near the proposed biosphere reserve with reference to the map (section 6.2):

The main settlements present (partially) in the proposed area are the following (from north to south):

- Trapani
- Misiliscemi
- Paceco
- Marsala

Fig. 26. Illustrates the distribution of the main urban centres in Sicily and their relative sizes (in terms of number of inhabitants).

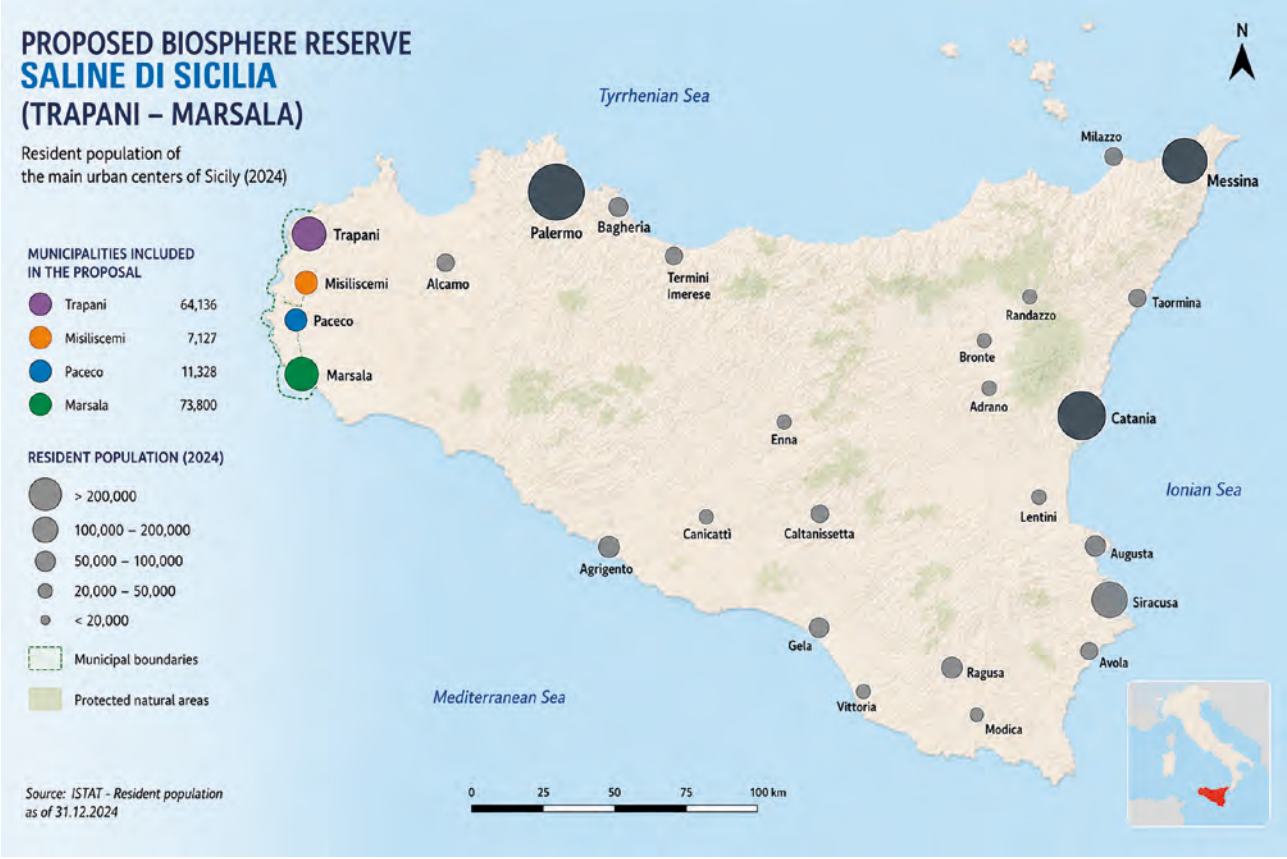


Fig. 26. Main urban centers of Sicily
(illustration generated with artificial intelligence based on data of the Nomination Form).

10.6 Cultural significance

The proposed area possesses significant cultural, historical, and ethno-anthropological value, resulting from the centuries-old interaction between local communities and the coastal salt pans. The current landscape is the result of human activity, which, through the traditional production of sea salt, has shaped a territorial system characterized by evaporation ponds, canals, embankments, windmills, and production infrastructure that still constitute a distinctive element of the local identity. The salt pans represent one of the most significant Mediterranean examples of a cultural landscape in which traditional economic activities and biodiversity conservation coexist in a virtuous manner.

Over the centuries, salt culture has generated specialized knowledge, production techniques, water management practices, and environmental expertise, passed down through generations of salt workers. These skills constitute an important intangible cultural heritage that continues to contribute to landscape maintenance and the conservation of natural habitats. Human presence and the continuity of traditional activities have played a decisive role in shaping the current ecosystem.

The area also preserves a rich heritage of rural and productive architecture, salt museums, interpretive trails, cultural events, educational activities, and promotion initiatives that strengthen the bond between local communities and the salt pan landscape. The salt pans are a symbol of identity shared by the communities of Trapani, Paceco, Misiliscemi, and Marsala, and are a central element of the cultural and tourist image of western Sicily.

10.7 Specify the number of spoken and written languages (including ethnic, minority and endangered languages) in the biosphere reserve.

Throughout the entire candidate area, there is only one official language: Italian. However, several local dialects persist, still spoken primarily by people living in rural areas. In particular, we can distinguish:

- *Trapani dialect* (Trapani–Paceco–Erice area): spoken by the urban and peri-urban population of Trapani, close to Palermo, with rural variants in the salt countryside

- *Marsalese dialect* (Stagnone area): spoken in Marsala and in the coastal hamlets (e.g. Birgi, Spagnola, Nubia), strongly influenced by Trapani but with its own characteristics (agricultural-marine vocabulary, linked to salt pans and fishing).



Ph: Salvatore Sinatra



Ph: Piero Lazzari

11. BIOPHYSICAL CHARACTERISTICS

11.1 General description of the site characteristics and topography of the area

The landscape of the area consists of a very low-altitude coastal plain, characterised by the presence of an integrated system of coastal and lagoon wetlands, including the Stagnone di Marsala, and historic salt pans that are still active, which represent a humanised but ecologically significant landscape (see fig. 27).



Fig. 27. The salt pans landscape

The context is completed by residual marshy areas and marginal mudflats, which play an ecological role of transition between the marine and terrestrial environments, and by discontinuous sandy coastal dunes and ridges, with psammophilous vegetation typical of Mediterranean environments.

In the areas behind it, a coastal agricultural plain develops in landscape continuity with the salt pans, while the system is visually closed, towards the interior, by weak peripheral hilly reliefs that define the overall morphological context.

Overall, it is a Mediterranean coastal-lagoon landscape with a strong integration between nature and traditional human activities, characterised by a high level of interaction between geomorphological and hydrological dynamics and historical production practices.

11.2 Altitude range:

11.2.1 Maximum altitude above sea level:

7 meters above sea level (maximum marginal value in the coastal areas and immediately adjacent reliefs)

11.2.2 Minimum altitude above sea level:

0 meters above sea level (sea level, salt basins and intertidal surfaces)

11.2.3 For coastal/marine areas, maximum depth below mean sea level:

about 5 meters (marine areas facing the Stagnone and shallow coastal platforms).

11.3 Climate

The salt pans of western Sicily predominantly fall into the Csa climate class of the Köppen–Geiger classification, corresponding to a Mediterranean climate with hot, dry summers, according to the terminology adopted by the World Meteorological Organization (WMO). This climate type is characterized by long, hot, dry summers and mild winters with precipitation concentrated in the autumn and winter months (see fig.28).

Average annual temperatures in the coastal salt pan areas of western and southern Sicily generally range between 17 and 19°C. Average summer maximum temperatures frequently reach 30–32°C, with extremes exceeding 40°C during African heatwaves; in 2021, southeastern Sicily recorded a value of 48.8°C, which is being verified by the WMO as a possible continental European record.

Annual precipitation is relatively limited, averaging between 450 and 650 mm/year, with strong rainfall seasonality: over 70% of precipitation falls between October and March, while the summer quarter is markedly dry, often with precipitation below 10 mm/month (see fig. 28). High annual sunshine, strong evaporation, and constant sea breezes are essential climatic factors for the historical and contemporary functioning of traditional saltworks.

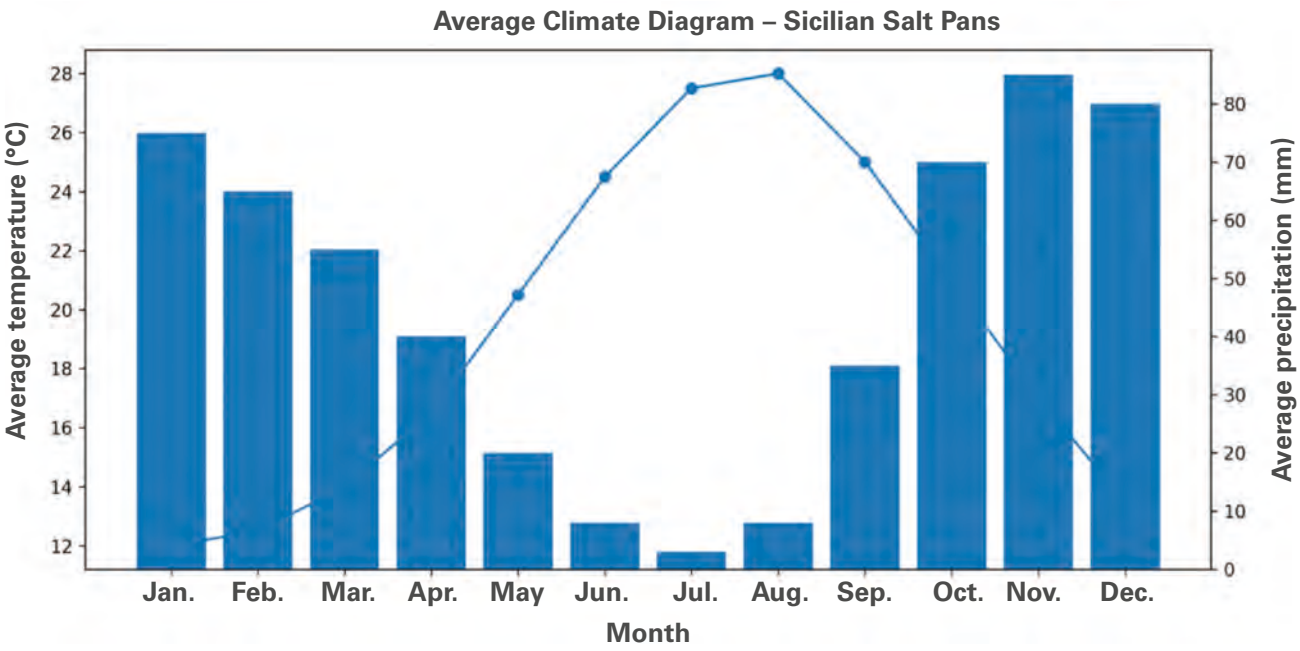


Fig. 28. Average climate diagram of the candidate area

The wind regime is dominated by the Mistral (NW) and Sirocco (SE) winds, which contribute to evaporative processes and significantly influence the ecological dynamics of coastal wetlands and halophilic habitats.

The area is also characterized by high levels of sunshine, strong evaporation, and constant ventilation. The prevailing winds are the *Mistral* (northwesterly), particularly frequent along the western coast, and the *Scirocco* (southeast), warm and dry, which contribute to the natural evaporation processes of the salt pans. The average annual wind speed in the Trapani coastal area frequently exceeds 20 km/h.

These climatic conditions favour the traditional production of sea salt and support halophilic ecosystems and coastal wetlands of high ecological value, fundamental for biodiversity and for the stopover of migratory birds in the central Mediterranean.

According to the IPCC's Sixth Assessment Report (AR6), the Mediterranean basin is recognized as one of the major global climate change hotspots, with rates of warming exceeding the global average, progressively decreasing precipitation, increasing climate aridity, greater frequency and intensity of heatwaves, and increased risk of droughts and wildfires. These dynamics are particularly relevant for brackish ecosystems and the sustainability of traditional salt-farming activities in Sicilian coastal areas.

11.3.1 Average temperature of the warmest month: 26.6 °C (August)

11.3.2 Average temperature of the coldest month: 10.8 –11.4 °C (February)

11.3.3 Average annual precipitation: 480–580 mm (with November being the wettest), recorded at an altitude of 2 metres.

The data are provided by the Italian Air Force Meteorological Service – Trapani Birgi Station, World Meteorological Organization (WMO station 16429) and the climate series analyzed are those for the period 1991–2025.

11.3.4 Is there a meteorological station in or near the proposed biosphere reserve? If so, what is its name and location and how long has it been operating?

The meteorological station located within the territories of the proposed Biosphere Reserve is that of Trapani-Birgi Airport (Italian Air Force Meteorological Service – Trapani Birgi Station, World Meteorological Organization (WMO station 16429). The climate series analyzed are those for the period 1991–2025.

11.4 Geology, geomorphology, soils

Geology

The Trapani and Marsala salt pans area is located in the western coastal sector of Sicily, characterized by a predominantly sedimentary geological structure of Mesozoic and Cenozoic age. The geological substratum consists primarily of carbonate and calcarenite successions, locally overlain by more recent marine and continental deposits.

Quaternary depositional dynamics played a key role in shaping the current coastal landscape. During the Pleistocene and Holocene, sea-level fluctuations and sedimentary processes favoured the formation of low-lying coastal plains, brackish lagoons, dune ridges, and back coastal wetland systems.

Particularly notable is the presence of recent alluvial, silty-clayey, and sandy deposits, associated with lagoonal environments and transition areas between land and sea. These sediments contributed to the formation of flat surfaces suitable for the historical development of salt-harvesting activities.

The geological setting (see fig. 29) of the area has therefore favoured the creation of a low-energy coastal environment, characterized by shallow water, high evaporation and optimal conditions for the traditional production of sea salt.

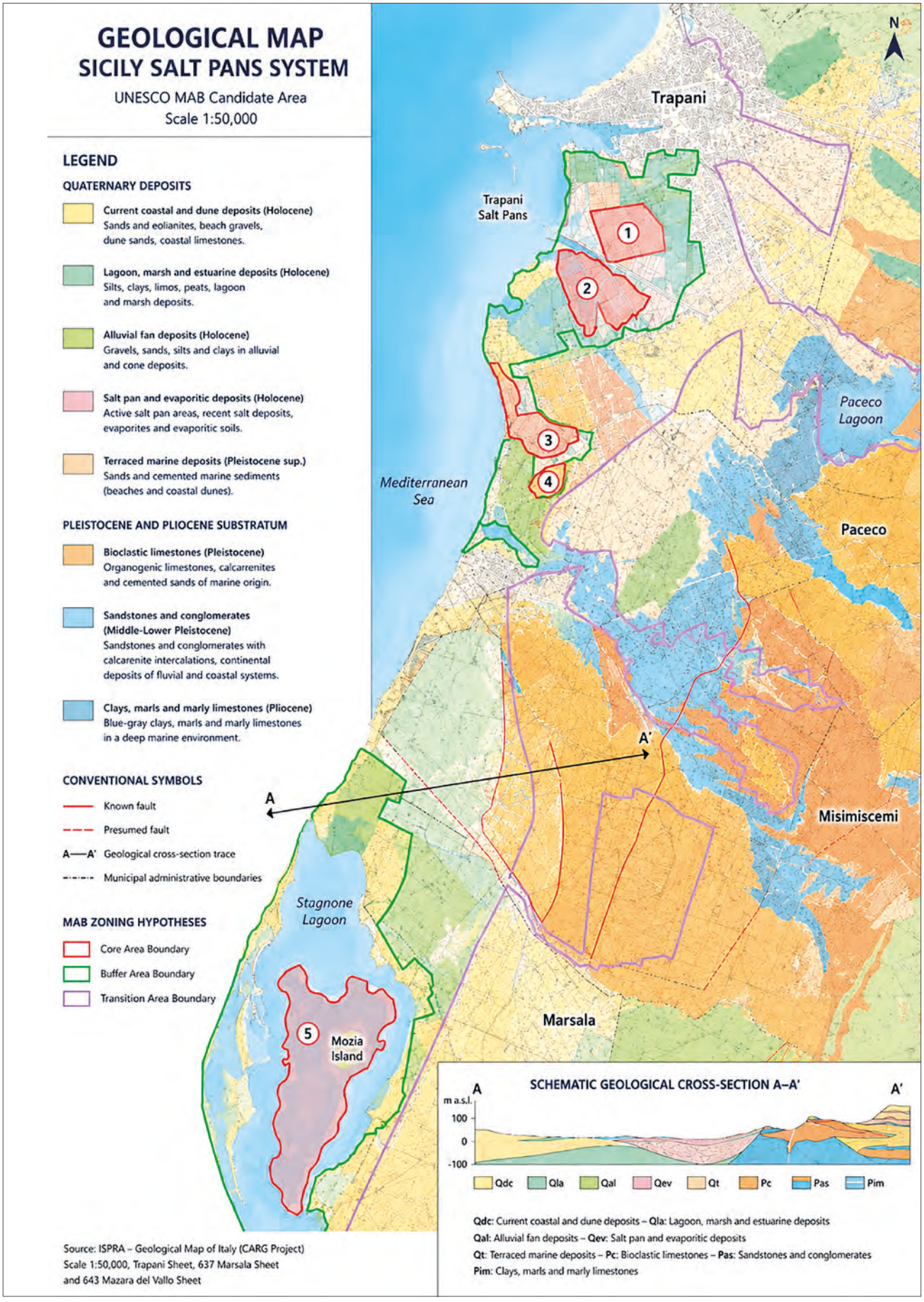


Fig. 29. Geological map of the candidate area.
(illustration generated with artificial intelligence based on data provided by Sicilian Region).

Geomorphology

From a geomorphological point of view, the candidate area is characterized by an extremely low and complex coastal plain, shaped by the interaction between marine, aeolian, lagoonal, and anthropogenic processes.

The main geomorphological elements include:

- coastal lagoon systems;
- tidal flats and brackish surfaces;
- dune ridges and paleo-dunes;
- artificial evaporation ponds;
- canals and historical hydraulic systems;
- islands and sandy banks of the Stagnone lagoon.

The coastal morphology is characterized by very low altitudes, often close to sea level, which over the centuries have allowed the construction of a complex system of evaporation basins and hydraulic infrastructures for the management of marine waters.

The Stagnone lagoon represents one of the area's key geomorphological features, appearing as a semi-enclosed, shallow environment, protected by Isola Grande and a series of sandy shorelines and islets.This geomorphological configuration creates hydrodynamic conditions particularly favourable to the development of brackish ecosystems and wetland habitats of high ecological value.

The current geomorphological landscape is also the result of a long coevolution between natural dynamics and human transformations. Historical salt mining activities have modified and structured the landscape through embankments, canals, and hydraulic regulation systems that today form an integral part of the area's landscape identity.

Soils

The soils of the candidate area reflect the strong influence of coastal, lagoonal, and saline dynamics. They are predominantly young, poorly evolved soils, and are closely influenced by the presence of brackish groundwater and high salinity.

The main soil typologies include:

- saline and saline-alkaline soils;
- hydromorphic soils associated with wetlands;
- coastal sandy deposits;
- silty-clayey soils of lagoon areas;
- anthropized soils linked to salt-harvesting activities.

The high salt concentration severely limits the development of vegetation, favouring highly specialized halophilic communities adapted to extreme environmental conditions.

In the areas of active saltworks, soils are profoundly influenced by human water management and evaporation cycles.The continuous circulation of seawater and the sedimentation of mineral salts contribute to the formation of substrates characterized by high mineralization and limited paedogenic evolution.

In the surrounding agricultural areas, however, moderately evolved soils are observed, predominantly sandy loam or clay loam, historically used for traditional Mediterranean crops such as vineyards and olive groves.

The combination of geological, geomorphological, and pedological characteristics contributes to the definition of a highly specialized and fragile coastal system, in which traditional salt pan management plays a fundamental role in maintaining ecological and landscape balances.

11.5 Bioclimatic zone

Table 13 shows the bioclimatic zone in which the candidate territories fall.

Table 13. Bioclimatic zone

Areas	Average annual rainfall/mm	Aridity index		Core Area(s)	Buffer Zone(s)	Transition Area(s)
		Penman	(UNEP index)			
Hyper-arid	P<100	<0.05	<0.05			
Arid	100-400	0.05-0.28	0.05-0.20			
Semi-arid	400-600	0.28-0.43	0.21-0.50	X	X	X
Dry Sub-humid	600-800	0.43-0.60	0.51-0.65			
Moist Sub-humid	800-1200	0.60-0.90	>0.65			
Per-humid	P>1200	>0.90				

11.6 Biological characteristics:

Main habitat types and land cover

The main habitat types are as follows:

Coastal brackish wetlands and salt pan evaporation basins

Scope: local

Description: This is a system of salt pans, evaporation basins, and brackish water ponds resulting from traditional sea salt production (see fig. 30). They constitute the characteristic ecological and landscape element of the proposed area.

The characteristic species are:

- *Artemia salina*
- *Salicornia fruticosa (Sarcocornia fruticosa)*
- *Halocnemum strobilaceum*
- *Suaeda vera*
- *Limonium spp*. endemic to western Sicily
- Greater flamingo *(Phoenicopterus roseus)*
- Avocet *(Recurvirostra avosetta)*
- Black-winged Stilt *(Himantopus himantopus)*
- Kentish plover *(Charadrius alexandrinus)*

The salt pan system is characterized by a close interaction between natural processes and human activities that, over the centuries, have shaped the landscape and local ecosystems. Among the main natural processes are the dynamics of the tides and the water exchanges between the sea and the lagoon, evaporation phenomena that lead to salt precipitation, the sedimentation of fine materials, and seasonal variations in salinity, factors that influence the structure and functioning of brackish habitats.

These dynamics are complemented by traditional management practices that have helped maintain the ecological balance of the system, including the hydraulic regulation of the salt pans, artisanal salt harvesting, and water level management aimed at both optimizing the production process and preserving the habitats used by aquatic birds. The continuous interaction between natural components and human intervention is a distinctive feature of the salt pans' cultural landscape and contributes to their high ecological and socioeconomic importance.



Fig. 30. Salt pans with Salicornia fruticosa bushes

Halophilous vegetation and Mediterranean salt steppes.
Scope: local

Description: Specialized plant communities adapted to high levels of salinity, developed along riverbanks, in brackish depressions and in periodically submerged areas.

Characteristic species:

- *Salicornia perennis*
- *Arthrocaulon macrostachyum*
- *Halimione portulacoides*
- *Suaeda vera*
- *Limonium spp.*
- *Frankenia laevis*

The halophilous vegetation communities and Mediterranean salt steppes present in the saltworks area are the result of a delicate balance between natural ecological processes and traditional management practices. The distribution and composition of plant species are closely influenced by soil salinity gradients, periodic temporary flooding, and the deposition of saline sediments, which create unique en-

vironmental conditions and favour the establishment of highly specialized species. At the same time, anthropogenic factors contribute to shaping these habitats, particularly through riverbank maintenance and vegetation control using traditional saltworks management practices. These interventions, historically integrated with the functioning of the production system, have helped maintain habitat diversity and ecological heterogeneity. At the same time, the growing tourist and recreational use of the area can generate localized pressures, particularly through trampling and disturbance of vegetation cover, necessitating careful management to ensure the long-term conservation of these habitats of high natural value.

Coastal lagoons and shallow marine waters.

Scope: regional

Description: Transitional environments between land and sea characterised by high biological productivity and a nursery function for numerous fish species (see fig. 31).

Characteristic species:

- *Posidonia oceanica*
- *Cymodocea nodosa*
- *Mugilidae spp.*
- *Sparus aurata*
- *Dicentrarchus labrax*
- *Sterna hirundo*
- *Sterna albifrons*

The coastal lagoons and shallow marine waters of the area constitute an ecological system strongly influenced by the physical and biological dynamics operating on a regional scale along the western Sicilian coastline. The main natural processes include coastal currents, which regulate the exchange of water, nutrients, and organisms between lagoon and marine environments, sediment transport, and storm surge dynamics, which contribute to the ongoing shaping of the coastline and associated habitats. Added to these are seasonal variations in water temperature and salinity, factors that impact biological productivity, species distribution, and the overall functioning of coastal ecosystems.

At the same time, human activities play a significant role in defining the ecological characteristics of these environments. In particular, traditional and professional fishing is a historic component of local coastal economies and interacts with the biological resources of lagoon and marine ecosystems. At the same time, shipping and nautical tourism contribute to the enjoyment of the territory and the enhancement of the coastal landscape, while requiring appropriate management measures to limit potential impacts on habitats and species of conservation interest. The balance between natural processes and human activities is therefore crucial for maintaining the ecological functionality and biodiversity of these coastal systems, which play a strategic role in the regional environmental context.



Fig. 31. Coastal lagoon environments

Coastal dunes and psammophilous vegetation.

Scope: regional

Description: the coastal dune systems are present in the less urbanized sectors of the coastal strip, important for coastal protection and biodiversity conservation.

Characteristic species

- *Ammophila arenaria*
- *Eryngium maritimum*
- *Pancratium maritimum*
- *Elymus farctus*
- *Lotus criticus*

Coastal dunes and psammophilous vegetation constitute a dynamic system closely dependent on the geomorphological processes that shape the regional coastline. The formation and evolution of dune habitats are determined by wind-driven sand transport, coastal dynamics, and the ongoing erosion and deposition processes that regulate the availability and distribution of sediment along the coastline.

These natural processes foster the creation of a sequence of habitats characterized by high ecological specialization, in which plant communities adapted to conditions of highly unstable substrates, high wind exposure, and salinity establish themselves. At the same time, these ecosystems are particularly

sensitive to human impacts. Tourist and seaside use can lead to degradation through trampling and fragmentation of vegetation cover, altering the natural consolidation processes of dunes. Dune stabilization interventions, if properly designed and integrated with the natural dynamics of the coastal system, can contribute to habitat conservation and erosion mitigation, strengthening the ecological resilience of these environments of high natural and landscape value.

Mediterranean scrub and coastal garrigue area.

Scope: regional

Description: Mediterranean shrub formations are present in the marginal areas of the biosphere reserve and in the sectors less influenced by salinity.

Characteristic species

- *Pistacia lentiscus*
- *Olea europaea var. sylvestris*
- *Phillyrea angustifolia*
- *Rosmarinus officinalis*
- *Thymbra capitata*

The Mediterranean scrub and coastal garrigue are characteristic ecosystems of the western Sicilian landscape, whose structure and composition are determined by the interaction between climatic factors, ecological dynamics, and human activities. The marked summer drought typical of the Mediterranean climate is a major factor in environmental selection, favouring species adapted to water-stressed conditions and contributing to the definition of plant communities. The evolution of these habitats is also influenced by ecological succession processes, which regulate the distribution and complexity of vegetation cover over time in relation to soil characteristics and environmental conditions. Among the main natural and anthropogenic disturbance factors are fires, which can significantly alter vegetation structure and influence the successional trajectories of ecosystems. Occasional grazing, when present, also contributes to maintaining open habitats and vegetation mosaics of high ecological interest, while inadequately regulated recreational use can lead to localized degradation, such as vegetation damage and the disruption of natural regeneration processes. The conservation of these environments therefore depends on maintaining a balance between natural ecological adynamics and sustainable management of land use, capable of preserving their biological, landscape, and cultural value.

Traditional agricultural areas

Scope: regional

Description: Agricultural mosaic consisting mainly of vineyards, olive groves, and traditional Mediterranean crops that contribute to ecological connectivity and the cultural landscape.

Characteristic species

- *Vitis vinifera*
- *Olea europaea*
- Fauna associated with Mediterranean agroecosystems (Passerines, pollinators, reptiles)

Traditional agricultural areas contribute significantly to the definition of the rural landscape and the preservation of the territory's ecological and cultural values. The structure and functionality of these agroecosystems are closely linked to agricultural practices historically adapted to local environmental conditions, which have favoured the coexistence of agricultural production and biodiversity conservation over time. Irrigation management is a fundamental factor in maintaining agricultural productivity and regulating available water resources, while pruning and soil cultivation influence vegetation structure, soil fertility, and ecological regeneration processes. A particularly important role is played by the conservation of hedgerows, rows, agricultural margins, and other linear landscape elements, which serve as ecological corridors and habitats for numerous flora and fauna species, contributing to



ecological connectivity on a regional scale. At the same time, the potential use of pesticides can impact agricultural ecosystems and associated biological communities, making the adoption of sustainable, low-impact cultivation practices desirable. The balance between productive activities, protection of natural resources, and conservation of the rural landscape is therefore a key element for the resilience and sustainability of these socio-ecological systems.

Urban areas, infrastructures and historical settlements.

Scope: regional

Description: Residential centres, port infrastructure, historic buildings linked to salt production, mills, and road networks.

Characteristic species

- Common synanthropic species
- Common Swift *(Apus apus)*
- Kestrel *(Falco tinnunculus)*

The area's urban areas, infrastructure, and historical settlements represent significant elements of the cultural landscape (see fig. 32), testifying to the long-standing interaction between local communities and the coastal environment. Urbanization processes (especially in the two major centres of Trapani and Paceco) and infrastructure development have influenced the landscape over time, modifying land use and the ecological relationships between natural and human environments. At the same time, tourism activities constitute an important economic and cultural resource, contributing to the enhancement of the area's natural and historical heritage, but requiring careful management to limit potential pressure on the most sensitive ecosystems. A central role is played by the conservation of the historical-industrial heritage linked to salt production, which includes artifacts, traditional systems, and historic architecture closely integrated into the landscape and representative of the area's cultural identity. The main factors of human impact also include artificial lighting and other forms of disturbance associated with human presence, which can influence wildlife behaviour and alter natural ecological processes. The sustainable management of these contexts therefore requires the integration of cultural heritage protection, biodiversity conservation, and socioeconomic development, in line with the objectives of the Biosphere Reserve.



Fig. 32. Aerial photo of Trapani and its salt pans

The main land use categories (according to the Corine classification) are reported in table 14 and mapped in fig. 33.

Table 14. Land use categories

CLC Code	CORINE Class	Relevance
422	*Salt pans*	Very high
421	*Salt marshes*	Very high
523	*Sea and ocean*	High
521	*Coastal lagoons*	High
331	*Beaches, dunes and sands*	Medium
223	*Olive groves*	Medium
221	*Vineyards*	Very high (particularly in the Marsala area)
243	*Heterogeneous agricultural areas*	Very high
112	*Discontinuous urban fabric*	High
123	*Port areas*	Localized
124	*Airports*	Localized
323	*Sclerophyllous vegetation*	Limited

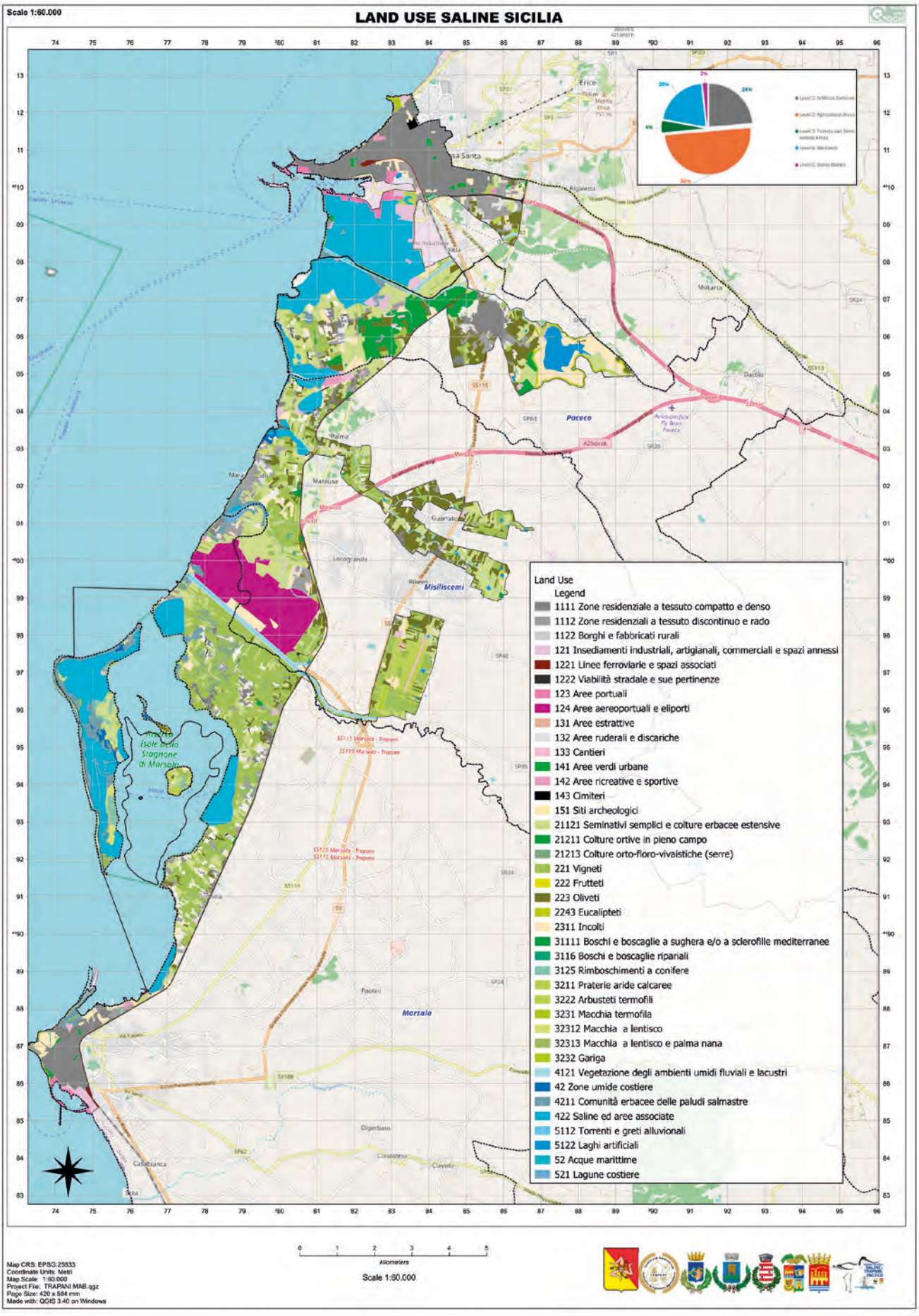


Fig. 33. Land use map
(illustration generated with artificial intelligence based on data porvided by the Sicilian Region).



Ph: Luigi Barraco

12. ECOSYSTEM SERVICES

12.1. If possible, identify the ecosystem services provided by each ecosystem in the biosphere reserve and the beneficiaries of these services.

The Trapani and Paceco salt pans and the Stagnone lagoon system of Marsala constitute a coastal socio-ecological system of exceptional value, characterized by the interaction between shallow lagoon ecosystems, hypersaline environments, and traditional salt landscapes that are still actively managed. The site's current configuration is the result of centuries of coevolution between natural coastal processes and human practices related to salt production, which have created a multifunctional landscape capable of combining biodiversity conservation, traditional economic activities, and cultural values.

The main ecosystem functions of the system concern (a) the hydrological regulation of microtidal coastal environments, (b) the maintenance of high levels of biological productivity in brackish and hypersaline ecosystems, (c) the availability of essential habitats for migratory and resident birds and (d) the conservation of ecological processes closely linked to the historical management of the salt landscape.



Fig. 34. A salt worker on the embankment of the salt flat

Although a comprehensive mapping and assessment study of ecosystem services across the entire area, according to the most recent international frameworks, has not yet been carried out, the site can benefit from a consolidated multidisciplinary scientific research framework. The available knowledge derives from numerous studies regarding biodiversity, coastal hydrology, microbiology of hypersaline environments, avifauna ecology, traditional saltworks management, and coastal landscape evolution (among the most relevant, it is worth mentioning Ingrassia et al. (2024) on the ecological and hydrological dynamics of the Stagnone; Wallace Initiative (2024) on climate change and biodiversity; and MedArtSal (2023) on the sustainable management of Mediterranean saltworks and ecosystem services). Such research allows for the robust identification and documentation of the main ecosystem services provided by the candidate territories.

The site's contribution to maintaining biodiversity is particularly significant. Surveys conducted on the halophilous flora, wetland vegetation, terrestrial and aquatic invertebrate communities, and microorganisms adapted to hypersaline environments, they exhibit high levels of biological diversity and ecological functionality. These elements support essential ecosystem services such as habitat conservation, nutrient cycling, organic matter decomposition processes, and the support of regional ecological networks.

Among the most recognized services at the national and international levels, its function as a habitat for migratory birds is particularly important. The system of salt marshes and coastal lagoons represents a highly valuable resting, feeding, and nesting area along the migratory routes of the central Mediterranean. This function is recognized through various protection and planning instruments, including the designation as a Special Protection Area (SPA) under the Birds Directive, recognition as an Important Bird Area (IBA), and inclusion in the network of wetlands of international importance under the Ramsar Convention. The site's contribution to Mediterranean ecological connectivity is one of its most significant and best-documented ecosystem services (BirdLife International DataZone, updated 2024).

The system also provides important regulatory services associated with coastal hydrological and geomorphological dynamics. Shallow lagoons and salt ponds contribute to the local regulation of water flows and the management of exchanges between the terrestrial and marine environments. The interactions between wind, evaporation, and salinity influence ecosystem functioning and contribute to the environmental stability of the coastal system, also contributing to the conservation of habitats and, in part, to the mitigation of erosion.

Alongside regulatory and support services, the site produces significant cultural and productive benefits. Traditional sea salt production represents an emblematic example of an ecosystem service generated by the integration of natural processes and human management. Maintaining a historic salt-making activity that is still operational allows for the preservation of traditional knowledge, sustainable production practices, and identity values that contribute to the quality of the landscape and its cultural and tourist appeal.

More recent research (Santulli, Biodiversity as a Source of Innovation and Development: the Trapani and Marsala Salt Works) has further highlighted the value of the hypersaline ecosystems present in the area, both for their role in biogeochemical processes and for the potential associated with specialized microbial biodiversity. At the same time, studies on the ecological connectivity of lagoon environments and shallow coastal waters (e.g., MedArtSal Project (2023), Handbook of Good Practices for Coastal Salt Pans (IUCN and Mediterranean partners) have confirmed the site's importance as a functional hub of the Mediterranean ecological network. Analyses conducted within the Natura 2000 network have also highlighted the area's contribution to biodiversity conservation and the maintenance of the ecological functionality of coastal ecosystems in western Sicily.

Overall, the system of the Trapani and Paceco salt pans and the Marsala Stagnone represents a particularly significant example of a socio-ecological landscape in which support, regulatory, supply, and cultural services derive from the dynamic interaction between natural processes and traditional management.

12.2 Specify whether ecosystem services indicators are used to assess the three functions (conservation, development and logistic) of biosphere reserves. If yes, which ones and give details.

A system of ecosystem services indicators to specifically assess the three functions of the proposed Reserve has not yet been developed, but this is one of the first activities envisaged for the future Management Plan.

12.3 Describe the biodiversity involved in the provision of ecosystem services in the biosphere reserve (e.g. species or groups of species involved).

The site's biodiversity is dominated by halophilous species, benthic communities and migratory birds, which together support a highly functional system in terms of:

- support services (primary production, food webs)
- regulatory services (biogeochemical cycles, sedimentation, filtration)
- cultural services (international landscape and naturalistic value)
- limited but historically significant supply services (salts)

Table 15 summarises the main biological groups, their key species/groups and associated ecosystem services.

Table 15. Main biological groups and their key species

Main biological groups	Key species/groups	Associated ecosystem services
Avifauna: the most relevant biological group for ecosystem services is represented by aquatic and migratory birds, which use the system as a resting, feeding and nesting area along the central Mediterranean flyway.	• ***Phoenicopterus roseus (pink flamingo)*** • ***Recurvirostra avosetta(avocet)*** • ***Charadrius spp. (plover)*** • ***Tringa spp. (gossips, squid)*** • ***Sternidae (terns)*** • ***Ardeidae (herons)***	- Migration support (strategic stopover habitat) - Ecological regulation of food webs - Cultural and recreational value (birdwatching)
Halophilous vegetation The vegetation typical of brackish environments contributes to soil stabilization and the regulation of biogeochemical cycles	• ***Salicornia spp.*** • ***Arthrocnemum Macrostachyum*** • ***Sarcocornia spp.*** • ***Suaeda vera*** • ***Limonium spp.***	- Regulation and support services - Stabilization of sediments and mud surfaces - Natural nutrient filtration - Support for microfaunal biodiversity
Benthic communities Benthic communities play a fundamental role in the basic processes of the lagoon ecosystem.	• ***Polychaete annelids*** • ***Bivalve molluscs (e.g. Cerastoderma glaucum)*** • ***Crustaceans (amphipods, isopods)*** • ***Invertebrates adapted to high salinity***	- Support and adjustment - Recycling of organic matter - Sediment stabilization - Trophic basis for avifauna
Phytoplankton and microalgaeIn brackish and hypersaline basins, microalgal communities are dominant in primary production processes	• ***Diatoms*** • ***Cyanobacteria*** • ***Dinoflagellates*** • ***Halophilic microalgae***	- Support and adjustment - Primary production - Regulation of carbon and nutrient cycles - Base of the aquatic food chain
Hypersaline microbiota Salt marshes host specialized microbial communities in extreme conditions	• ***Extreme halophilic bacteria*** • ***Halophilous Archaea*** • ***Microbial communities of salt crystallizers***	- Regulation and potential provisioning - Biogeochemical cycles in extreme environments - Decomposition and transformation of organic matter - Biotechnological potential (enzymes, metabolites)
Fish and lagoon fauna	• ***Small euryhaline fish (e.g. Aphanius fasciatus)*** • ***Juvenile marine species that use the lagoon as a nursery*** • ***Planktonic and nektonic invertebrates***	- Imitated provisioning and support - Support for food webs - Limited local fish production - Connection between marine and lagoon ecosystems

Table 16 shows the main species and the related categories of functions performed.

Table 16. Main species and related categories of ecosystem services functions

Group / Species	P	R	C	S	Main Ecosystem Function
Phoenicopterus roseus (Greater Flamingo)	–	✓ ✓ ✓	✓ ✓ ✓	✓ ✓	Flagship species for birdwatching; indicator of salt-pan ecological quality
Recurvirostra avosetta	–	✓ ✓	✓ ✓	✓ ✓	Regulation of benthic macroinvertebrate communities
Charadrius spp.	–	✓ ✓	✓	✓ ✓	Feeding on mudflats
Sternidae (Terns)	–	✓	✓ ✓	✓	Ecological linkage between marine and lagoon systems
Ardeidae (Herons)	–	✓ ✓	✓	✓ ✓	Regulation of fish populations
Aphanius fasciatus	✓	✓ ✓	–	✓ ✓ ✓	Euryhaline fish species and trophic-network support
Cerastoderma glaucum	✓	✓ ✓	–	✓ ✓ ✓	Water filtration and bioindicator species
Benthic polychaetes	–	✓ ✓	–	✓ ✓ ✓	Organic matter recycling
Crustaceans (Amphipoda, Isopoda)	–	✓ ✓	–	✓ ✓ ✓	Decomposition processes and trophic support
Diatoms	–	✓ ✓ ✓	–	✓ ✓ ✓	Primary production
Cyanobacteria	–	✓ ✓	–	✓ ✓ ✓	Nutrient fixation
Arthrocnemum macrostachyum	–	✓ ✓	✓	✓ ✓ ✓	Sediment stabilization
Salicornia spp.	–	✓ ✓	✓	✓ ✓ ✓	Halophytic habitat formation
Limonium spp.	–	✓	✓ ✓	✓ ✓	Landscape and aesthetic value
Halophilic archaea	–	✓ ✓ ✓	–	✓ ✓	Extreme-environment biogeochemical cycling
Hypersaline microalgae	✓	✓ ✓	–	✓ ✓ ✓	Primary production in hypersaline environments
Phytoplankton	✓	✓ ✓	–	✓ ✓ ✓	Foundation of aquatic food webs

Note: Provisioning (P); Regulating services (R); Cultural services (C); Supporting services (S)



Fig. 35. Heron



Ph: Giovanni La Francesca

12.4 Specify whether any ecosystem services assessment has been done for the proposed biosphere reserve. If yes, is this assessment used to develop the management plan?

A full assessment of the ecosystem services supporting the proposed Biosphere Reserve has not yet been carried out, but a methodological framework has been established to allow for a start as soon as possible.

The various types of services identified are the following:

Provisioning Services

The site provides limited but significant historical and cultural supply services:

- Sea salt production, obtained through solar evaporation in traditional salt pans, a historical economic activity still active.
- Biological resources, including limited fish biomass in lagoon areas and extremophilic microbial organisms with potential biotechnological interest.
- Biota of brackish environments, with limited local use and ecological relevance.

Regulating Services

The regulatory functions are particularly relevant for shallow lagoon morphology and evaporative dynamics:

- Hydrological regulation, through exchanges between marine and lagoon waters in limited circulation systems.
- Regulation of sediment dynamics, including processes of deposition, resuspension and geomorphological stabilization of brackish basins.
- Local microclimatic regulation, influenced by high evaporation, wind and salinity gradients.
- Natural purification processes, linked to the filtering functions of brackish humid ecosystems.

Cultural Services

Cultural services represent a dominant component of the system:

- Salt Cultural Landscape, the result of a centuries-old coevolution between human activities and the coastal environment.
- Recreational and ecotourism value, particularly for birdwatching, nature photography and environmental tourism.
- Scientific and educational value, as a reference site for the study of coastal lagoons and hypersaline environments.
- Landscape and heritage identity, strongly linked to traditional Mediterranean practices.

Support Services

Ecological support functions are essential for the functioning of the system:

- Critical habitat for migratory birds, along the central Mediterranean route, for stopping, feeding and nesting.
- High benthic and microbial biodiversity, adapted to strong salinity gradients and extreme conditions.
- Primary production, supported by halophilic vegetation, phytoplankton and benthic algae.
- Eco-friendly connectivity function, between marine, lagoon and terrestrial environments in a coastal transition system.



Fig. 36. Canals, embankments and salt pans for water management



Ph: Giovanni La Francesca

13. MAIN OBJECTIVES FOR THE DESIGNATION OF THE BIOSPHERE RESERVE

13.1 Describe the main objectives of the proposed biosphere reserve, integrating the three functions (conservation, development and logistic), presented below (sections 14 to 16), including components of biological and cultural diversity. Please specify the indirect pressures and/or organizational issues.

The main objectives of the proposed Biosphere Reserve can be summarised in the following three areas:

(1) Contribute to the protection and enhancement of the cultural landscapes of the Trapani and Paceco salt pans and the habitats they have generated over time and space;

(2) Contribute to the design of a shared agenda for the entire designated territory that enhances the existing and future innovative projects with a view to pursuing the objectives of the 2030 Agenda;

(3) Organize the proposed area as a large open-air sustainability laboratory, where research, experimentation and training activities on sustainability issues can be organized with a Euro-Mediterranean vision.

Regarding point (1) the Biosphere Reserve aims to contribute to the conservation of the cultural landscapes of the salt pans (see fig. 37), characterised by a very long-standing salt production activity (for details see paragraph 11) and, as such, permeated by a series of characteristics linked to the cultivation of ''white gold' that have marked them physically, ecologically, economically, and culturally. Updating the Management Plan for the Natura 2000 site (which includes the current Stagnone and Trapani Regional Reserves) will be one of the first activities to which the future Biosphere Reserve will make a concrete contribution. This approach, already identified during the working groups, aims to foster greater integration by converging toward a single form of governance, a long-standing desire of the various stakeholders. Natural asset conservation activities must be recalibrated in light of the development of new activities (such as kitesurfing), which, despite their low impact, must be monitored. All of this is aimed at preventing the abandonment of the salt pans, which would inevitably lead to the decay of this biocultural landscape.



Fig. 37. Salt cultivation

Regarding point (2), the Biosphere Reserve intends to systematize, within the framework of a future Integrated Management Plan, the activities in the area that are already aimed at greater sustainability. Starting from those related to salt cultivation (experimentation on organoleptic characteristics, quality certification, etc.), proceeding with those related to forms of sustainable tourism (sailing, salt tourism, birdwatching) and including those related to traditional crops conducted with cutting-edge techniques (viticulture, olive growing, cultivation of red garlic, etc.).

Regarding point (3), the future Biosphere Reserve aims to become a large open-air laboratory of sustainability. The ongoing research initiatives conducted mainly on ecological, hydrological and zoological aspects in specific areas will be systematized within a broader framework of investigation of all the relevant aspects of the dynamics of the candidate territories, including the socio-economic and anthropological ones. In this broader framework, the idea of establishing a permanent Observatory on the Biosphere Reserve coordinated by the University of Palermo through its Trapani branch, in collaboration with the Sicilian Region, has been proposed.

The existing environmental education activities, mainly carried out by the WWF Visitor Centre and the CEA of Marsala (see fig. 38). They will be strengthened and made available to a broader and more diverse set of stakeholders. Finally, specific activities for schools have already been planned thanks to the support of the two UNESCO Clubs in Trapani and Marsala.



Fig. 38. Environmental interpretation course

13.2 Describe the sustainable development objectives of the biosphere reserve.

The proposal for the Sicilian Salt Pans Biosphere Reserve is based on an integrated vision of sustainable development, in line with the principles of the United Nations 2030 Agenda. The Reserve intends to serve as a local laboratory for the concrete implementation of the Sustainable Development Goals (SDGs), integrating environmental conservation, sustainable economic development, and the well-being of local communities.

In particular:

1. Conservation of ecosystems and natural capital (addressing SDGs 14 and 15)

The future Reserve aims to:

- contribute to the protection and restoration of coastal wetland and salt marsh ecosystems, recognized for their high ecological value;
- contribute to the conservation of biodiversity, with particular attention to migratory birds and halophilous habitats;
- promote ecosystem management that ensures the continuity of ecosystem services (hydrological regulation, carbon sequestration, landscape value).

The future Biosphere Reserve Management Plan intends to recognize biodiversity as an essential foundation for sustainable development. The MaB designation will contribute to improving the functionality of the Trapani and Paceco and Stagnone Strict Nature Reserves and to the preparation of their updated Management Plan.



2. Sustainable use of resources and resilient local economy (addressing SDGs 8 and 12)

A central objective of the management of the future Biosphere Reserve is the promotion of:

- sustainable production practices, in particular salt cultivation, as an example of compatible use of natural resources (promotion of process innovation and product certification projects);
- local supply chains with low environmental impact and high cultural value (e.g. traditional viticulture, Slow Food Presidia);
- circular economy and sustainable tourism models linked to the salt pan landscape (e.g. birdwatching, sailing).

The Reserve thus intends to contribute to the transition towards a more inclusive green economy in all the areas involved.

3. Climate change adaptation and coastal resilience (addressing SDGs 13 and 14)

The Saline di Sicilia Biosphere Reserve aims to:

- being a pilot area for climate change adaptation strategies in coastal and island environments;
- becoming a Nature Based Solutions Laboratory;
- becoming a sentinel system for monitoring the effects of sea level rise and extreme events.

This approach contributes to global climate commitments, in line with the 2030 Agenda.

4. Enhancement of the cultural landscape and local communities (addressing the SDGs 1, 10 and 11)

The future management of the Biosphere Reserve recognizes the salt landscape as:

- living cultural landscape, the fruit of centuries-old interactions between man and nature;
- element of identity and resource for local development.

The following objectives are included:

- strengthening the role of local communities in decision-making processes;
- promoting of social inclusion, qualified employment and territorial cohesion;
- reducing inequalities through sustainable economic opportunities.

5. Education, research and participatory governance (addressing the SDGs 4, 16 and 17)

The future management of the Biosphere Reserve aims to:

- promote education for sustainable development at all levels;
- support interdisciplinary scientific research on saltwater ecosystems;
- strengthen forms of participatory and multilevel governance.

The governance system proposed for the future management of the Biosphere Reserve (see section 17 for details) reflects these priorities in the proposed operating methods and envisaged bodies.

13.3 Indicate the main stakeholders involved in the management of the biosphere reserve.

At the end of a long and complex process of territorial animation, the Promotion Committee has approved a governance system (see fig. 39). This will govern the operation of the Biosphere Reserve once designated. The legal form this system will adopt is currently under discussion: the preferred model is a Participatory Foundation, which, in Italy, guarantees the participation of all interested stakeholders, while also ensuring the smooth functioning of the management process. The first planned activity is the preparation of a Management Plan informed by the strategic proposals emerging from the Working Groups thus far.



Fig. 39. Participation of the youth group in meetings and working groups with the organizing committee

The following aspects have been taken into account in the proposed governance system (described in detail in section 17):

Maintain a bottom-up and participatory approach.

To this end, it was decided to establish a Biosphere Reserve Assembly (referred to for short as the "Assembly"), which is the body responsible for strategic direction and representation of the territorial partnership. It guarantees institutional representation of the territorial partnership, defines strategic directions, and ensures the integration of biodiversity conservation policies, sustainable development, and support for research and education, consistent with the objectives of the MAB Programme.

Composition

The Assembly will include all members of the Candidacy Promotion Committee and any additional members subsequently admitted.



Ph: Luigi Barraco

Be provided with an efficient management system.

To this end, a Management Committee will be established, which will be the executive body responsible for implementing the guidelines established by the Assembly and for the ordinary management of the Reserve.

Composition

Small group composed of the current members of the Promotion Committee (Municipalities of Trapani, Marsala, Misiliscemi and Paceco, by the WWF of Trapani, by the Free Municipal Consortium of Trapani, by the Regional Department of Territory and Environment of the Sicilian Region, and by the Chamber of Commerce of Industry, Crafts and Agriculture (CCIAA) of Trapani), the salt workers' representation, the youth representation and 3 members elected by the Assembly.

The Trapani Chamber of Commerce will serve as national and international institutional representative (the envisaged role of Biosphere Reserve Coordinator), which will ensure continuity in institutional relations and guarantee a single representation of the Biosphere Reserve in national and international

contexts (the UNESCO MAB National Technical Committee, the UNESCO MAB Programme Secretariat, the World Network of Biosphere Reserves, and other national and international cooperation networks), until the current Nomination Promotion Committee is transformed into a definitive governance structure. This function is exclusively institutional and representative in nature and does not entail strategic direction or operational management responsibilities, which remain vested in the Biosphere Reserve Assembly and the Management Committee, respectively.

In carrying out these functions, the Institutional Representation will be assisted by a Permanent Technical Secretariat, which constitutes the Reserve's permanent operational structure and ensures technical, administrative, and organizational support to the governance bodies.

Composition

Dedicated technical and administrative staff, supplemented where necessary by professionals made available by institutional partners.

Adequate technical-scientific supervision

This role will be performed by the Scientific Committee, which serves as a technical and scientific advisory body. The Scientific Committee supports the governance bodies in defining strategies, evaluating the effectiveness of actions, and monitoring results.

Composition

Representatives of the following may be members:

- University;
- ISPRA;
- CNR;
- research institutions;
- experts in the fields of biodiversity, wetlands, climate change, land-use planning, and sustainable development.

A way of involving and permanently participating local stakeholders

This modality will take the form of Permanent Consultation Tables. They will be thematic consultative bodies, with the aim of promote continuous, qualified, and truly representative participation of stakeholders and will be dedicated to the Biosphere Reserve's main areas of intervention, ensuring the involvement of the widest possible number of local stakeholders.

The Round Tables provide forums for discussion, proposals, and co-planning, and operate in conjunction with the Technical Secretariat, which coordinates their work and forwards the proposals and requests that emerge to the governance bodies.

It is proposed to establish the following tables:

Education, Training and Research Table

It involves schools, universities, training institutions, environmental education centres, and UNESCO

Clubs, with the aim of promoting educational programs, training activities, scientific research, and sustainable development education initiatives.

Environment and Third Sector Table

It brings together environmental associations, third sector entities, volunteer organizations, and cultural associations, encouraging civic participation and the formulation of proposals for biodiversity protection, environmental awareness, and participatory monitoring.

Saliculture and Biocultural Heritage Table

It involves salt workers, management bodies, salt museums, foundations, cultural operators, and historical heritage experts with the aim of promoting traditional salt cultivation, protecting tangible and intangible cultural heritage, and promoting conservation and dissemination initiatives.

Sustainable Economy and Tourism Roundtable

It brings together the Chamber of Commerce, trade associations, businesses, agricultural organizations, fishing and tourism operators, with the aim of promoting sustainable development models, supporting business innovation, enhancing local products, and promoting a tourism offering consistent with the values of the Biosphere Reserve.

Youth Forum of the Biosphere Reserve

In line with the guidelines of the UNESCO MAB Programme, it provides a space dedicated to the participation of younger generations, involving students, youth associations, young researchers, young entrepreneurs, and representatives of schools and universities. The Forum promotes the active involvement of young people in the governance of the Reserve, fosters the development of project proposals, and supports awareness-raising and innovation initiatives.

How to connect governance and participation

To ensure a structured flow of information between the participation mechanisms and the governance bodies, it is proposed that the coordinators of the Permanent Consultation Tables and the Youth Forum submit an annual report to the Assembly on their activities, projects initiated, and proposals formulated. The Technical Secretariat examines the proposals and ensures their transmission to the Management Committee, which oversees their implementation or, if they involve strategic decisions, submits them to the Assembly.

13.4. What consultation process was used for designing the biosphere reserve?

Beginning in the fall of 2024, the Trapani Chamber of Commerce (CCIAA) expressed the desire of several public and private entities to undertake a shared path toward joining the UNESCO MaB program for the coastal salt pans between Trapani and Marsala. Subsequent discussions with the four relevant municipal administrations, the two managing bodies of the two protected areas, and the Sicilian Region strengthened the working hypothesis. Thus, in November 2024, during a meeting at the Chamber of Commerce, an initial "control room" was established, albeit informally, to begin the process of applying for "Biosphere Reserve" recognition. At the same time, the possibility was explored for the aforementioned proponents to formalize their intentions through the establishment of a third party, agile and open to local communities, businesses, and civil society, that could guide efforts toward UNESCO Biosphere Reserve recognition.



Fig. 40. Meeting of the promotion committee

The Promotion Committee

In December 2024, a first draft of the statute of the "Promoting Committee - Area MaB Saline di Sicilia" was drawn up. This body was formally established on Wednesday 15 January 2025, through the signing of the statute by the Sicilian Region, the Trapani Chamber of Commerce, WWF Italy (as managing body of the "Saline di Trapani e Paceco" Nature Reserve), the Free Municipal Consortium of Trapani (as managing body of the "Isole dello Stagnone di Marsala" Nature Reserve), the Municipality of Marsala, the Municipality of Misiliscemi, the Municipality of Paceco and the Municipality of Trapani.

The Promotion Committee has consistently maintained its role as a coordination unit for all the activities necessary to achieve the candidacy: from local involvement to field action research activities, up to the definition of all the strategic decisions that guided the entire activity (see fig. 40) and the relations with the National MaB Committee.

The Promotion Committee established its own technical secretariat, opened its own email address, met regularly at the Trapani Chamber of Commerce headquarters, and launched a dedicated communications campaign. Table 17 lists the dates, locations, and topics of the Committee meetings; minutes of each meeting were taken.

Table 17. Meetings of the Promotion Committee and the main topics discussed

Meeting date	Main topics discussed
Friday, November 8, 2024	**Informal meeting of stakeholders (Chamber of Commerce, four municipal administrations, two management bodies). Discussion of a possible roadmap for 2025 and 2026.**
Wednesday, January 15, 2025	**Establishment of the MaB Area Promotion Committee "Saline di Sicilia"**
Wednesday, February 26, 2025	**Definition of the stages of the participatory process and approval of the calendar of meetings in the area until the summer break**
Monday, April 7, 2025	**The vision of the territory**
Thursday, June 12, 2025	**Sharing of the elements of the SWOT Analysis that emerged from the stakeholder working groups.**
Tuesday, July 15, 2025	**Adoption of the Draft Strategy for the MaB area**
Tuesday, September 9, 2025	**Sharing the strategy**
Wednesday, November 4, 2025	**Closing of the perimeter and zoning**
Monday, December 15, 2025	**Public event preparation**
Wednesday, February 26, 2026	**Governance hypothesis**
Thursday, April 16, 2026	**Update on the state of the art of the application process and the next steps and**

Table 17. (continuation). Meetings of the Promotion Committee and the main topics discussed

Meeting date	Main topics discussed
Tuesday, May 19, 2026	**Discussion on the drafting of the first version of the Dossier**
Tuesday, May 26, 2026	**Final approval of zoning and planning of media and social media communication activities**
Thursday, May 28, 2026	**Communications from the Coordinator of the Promotion Committee**
Friday, July 24, 2026	**Report on discussions with the National Committee and implementation of the governance changes suggested by the Ministry. Definition of the dossier approval procedures for signatories and planning of upcoming deadlines.**

Public meetings, working tables and focus groups

The findings that emerged during the numerous meetings held throughout 2025 and the first months of 2026, were collected through a participatory process, in which the Promotion Committee solicited and met with local governments and private businesses, schools and universities, associations, groups, and ordinary citizens, gathering opinions, ideas, and proposals (see fig. 41). This information represented the meeting point between participatory activity (local knowledge), field research, and the more traditional compilation research (expert knowledge).



Fig. 41. Working tables in the municipality of Misiliscemi

The participatory process was designed to (a) make a SWOT analysis, (b) identifying a shared vision, and (c) develop a related initial strategy (which also included the identification of several best practices). The results of this process were presented at the public meeting held at the Chamber of Commerce on February 12, 2025. On that occasion, the decision to proceed with joining the MaB program was agreed upon, the overall objectives were outlined, and the program's specific characteristics were explained. Finally, after highlighting several best practices, an initial schedule of working group meetings to be held in 2025 was shared.

During the first meetings of the Working Groups (spring 2025)—after a renewed presentation of the MaB program, a quick overview of its global and Italian presence, and a quick comparative analysis with reference to other UNESCO programs—the participants were involved in a simulation to identify some of the strengths and weaknesses of the Saline area and to develop an initial shared vision for the development of sustainable tourism in the four municipalities of the future "Saline di Sicilia" MAB Area. Each participant, following a discussion with their neighbours, independently completed a specially prepared form.

The highlighted results (obtained using the word cloud analysis technique) have also been translated in some concrete proposals that clearly reflects the concerns and hopes of the major stakeholders of the salt pans area between Trapani and Marsala; they are summarised below.

Nature Conservation

Strengths, hopes, opportunities to be seized	**Weaknesses, fears, threats to be countered**
Effective protection thanks to improved activity of the relevant bodies (Nature Reserves). Greater biodiversity and more respected rules. Development of compatible activities (birdwatching, etc.) and raising awareness among visitors. Promoting the relationship between salt pans, lagoon, and agriculture and reclaiming abandoned mills and salt pans.	Failure to comply with regulations, particularly waste disposal and illegal building. Unsustainable economic interests: increased land consumption, unbridled tourism. Abandonment of traditional activities. Habitat destruction: the battle against alien species and the asphyxiation of the lagoon.

Sustainable Development

Strengths, hopes, opportunities to be seized	Weaknesses, fears, threats to be countered
Responsible tourism: protected and exclusive cycling routes between Marsala and Trapani, which do not interfere with the Protected Areas. Territorial integration: sustainable mobility, on-demand mobility, and shared mobility systems. The salt sector is central to renewable energy production, circular economy projects, and cultural events tied to traditions. Enhancement of the Baiata basin. New innovative companies connected to each other in the supply chain (salt, agriculture, energy, tourism).	Mass tourism: excessive seasonality and lack of continuity, disrespectful sports tourism, hit-and-run tourism. Lack of investment: disinterest of the younger generations, lack of long-term vision, loss of cultural identity.

Logistics Support

Strengths, hopes, opportunities to be seized	Weaknesses, fears, threats to be countered
Development of documentation and education centres on salt pans. Collaborations with/between schools, educational workshops and outreach activities, and university involvement in research projects. Raising awareness among the local community: environmental awareness and volunteering programs. Increasing the visibility of the Sicilian salt pans.	Weakness and/or disinterest of the new generations: lack of investment in educational and training activities, obsolete teaching approaches. Loss of local and collective identity: insufficient involvement/capacity of local communities to maintain traditional knowledge.

During the discussions with the representatives of business community, it was agreed that salt production should be given centrality by electing a spokesperson to be invited to meetings of the Promotion Committee.

Designing a map of the current values

During the second round of Working Groups (May 2025), after sharing the results of the work carried out during March and April 2025, participants were involved in a second activity to develop a sort of "community map": a map of the salt pans' treasures. Participants were asked to indicate, on a specific form, their "favourite place" (both natural and cultural), a site with which they could identify and which they wished to see preserved and promoted. Furthermore, on the same form, they were asked to list, if any, good tourism practices to be preserved and/or improved (unique features and excellence), as well as highlighting threats to be addressed to promote the development of sustainable tourism in the area.

The information collected was then catalogued and georeferenced in order to obtain a map of the "places of the heart" (see fig. 42), where sites were divided into four categories: Salt pans (in white), History and Archaeology (in blue), Cellars and Bagli (in red) and Nature (in green) (see table 18).

The great importance of the world of salt pans as a shared heritage considered characteristic and "specific" by local communities is certainly highlighted, together with the natural heritage (composed mainly of the two existing Nature Reserves and the coastlines) and the historical/traditional one (with a good number of mentions for the Island of Mozia and the various windmills present in this area). Finally, some places linked to the world of wine and winemaking were also mentioned.

Table 18. The "places of the heart" (description)

Salt Pans	History and Archaeology	Cellars and Bagli	Nature
Salt pans of Nubia [6]	Island of Mozia [8]		
Culcasi Salt Pans [5]	Dovecote of Trapani [5]		
Salinagrande [4]	Tower of Nubia [5]		Stagnone Lagoon [9]
Ettore Infersa Mill [4]	Historic center of Erice [4]		Marausa coast [7]
Mamma Caura Salt Pans [4]	Ligny Tower [4]		RNO Salt Pans of Trapani and Paceco [3]
Salt pans of Long Island [3]	Marausa Tower [3]		Marsala coast [2]
Saltworks Calcara [3]	Misiliscemi watering hole	Itinerary of the "Bagli" [2]	Baiata Reservoir
Salina Maria Stella [2]	Pepoli Marine Hospice	Florio Cellars	Egadi IslandsMisiliscemi coast
Genna Salt Pans [2]	School Island (of Cavour)	Pirrera under the Alagna winery	San Teodoro Beach
Salina Anselmo [2]	Bastion of Trapani	Baglio Aula	Dante Alighieri Promenade
Salina Canino-Galia [2]	Historic center of Marsala		Cave Park
Trapani Salt Pans ZIR Area [2]	Church of Santa Maria del Soccorso		Lido Valderice Beach
Maria Stella Mill [2]	Villino Nasi		
Salina River	Paceco Square		
Salina Morana	Church of San Liberale		
Alfano Salt Mine	Church of the Immaculate Conception		
Newfoundland Salt Pans	Historic center of Trapani		
San Francesco Salt Pans			
Canino Mill			

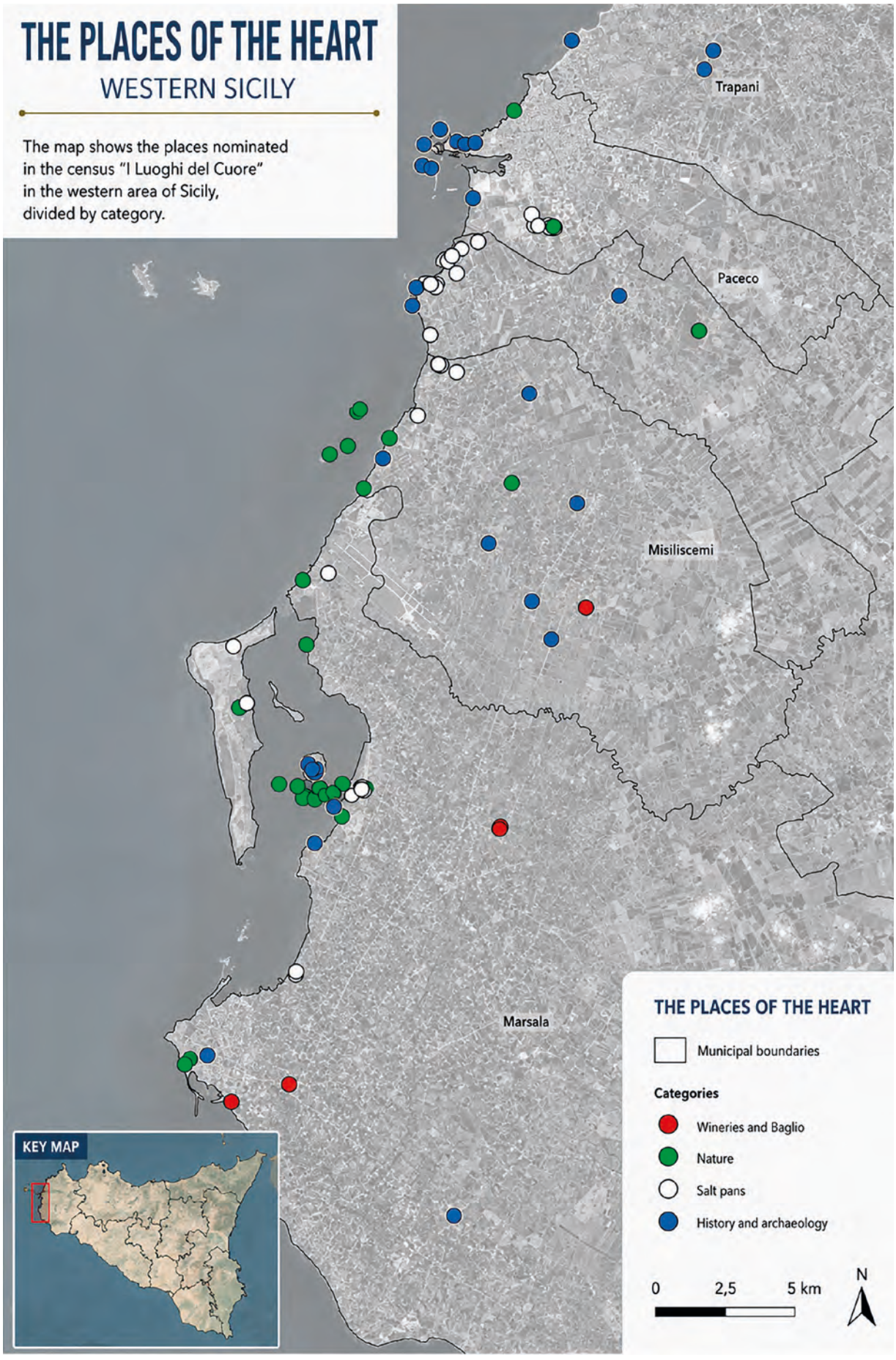


Fig. 42. The "places of the heart" (map).
(illustration generated with artificial intelligence based on data of the Nomination Form).

SWOT analysis of the candidate area of the "Saline di Sicilia"

By combining the indications gathered through the "vision" activity (March/April 2025) with those deriving from the "community maps" (May 2025), it was possible to draw a series of useful elements for compiling the SWOT analysis.

With the aim of expanding information and enhancing participation in the local community, the Promotion Committee sought to highlight its activities on three occasions of significant public participation. To this end, in collaboration with the two UNESCO Clubs of Trapani and Marsala and the Youth Council of Misiliscemi, three stations were set up (a gazebo, a stand with a banner, a roll-up banner, an information leaflet, and a QR code) to administer a questionnaire and interview residents willing to learn more about the issue. The time required to inform interested parties about the topic and conduct each interview averaged 15–20 minutes. The interview days were:

- Thursday 17 April 2025, on the occasion of the Holy Thursday procession in Marsala;
- Friday 18 April 2025, on the occasion of the procession of the mysteries of Good Friday in Trapani;
- Sunday, June 1, 2025, on the occasion of the Festival of Flavors in Misiliscemi.

The questionnaire was drawn up to investigate in a structured way the issues that emerged during the activities of the working groups, dividing it into three specific sessions of questions that developed the three pillars of the MaB Program (conservation, development and logistics).

The results show the main concerns that respondents highlighted, as well as their hopes and awareness of certain strengths. The importance perceived by different citizens is displayed in the following histograms (hopes in green and fears in red), with specific issues highlighted in yellow and grey.

Regarding nature conservation issues, the interviewees reiterated the concerns that had emerged at the working groups without any particular emphasis, in addition to the need for greater collaboration between local authorities and reserve management bodies.

Regarding sustainable development issues, the emphasis is on the positive trend toward increasing territorial integration, although there is still a lack of capacity to build more structured supply chains and business networks capable of attracting greater investment, partly due to the lack of young people.

Finally, regarding the logistical support aspect, interviewees perceived the progress the region has made in fostering a culture of legality and, consequently, awareness of the progress made as one of its strengths. On the other hand, there are concerns that this may not be sufficient, given the impoverishment of communities, which is perceived as a potential threat for the future.

The analysis was then completed by summarizing the results of the interviews, together with the considerations made following the work of the tables we previously reported, by developing a SWOT analysis (see table 19) which was shared with the members of the Promotion Committee.

Table 19. SWOT analysis resulted from the first phase of territorial animation.

Strengths	Weaknesses	Opportunities	Threats
High-value natural heritage and biodiversity: wetland of international importance, recognized at the Mediterranean level for its ecological role, biodiversity and habitats of migratory species.	Fragmented governance: management complexity, multiple stakeholders involved, and the need to strengthen institutional and territorial coordination.	Sustainable and experiential tourism: development of ecotourism, birdwatching, cultural and nature tourism, with deseasonalization of flows and new employment opportunities.	Anthropogenic pressure and land consumption: coastal urbanization, infrastructure development and the risk of landscape alteration and loss of natural habitats.
Distinctive cultural and landscape heritage: salt pans, windmills, canals and rural architecture make up a unique historical landscape of identity in the Mediterranean.	Limited awareness and shared culture: insufficient knowledge of the value of the territory, the fragility of ecosystems and the opportunities related to conservation.	Enhancement of local supply chains: integration between salt production, sustainable agriculture, the circular economy, and local identity products.	Climate change: rising temperatures, droughts, rising sea levels, and extreme events that can compromise ecosystems and salt production.
Traditional production chains still active: presence of artisanal salt cultivation, consolidated local skills and potential integration with tourism and agriculture.	Economic fragility of traditional activities: reduced competitiveness of artisanal salt, fragmented tourist offering and seasonal profitability.	Innovation, research and youth leadership: collaborations with universities and research centers, permanent observatories and experiments that can be replicated in the Mediterranean.	Loss of traditions and local knowledge: aging of operators, poor generational turnover and the risk of disappearing traditional skills.
Integrated human-nature model: a consolidated example of balance between production and conservation activities, fully consistent with the principles of the UNESCO MaB Programme.	Socio-demographic fragility: depopulation, reduced attractiveness for young people and residents, and limited diffusion of innovation and digital tools.	Access to international funding and networks: opportunities offered by European, national and regional programmes and by integration into UNESCO and Mediterranean networks.	Conflicts between conservation and development: potential tensions between environmental protection, tourism, manufacturing, and logistics, with risks of loss of sustainability and credibility.

In summary, the SWOT highlights that:

- the true capital of the area is unique and is already present (nature + culture + identity);
- the weaknesses are mainly organizational and social, but not yet structural;
- the opportunities depend on the capacity for integration (institutions, networks, young people, innovation);
- the main threats are external and systemic (climate, market, urbanization).

The future Saline di Sicilia Biosphere Reserve, therefore, has enormous potential, based on its history, on the centuries-old relationship between humanity and nature. This potential will be best expressed if it succeeds in:

- transforming territorial complexity into effective governance;
- balancing tourism and conservation;
- using UNESCO recognition as a real lever for sustainable development and not just as a symbolic medal.

Towards the definition of the Strategy

Before the summer break, between June 9 and 12, 2025, a third round of working groups was convened, and a process was initiated to engage a group of young people who had expressed interest in the "MAB UNESCO Saline di Sicilia" proposal. During the same period, relations with the University Consortium of the Province of Trapani were consolidated and subsequent contacts with the University of Palermo were initiated.

During the work of the round tables, some strategic proposals for the future Biosphere Reserve "Saline di Sicilia" were shared (summarised in table 20) and - through a role-play - each participant was given the opportunity to confirm, amend and improve them by filling out a support sheet that had been prepared for the occasion.

Table 20. Guidelines for the strategy

CONSERVATION	
Let us become GUARDIANS of our landscape and the ecosystem of the Salt Pans, attentive to biodiversity and to the many living beings (animals and plants) that live alongside us.	
1	Guardians of Nature through improved action by the relevant authorities (Nature Reserves), their cooperation, and greater respect for the rules.
2	Guardians of Traditional Activities, a prerequisite for safeguarding the relationship between salt pans–lagoon–agriculture, with particular benefits for the environment.
3	Guardians of the Cultural Landscape, countering new land consumption and recovering historic buildings and structures (mills, bagli,...).

SUSTAINABLE DEVELOPMENT	
We work as GUIDES in exploring activities that foster socio-economic growth while raising awareness of the value of the Salt Pans.	
1	Guides in the process of territorial integration between new interconnected businesses in the salt, agriculture, energy and tourism sectors, drawing on the centuries-old experience of the salt pans from the perspective of a circular economy.
2	Guides in the development of responsible tourism, with particular reference to quality-certified agritourism, wine and food tourism, and cycling itineraries.
3	Guides in the search for new investments, promoting public-private cooperation aimed at countering the potential marginalisation of the salt-pan territory.

LOGISTICS	
Let us become PROMOTERS of sustainable development, educating and training new generations, fostering research and communicating about the Salt Pans in an informed and responsible manner.	
1	Promoters of greater awareness among local communities in support of the development of a culture of legality and the common good.
2	Promoters of a visible and integrated territorial system which – thanks to a network of centres, structures and professionals capable of maintaining, supporting and communicating its unity and values – can strengthen its identity.
3	Promoters of a renewed active role for young people, through cooperation with schools, the use of new technologies and the development of research and innovation projects with universities.

CONSERVATION
Let us become GUARDIANS of our landscape and the ecosystem of the Salt Pans, attentive to biodiversity and to the many living beings (animals and plants) that live alongside us.

SUSTAINABLE DEVELOPMENT
We work as GUIDES in exploring activities that foster socio-economic growth while raising awareness of the value of the Salt Pans.

LOGISTICS (EDUCATION AND TRAINING)
Let us become PROMOTERS of sustainable development, educating and training new generations, fostering research and communicating about the Salt Pans in an informed and responsible manner.

The summer break also served to prepare the first draft of the strategy, which the Promotion Committee adopted during its meeting on July 15, 2025. The document was subsequently used—starting in September—during the participatory activities of the second half of 2025.

Throughout the participatory process, great importance was given to involving schools. One of the most successful initiatives was the competition to design the logo for the candidacy of the Saline di Sicilia: fig. 43 shows the winning entry selected by the jury during a special ceremony (see fig. 44).



Fig. 43. Winning logo of the competition for ideas for the candidacy



Ph: Giovanni La Francesca



Fig. 44. Award ceremony and logo presentation with the schools

13. 5. How will stakeholder involvement in implementing and managing the biosphere reserve be fostered?

The Promotion Committee has decided to follow up on the local meetings through co-planning, focusing on (a) the design of the Management Plan and (b) an innovative format (to be called *MaB Lab*) to discuss the most relevant topics (e.g., management of natural areas in relation to sustainable tourism activities). Chapter 16 details the results of the first phase of the candidacy process, which provide strategic guidance for the formulation of the Management Plan.

Regarding the governance system that the Promotion Committee has defined for the management of the future Biosphere Reserve, please refer to chapter 17. The model is based on the principle of a bottom-up approach and inclusive logic to ensure the fullest possible participation of local stakeholders.

13.6. What are the expected main sources of resources (financial, material and human) to implement the objectives of the biosphere reserve and projects within it?

Over the next few months, a definitive governance model will be developed, involving the participation of all members (including local and regional governments and any private entities) in terms of human and financial resources. The Chamber of Commerce (CCIAA) has allocated a budget of $40,000 to continue the Promotion Committee's activities until its expiration on December 31, 2026. In the meantime, the new management model, as described above, will be finalized; consequently, each of the stakeholders, starting with the current promoters, will define its own financial contribution to the future activities of the Biosphere Reserve. The Sicilian Region has committed to supporting the future management of the Biosphere Reserve, both in terms of human and financial resources.



Ph: Luigi Barraco

14 CONSERVATION FUNCTION

14.1. At the level of landscape and ecosystem (including soils, water and climate):

14.1.1 Describe and indicate the location of ecosystems and/or land cover types in the biosphere reserve.

The proposed Saline di Sicilia Biosphere Reserve extends along the coastal sector of western Sicily between the municipalities of Trapani and Marsala, encompassing a territorial system characterized by the close interaction between natural ecosystems, semi-natural habitats, and cultural landscapes resulting from the historic production of sea salt.

From an ecological point of view, the territory includes a mosaic of coastal and terrestrial ecosystems that can be classified into five main categories: (a) brackish and lagoonal wetlands, (b) coastal halophilic ecosystems, (c) traditional agricultural systems, (d) coastal and marine ecosystems, and (e) urbanized areas.



Fig. 45. Salt pans and coast, Marsala coast

Coastal and lagoon wetlands

The dominant ecosystem is represented by brackish wetlands associated with the historic salt pans of Trapani-Paceco and the Stagnone di Marsala. These environments include evaporation ponds, salt basins, inlet canals, coastal lagoons, and bodies of water with varying degrees of salinity.

The most representative areas are located:

- in the northern portion of the candidacy, corresponding to the Trapani and Paceco salt pans (Core Areas 1 and 2);
- in the southern portion, including the Stagnone di Marsala lagoon complex and the surrounding salt pans (Core Area 5).



Ph: Leonardo Rallo

These environments constitute priority habitats of community interest and represent one of the most important wetland systems in the central Mediterranean for migratory, nesting, and wintering birds. Traditional saltworks, despite being of anthropogenic origin, have over time acquired ecological characteristics similar to semi-natural ecosystems with high biodiversity; namely:

- Halophilous vegetation and coastal habitats
- Extensive halophilic plant communities, adapted to the high salinity of the soil, develop around brackish basins.

These communities include:

- Mediterranean salt steppes (Limonietalia);
- halophilous fruit trees in Salicornia and Sarcocornia;
- pioneer vegetation of marine deposition lines;
- annual and perennial communities typical of coastal brackish depressions.

These habitats are distributed primarily along the edges of the Trapani and Paceco salt pans, in the coastal areas between Nubia and Marausa, and along the Stagnone lagoon system of Marsala. They are home to numerous endemic and rare Mediterranean flora species, including populations of Calendula maritima, a species endemic to western Sicily.

Traditional agricultural environments

Parts of the Buffer Zones and much of the Transition Area are characterised by a traditional Mediterranean agricultural landscape, consisting of:

- vineyards;
- olive groves;
- dry arable land;
- irrigated horticultural crops;
- agro-pastoral mosaics.

These agroecosystems play an important ecological role in connecting the main coastal wetlands and contribute to the maintenance of western Sicily's landscape and biological diversity. The presence of historic agricultural practices and traditional land management systems favours the persistence of secondary habitats used by numerous wildlife species.

Coastal and marine ecosystems

Along the coastal front there are stretches of sandy shoreline, low rocky coasts, shallow seabeds and transitional environments between land and sea.

Of particular importance is the Stagnone lagoon of Marsala, characterized by shallow waters, submerged meadows, and lagoon islands, which constitute fundamental habitats for the feeding and reproduction of numerous aquatic species.

Urbanized areas and historical settlements

The Transition Area includes the main urban centres of Trapani, Paceco, Misiliscemi, and Marsala, along with their manufacturing, port, and tourism infrastructure. Although heavily anthropized, these areas maintain a close functional and cultural relationship with the salt pan system, representing the hub of the economic, cultural, and governance activities that support the MAB candidacy.

Spatial distribution with respect to the proposed zoning

The Core Areas include ecosystems with the greatest naturalness and conservation value, consisting mainly of traditional salt pans, coastal lagoons, brackish wetlands and halophilic habitats.

Buffer Zones include natural areas of ecological connection and surfaces functionally connected to wetlands.

The Transition Areas include urban centers, productive areas, infrastructures, and the most intensively used agricultural mosaic, where economic and social activities compatible with the sustainable development objectives of the Biosphere Reserve are concentrated.

14.1.2 Describe the status and trends of the ecosystems and/or land cover types described above and the natural and human drivers of the trends.

The ecosystems of the proposed Biosphere Reserve have high ecological and landscape value, resulting from the coexistence of natural and semi-natural habitats closely linked to traditional sea salt production activities. Overall, the conservation status of the key ecosystems can be considered good, thanks to the presence of protected areas, the Natura 2000 site, and the Ramsar site.



Ph: Luigi Barraco

Coastal and saline wetlands

Brackish wetlands and salt systems represent the most characteristic ecosystems and those with the greatest conservation value of the proposed Biosphere Reserve.

In recent decades, the conservation status of many areas has gradually improved thanks to the strengthening of protection tools, the management of protected areas, and growing awareness of the ecological value of traditional saltworks. Maintaining salt cultivation and harvesting, even using more modern methods, has contributed to maintaining the hydrological conditions necessary for the conservation of habitats and associated species.

However, some critical issues remain related to:

- abandonment or reduction of production activities in some sectors (decommissioned saltworks);
- alteration of hydraulic regimes and water circulation;
- progressive silting up of some basins;
- pressure from tourism and recreational activities;
- spread of invasive alien species.

The overall trend can be considered stable or moderately positive in actively managed areas, while greater vulnerability remains in the portions where maintenance of hydraulic infrastructure is discontinuous.

Halophilous habitats and coastal vegetation

The halophilous plant communities still retain a good representativeness and constitute one of the elements of greatest naturalistic interest in the area.

The main trends observed concern:

- habitat fragmentation in areas close to urban centres;
- pressure exerted by foot traffic and tourist use;
- competition with invasive plant species;
- microclimatic changes linked to rising temperatures and decreasing water availability.

Despite these pressures, the presence of large protected areas and limited urbanization along some coastal areas allow the maintenance of significant areas of natural vegetation.

Coastal lagoon and marine ecosystems

The Stagnone lagoon and its associated marine-coastal environments maintain high levels of biodiversity and continue to play a fundamental role in the migration routes of Mediterranean birds.

The main trends are influenced by:

- sea level changes;
- increased frequency of extreme weather events;
- changes in water temperature and salinity;
- increase in seasonal tourist pressure.

Climate change represents the main long-term risk factor, with possible effects on sedimentary processes, lagoon dynamics and species distribution.

Traditional agroecosystems

The agricultural landscape (see fig. 46) of the coastal strip and the hinterland constitutes an essential component of the future Biosphere Reserve, as it ensures ecological continuity between the wetlands and contributes to the conservation of the historical cultural landscape.

Current trends show contrasting processes: on the one hand, traditional crops persist, particularly vineyards and olive groves. On the other hand, there are phenomena of agricultural intensification, crop simplification and land consumption.

Throughout the transition area, virtuous recovery processes for traditional crops (viticulture, olive growing, horticulture) are underway, conducted with modern and sustainable approaches (e.g., biodistricts, Slow Food Presidia). The more inland areas include zones dedicated to green infrastructure projects (e.g., the Baiata Basin Park), contributing to the creation of an integrated agroecosystem protecting the salt pan system.



Ph: Comune di Misiliscemi

Fig. 46. Recovered agricultural areas and historical buildings

Urban areas and infrastructure

The urban areas of Trapani (see fig. 47), Paceco, Misiliscemi and Marsala represent the main centres of population and economic development of the Biosphere Reserve.

In recent decades, urban and infrastructural expansion has led to a progressive reduction in ecological continuity in some coastal and peri-urban areas. However, the presence of land-use planning and environmental protection tools has helped limit the most significant transformations in areas of greatest natural value.

The current trend is towards greater integration between environmental conservation, cultural heritage valorization, and sustainable tourism development.



Fig. 47. Aerial photo of the historic centre of Trapani and the salt pans area

Main natural and anthropogenic factors driving the observed trends.

Changes in ecosystems and land cover in the Biosphere Reserve are determined by the interaction of natural and human factors, as summarized in table 21.

Table 21. Factors influencing changes in ecosystems in the territory of the Biosphere Reserve

Natural factors	Anthropogenic factors
Global climate change	management of traditional salt pans
Increase in average temperatures	agricultural practices and land use
Sea level rise	urban and infrastructural development
more frequent and intense extreme weather events	tourist and recreational activities
coastal erosion processes	seasonal anthropogenic pressure along the coastal strip
variations in hydrological and sedimentary regimes	introduction and spread of invasive alien species
natural ecological dynamics of wetlands and lagoon ecosystems	conservation and management policies of protected areas
	ecological restoration and cultural heritage enhancement programs

Overall, the future of the Biosphere Reserve depends on the ability to maintain a balance between the conservation of wetland ecosystems, the continuation of saliculture activities, the sustainable management of economic activities, and the adaptation to climate change.

14.1.3 What kind of protection regimes (including customary and traditional) exist for the core area(s) and buffer zone(s)?

Table 22 lists all the existing legal frameworks in the candidate areas, along with the relevant competent authorities, regulatory references, and what they entail.

Table 22. Protection regimes that are present in the designated areas

Level	Legal frameworks	Competent Authority	Legal Reference	Implications
Regional	Trapani and Paceco Oriented Nature Reserve (Riserva Naturale Orientata Saline di Trapani e Paceco)	Sicilian Regional Government - Department of Territory and Environment; managed by WWF Italy	Regional Decree (D.A.) No. 257/44 of 11 May 1995	Protection of habitats and species; management regulations; restrictions on land-use change; zoning (Zone A and Zone B); control of incompatible activities.
European	SAC ITA010007 "Saline di Trapani"	Sicilian Regional Government European Commission	Habitats Directive 92/43/EEC	Conservation of habitats and species of Community interest; requirement for Appropriate Assessment (AA) for plans and projects likely to have significant effects.
European	SPA ITA010028 "Stagnone di Marsala and Trapani Salt Pans"	Sicilian Regional Government European Commission	Birds Directive 2009/147/EC	Protection of migratory and breeding bird species; restrictions on activities that may cause disturbance or habitat loss.
International	Ramsar Site "Saline di Trapani e Paceco"	Italian Ministry for the Environment	Ministerial Decree of 4 April 2011 (Ramsar Convention)	Conservation and wise use of wetlands of international importance; reinforcement of ecological protection obligations.
International (scientific)	Important Bird Area (IBA)	BirdLife International	IBA Inventory	International recognition of ornithological value; guidance for conservation planning and management.
National	Coastal Landscape Protection Designation	Sicilian Regional Government Superintendency for Cultural and Environmental Heritage	Article 142, Legislative Decree 42/2004	Automatic protection of the coastal strip within 300 metres of the shoreline; landscape authorization required for interventions.
National	Wetland Landscape Protection Designation	Sicilian Regional Government Superintendency for Cultural and Environmental Heritage	Article 142, Legislative Decree 42/2004	Protection of wetland and lagoon environments; restrictions on landscape alteration.
National	Cultural Heritage Protection Designation	Superintendency for Cultural and Environmental Heritage of Trapani	Part II, Legislative Decree 42/2004	Protection of windmills, bagli (traditional rural complexes), historic structures, and the industrial archaeology of salt production; authorization required for restoration and modifications.
Regional	Landscape Plan of the Province of Trapani	Sicilian Regional Government	Current Landscape Plan	Landscape prescriptions; conservation of historical views and visual corridors; protection of the traditional salt-production landscape.
Regional	Protection of Windmills and Salt-Making Heritage	Sicilian Regional Government	Sicilian Regional Law No. 15/1996	Restoration and enhancement of the historical and productive heritage of salt pans and windmills.
Local	Municipal Master Plans and Planning Instruments (PRGs)	Municipalities of Trapani, Paceco, Misiliscemi and Marsala	Municipal planning instruments currently in force	Regulation of building development and land-use designations compatible with conservation objectives.
State property	Maritime State Domain	Sicilian Regional Government and Maritime Authority	Navigation Code	Concession regime governing the use of coastal areas, channels, water bodies, and state-owned maritime assets.
Pelvis	Hydrogeological Risk Management Plan (PAI), where applicable	Sicilian Regional Basin Authority	PAI Regulations	Restrictions affecting areas exposed to hydraulic or geomorphological risk.

(Fig. 48) maps the nature protection regimes in the designated area.

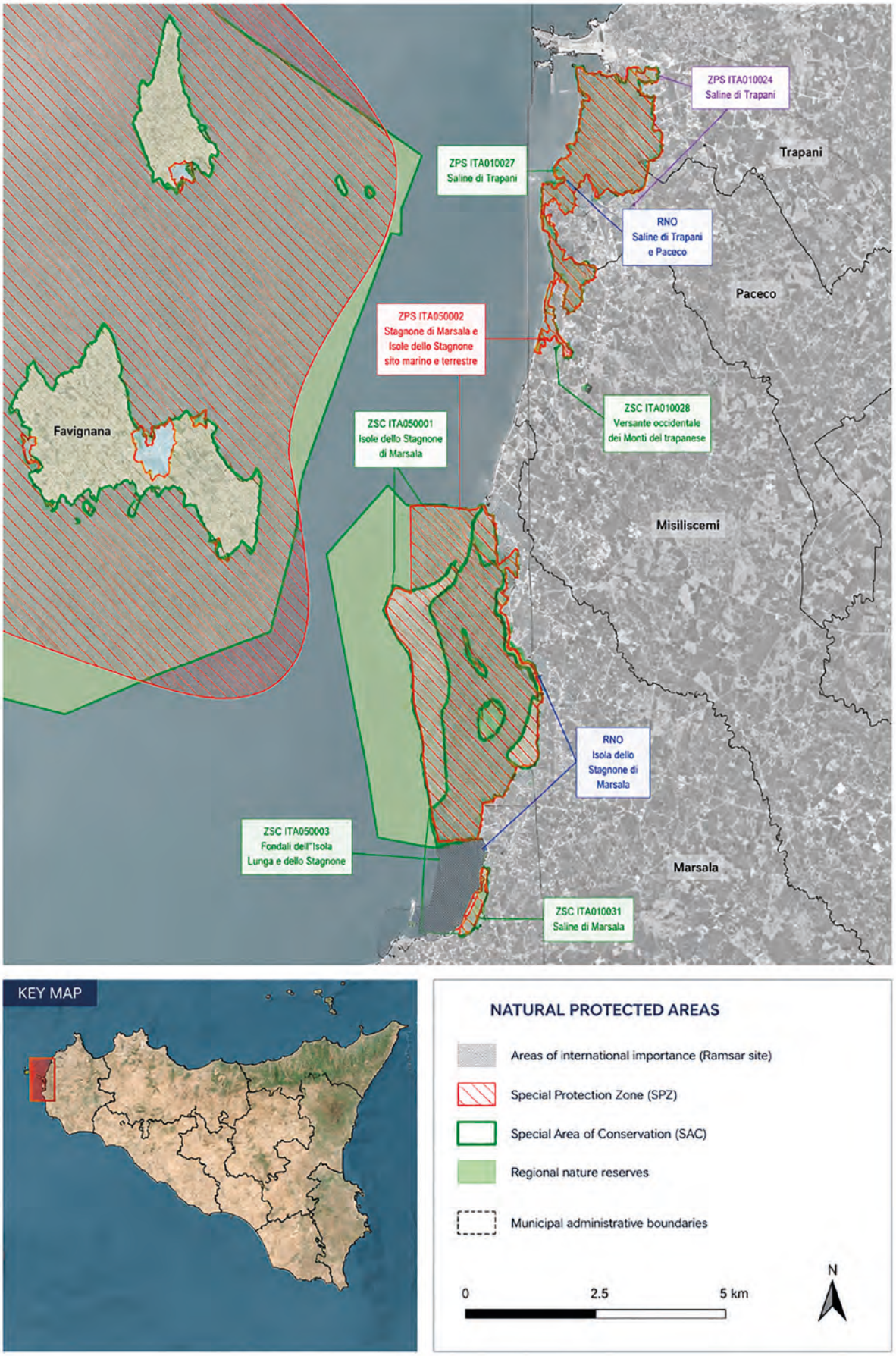


Fig. 48. Map of nature protection regimes
(illustration generated with artificial intelligence based on data of the Nomination Form).

14.1.4 Which indicators or data are used to assess the efficiency of the actions/strategy used?

These indications are primarily contained in the Natura 2000 site Management Plan, which dedicates an entire section to evaluating the effectiveness of management actions through a monitoring program based on quantitative and qualitative indicators, designed to measure the conservation status of habitats, species, and the system's socioeconomic components over time. The Plan's indicators cover the three dimensions relevant for the MAB candidacy; namely:

- biodiversity conservation (habitat, flora, fauna);
- ecosystems functioning (water quality, ecological dynamics, invasive species);
- sustainable development and social participation (tourism, enjoyment, environmental awareness);

The effectiveness of conservation and management measures is assessed through a comprehensive monitoring program that uses ecological, environmental, and socioeconomic indicators. These indicators allow to monitor the evolution of the conservation status of habitats and species of community interest and measure the effects of management actions implemented in Natura 2000 sites.
Table 23 summarizes the main indicators.

Table 23. Main indicators used to evaluate the effectiveness of management actions and strategies

Category	Indicator	Monitored parameters	Related SDGs
Habitat	Quality and extent of Natura 2000 habitats	Habitat area; spatial variations (GIS and photointerpretation); conservation status and ecological continuity	SDG 15 SDG 14 SDG 13
Lagoon and brackish habitats (1150 coastal lagoons)	Ecological status of coastal lagoons	Specific richness of wintering aquatic birds; size of populations associated with lagoon environments	SDG 14 SDG 15
Posidonia oceanica meadows (1120)	Conservation status of seagrass meadows	Lower limit of the prairie; density of leaf bundles; cover; phenological and lepidochronological parameters	SDG 14 SDG 13
Terrestrial and shrubby habitats	Structure and functionality of terrestrial habitats	Plant biomass; structural complexity; continuous vegetation cover	SDG 15 SDG 13
Flora	Rare species and species of conservation interest	Numerical size of populations; geographical distribution; variation in occupied surfaces	SDG 15
	Invasive alien species	Distribution of outbreaks; extension of colonized areas; temporal evolution of biological invasions	SDG 15 SDG 14
Fauna	Nesting birds	Number of breeding pairs; distribution of colonies; reproductive success	SDG 15 SDG 14
	Migratory and wintering birds	Population size; spatial distribution; specific richness of communities	SDG 15 SDG 14
	Fish fauna	Fish stocks; composition of catches; relative abundance of fish and crustaceans	SDG 14 SDG 12
	Problematic species	Distribution and number of stray dogs and cats; bird mortality caused by vehicular collisions	SDG 15 SDG 11

Table 23. Main indicators used to evaluate the effectiveness of management actions and strategies

Category	Indicator	Monitored parameters	Related SDGs
Environmental quality hydrology	Hydrological regime and functionality	Hydrological regime; river continuity; River Functionality Index (IFF)	SDG 6 SDG 14 SDG 15
	Water quality	Temperature; dissolved oxygen; pH; nutrients; pollutants and priority substances	SDG 6 SDG 14 SDG 3
Socioeconomics and fruition	Sustainable tourism	Number of presences; tourist pressure per inhabitant and per unit of surface area	SDG 8 SDG 11 SDG 12
	Nautical enjoyment	Number of boats present in the Stagnone; intensity of summer boating	SDG 11 SDG 14
	Environmental awareness	Level of knowledge and perception of the environmental, cultural and landscape value of the salt pans	SDG 4 SDG 11 SDG 17

This integrated monitoring system mainly contributes to:

- SDG 15 - Life on Land, through monitoring the conservation status of habitats, flora and fauna.
- SDG 14 - Life Below Water, through monitoring coastal lagoons, Posidonia oceanica and fish communities.
- SDG 6 - Clean Water and Sanitation, thanks to the control of water quality and hydrological functionality.
- SDG 13 - Climate Action, through the observation of the resilience of coastal and lagoon ecosystems.
- SDG 8 - Decent Work and Economic Growth and SDG 12 - Responsible Consumption and Production, through indicators relating to sustainable tourism and economic activities compatible with conservation.
- SDG 4 - Quality Education and SDG 17 - Partnerships for the Goals, through measuring environmental awareness and supporting research, monitoring and participation activities.

14.2 At the level of species and ecosystem diversity:

14.2.1 Identify the major species groups or species of particular interest for conservation objectives, especially those that are endemic to the biosphere reserve, and provide a brief description of the communities in which they occur.

The proposed Biosphere Reserve includes a complex system of coastal salt marshes, lagoons, brackish wetlands, halophilous habitats, and traditional agroecosystems that are home to species and biological communities of high conservation value at the regional, national, and Mediterranean levels.

Birdlife of coastal wetlands

The salt pans of Trapani and Paceco and the Stagnone lagoon of Marsala represent some of the most important sites in the central Mediterranean for migratory, nesting, and wintering aquatic birds.

Among the species of greatest interest are:

- the Greater Flamingo (*Phoenicopterus roseus*), a symbolic species of the area and an indicator of the ecological quality of the hypersaline environments;
- the Avocet (*Recurvirostra avosetta*);
- the Black-winged Stilt (*Himantopus himantopus)*;
- the Kentish Plover (*Charadrius alexandrinus*), a species of conservation interest linked to coastal environments and salt marshes;
- numerous species of terns and gulls (*Sterna spp., Larus spp.*) that use brackish basins for nesting, feeding and migratory stopover.

These species are associated with the ecological communities of coastal lagoons, active salt marshes, and brackish wetlands.



Ph: Luigi Barraco

Pink Flamingo Nesting

It is worth noting that in 2026, the Trapani and Paceco Salt Pans Nature Reserve recorded the first documented nesting of the greater flamingo (*Phoenicopterus roseus*) in the protected area's history, as well as the first and, to date, only confirmed nesting of the species in western Sicily. This is an achievement of extraordinary naturalistic value and represents one of the most significant indicators of the effectiveness of the conservation efforts implemented over the past few decades.

When the Reserve was established by the Sicilian Region, and in its early years, the greater flamingo numbered only a few dozen individuals, observed exclusively during migration or wintering. In subsequent years, the population gradually increased to reach regular numbers of several hundred individuals, with peaks ranging from 800 to over 1,500 individuals, making the Trapani and Paceco salt pans one of the main feeding and stopping points along Mediterranean migration routes. Reproduction of the species, however, had never been observed. The breeding success achieved in 2026 is the result of a long process of managing the wetland, based on the application of management regulations and the Natura 2000 Network site plan. Specifically, this result is the fruit of various initiatives, including collaboration between the Management Authority and the salt workers. Among the actions that have contributed to creating favourable conditions for nesting, particularly significant are maintaining water levels in the ponds during the breeding season, the removal of the two power lines that crossed the Reserve, access restrictions, regulated use, a ban on unauthorized aircraft overflights, a ban on sporting activities that impact the birdlife, the installation of video surveillance systems, continuous monitoring activities, information and awareness campaigns, and the relocation of fireworks that were once set near the protected site.

The reproduction of the greater flamingo (see fig. 49) in this protected site therefore confirms the ecological quality achieved by the salt pan ecosystem and demonstrates how the conservation of biodiversity can be fully compatible with salt cultivation.



Ph: Luigi Barraco

Fig. 49. Young flamingos

Halophilous flora and specialized habitats

Brackish waters are home to highly specialized plant communities adapted to high salinity levels. Among the most representative species are:

- *Salicornia spp.*
- *Arthrocnemum macrostachyum*
- *Halocnemum strobilaceum*
- *Limonium spp.*

Particularly important is the presence of the Calendula maritima, a species endemic to western Sicily and of great conservation interest.

These species characterise the coastal halophilic habitats recognised by the Habitats Directive and constitute one of the most distinctive elements of the salt pan landscape.



Fig. 50. Calendula suffruticosa subsp.maritime

Microbial communities and organisms of hypersaline environments

Salt pans also host highly specialized species and biological communities typical of hypersaline environments, including:

- the microalgae *Dunaliella salina*, responsible for the typical colours of highly salinity waters;
- the crustacean *Artemia salina* (see fig. 51), a fundamental element of the food web and a food resource for numerous species of avifauna;
- bacterial and microalgal communities adapted to extreme environmental conditions.

These organisms form the ecological basis of the functioning of saltwater ecosystems.



Fig. 51. Artemia salina

Agro-biodiversity and cultural landscape

In the agricultural areas of the buffer zone and the transition area, there are traditional varieties that represent an important genetic and cultural heritage, including:

- the historic vines of the Marsala area (Grillo, Catarratto, Inzolia) (see fig. 52);
- local olive varieties;
- traditional horticultural crops adapted to the soil and climatic conditions of the coastal strip.

These elements are an integral part of the cultural landscape of the Biosphere Reserve and bear witness to the long-standing relationship between local communities and the environment.



Fig. 52. Vineyards with historic buildings (bagli)

Overall value for conservation

The exceptional biodiversity value of the Sicilian Salt Pans stems from the close interaction between natural processes and traditional salt-farming practices, which over the centuries have created a mosaic of habitats capable of supporting rare, endemic, and community-wide species. The conservation of these species is therefore closely linked to the ongoing active management of the salt pans and the cultural landscape that characterizes them.

14.2.2 What are the pressures on key species? In other words: what are the threats (example unsustainable forest management), their immediate causes (drivers of change like forest change or habitat change), their underlying causes (example overgrazing, fires, pollution), and the main driving forces (example economic, political, social, external, etc.) and the area(s) concerned?

The species and habitats of greatest conservation interest in the Trapani and Paceco salt pans and in the Stagnone lagoon of Marsala are subject to various pressures of anthropogenic and natural origin (see table 24). These pressures act mainly through habitat modification, alteration of ecological processes and direct disturbance of the species.

Table 24. List of the main threats and pressures detected in the various areas

Threat Pressure	Immediate Causes (Habitat Change Factors)	Underlying Causes	Main Drivers	Areas Affected
Abandonment or reduction of traditional salt production	Altered water circulation, degradation of evaporation basins, loss of suitable habitats for waterbirds	Declining economic profitability of salt production; loss of traditional knowledge	Economic and social	Trapani–Paceco Salt Pans; Stagnone Salt Pans
Coastal urbanization and infrastructure development	Habitat fragmentation, land consumption, loss of ecological connectivity	Urban and infrastructure expansion	Economic, demographic and planning factors	Peri-urban areas of Trapani, Paceco, Misiliscemi and Marsala
Human disturbance and tourism pressure	Disturbance of breeding, feeding and resting areas	Increase in tourism and recreational activities	Economic and social	Stagnone Lagoon, coastal salt pans, islands and lagoon margins
Boating and recreational navigation	Disturbance of wildlife and damage to seabeds and submerged habitats	Expansion of tourism activities	Economic	Stagnone Lagoon
Pollution and nutrient inputs	Water-quality degradation and localized eutrophication	Urban wastewater, agriculture, diffuse catchment pressures	Economic and territorial	Stagnone Lagoon, channels and coastal wetlands
Invasive alien species	Competition with native species and habitat alteration	Intentional or accidental introduction of exotic species	Globalization of transport and economic activities	Coastal, lagoon and marine habitats
Stray animals and predation	Predation of nests, eggs and young birds	Presence of feral dogs and cats	Social and management related	Nesting areas and salt pans
Mortality from road infrastructure	Vehicle collisions and chronic disturbance	Roads located close to sensitive habitats	Planning and infrastructure factors	Coastal sectors and areas adjacent to salt pans
Climate change	Rising temperatures, salinity changes, hydrological alterations and sea-level rise	Global climate change	Global drivers	Entire Biosphere Reserve
Coastal erosion and geomorphological processes	Loss of coastal habitats and alteration of transition zones	Natural processes amplified by climate change	Natural and climatic factors	Coastal and lagoon systems

The pressures described above mainly impact on:

- communities of migratory, nesting and wintering waterbirds that use the salt marshes and the lagoon as feeding, resting and breeding areas;
- colonial nesting species present on islets and brackish basins;
- halophilous flora of conservation interest, including coastal endemics of western Sicily;
- lagoon fish and macroinvertebrate communities;
- submerged meadows and marine-coastal habitats of the Stagnone;
- lagoonal and brackish habitats of community interest.

The Natura 2000 Management Plan highlights that the main challenge for the long-term conservation of ecosystems is not a single pressure, but rather the cumulative effect resulting from the interaction between climate change, land transformation, and the progressive loss of traditional salt management practices. On the contrary, maintaining traditional salt pan production is recognized as one of the main positive factors for the conservation of habitats and species of community interest, as it contributes to maintaining the hydrological regimes and ecological diversity that characterize the landscape of the Sicilian Salt Pans.

14.2.3 What kind of measures and indicators are currently used, or planned to be used, to assess both species groups and the pressures on them? Who undertakes this work, or will do so in the future?

Monitoring the conservation status of habitats and species and the dynamics of the main anthropogenic and natural pressures is carried out through the monitoring system established by the Natura 2000 site Management Plan and other monitoring programs for protected areas in the area.

The indicators used are shown in table 25.

Table 25. Main indicators foreseen by the Natura 2000 site Management Plan

Aquatic and migratory birds	Lagoon, brackish and coastal habitats	Marine and lagoon ecosystems	Anthropogenic pressures
size of nesting, migratory and wintering populations; number of breeding pairs; reproductive success; spatial distribution of colonies; specific richness of ornithic communities.	surface area and distribution of Natura 2000 habitats; habitat conservation status; ecological continuity; quality of halophilic plant communities; evolution of wetlands and salt basins.	chemical-physical quality of water; temperature, salinity, oxygenation and nutrients; state of Posidonia oceanica meadows; abundance and composition of fish communities.	presence and spread of invasive alien species; intensity of tourist flows; number of boats and level of nautical use; extension of urbanized surfaces; wildlife mortality caused by vehicular traffic; presence of stray or feral dogs and cats.

The monitoring activities are currently carried out or coordinated by:

- Sicilian Region;
- Management bodies of the Trapani and Paceco Salt Pans and the Stagnone Islands of Marsala Oriented Nature Reserves;
- ISPRA;
- ARPA Sicily;
- Universities and research institutes.

Within the future Biosphere Reserve, monitoring will be further expanded (to include areas outside the Natura 2000 site) and integrated through a coordinated system of data collection and periodic reporting involving local authorities, research institutions, and local stakeholders.

14.2.4 What actions are currently undertaken to reduce these pressures?

Numerous conservation, management, and awareness-raising actions are currently underway to reduce the main pressures affecting the ecosystems of the Sicilian Salt Pans and strengthen their ecological resilience. These interventions are part of an integrated management framework aimed at ensuring habitat protection, biodiversity conservation, and the continuity of the traditional activities that characterize the cultural landscape of the salt pans.

A priority area concerns habitat conservation and hydraulic management of the salt marsh system. Activities include maintenance of hydraulic infrastructure and supply channels, which are essential for the proper functioning of the ecosystem, regulation of water levels based on the needs of habitats and birdlife, and the restoration of traditional salt marsh basins and degraded wetlands, contributing to the preservation of the area's ecological and landscape diversity.

Particular attention is paid to protecting avifauna, which represents one of the most significant elements of the salt pans' naturalistic value. Planned actions include protecting nesting areas, regulating access to ecologically sensitive areas, monitoring species of community interest, and limiting potentially disruptive activities during breeding seasons, to ensure favourable conditions for aquatic birds to rest, feed, and breed.

Conservation activities also include monitoring and controlling invasive alien species, considered one of the main threats to coastal wetland ecosystems. Interventions include controlling their spread and implementing specific containment or removal measures for the most impactful plant and animal species, with the aim of preserving the ecological balance and the functionality of natural habitats.

Another area of intervention is aimed at reducing human pressure. This includes the regulation of tourism and recreational activities, the management of navigation within the Stagnone Lagoon, the control of stray animals and opportunistic species, and environmental monitoring activities, all aimed at minimizing impacts on the most vulnerable components of the ecosystem and promoting use compatible with conservation objectives.

Protection measures are complemented by education, participation, and engagement initiatives for local stakeholders (see fig. 53). Environmental education programs, informational activities for visitors, and the involvement of economic operators, salt producers, and local communities promote shared and informed management of the territory. This participatory approach helps strengthen the link between nature conservation, the promotion of traditional activities, and sustainable development.



Fig. 53. Bird monitoring 2026 (WWF and Youth Group)

14.2.5 What actions do you intend to take to reduce these pressures?

A part of the future Biosphere Reserve management plan is dedicated to consolidate and expand existing conservation and management measures through an integrated strategy that combines biodiversity protection, enhancement of traditional activities, and promotion of sustainable territorial development. In this context, the Reserve intends to strengthen its role as a local laboratory for testing innovative practices capable of ensuring the conservation of lagoon and brackish ecosystems, while also providing opportunities for economic and social development for local communities.

A priority area of intervention concerns strengthening the ecological management of the saltworks. The planned actions aim to support traditional salt production as an identifying element of the area's cultural and productive landscape, while also promoting innovation processes capable of improving its economic sustainability, increasing its competitiveness, and fostering the transmission of traditional skills to new generations. At the same time, the rehabilitation of additional currently non-productive saltworks will be promoted, along with improved hydraulic management of the entire lagoon and brackish water system and the restoration of the historic network of canals, waterways, and saltworks protection structures, which are essential for both habitat conservation and the ecosystem's productive function.

Particular attention will be paid to climate change adaptation strategies. The vulnerability of coastal and lagoon ecosystems to the effects of sea level rise requires strengthening monitoring activities and defining specific measures to increase the resilience of wetland habitats. The future Reserve will therefore promote ecosystem-based adaptation actions, aimed at preserving the ecological functions and ecosystem services provided by brackish and coastal environments.

Another strategic objective is to improve ecological connectivity between the different ecosystems that comprise the Reserve. To this end, existing ecological corridors will be strengthened, encouraging agricultural practices compatible with biodiversity conservation and promoting the recovery of degraded habitats in buffer zones, to foster species mobility and the ecological coherence of the entire landscape.

The future Biosphere Reserve intends to develop sustainable tourism models based on the carrying capacity of ecosystems and the valorization of natural and cultural heritage. Planned actions include defining management criteria for the most sensitive areas, promoting forms of ecotourism and nature tourism, and improving environmental interpretation services, aiming to enhance the quality of the visitor experience and raise awareness of the value of local ecosystems.

Scientific research and monitoring will also be central components of the Reserve's future governance. An integrated environmental and socioeconomic monitoring system is planned, based on indicators shared by the various management bodies and developed through strengthened collaborations with universities, research centres, and national and international scientific networks. This system will allow for the evaluation of the effectiveness of the measures adopted and the adaptive guidance of future management strategies.

Finally, the governance (see chapter 17 for details) of the Reserve will be based on the active participation of local communities and stakeholders. Permanent tools for consultation between public bodies, economic operators, associations, and citizens will be promoted, encouraging shared decision-making processes and strengthening traditional economic activities compatible with conservation objectives. Through this collaborative approach, the Biosphere Reserve intends to consolidate itself as a model of balance between natural heritage protection, enhancement of local identities, and sustainable development of the territory.

14.3 At the level of genetic diversity:

14.3.1 Indicate species or varieties that are of importance (e.g. for conservation, medicine, food production, agrobiodiversity, cultural practices etc).

In the coastal salt pan system between Trapani, Paceco and Marsala, the most important species and varieties are summarised in table 26.

Table 26. List of the main species and their ecological role

Category	Species / Element	Ecological role and value for the Biosphere Reserve
Avifauna	*Phoenicopterus roseus* (Pink flamingo)	This species is a symbol of the Sicilian salt marshes and an important indicator of the ecological quality of hypersaline habitats. Recent nesting confirms the effectiveness of conservation measures and the functionality of the ecosystem.
	Recurvirostra avosetta (Avocet)	Nesting species typical of brackish humid environments, representative of the ecological integrity of salt pan areas.
	Charadrius alexandrinus (Little Plover)	Species of high conservation interest, closely linked to dune habitats and coastal brackish areas.
	Himantopus himantopus (Italian Knight)	Characteristic species of Mediterranean wetlands, indicator of the quality of surface aquatic habitats.
	Larids and ternids *(Sterna spp., Larus spp.)*	A group of species that uses saltwater pools for feeding, resting, and breeding, contributing to the area's biodiversity.
Halophilous flora and specialized habitats	*Salicornia spp.*	Keystone species of brackish environments, essential for soil stabilization and the maintenance of halophilic habitats.
	Arthrocnemum macrostachyum	Characteristic element of Mediterranean halophilic plant communities, adapted to high levels of salinity.
	Halocnemum strobilaceum	Highly specialized species, typical of coastal brackish ecosystems and of high biogeographical interest.
	Plant communities of the class *Salicornietea fruticosae*	Priority habitats at European level that host highly specialized biodiversity and perform important ecological functions.
Microalgae and planktonic fauna	*Dunaliella salina*	Microalgae responsible for the primary productivity of salt marshes and the characteristic color of the water; an essential element of the food web.
	Artemia salina	Crustacean adapted to hypersaline environments that constitutes a fundamental food resource for numerous bird species.
Agrobiodiversity and agricultural heritage	Traditional grape varieties from the Marsala area (Grillo, Catarratto, Inzolia)	An expression of local agricultural biodiversity and the historical interaction between human communities and the coastal environment.
	Local horticultural varieties adapted to saline soils	Important agricultural genetic resources that testify to processes of adaptation to the environmental conditions of the territory.
Biocultural heritage of salt cultivation	Salt pan microbiota (bacterial and algal consortia)	Specialized microbial communities that contribute to the ecological and productive processes of saltwater ecosystems.
	Productive landscape of the salt pan	A historic ecosystem shaped by the interaction between humans and nature, an emblematic example of the UNESCO MAB concept of biocultural landscape.

These species not only support the natural ecosystem but are also an integral part of cultural practices and traditional production related to salt processing and local agriculture.



Ph: Giovanni La Francesca

Fig. 54. Avocet (Recurvirostra avosetta)

14.3.2 What ecological, economic or social pressures or changes may threaten these species or varieties?

The main ecological, economic and social pressures are shown in table 27.

Table 27. The main ecological, economic and social pressures

Pressure category	Pressure identified	Potential effects on the territory and ecosystems
Ecological	Alteration of the hydraulic regime of the salt pans due to the abandonment or discontinuous management of the plants	Compromised functionality of wetland habitats and reduction of biodiversity associated with brackish ecosystems.
	Nutrient pollution from intensive agriculture and urban wastewater	Eutrophication phenomena, alteration of water quality and loss of suitable habitats for numerous species.
	Human disturbance in nesting areas caused by tourism and unregulated use	Reduced reproductive success of birds and increased stress for the most sensitive species.
	Sea level rise associated with climate change	Modification of coastal habitats and increased vulnerability of traditional saltworks infrastructure.
	Increase in the frequency and intensity of extreme weather events	Alteration of hydrological balances, excessive evaporation and anomalous salinization phenomena.
Economical	Reduction in the profitability of traditional salt cultivation	Risk of abandonment of productive activities that contribute to the maintenance of the ecosystem and the historical landscape.
	Competition from industrial salt production	Decreased competitiveness of traditional production and loss of economic sustainability of artisanal saltworks.
	Conversion of brackish areas to incompatible tourist or infrastructural uses	Consumption of natural habitats and fragmentation of coastal ecosystems.
Social and management	Progressive abandonment of traditional salt pan management practices	Loss of management processes that ensure the conservation of habitats and local cultural heritage.
	Conflicts between conservation needs and tourism development	Difficulty in balancing biodiversity protection and economic development of the territory.
	Fragmentation of skills between different bodies and management entities	Reduced effectiveness of integrated land planning and management actions.
	Reduction of traditional know-how related to the figure of salt workers	Loss of historical knowledge and technical skills essential for the sustainable management of salt pans.



Fig. 55. Border between port and salt pans

14.3.3 What indicators, at the level of the species, are used, or will be used, to assess the evolution of population status and associated use?

To monitor the evolutionary status of species and populations in the site, specific indicators are adopted, summarised in table 28.

Table 28. Indicators for monitoring species and populations

Category of indicators	Indicator	Meaning and purpose of monitoring
Biological indicators (target species)	Number of breeding pairs of Phoenicopterus roseus (Greater Flamingo)	Assess the suitability of breeding habitats and the effectiveness of conservation measures adopted in the salt marsh system.
	Number of breeding pairs of Charadrius alexandrinus (Little Plover)	It measures the conservation status of coastal and brackish habitats used for nesting by the species.
	Number of breeding pairs of Himantopus himantopus (Black-winged Stilt)	It provides information on the ecological quality of wetlands and low-lying areas.
	Reproductive success (fledging rate) of breeding species	It allows us to evaluate not only the presence of species but also the actual capacity of habitats to support the completion of the reproductive cycle.
	Density of use of the basins by migratory birds	Measure the importance of salt marshes as rest stops, feeding areas, and refuges along Mediterranean migratory routes.
	Presence and abundance of Artemia salina	Indicator of the biological productivity of salt marshes and the availability of trophic resources for aquatic birds.
Floristic indicatorsand habitat	Extent of halophilous plant communities (ha)	Evaluates the conservation and dynamics of habitats characteristic of brackish ecosystems.
	Conservation status of EU priority habitats	It allows to verify the maintenance of the ecological integrity of habitats of community interest.
	Plant cover of Salicornia spp. and Arthrocnemum macrostachyum	Indicator of the ecological status of halophilous communities and the stability of saline habitats.
Functional ecological indicators	Average salinity and seasonal variations of the pools	A fundamental parameter for the ecological functioning of salt marshes and for the conservation of specialized species.
	Water quality (nitrogen, phosphorus, dissolved oxygen)	It allows to monitor eutrophication processes and changes in environmental conditions.
	Stability of the hydraulic cycle of the salt pans and continuity of production activity	It measures the system's ability to maintain its ecological and productive functions over time.
Socioeconomic indicators	Number of active saltworks	Indicator of the vitality of the traditional salt sector and the conservation of the historic production landscape.
	Annual production of artisanal salt	Measure the contribution of traditional activities to the local economy and ecosystem management.
	Number of local operators involved	Assess the level of participation and involvement of stakeholders in the Biosphere Reserve's activities.
	Nature tourism flows (birdwatching, guided tours, educational activities)	It measures the Reserve's ability to generate sustainable economic benefits and raise environmental awareness.



Ph: Luigi Barraco

14.3.4 What measures will be used to conserve genetic diversity and practices associated with their conservation?

The conservation measures envisaged are listed in table 29.

Table 29. List of areas of intervention, related measures and their contribution to the Reserve's objectives

Scope of intervention	Expected measure	Contribution to the objectives of the Biosphere Reserve
Conservation of habitats and species	Maintaining active management of salt pans through regulation of hydraulic circulation	It ensures the conservation of brackish and hypersaline habitats and the maintenance of the ecological conditions necessary for specialized flora and fauna.
	Creation of protected nesting areas with seasonal access bans	It promotes the reproductive success of bird species of conservation interest and reduces human disturbance during sensitive periods.
	Control of human activities during the breeding season	It reduces pressure on habitats and contributes to the stability of breeding and migratory populations.
	Recovery and reactivation of disused tanks	It strengthens the ecological continuity of the salt marsh system and increases the availability of habitat for aquatic species.
Conservation of genetic diversity	Genetic monitoring of the main avifauna populations in collaboration with research institutes	It allows us to evaluate the vitality of populations and guide long-term conservation strategies.
	Protection of the microalgal and bacterial communities characteristic of salt marshes	It safeguards the specialized microbial biodiversity that supports the ecological and productive processes of the hypersaline ecosystem.
	Maintaining favorable ecological conditions for Artemia salina	It ensures the conservation of a key species in the food web and provides food support for aquatic birds.
Preservation of traditional practices	Support for traditional saliculture as a tool for active ecosystem management	It contributes to the joint conservation of biodiversity and the historical cultural landscape of the salt pans.
	Transmission of traditional salt workers' knowledge through intergenerational training programs	It promotes the conservation of intangible cultural heritage and the generational renewal of local skills.
	Incentives for the maintenance of production activities compatible with conservation objectives	Strengthens the economic sustainability of traditional activities and their role in land management.
Governance and integrated management	Management and collaboration agreements between public bodies, WWF, and private operators	It promotes participatory governance and coordinated management of natural and cultural resources.
	Regulating nature tourism through carrying capacity and dedicated routes	It ensures use compatible with the conservation of the most sensitive habitats and species.
	Implementation of a continuous monitoring system based on Natura 2000 and UNESCO MAB indicators	It enables the evaluation of the effectiveness of the actions undertaken and supports adaptive management processes.



Ph: Michele Fundarò

15. DEVELOPMENT FUNCTION

15.1. Potential for fostering economic and human development which is socio-culturally and ecologically sustainable:

15.1.1 Describe how and why the area has potential to serve as a site of excellence/model region for promoting sustainable development.

The proposed Saline di Sicilia Biosphere Reserve promotes an integrated model of sustainable development based on the close interaction between (a) conservation of coastal ecosystems, (b) continuity and improvement of activities related to salt cultivation and traditional production, and (c) enhancement of cultural and landscape heritage through the support of ongoing research, training, and education. The salt pan system represents a historic example of coevolution between local communities and the natural environment, in which the human management of evaporation ponds has contributed over time to the formation and maintenance of brackish habitats of high ecological value in the Mediterranean context.

The economic activities present in the proposed Biosphere Reserve (see table 30) are primarily based on the production and harvesting of sea salt, primary production activities (viticulture, olive growing, and indigenous products), fishing, nature and cultural tourism, educational services, and scientific research. Salt production continues to be an important economic and identity resource for local communities, providing direct and indirect employment and contributing to the maintenance of traditional skills and sustainable land management practices. The continued existence of salt-making activities also plays a vital role in preserving the historic cultural landscape and maintaining the ecological characteristics of coastal wetlands, improving resilience to climate change.

The proposed Biosphere Reserve aims to strengthen forms of sustainable local development based on the valorization of local supply chains, the promotion of quality products, slow and seasonal tourism, and the dissemination of circular and blue economy models. From this perspective, the salt pans constitute an ecological and cultural infrastructure capable of integrating environmental protection, economic activities, and the well-being of resident communities.



Ph: Saline Culcasi

Table 30. Main economic activities within the proposed Biosphere Reserve

Sector / Activity	Main Characteristics	Direct Employment (Qualitative Estimate)	Importance of Indirect Economic Effects	Relationship with the Proposed Site
Sea salt production	Harvesting and processing of sea salt in the historic salt pans of Trapani, Paceco and Marsala; processing and marketing of Trapani PGI Sea Salt	Medium (approximately 150–200 direct employees in the salt sector)	High	Traditional and emblematic activity that has shaped the cultural landscape and contributed to the maintenance of coastal wetland habitats
Nature-based and cultural tourism	Visits to the salt pans, birdwatching, experiential tourism, salt-tourism activities, salt museums and excursions in the Stagnone Lagoon	High and growing	Very high	Strategic sector for the sustainable valorization of the UNESCO candidature, integrating natural and cultural heritage
Viticulture and winemaking	Wine production in the Marsala area (Marsala DOC and other wines of the Val di Mazara region)	High	Very high	Key component of the historic agricultural landscape and the local tourism offer
Fisheries and seafood value chain	Traditional coastal fisheries, small-scale lagoon fisheries and food processing activities	Medium	Medium-high	Historic activity closely linked to the coastal and lagoon ecosystems of the Stagnone and the Trapani coastline
Tourism and hospitality services	Hotels, guesthouses, restaurants, excursion services and tourism mobility services	High	Very high	Supports the sustainable enjoyment of the area and the diversification of tourism throughout the year
Traditional agriculture	Olive cultivation, Mediterranean horticulture and typical coastal crops	Medium	Medium	Contributes to the conservation of the historic landscape mosaic of western Sicily
Craft production and agri-food processing	Artisanal products, fish processing and salt-related products	Low-medium	Medium	Complementary sector supporting local value chains and experiential tourism
Transport and port services	Activities associated with the Port of Trapani, maritime connections and logistics	Medium	High	Supports tourism and commercial mobility throughout the wider coastal area

The nominated area has the potential to operate as a "site of excellence" within the regional context and within the MAB Program because it uniquely and clearly integrates ecosystems of high naturalistic value, traditional productive activities that are still active, and a strong local cultural identity. Salt cultivation has created and maintained a mosaic of basins, salinity gradients, and habitats that support biodiversity, migratory species, and coastal landscapes of great Mediterranean importance. In this context, the hydraulic management required for salt production can be coordinated with conservation objectives, offering a concrete example of integrated coastal wetland management.

The area's demonstrative value lies primarily in the coexistence of conservation and sustainable use. The salt pans demonstrate how a traditional economic activity can contribute to the maintenance of habitats, local knowledge, and landscape quality, while also generating income opportunities through salt cultivation, nature and cultural tourism, environmental education, scientific research, and ecosystem services. This makes them a useful reference for other Mediterranean areas facing production abandonment, loss of cultural heritage, and increasing coastal pressures.

The area is also particularly suited to research, monitoring, and education programs on biodiversity, salinity management, bird migration, and climate change adaptation. The hydraulic infrastructure and managed nature of the wetlands offer a favourable environment for testing ecosystem-based adaptation measures. Taken together, these elements give the saltworks significant potential for replication as a Mediterranean model of sustainable development based on the integration of biodiversity, cultural heritage, and the well-being of local communities.

15.1.2. How do you assess changes and successes (which objectives and with which indicators)?

At the time of the application, the Promotion Committee had not yet defined a complete and definitive framework of quantitative objectives and related targets for assessing the expected changes. However, a process has already been initiated to develop an integrated monitoring and evaluation system, aimed at measuring the effects of the actions undertaken over time in the areas of biodiversity conservation, sustainable development, and strengthening institutional and community capacity.

This system will be developed in collaboration with protected area management bodies, competent public administrations, research institutes, and local stakeholders, and will adopt quantitative and qualitative indicators consistent with the objectives of the MAB Programme and the Sustainable Development Goals of the 2030 Agenda.

Conservation of biodiversity and ecosystems

A first area of evaluation will concern the Biosphere Reserve's ability to ensure the conservation and improvement of the coastal, lagoon, and brackish ecosystems that characterize the Trapani and Marsala salt pans system.

The main expected results include:

- the maintenance and improvement of the ecological status of natural and semi-natural habitats;
- the conservation of species of conservation interest, with particular attention to migratory, wintering and nesting birds;
- strengthening the ecological functionality of the salt and lagoon system.

Indicators that may be used include:

- area of natural and semi-natural habitats maintained or restored;
- conservation status of habitats of community interest;
- number and trend of target species monitored;
- consistency of bird populations of conservation interest;
- water quality parameters and hydrological functionality of salt basins;
- extension of areas affected by active ecological management interventions.

Sustainable economic development

The assessment will also consider the Biosphere Reserve's ability to promote economic models compatible with the protection of natural and cultural heritage and to generate benefits for local communities.

The expected changes concern:

- the strengthening and diversification of the traditional sea salt supply chain;
- the promotion of sustainable production in the primary sector, including viticulture, olive growing and fishing;
- the development of sustainable, responsible and experiential forms of tourism;
- the growth of economic activities linked to environmental and cultural heritage;
- increasing employment opportunities related to the green economy and sustainable land management.

Indicators may include:

- number of companies involved in the Reserve's initiatives;
- employment levels in local sustainable supply chains;
- quantity of sea salt produced and enhanced through quality and certification systems;
- agricultural areas managed according to organic or sustainable methods;
- number of visitors to naturalistic and cultural sites;
- average length of tourist stay in the area;
- economic value generated by activities related to natural and cultural heritage;
- number of operators adhering to voluntary sustainability brands, certifications, or agreements.

Education, research and knowledge transfer

In accordance with the logistical support function envisaged by the MAB Programme, the Biosphere Reserve will also be evaluated as a territorial platform for scientific research (see fig. 56), environmental education and innovation.

Objectives include:

- strengthening research and monitoring activities;
- expanding opportunities for environmental education and awareness;
- the consolidation of collaborations between research institutes, schools, public bodies and local operators;
- the dissemination and transfer of good practices developed in the area.

among the main indicators we can consider:

- number of active research projects;
- collaboration agreements with universities and research centers;
- number of students involved in educational programs;
- training and dissemination activities carried out annually;
- scientific and technical publications produced;
- citizen science initiatives and public participation.



Fig. 56. The Trapani University Campus of the University of Palermo.

Governance and participation

A further area of evaluation will concern the effectiveness of multilevel governance and the degree of involvement of local stakeholders in decision-making and implementation processes.

Expected results include:

- strengthening cooperation between public bodies, protected area managers, economic operators, associations, and local communities;
- strengthening transparent and participatory decision-making processes;
- increasing the sense of belonging and co-responsibility in land management.

Indicators may include:

- number of entities adhering to the governance mechanisms of the Biosphere Reserve;
- participation in meetings and coordination tables;
- formalized agreements, protocols and partnerships;
- number of projects developed through multi-actor collaborations;
- evel of stakeholder satisfaction detected through periodic consultations.

Data collection and evaluation of results will be conducted through periodic monitoring reports prepared with the input of the relevant authorities, protected area managers, economic operators, and research institutions involved. The information collected will form the basis for updating management strategies and guiding future actions of the Biosphere Reserve, in accordance with the principles of adaptive management, continuous improvement, and stakeholder participation.

15.2. If tourism is a major activity

Overall, tourism represents a strategic component of the area's sustainable development. The future Biosphere Reserve will contribute to strengthening responsible use models based on the integrated valorization of natural and cultural heritage, the deseasonalization of tourist flows, and the involvement of local communities in the management and promotion of local resources.

15.2.1. Describe the type(s) of tourism and the tourist facilities available. Summarize the main tourist attractions in the proposed biosphere reserve and their locations.

Analyzing the main visitor flows (see fig. 57) which characterize the candidate area it is possible to observe:

- “Sali-turism”: a trend in experiential tourism and wellness linked to the culture of salt, the offerings of the Ettore and Infersa salt pans – the most structured in the area – attract approximately 100,000 visitors (company data 2025);

- “Wine tourism”: a flow of high-spending visitors to Marsala's historic wineries—the Florio Winery alone welcomes over 50,000 visitors, followed by major wineries such as the Pellegrino Winery (around 15,000 visitors annually), Donnafugata (29,000 visitors to all their Sicilian wineries), and many others, such as Alagna Vini, Cantine Fina, Caruso & Minini, and Marco De Bartoli, which each attract an estimated 5,000 annual visitors;

- “Historical-archaeological tourism”: the Whitaker Museum of Mozia estimates that visits are around 50,000 persons a year;

- “Sports tourism (kitesurfing)”: an international movement (especially from Germany, Poland, France and the United Kingdom) concentrated in the Stagnone which involves around 30,000 practitioners every year;

- "Cruise tourism": approximately 25,000 people disembark from cruise ships docked at the port of Trapani, visiting the historic centre and taking part in day-long experiences in the area;

- "Slow Tourism": slow and aware visitors to the area, lovers of birdwatching and landscape photography, with numbers that are difficult to quantify, but potentially estimated at least around 10,000 people;

- "Folkloristic-religious tourism": the flows are concentrated during Easter week, with the Sacred Representation of the Passion of the Lord of Marsala (Maundy Thursday) and the Procession of the Mysteries of Trapani (Good Friday), which are estimated to attract around 100,000 faithful and tourists.



Ph: Piero Lazzari



Fig. 57. Main access routes for tourists
(the illustration is generated by AI based on data from Regione Sicilia)

Among the main tourist attractions present in the territories nominated for Biosphere Reserve are:

- the Trapani and Paceco Salt Pans Nature Reserve, located along the coastal strip between Trapani and Paceco, characterised by a complex system of active salt pans, wetlands and habitats of international importance for birdlife;
- the Stagnone Islands of Marsala Oriented Nature Reserve, including the Stagnone lagoon and the Marsala salt pan system, one of the most important lagoon complexes in the Mediterranean;
- the island of San Pantaleo (Mozia), an important Phoenician archaeological site located within the Stagnone lagoon;
- the Nubia Salt Museum, in the Paceco area, dedicated to the history and traditional techniques of salt production;
- the historical system of windmills and hydraulic infrastructures of the salt pans, distributed along the entire salt landscape;
- the historic centers of Trapani and Marsala, characterized by a rich architectural, monumental and cultural heritage;
- the coastal areas and beaches of the western Sicilian coast, which complement the naturalistic and cultural offerings of the Reserve;
- the food and wine and wine routes of the Marsala area, linked to local agricultural and agri-food production (see fig. 58).



Fig. 58. Experiential food and wine tourism experience at the Culcasi salt pans

The four municipalities analysed (Marsala, Misiliscemi, Paceco, Trapani) host a total of 44 hotels (see table 31), for a total of over 2,700 beds. These are primarily medium- to high-quality establishments (70% have three- to four-star ratings), with one five-star establishment in Marsala.

Table 31. Hotels (no.) and accommodation capacity (beds) by municipality (2024)

Municipalities	5 stars		4 stars		3 stars		1 stars		RTA		Total	
	n.	beds	n.	beds	n.	beds	n.	beds	n.	beds	n.	beds
Marsala	1	124	5	451	11	693	1	24	3	100	21	1.392
Misiliscemi					1	28					1	28
Paceco			1	39	1	15			1	35	3	89
Trapani			7	813	5	202	1	25	6	204	19	1.244
Total	**1**	**124**	**13**	**1.303**	**18**	**938**	**2**	**49**	**10**	**339**	**44**	**2.753**

Source: Agenda 21 Consulting srl elaboration based on ISTAT data.

Analysing non-hotel accommodations (table 32), there are another 280 establishments with over 3,000 beds, 45% of which are rental accommodations (concentrated in the municipalities of Trapani and Marsala) and 30% are B&Bs scattered throughout the area (with a good presence in all four municipalities, but Trapani accounts for almost half of this type of bed). Agritourism facilities are also available, demonstrating the presence of a significant rural context and recognizable wine, olive, and agri-food products.

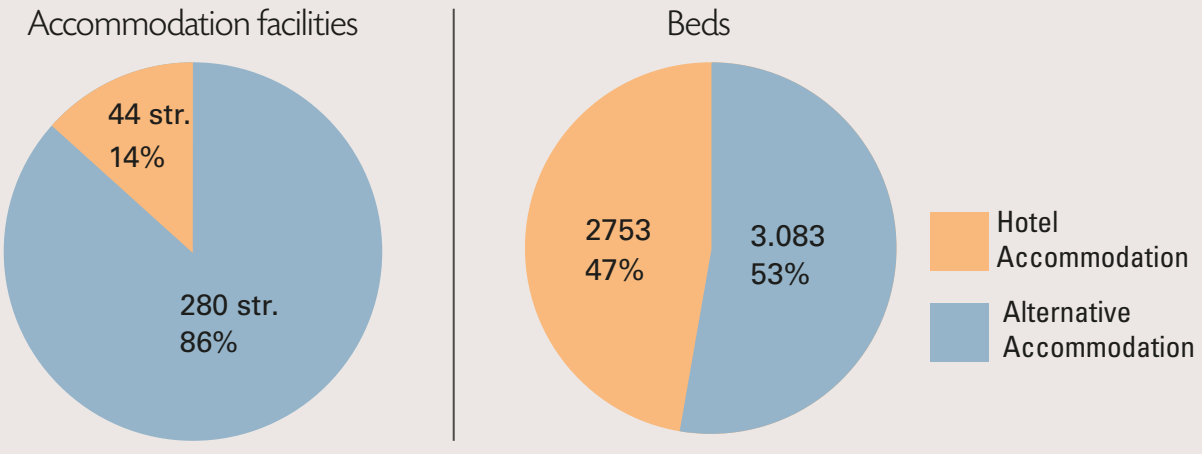
Table 32. Non-hotel facilities (no.) and accommodation capacity (beds) by municipality (2024)

Municipalities	Campings		Rentings		Agriturism		B&B		others		Total	
	n.	beds	n.	beds	n.	beds	n.	beds	n.	beds	n.	beds
Marsala	1	160	53	616	6	125	40	246	3	67	103	1.214
Misiliscemi			3	41	4	144	14	104	1	24	22	313
Paceco			1	8	4	32	17	125	1	22	23	187
Trapani			58	732	5	148	67	445	2	44	132	1.369
Total	**1**	**160**	**115**	**1.397**	**19**	**449**	**138**	**920**	**7**	**157**	**280**	**3.083**

Source: Agenda 21 Consulting srl elaboration based on ISTAT data.

In short, the area included between Trapani and Marsala, the tourist offer is predominantly non-hotel, characterised by B&Bs and rental accommodations, although the larger size of the "classic" hotel facilities means that the distribution of beds is practically equal between the two categories. This division characterises both the major centres, Trapani and Marsala, while the more rural communities of Misiliscemi and Paceco see a prevalence of non-hotel beds.

Type of accommodation facilities present in the area (2024)

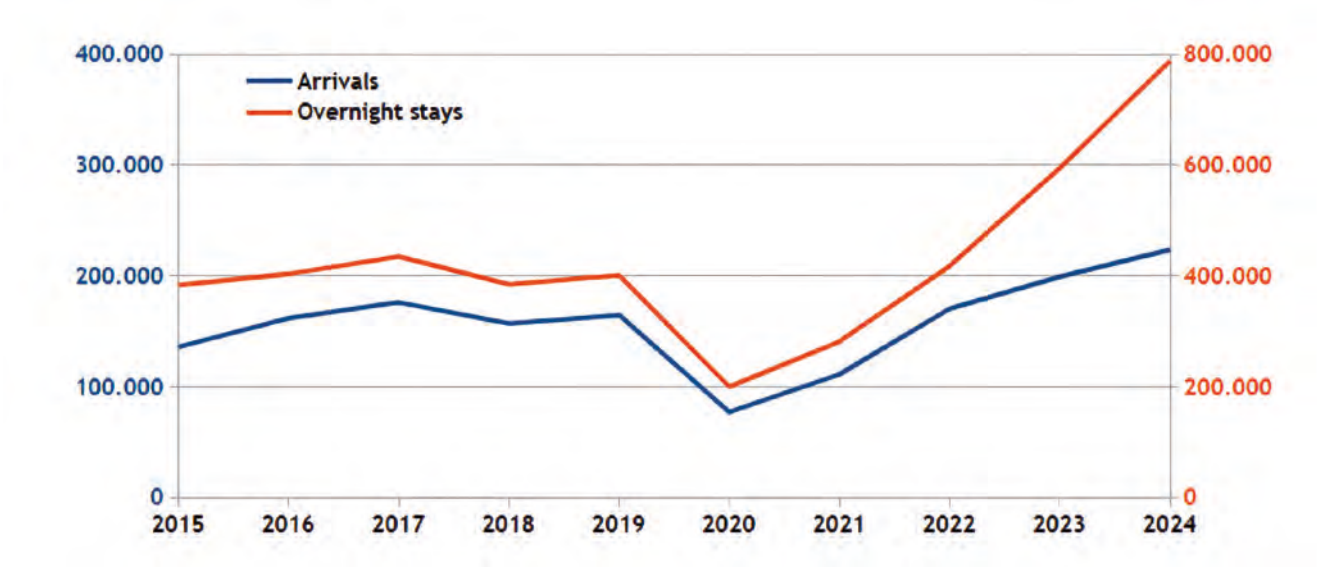


(Source: Agenda 21 Consulting srl elaboration on ISTAT data)

15.2.2 How many visitors come to the proposed biosphere reserve each year? (Distinguish between the single-day visitors and overnight guests, visitors only visiting the proposed biosphere reserve or only passing on the way to another place). Is there an upward or downward trend, or a particular target?

The following graph highlights the trend in arrivals (data in blue) and stays (data in red) over the last ten years for the four municipalities analysed. Leaving aside the data for the two-year period 2020/2021 (a decrease of approximately 50%), heavily impacted by restrictions related to the Covid-19 pandemic, the three-year period 2022/2024 saw a return to pre-pandemic values as early as 2022, before returning to a medium-term growth path. It should be noted that the significant increase recorded in 2024 for both analyzed figures is largely due to the inclusion of short-term rental data in the collected statistics.

Table 33. Arrivals and presences in the analysed area (2015-2024)

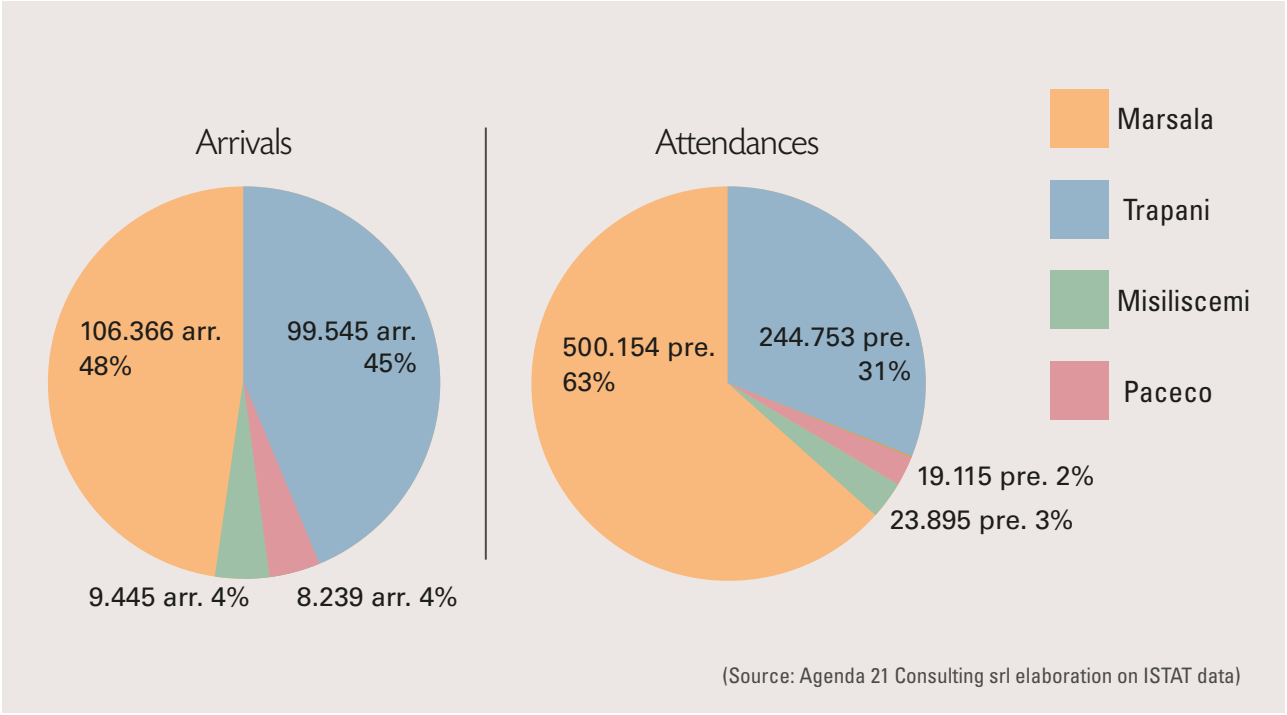


	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Arrivals	135,788	161,704	175,938	156,766	164,522	77,022	111,057	170,337	199,226	223,595
Attendances	383,372	403,530	435.023	384,694	400.985	199,694	281.172	417,741	594,682	787,917

(Source: Agenda 21 Consulting srl elaboration on ISTAT data)

Breaking the analysis down into the four municipalities analysed, it can be observed that Marsala and Trapani represent the area's two main tourist hubs, sharing approximately 90% of the total flow, with Paceco and Misiliscemi each accounting for 4%. Looking at tourism's economic impact, we see that Marsala manages to retain tourists the most, accounting for 63% of the total overnight stays in the area.

Arrivals and presences in the four municipalities (2024)



(Source: Agenda 21 Consulting srl elaboration on ISTAT data)

By further examining the evolution of arrivals and presences over the last ten years, some differences can be noted between the territories (for simplicity of analysis of the historical series, the data for the municipality of Misiliscemi - available only from 2023 - have been added to those for the municipality of Trapani, from which it was detached in 2021):

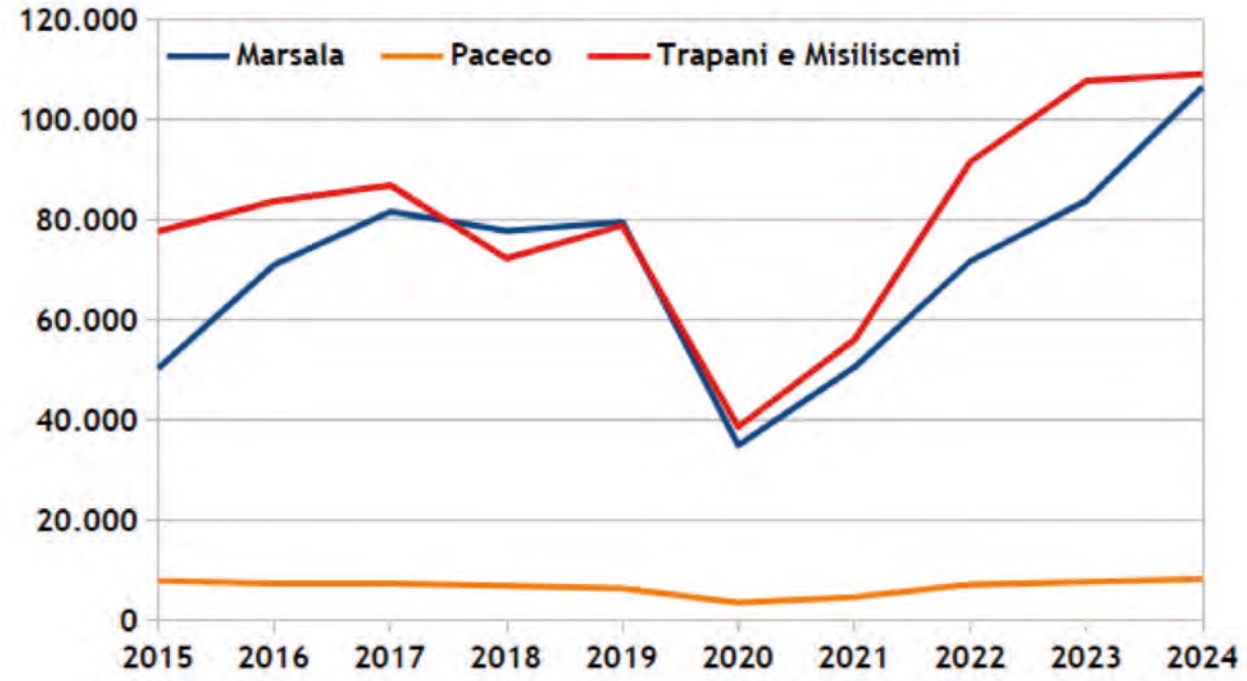
Paceco. Arrival and presence data recorded in 2024 are slightly higher than the values reached in 2017 (the pre-Covid19 peak year), with an increase of +8.8% in arrivals and +5.8% in presences.

Trapani+Misiliscemi. Both figures show a 25% increase compared to the 2017 peak, with a strong post-pandemic recovery and a subsequent stabilization in growth and greater attractiveness to foreign tourists.

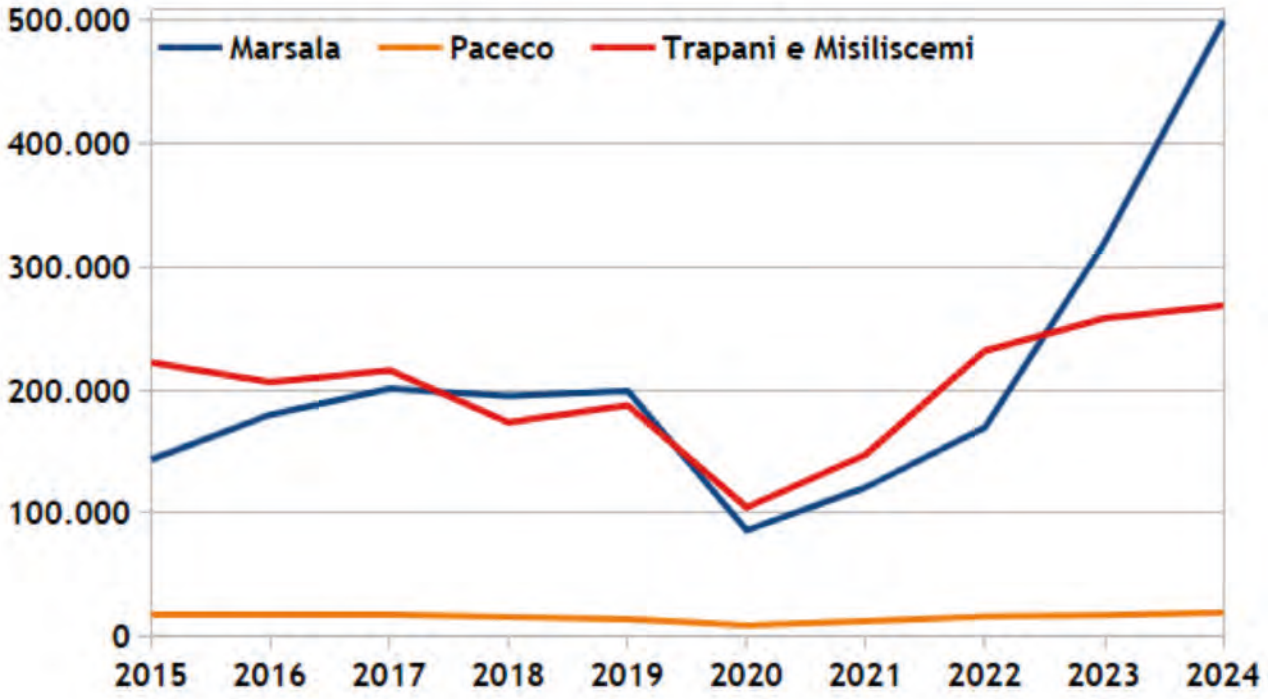
Marsala. The 30% increase in arrivals between 2017 and 2024 is largely due to the surge recorded in 2024, so it's safe to say that including short-term rentals among the metrics used by the statistics had a greater impact in this municipality. Noteworthy is the significant 150% increase in tourist arrivals, which exceeded half a million nights spent in the area, bringing the average length of stay in hotels from 2.1 days in 2022 to 5.1 days in 2024 (the average stay in complementary accommodations, however, remained constant at 3 days). A possible explanation for part of this increase could be the emergence of some short-term rentals, managed through partner hotels, linked to kitesurfing, a sport with a significant average stay in the area (around a week).

Table 34. Arrivals and presences in the four municipalities (2015-2024)

Arrivals



Attendances



(Source: Agenda 21 Consulting srl elaboration on ISTAT data)

Regarding visitor origin, it is clear that the domestic market represents the majority of tourist traffic in the area analysed, with a stable share of attendance at around 60%, unchanged compared to the pre-Covid period (58% in 2024, 62% in 2019). The share of Italian tourists in Marsala, Misiliscemi, and Paceco is in line with the average, while the municipality of Trapani records a higher presence of foreign tourists. Looking at the provincial average, the regions with the highest number of visitors are Sicily (37% of total national attendance), Lombardy (15%), Lazio (8%), Emilia-Romagna (6%), Campania (6%), and Veneto (6%). Shifting attention to foreign visitors, the countries with the highest presence in the Trapani area are France (18% of total international attendance), Germany (15%), the United States (10%), the United Kingdom (7%), Poland (7%), and Switzerland (7%).

Table 35. Origin of tourists (2022-2024)

	2022	2023	2024
Marsala	**Arrivals:** 64% Italians **Attendances**: 60% Italians **Average stay:** 2.2 days Italian 2.6 days French	**Arrivals:** 58% Italians **Attendances:** 59% Italians **Average stay:** 3.9 days Italian 3.7 days foreign	**Arrivals:** 63% Italians **Attendances:** 63% Italians **Average stay:** 4.7 days Italian 4.7 days French
Misiliscemi	*** data not available**	**Arrivals:** 66% Italians **Attendances:** 66% Italians **Average stay:** 2.4 days Italian 2.4 days French	**Arrivals:** 62% Italians **Attendances:** 61% Italians **Average stay:** 2.5 days Italian 2.6 days foreign
Paceco	**Arrivals:** 68% Italians **Attendances:** 68% Italians **Average stay:** 2.2 days Italian 2.3 days French	**Arrivals:** 63% Italians **Attendances:** 67% Italians **Average stay:** 2.4 days Italian 1.9 days foreign	**Arrivals:** 60% Italians **Attendances:** 62% Italians **Average stay:** 2.4 days Italian 2.2 days foreign
Trapani	**Arrivals:** 58% Italians **Attendances:** 55% Italians **Average stay**: 2.4 days Italian 2.7 days foreign	**Arrivals:** 51% Italians **Attendances:** 48% Italians **Average stay:** 2.2 days Italian 2.5 days foreign	**Arrivals:** 49% Italians **Attendances:** 47% Italians **Average stay:** 2.4 days Italian 2.5 days foreign

Source: Agenda 21 Consulting srl elaboration on ISTAT data

A deeper analysis of visitor preferences regarding accommodations reveals that hotel stays account for 77% of total stays, up from 65% in 2019. The preference for hotel accommodations is more marked in Marsala than in Paceco and Trapani, while data for Misiliscemi is not available.

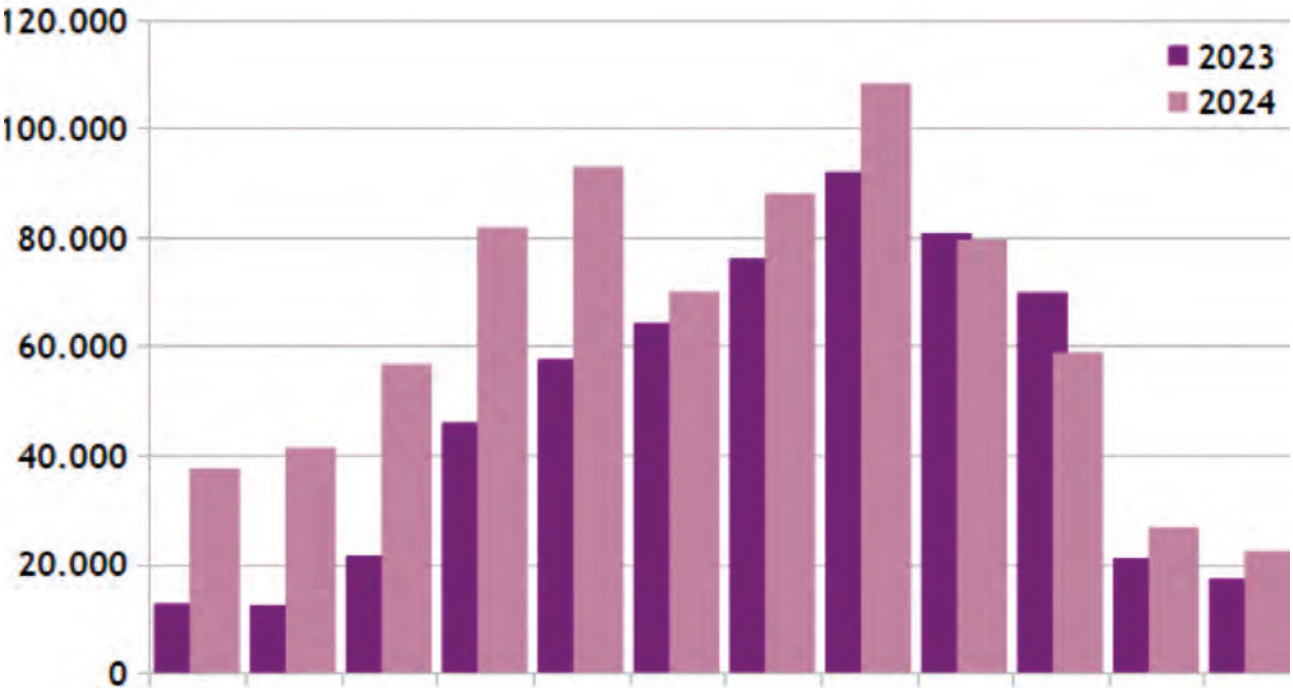
Table 36. Choice of accommodation (2022-2024)

	2022	2023	2024
Marsala	**Arrivals:** 75% hotel preference **Attendances**: 68% hotel preference **Average stay:** 2.1 days alb. 3.0 days total	**Arrivals:** 74% hotel preference **Attendances:** 79% hotel preference **Average stay:** 4.0 days alb. 3.2 days total	**Arrivals:** 79% hotel preference **Attendances:** 86% hotel preference **Average stay:** 5.1 days alb. 3.1 days total
Paceco	*** data not available**	*** data not available**	**Arrivals:** 60% hotel preference **Attendances:** 64% hotel preference **Average stay:** 2.4 days alb. 2.1 days total
Trapani	**Arrivals:** 57% hotel preference **Attendances**: 52% hotel preference **Average stay:** 2.3 days alb. 2.8 days total	**Arrivals:** 57% hotel preference **Attendances**: 55% hotel preference **Average stay:** 2.3 days alb. 2.5 days total	**Arrivals:** 62% hotel preference **Attendances**: 61% hotel preference **Average stay:** 2.4 days alb. 2.5 days total

Source: Agenda 21 Consulting srl elaboration on ISTAT data

Finally, analyzing the data relating to the seasonality of tourist presences, we observe that the number of nights spent in the area followed a "bell-shaped" trend until 2023, with a main peak during the month of August and a presence that then decreased as the season approached the winter one. The addition of data relating to short-term rentals (2024) led to a greater redistribution of flows during the spring, with the two main peaks recorded in August and May, while the "low" season still remains the winter one.

Table 37. Seasonality of tourist presences (2023-2024)



(Source: Agenda 21 Consulting srl elaboration on ISTAT data)

15.2.3 How are tourism activities currently managed?

Tourism activities in the Trapani and Paceco salt pans and the Stagnone salt pans of Marsala are managed through a complex system involving environmental protection agencies, salt companies, municipal administrations, tour operators, cultural associations, and private entities active in hospitality, mobility, and the promotion of local heritage.

In the Trapani and Paceco Salt Pans Nature Reserve, managed by WWF Italy, tourism is regulated through guided tours, environmental education activities, landscape interpretation tours, and birdwatching initiatives, organized in a manner compatible with the conservation objectives of habitats and species of community interest. Similarly, in the Marsala Stagnone Nature Reserve, tourism is geared toward the integrated valorization of the natural, archaeological, and landscape heritage, with particular attention to lagoon ecosystems and historical evidence of the Phoenician and Punic presence.

Active salt companies contribute to the management of tourism through visits to production sites, historic mills, and salt museums, promoting experiential tourism based on knowledge of traditional production techniques and the cultural heritage of salt cultivation. These activities are complemented by tour guides, cycling routes, nature excursions, and photography initiatives organized by specialized operators.

The salt pans' tourist offerings are part of a broader territorial network cantered around the towns of Trapani and Marsala, the main gateways to the nominated area. Trapani plays a central role as a tourist and port hub for western Sicily, thanks to its historic centre, museums, passenger port, connections to the Egadi archipelago, and access to the historic village of Erice. The city also serves as the main hub for cultural, seaside, and nautical tourism in the wider area.

Marsala, on the other hand, represents a centre of excellence for cultural, archaeological, and food and wine tourism. Its heritage includes the Archaeological Park of Lilibeo (see fig. 59), the Baglio Anselmi Archaeological Museum, the Phoenician site of Mozia, and the Stagnone lagoon landscape. The city is also internationally recognized for its wine production and for the presence of historic wineries open to visitors, which complement the experiential and food tourism offerings.



Fig. 59. Archaeological Park of Lilibeo in Marsala

The candidate area also benefits from a strong complementarity between nature, culture, beach tourism, sports, and food and wine. The salt pans and coastal wetlands are the main attractions for slow tourism and nature observation, while the cities of Trapani and Marsala offer hospitality services, accommodations, cultural activities, events, restaurants, and connections to other destinations in western Sicily. This integration favours a more balanced distribution of tourist flows and contributes to the diversification of the local economy.

15.2.4 Indicate possible positive and/or negative impacts of tourism at present or foreseen and how they will be assessed (linked to section 14)?

Tourism is one of the main tools for enhancing the natural, cultural, and productive heritage of the Sicilian Salt Pans, contributing to the achievement of the sustainable development goals promoted by the MAB Program. At the same time, the area's growing attractiveness requires careful management of visitor flows and constant monitoring of the impacts on the region's environmental and socioeconomic components.

Positive impacts

Current and expected positive impacts from the development of tourism activities in the area proposed as a Biosphere Reserve include:

- the diversification and strengthening of the local economy through the development of sustainable tourism, with particular reference to ecotourism, cultural tourism, wine tourism, and experiences linked to the natural and productive heritage of the area;
- the creation of employment and entrepreneurial opportunities in the sectors of hospitality, environmental interpretation, guided tours, catering, tourist services and traditional production;
- the consolidation of economic activities related to the conservation of the salt pan landscape and the continuity of traditional salt production, an essential element for the maintenance of habitats and associated biodiversity;
- increasing awareness and sensitization among visitors and residents regarding the ecological, historical, cultural and landscape values of the area;
- strengthening territorial identity and cooperation between public bodies, protected area managers, economic operators, associations, and local communities;
- Promoting local supply chains by increasing demand for local products and services, including artisanal sea salt, local wines, traditional agri-food products, and cultural initiatives.

Potential negative impacts

Among the potential negative effects associated with tourist flows, particularly during peak periods or in the absence of adequate management measures, the following are highlighted:

- disturbance to wildlife, with particular reference to bird species that use salt marshes and wetlands as nesting, feeding and migratory stopover areas;
- pressure on the most sensitive habitats due to trampling, unregulated access and frequentation of ecologically vulnerable areas;
- the increase in vehicular traffic, parking demand and emissions associated with visitor mobility;
- the growth in waste production and consumption of natural resources, particularly water and energy;
- localized congestion phenomena in sites of greatest scenic and tourist interest, especially during events, demonstrations and at peak traffic times;
- potential conflicts between tourism activities, biodiversity conservation objectives and the maintenance of traditional production activities.

Management and mitigation measures

To ensure compatibility between tourism and ecosystem conservation, management of the area includes the adoption of measures to direct visitor flows, improve sustainable mobility, promote environmental education and awareness-raising activities, and monitor the effects of tourism on habitats and species of conservation interest. Particular attention will be paid to protecting the most ecologically sensitive areas, promoting responsible tourism models capable of generating economic and social benefits for local communities without compromising the natural and cultural values that characterize the nominated territory.

Monitoring and evaluation

Assessing the impacts of tourism will be an integral component of the future Biosphere Reserve's monitoring system, consistent with the methodological framework described in Section 14 of this dossier. Through an integrated approach, monitoring will allow for the ongoing verification of the compatibility of tourist flows with the objectives of biodiversity conservation, cultural heritage enhancement, and sustainable development of local communities.
The monitoring system will be based on a set of environmental, tourism and socio-economic indicators (as summarised in the table 38), aimed at evaluating both the benefits generated by the use activities and the possible pressures exerted on ecosystems and territorial resources.

Table 38. Main indicators grouped by category

Category	Main indicators	Purpose
Environmental indicators	*Conservation status of habitats of community interest; population trends of target bird species; disturbance levels in the most ecologically sensitive areas; water quality and functionality of lagoon and brackish ecosystems*	*Evaluate the effects of tourism on ecosystems and the conservation status of biodiversity*
Tourism indicators	*Number of visitors to protected areas, visitor centers, museums, and production sites; seasonal distribution of flows; participation in guided activities and environmental education programs; use of sustainable mobility infrastructure*	*Monitor the intensity and ways of using the territory*
Socioeconomic indicators	*Employment generated by tourism activities; number of businesses involved in the sustainable tourism supply chain; economic value of tourism services and associated local products; level of satisfaction among residents and visitors*	*Evaluate the contribution of tourism to sustainable local development and community well-being*

The main expected impacts, broken down by main areas and with related monitoring indicators, are summarised in table 39.

Table 39. List of expected impacts and related monitoring indicators

Scope	Expected impact	Monitoring indicators	Expected trend
Local economy	*Diversification of economic activities*	*Number of tourism businesses; turnover from sustainable tourism-related activities; number of certified operators*	⬆
Employment	*More job opportunities*	*Number of employees in the tourism sector; seasonal and annual employment*	⬆
Traditional productions	*Promoting the salt supply chain and local products*	*Quantity of salt sold; number of companies involved; sales of typical products*	⬆
Education and awareness	*Greater environmental awareness*	*Number of guided tours; participants in educational activities; level of visitor satisfaction*	⬆
Biodiversity conservation	*Better support for conservation activities*	*Resources invested in conservation; habitat status; trends in target species*	⬆
Wildlife	*Tourist attendance disorder*	*Presence and reproductive success of sensitive species; recorded disturbance events*	⬇
Sensitive habitats	*Localized anthropogenic pressure*	*Extent of degraded areas; intensity of trail use; access to vulnerable areas*	⬇
Mobility	*Increase in vehicular traffic*	*Vehicle flows; parking space occupancy; estimated emissions*	⬇
Waste and consumption	*Increased pressure on resources*	*Waste production; water and energy consumption per visitor*	⬇
Tourist use	*Congestion of specific sites*	*Number of visitors during peak periods; carrying capacity indices*	⬇
Territorial governance	*Cooperation between stakeholders*	*Number of agreements and partnerships; joint initiatives; participation in management roundtables*	⬆

The monitoring results will be periodically analysed by the Biosphere Reserve's governance bodies and used to update management policies, following an adaptive management approach aimed at ensuring a balance between natural heritage conservation, the promotion of traditional activities, and the area's socioeconomic development.

15.2.5 How will these impacts be managed and by whom?

The management of impacts from tourism activities will be implemented through an integrated and adaptive approach, based on coordination between the competent public bodies, protected area managers, businesses operating in the area, local associations, and other stakeholders involved in the governance of the Biosphere Reserve.

Management actions will be aimed at ensuring compatibility between ecosystem conservation, tourism, and the maintenance of traditional economic activities, particularly salt cultivation, which is essential for the conservation of the area's landscape and biodiversity.

Table 40 shows the main organs responsible for the implementation of mitigation measures.

Table 40. List of main mitigation measures and the relevant organs responsible for their implementation

Potential impact	Mitigation measures	Responsible organs
Disturbance to birds and wildlife	Regulation of access to sensitive areas, delimitation of nesting zones, definition of visiting periods and routes compatible with the biological cycles of the species	Protected area management bodies, the Sicilian Region, ISPRA, scientific and environmental associations
Pressure on vulnerable habitats	Management of visitor routes, installation of walkways and flow direction systems, monitoring of load capacity	Nature reserve management bodies, municipalities, owners and managers of salt pans
Vehicle traffic and congestion	Strengthening sustainable mobility, shuttle services, cycle/pedestrian paths, and peripheral parking systems	Municipalities, the Free Municipal Consortium of Trapani, tour operators, and transport companies
Waste production and resource consumption	Implementation of separate waste collection systems, awareness campaigns, promotion of responsible tourism practices	Municipalities, environmental services managers, tourism operators and site managers
Overcrowding of the most attractive sites	Diversification of tourist offerings, promotion of alternative itineraries, monitoring of flows and event management	Municipalities, territorial DMOs, tourism operators, Biosphere Reserve Coordination Body
Conflicts between tourism and traditional production activities	Definition of shared usage protocols, involvement of economic operators in decision-making processes	salt producers, trade associations, municipalities, the Biosphere Reserve Coordination Body
Impacts on landscape and cultural heritage	Adoption of guidelines for infrastructure, signage and tourist activities compatible with the landscape context	Superintendency of Cultural and Environmental Heritage, Municipalities, Sicilian Region

Evaluation and adaptation

The data collected through the monitoring system will be periodically analysed by the Biosphere Reserve's governance bodies and the relevant authorities. The results will allow for the effectiveness of the measures adopted to be verified and, where necessary, corrective actions to be implemented through an adaptive management process.

From this perspective, the MAB candidacy represents an opportunity to consolidate permanent territorial coordination tools, strengthen stakeholder participation, and promote a sustainable tourism model based on the active conservation of the salt pan landscape, the protection of biodiversity, and the well-being of local communities.

15.3 Agricultural (including grazing) and other activities (including traditional and customary)

15.3.1 Describe the type of agricultural activities (including grazing) and other activities, area concerned, and people involved (including men and women).

The nominated area encompasses a complex system of traditional productive activities that contribute to landscape conservation, biodiversity maintenance, and the socioeconomic vitality of local communities. These activities are primarily located in the municipalities of Trapani, Paceco, and Marsala and involve both the coastal and lagoon areas as well as the inland agricultural areas directly connected to the salt pan system.

The most characteristic economic and cultural activity is salt cultivation, practiced in the coastal salt pans of Trapani, Paceco, and Marsala. Sea salt production occurs through techniques based on the natural evaporation of seawater and is a key element in the preservation of the historic landscape and wetland habitats that support numerous species of conservation interest. The activities involve owners, salt companies, specialized workers, technicians, administrative staff, and professionals committed to the cultural and touristic enhancement of the salt heritage. In recent years, there has been a growing female participation in both management and administrative activities and in promotion, hospitality, and outreach initiatives.


Ph: Patrizia Gatia

Trapani Sea Salt

The product "Trapani Sea Salt" is extracted from the precipitation of sodium chloride from the waters of the Mediterranean Sea, in the coastal areas of the province of Trapani, along the strip that connects Trapani to Marsala, on a total dedicated surface area of just over 1000 hectares. All the salt pans in the Trapani area are located on privately owned land (with the exception of one, owned by the Sicilian Region and entrusted to the naturalistic management of the WWF, whose hydraulic circuit is however integrated into that of SOSALT SpA). The owners are also producers, in the majority of cases. There are 10 producing companies, the majority of which (8) have a typically artisanal connotation, some of these are family-run (5), and only 2 (SOSALT SpA and Isola Longa srl) have an industrial connotation. SOSALT SpA operates in all segments of the supply chain (production, processing, packaging, marketing). The other companies rely on SOSALT for marketing or limit their direct marketing to the regional market or to niche segments. The sector directly employs approximately 80 full-time workers, plus an equal number of seasonal workers for harvesting and tank maintenance, bringing the total number of man-years employed to approximately 100. The related services and transportation sector is estimated to employ approximately 100 people, bringing the total number of employees to 200. The sector's contribution to improving the efficiency of commercial transport is particularly significant, as salt is one of the few commodities exported from the island to the mainland.

All the salt pans in the area fall within two Nature Reserves established by the Sicilian Region (Trapani and Paceco Salt Pans Reserve and Marsala Stagnone Islands Reserve), partly to promote salt cultivation as a vital element in preserving the integrity of the landscape and ethno-anthropological values of the area,



Fig. 60. Salt worker and harvesting machines

as well as the unique flora and fauna of the saltpan ecosystem. The European Union's recognition of the coastal wetland of the salt pans as a Nature Reserve and Special Protection Area (SPA) also contributes to the uniqueness of the salt pans area where "Trapani Sea Salt" is produced. The total production—in value terms—in 2025 amounts to approximately €22.0 million, while the expected turnover for 2026 is approximately €24.0 million. Average annual production volumes range between 130,000 and 140,000 tons. The potential figure, approximately 160,000 tons, also takes into account the restart of production at some temporarily inactive saltworks and the optimization of production at others that are currently underutilized. This figure does not take into account the additional production potential of approximately 300 hectares of saltworks that have been inactive for over 20 years. Furthermore, it should be noted that the area has a historically dedicated role in sea salt production, and therefore, with appropriate investments, production capacity could be significantly increased by repurposing currently abandoned facilities. The primary destination of "Trapani Sea Salt" is the food market, both for direct consumption as "table salt" and for use in the food and canning industries, with a particular focus on certified quality products (Parma and San Daniele ham factories, dairy industries such as Caciocavallo Ragusano, and canned fish, etc.). It should be noted, in particular, that the fish and canning industry in western Sicily, which represents approximately 60% of the entire national sector, sources exclusively from Trapani sea salt. From a geographical perspective, the current distribution of Trapani Sea Salt can be distinguished as follows: - Sicilian regional market: 20-25% (10% by value) - national market: 65% (excluding Sicily, 70% by value) - foreign market: 10-15% (20% by value; EU, North America and Japan, and to a lesser extent EU, Australia). The improved product recognition could constitute a significant distinctive element especially on the continental national market, shifting penetration shares towards segments traditionally more attentive to qualitative characteristics and especially on the foreign market, giving value to the intrinsic qualities of "Trapani Sea Salt" also in the context of the valorization of the "Italian taste".



Ph: Leonardo Rallo

In the surrounding agricultural areas, traditional Mediterranean crops are widespread, including vineyards, olive groves, horticulture and herbaceous crops.

Agriculture is one of the main economic sectors, and the wine sector represents the most thriving with the largest cultivated area in Italy. In 2025, Sicily, with 18,000 hectares, equal to 17.8% of the national total, will remain the most vineyard-planted region in Italy (7.9% of the total regional agricultural area), with a production-to-cultivated area ratio of 35.8 hectoliters per hectare (the leading Italian region is Emilia-Romagna with 137.6 hectoliters per hectare). In 2025, the province of Trapani, on 52,500 hectares of wine grapes, produced 1,833,000 quintals of grapes. It alone recorded a turnover of €239 million from PDO and PGI wine production. This result allowed it to position itself in first place among the provinces of southern Italy (Ismea-Qualivita 2024 survey).

The total area cultivated with olive trees in the province of Trapani, in 2025, corresponds to 19,000 hectares: the quintals of oil produced are 55,000 (both in 2024 and 2025) out of a regional total of 347,511 (2025) and 342,350 (2024). In 2025 the province of Trapani produced 15.83% of the total regional oil.

In the province of Trapani, there are 475 active fishing and aquaculture companies, with a total catch of 9,530 tons (2022); the Mazara del Vallo fleet is one of the largest and most profitable in the country.

Overall exports in the primary sector are particularly strong, with a turnover of 75 million euros in 2023. In particular, oil exports doubled compared to the previous year, reaching a value of 34 million euros.

Farms are generally family-run or small to medium-sized and employ both male and female workers in production, processing, and marketing activities.



Ph: Piero Lazzari


Ph: Piero Lazzari

Nubian Red Garlic

Garlic is a traditional crop with a deep-rooted tradition, growing in areas with favourable soil and climate conditions. Its cultivation has ancient traditions and was once concentrated in the Nubia area, a district in the municipality of Paceco (TP), from which it takes its name, as well as its colour (see fig. 61). The production area includes the municipality of Paceco, part of the municipality of Trapani, Erice, the northern area of Marsala, and Salemi: approximately 300 hectares in total (equivalent to approximately 16% of the SOAT horticultural area). It is generally cultivated dry, in dark, clayey soils, and in rotation with melon, broad beans, and durum wheat. The local ecotype "Aglio di Paceco," with its pink skin and excellent organoleptic characteristics, is grown almost exclusively in the area.

It is sown between November and December (sometimes even in January) and harvested fresh in May, or in June, partially dried in the fields. Harvesting should be done in the evening - on the hottest days, it may even be necessary to wait until nightfall - because the leaves, being more humid, allow for the manual braiding of the bulbs. Nubia Red Garlic has a bulb consisting of an average of twelve bulblets, with white outer skins and bright red inner skins. Traditionally, it is



Fig. 61. Nubia Red Garlic, PAT product (Municipality of Paceco).

packaged in very large braids (of one hundred bulblets each) and hung on balconies or stored in cellars or warehouses. Depending on the diameter of the bulb, the *trizza* is called *cucchia rossa* (50 mm), *corrente* (40 mm), *cucchiscedda* (30 mm), or *mazzunedda* (20-25 mm). For some years, to meet market demands, *trizza* have been produced with a single braid and a smaller number of bulbs (10 to 50), and a basket containing only four bulbs. The flavour of Nubia red garlic is particularly intense, thanks to its significantly higher-than-average allicin content (comparisons have been made by the Faculty of Agriculture in Palermo with the main national varieties). In Trapani cuisine, it is a key ingredient in some of the most important traditional dishes. First and foremost, pasta with Trapani-style pesto (made with crushed garlic, basil, almonds, tomatoes, extra virgin olive oil, salt, and pepper), a humble dish that, in dialect, is precisely called pasta *cull'àgghia*, meaning "with garlic." And then there's the famous fish couscous.


Ph: Piero Lazzari

Extensive and semi-extensive livestock farming, primarily sheep and goats, is also present. This practice is limited compared to other areas of Sicily, but important for maintaining open spaces and producing local dairy products. In some peri-urban and rural areas, grazing contributes to controlling wild vegetation and preserving the traditional landscape.

Fishing and lagoon resource harvesting activities further define the area's identity, particularly in the Marsala Stagnone lagoon and along the coastal strip. Artisanal fishing (see fig. 62) and related activities involve local operators and maintain traditional knowledge closely tied to coastal ecosystems.



Fig. 62. Fisherman and repair of fishing net

Alongside primary production activities, complementary initiatives have developed, such as agritourism, wine tourism, nature tourism, environmental education, guide services, and cultural heritage promotion. These activities foster income diversification for local families and contribute to the permanence of residents in rural and coastal areas.

Overall, agricultural, salt-mining, pastoral, fishing, and cultural-tourist activities involve a significant portion of the local population, with increasing participation of women in entrepreneurial, managerial, and administrative roles, and in services related to the development of the territory. A significant share of artisanal activities still exists (especially in the two smaller towns of Paceco and Misiliscemi) (see table 41).

Table 41. Incidence rate of artisan by municipality (2014-2023 period)

Municipality	Employment Rate in Craft Enterprises
Marsala	*17.3%*
Paceco	*32.1%*
Trapani	*17.3%*
Misiliscemi	*35.8%*

The multifunctionality of all these activities represents one of the main factors of economic resilience and active conservation of the landscape of the future Biosphere Reserve.



Ph: Salvatore Sinatra

15.3.2 Indicate the possible positive and/or negative impacts of these activities on biosphere reserve objectives (section 14).

The economic, social and cultural activities present in the territory of the proposed Biosphere Reserve contribute in different ways to the achievement of the objectives of biodiversity conservation, sustainable development and support for knowledge, as summarised in the table 42.

Table 42. Activities and contributions to the objectives of the Biosphere Reserve

Activity	Contribution to conservation	Contribution to sustainable development	Contribution to logistical support (research, monitoring, education)
Traditional salt production	It maintains coastal wetland habitats, brackish ecosystems, and bird populations of conservation interest. It preserves the historic landscape of the salt pans.	It generates employment and income, supports traditional supply chains, and enhances local cultural heritage.	It constitutes an open-air laboratory for environmental research and monitoring activities.
Innovative integration between saltworks and desalination	Potential reduction of brine discharge to the marine environment and improvement of the overall ecological efficiency of the system.	It promotes circular economy models and sustainable innovation.	It represents a pilot case of international relevance for applied research and the transfer of best practices.
Nature and cultural tourism	It encourages the protection of natural and landscape heritage through its enhancement.	It diversifies the local economy and generates employment opportunities.	It promotes environmental interpretation, education and awareness-raising activities.
Scientific research and monitoring	Improves ecosystem knowledge and supports adaptive management.	It provides useful information for territorial planning and the resilience of production activities.	Strengthens the Biosphere Reserve's territorial observatory function.
Environmental education and social participation	It promotes the protection of habitats and species through responsible behavior.	Strengthens social cohesion and local community involvement.	It increases the dissemination of knowledge and stakeholder participation.
Compatible traditional agriculture	It contributes to the conservation of the rural landscape and the reduction of pressure on ecosystems.	It supports local production and economic diversification.	It promotes the diffusion of agroecological practices and traditional knowledge.

In parallel, some pressures and risk factors require specific management and monitoring measures, as listed in the table 43.

Table 43. Main pressures and risk factors

Pressure/Risk Factor	Possible effects	Areas concerned
Unregulated tourist pressure	Disturbance to wildlife, habitat degradation, congestion and increased waste.	Conservation, local quality of life
Urbanization and coastal infrastructure	Ecological fragmentation, habitat loss, and landscape alteration.	Conservation and sustainable development
Climate change	Risks to the functionality of salt pans, wetland habitats and traditional activities.	Conservation and economic development
Pollution and anthropogenic pressures	Deterioration of environmental quality and reduction of biodiversity.	Conservation
Abandonment of traditional activities	Degradation of the cultural landscape and loss of ecological functions associated with salt marsh management.	Conservation and sustainable development

15.3.3 Which indicators are or will be used to assess the state and its trends?

The evaluation of the future Biosphere Reserve's effectiveness will be based on an integrated system of environmental, socioeconomic, and governance indicators, aimed at monitoring the achievement of biodiversity conservation, sustainable development, and support for research, education, and territorial cooperation over time.

Table 44. Indicator system for evaluating the effectiveness of the Biosphere Reserve

Category	Indicator	Purpose	Frequency
Environmental	Area and state of conservation of habitats of community interest	Assessing the status of priority ecosystems	Annual
	Ecological and chemical status of waters	Monitor the quality of aquatic and lagoon ecosystems	Annual
	Extent and functionality of active salt basins	Verify the maintenance of the ecological and productive functions of the salt pans	Annual
	Populations of target avifauna species	Evaluate the conservation status of species of greatest conservation interest	Annual/ Seasonal
	Richness and abundance of halophilous flora	Monitoring plant biodiversity in brackish habitats	Multi-year
	Presence and spread ofinvasive alien species	Identify potential threats to local biodiversity	Annual
	Climatic and hydrological parameters (salinity, water levels, temperature, extreme events)	Assessing the effects of climate change on ecosystems	Continuous
Socioeconomic	Amount of salt produced annually	Monitor the economic and productive vitality of the salt sector	Annual
	Number of companies active in the salt sector	Evaluate the continuity of traditional activities	Annual
	Employment generated by traditional, tourism and cultural activities	Measuring the contribution to local development	Annual
	Number of visitors to natural and cultural sites	Monitor land use and human pressure	Annual
	Presences related to ecotourism and experiential tourism	Evaluating the evolution of sustainable tourism	Annual
	Number of companies adopting sustainable practices and environmental certifications	Measuring the diffusion of sustainable production models	Annual
	Economic value of sustainable local production	Evaluate the economic benefits generated by the territory	Annual

Table 44. (continuation). Indicator system for evaluating the effectiveness of the Biosphere Reserve

Category	Indicator	Purpose	Frequency
Research, education and governance	Number of research projects activated	Measuring the Reserve's contribution to knowledge production	Annual
	Scientific publications and institutional collaborations	Evaluate the capacity for cooperation and innovation	Annual
	Number of environmental education activities carried out	Monitor awareness-raising and dissemination actions	Annual
	Participants in training initiatives	Evaluating the effectiveness of educational activities	Annual
	Level of stakeholder engagement	Verify participation in decision-making processes	Annual
	Number of active territorial agreements and partnerships	Monitor the level of territorial cooperation	Annual
	Status of implementation of the Management Plan	Evaluate the effectiveness of the Reserve's governance	Annual

Monitoring results will be collected and analysed within the Biosphere Reserve's management system and used to guide decision-making processes according to the principles of adaptive management. The indicators will be periodically updated and integrated based on evolving scientific knowledge, local needs, and the objectives of the Management Plan.

15.3.4 What actions are currently undertaken and which measures will be applied to strengthen positive impacts or reduce the negative impacts on the biosphere reserve objectives?

The proposed Biosphere Reserve aims to promote an integrated approach aimed at consolidating the environmental, social, and economic benefits generated by traditional activities and sustainable development initiatives, while reducing the main pressures affecting coastal ecosystems and wetlands. The planned actions encompass conservation, sustainable development, tourism, research, and governance. Table 45 provides an overview of the actions (currently underway and planned) and their expected results.

Table 45. Framework of Actions and related expected results

Scope	Actions currently underway	Planned actions	Expected results
Ecosystem conservation and climate resilience	Active management of salt marshes and hydraulic systems; enforcement of protection measures for protected areas and the Natura 2000 network; monitoring of biodiversity and avifauna.	Strengthening integrated ecological monitoring; climate change adaptation; restoration of degraded habitats; management of invasive species	Improving the conservation status of habitats and increasing the resilience of coastal ecosystems
Promotion of traditional salt production	Support for existing production activities; maintenance of salt basins and historic infrastructure	Development of economic valorization tools; promotion of traditional sea salt; testing of innovative circular economy solutions, including the potential integration of salt production and desalination plants.	Strengthening the economic sustainability of salt pans and maintaining the associated ecological functions
Protection of cultural and landscape heritage	Restoration and maintenance of mills, historic buildings, and saltworks; promotion of the salt civilization	Restoration and redevelopment programs for historical heritage; development of integrated cultural itineraries	Preservation of the historical cultural landscape and increase of its sustainable use
Sustainable tourism	Environmental education activities, guided tours, and promotion of natural and cultural heritage	Defining the carrying capacity of sensitive areas; regulating tourist flows; improving sustainable mobility; developing environmental interpretation programs.	Reducing pressure on habitats and improving the quality of visitor experience
Sustainable economic development	Collaboration between economic operators, public bodies and local associations	Promoting sustainable agricultural and production practices; promoting local supply chains; developing territorial brands linked to the Biosphere Reserve	Greater competitiveness of local economies and increase in territorial added value
Research, education and governance	Collaboration between research institutions, protected area managers and local administrations	Strengthening national and international scientific networks; creating shared platforms for data management; strengthening stakeholder participation; and periodically evaluating the results of the Management Plan.	Improving scientific knowledge, institutional cooperation and governance effectiveness

Implementation of the actions will be verified through the monitoring system described in paragraph 15.3.3 and periodically evaluated as part of the Biosphere Reserve's governance processes. The results obtained will be used to update the priorities of the future Management Plan according to the principles of adaptive management, ensuring the pursuit of conservation, sustainable development, and logistical support objectives.

15.4 Other types of activities positively or negatively contributing to local sustainable development, including impact/influence of the biosphere reserve outside its boundaries.

15.4.1 Describe the type of activity, the area covered, and the people involved (including men and women).

The proposed "Saline di Sicilia" Biosphere Reserve intends to serve as a territorial platform for biodiversity conservation, sustainable development, and social innovation. Its impact is expected to extend beyond the administrative and ecological boundaries of the proposed area, contributing to the sustainable development of the entire western Sicilian coastal strip and strengthening relationships with national and international networks for research, environmental management, and cultural heritage promotion. The main areas of influence of the future Biosphere Reserve are summarized in table 46.

Table 46. Main areas of influence of the Biosphere Reserve

Scope	Affected area	Beneficiaries and subjects involved	Main contributions to sustainable development
Enhancement of territorial identity	Western Sicily	Local communities, cultural operators, tourism businesses, residents and visitors (men and women)	Strengthening the identity linked to the salt pan landscape, the salt culture and local traditions
Territorial cooperation and governance	Provinces of Trapani and surrounding areas	Municipalities, management bodies, universities, associations, businesses and civil society organisations	Development of integrated governance models and greater coordination between institutions and stakeholders
Scientific research and innovation	Regional, national and Mediterranean scope	Universities, research centers, students, professionals and technicians	Testing innovative solutions for wetland management, biodiversity conservation, and climate change adaptation
Transfer of good practices	Other coastal areas and wetlands of the Mediterranean	Public administrations, protected area managers and local communities	Dissemination of replicable models for sustainable management of salt marshes and coastal cultural landscapes
Sustainable economic development	Western Sicily	Local businesses, producers, tour operators and young entrepreneurs	Promoting local supply chains, sustainable tourism, and the circular economy
Attractiveness and international cooperation	UNESCO Networks and International Partnerships	Public bodies, international organizations, scientific institutions and companies	Greater ability to attract investments, research projects and international cooperation programs

The potential critical issues and related management measures that are to be adopted are summarised in table 47.

Table 47. Potential critical issues and related management measures

Potential threats	Possible effects	Management approach
Increase in tourist pressure	Habitat disturbance and overcrowding of the most sensitive sites	Flow planning, carrying capacity monitoring and promoting sustainable mobility
Conflicts between conservation and economic development	Pressures on ecosystems and cultural landscapes	Participatory processes and integrated evaluation of territorial policies
Uneven distribution of economic benefits	Concentration of opportunities in specific sectors or territories	Support for local supply chains and widespread stakeholder involvement
Increased demand for infrastructure and services	Increased consumption of natural resources and increased environmental pressures	Sustainable planning and monitoring of cumulative impacts

Finally, the potential development of innovative solutions based on the integration of traditional sea salt production with existing local desalination infrastructure is particularly important. This approach could constitute a circular economy model that can be replicated in other Mediterranean coastal areas, contributing both to reducing environmental impacts and strengthening the economic and productive resilience of traditional salt systems.

Trapani-Birgi Airport: a sustainable gateway to the future Biosphere Reserve



Trapani-Birgi Airport, managed by Airgest SpA, has launched an ambitious environmental sustainability program aimed at reducing the climate footprint of its activities and strengthening the compatibility of airport operations with the delicate system of surrounding coastal wetlands.

The projects already completed include the installation of a 50 kWp photovoltaic system, the energy upgrade of the lighting and air conditioning systems, and the introduction of advanced energy management systems. These actions have led to a significant reduction in greenhouse gas emissions associated with airport operations.

In 2025, Airgest obtained the Airport Carbon Accreditation (ACA) - Level 2 "Reduction" certification, a program promoted by ACI Europe and recognized as an international benchmark for managing and reducing emissions in the airport sector. This recognition certifies the adoption of a structured system for monitoring, reporting, and reducing emissions in accordance with the Greenhouse Gas Protocol standards.

The airport also joined the MAB "Saline di Sicilia" Promotion Committee as a supporting member, confirming its commitment to territorial sustainability and cooperation between strategic infrastructure, biodiversity conservation, and local development.



Ph: Aeroporto I. e V. Florio di Trapani

15.4.2 Indicate the possible positive and/or negative impacts of these activities on biosphere reserve objectives (section 14). Have any results already been achieved?

The activities developed within and within the territorial context of the proposed Biosphere Reserve (see table 48) contribute to the objectives of biodiversity conservation, sustainable development, and support for research, education, and cooperation envisioned by the MAB Program. However, some of these activities may generate pressures that require appropriate planning, monitoring, and adaptive management measures.

Table 48. Contribution of activities to the objectives of the Biosphere Reserve

Activity	Conservation	Sustainable development	Logistics support (research, education, governance)	Potential critical issues
Environmental education and scientific dissemination	Strengthen ecosystem protection through increased public awareness	It promotes sustainable behaviors and the participation of local communities	Increases knowledge dissemination and stakeholder participation	Limited effectiveness in the absence of continuity and adequate resources
Nature and cultural tourism	Encourages the conservation of natural and landscape heritage	It generates employment and economic diversification	Supports environmental interpretation programs	Pressure on the most sensitive habitats and sites if not properly managed
Traditional production and salt supply chain	Maintains habitats and ecosystems dependent on salt management	It supports income, employment and territorial identity	Enhances historical knowledge and traditional practices	Risk of loss of profitability and abandonment of activities
Scientific research and monitoring	Improves knowledge of ecosystems and guides conservation	Supports decision-making processes and territorial innovation	Strengthens the Reserve's function as a territorial laboratory	Need for financial continuity and institutional coordination
Territorial partnerships and cooperation	They promote integrated approaches to environmental management	They improve the ability to attract investments and projects	Strengthen multilevel governance and scientific cooperation	Possible conflicts between different interests and priorities
Territorial promotion and UNESCO recognition	Encourages the protection of natural and cultural heritage	Increases attractiveness and economic opportunities	Expand national and international collaboration networks	Concentration of benefits or excessive tourist pressure

Main results already achieved

Even before any recognition, the candidate territory obtained results consistent with the objectives of the future Biosphere Reserve, as summarized in table 49.

Table 49. Main results achieved

Objective	Main results achieved
Conservation	Strengthening the recognition of the salt pans as a natural and cultural heritage site of international importance; improving knowledge of the area's ecological and landscape heritage
Sustainable development	Growth of nature, cultural, and experiential tourism activities; promotion of traditional products linked to the salt supply chain and local economies
Logistics support	Increase environmental education and scientific dissemination activities; develop collaborations between management bodies, universities, research centers, and economic operators
Governance and participation	Strengthening local communities' awareness of the role of salt pans in preserving biodiversity and the cultural identity of western Sicily; expanding territorial cooperation networks.


Ph: Salvatore Sinatra

15.4.3 What indicators are or will be used to assess the state and its trends?

The effects of the activities promoted by the Biosphere Reserve on local sustainable development, as well as its ability to generate benefits and innovative processes on a broader territorial scale, will be evaluated through an integrated system of economic, tourist, social, cultural, scientific and territorial cooperation indicators (see table 50).

Table 50. Indicators grouped by category

Category	Indicator	Monitoring purposes
Local economy and development	Number of companies involved in sustainable activities	Evaluate the diffusion of economic models consistent with the objectives of the Reserve
	Employment generated directly and indirectly by activities related to the Reserve	Measuring the contribution to local economic development
	Economic value of traditional production and local supply chains	Verify the ability to enhance local economies
	Number of new sustainable business ventures	Monitor economic innovation and production diversification
	Volume of public and private investments activated	Evaluate the leverage effect of the Reserve on territorial development
Sustainable tourism	Annual number of visitors	Monitor the attractiveness of the territory
	Impact of nature, cultural and experiential tourism	Evaluating the quality and sustainability of tourism demand
	Average visitor stay	Measuring the economic contribution of tourism
	Seasonal distribution of flows	Check the degree of seasonality
	Use of sustainable mobility services and infrastructure	Evaluate the sustainability of visitor travel

Table 50. (continuation). Indicators grouped by category

Category	Indicator	Monitoring purposes
Social cohesion and cultural heritage	Public participation in decision-making processes	Measuring local community involvement
	Number of associations and stakeholders involved in governance	Evaluate the level of participation and collaboration
	Number of cultural events and local initiatives	Monitor the cultural vitality of the area
	Perception of the benefits deriving from the Reserve by residents	Evaluate social acceptance and local consensus
	Involving young people in training and project activities	Measuring the ability to generate opportunities for new generations
Research, innovation and learning	Number of active research projects	Evaluate the role of the Reserve as a territorial laboratory
	Scientific production and publications	Measuring the generation and diffusion of knowledge
	Agreements with universities and esearch centers	Monitor scientific collaborations
	Participatory monitoring and citizen science activities	Evaluating civil society involvement in knowledge production
	Participation in national and international networks	Verify the Reserve's contribution to the exchange of experiences and good practices
Territorial cooperation and external influence	Number of institutional partnerships activated	Measuring the capacity to build territorial networks
	Projects funded at regional, national and European level	Evaluate the ability to attract resources and projects
	Collaborations with other Biosphere Reserves	Monitor integration into MAB networks
	Dissemination and replication of good practices developed in the Reserve	Evaluating the demonstration effect of the Reserve beyond its borders
	Mediterranean and international cooperation initiatives	Measuring territorial relevance and contribution to global sustainability goals

The data collected will be periodically analysed as part of the Biosphere Reserve's monitoring system to assess the evolution of the economic, social, cultural, and institutional impacts of UNESCO recognition. Particular attention will be paid to the Reserve's ability to serve as a reference model for the sustainable management of coastal wetlands, the enhancement of salt cultural landscapes, and the promotion of cooperation and innovation processes transferable to other Mediterranean regions.

15.4.4 What actions are currently undertaken and which measures will be applied to strengthen positive impacts or reducing negative ones on the biosphere reserve objectives?

The future Biosphere Reserve intends to consolidate the positive effects generated by conservation, territorial enhancement, research, and sustainable development activities, while reducing potential critical issues arising from anthropogenic pressures and socioeconomic changes. To this end, a coordinated set of ongoing actions and measures to be implemented within the future Management Plan is envisaged, as summarized in table 51.

Table 51. Actions and expected results

Objectives	Actions currently underway	Measures envisaged	Expected results
Enhancement of territorial heritage	Visiting programs, educational activities, cultural initiatives and interpretation tours of the salt pan landscape	Strengthening the Reserve's integrated communication and developing new territorial enhancement tools	Increased public awarenes and strengthening of territorial identity
Participation and governance	Collaboration between local administrations, management bodies, businesses, universities and associations	Establishment of permanent discussion tables, structured stakeholder involvement and shared planning tools	Greater participation in decision-making processes and integrated governance
Education and awareness	Activities aimed at schools, residents and visitors on sustainability and environmental protection	Expanding environmental education programs and citizen science initiatives	Strengthening the culture of sustainability and the involvement of local communities

Table 51. (continuation). Actions and expected results

Objectives	Actions currently underway	Measures envisaged	Expected results
Research and monitoring	Biodiversity monitoring programs and active scientific collaborations	Strengthening research networks, data sharing, and developing integrated territorial platforms	Improved availability of scientific knowledge to support adaptive management
Sustainable economy	Promotion of traditional activities and local productions	Support for sustainable supply chains, development of the circular economy, promotion of environmental certifications and territorial brands	Increase the competitiveness of local economies and the sustainability of productive activities
Innovation and entrepreneurship	Collaborations between public and private entities on local development initiatives	Support for youth entrepreneurship, social innovation, and sustainability-focused startups	New job opportunities and greater capacity for territorial innovation
Sustainable tourism	Organized use of naturalistic and cultural sites	Definition of carrying capacity, management of tourist flows, sustainable mobility and sustainability standards for operators	Reducing pressure on ecosystems and improving the quality of tourism offerings
Cooperation and knowledge transfer	Collaborations with scientific bodies and national institutions	Development of international partnerships and dissemination of good practices to other Mediterranean coastal areas and wetlands	Strengthening the Reserve's role as an innovation laboratory and replicable model

Table 52 summarizes the measures that are intended to be adopted to reduce critical issues.

Table 52. Measures to reduce potential critical issues

Potential threats	Mitigation measures
Tourist pressure on the most sensitive sites	Flow monitoring, definition of carrying capacity and access regulation
Conflicts between conservation and economic development	Participatory processes and integration of the Reserve's objectives into territorial planning
Unbalanced distribution of economic benefits	Widespread support for local supply chains and community initiatives
Increased environmental pressures	Periodic monitoring of environmental and socioeconomic impacts
Changes in territorial dynamics	Application of adaptive management tools and periodic review of the measures adopted

The effectiveness of the actions will be verified through the monitoring system described in the previous paragraphs. The results obtained will be periodically evaluated by the Biosphere Reserve's governance bodies and used to update strategies, programs, and intervention priorities in accordance with the adaptive management principles promoted by the MAB Program.

15.5 Benefits of economic activities to local people

15.5.1 For the activities described above, what income or benefits do local communities (including men and women) derive directly from the site proposed biosphere reserve site and how?

The economic, cultural and social activities developed within the proposed Biosphere Reserve generate direct and indirect benefits for local communities (as summarised in table 53) contributing to job creation, supporting traditional supply chains, enhancing cultural heritage, and improving quality of life. These benefits benefit men and women of all ages and professional backgrounds, with particular relevance for young people and local businesses.

Table 53. Main benefits for local communities

Sector of activity	Main beneficiaries	Benefits generated	Available evidence
Traditional salt production	Salt workers, manufacturing companies, seasonal workers, transport and service companies	Direct and indirect employment, income, preservation of traditional skills and salt cultural heritage	Approximately 80 full-time employees, 80 seasonal workers and an estimated induced workforce of approximately 100; a total of approximately 200 employees are involved
Nature and cultural tourism	Accommodation facilities, guides, restaurateurs, tour operators, local traders and artisans	Increase in income and economic diversification of the territory	In 2025, the WWF Visitor Centre recorded approximately 4,000 visitors and the Culcasi Salt Museum approximately 8,000 visitors.
Sports tourism and outdoor activities	Sports schools, instructors, local businesses, young entrepreneurs	Creating new jobs and attracting international visitors	Around 20 kitesurfing schools operate in the Stagnone area; in 2025 the sector involved around 10,500 people between practitioners and instructors.
Local production and sustainable supply chains	Agricultural companies, artisanal businesses, fishing and food processing operators	Increase the added value of local production and diversification of income sources	Growing integration between local production, tourism and territorial valorization
Research, training and education	Researchers, technicians, environmental educators, professionals and young people in training	Qualified employment opportunities and strengthening local skills	Scientific collaborations and environmental monitoring and education programs active in the area
Ecosystem services	Entire resident population	Indirect benefits from environmental quality, landscape conservation and ecological regulation	Conservation of coastal wetlands, maintenance of biodiversity and increase of territorial resilience

Social and cultural benefits

In addition to the direct economic benefits, the future Biosphere Reserve contributes to strengthening the social and cultural capital of the region. Promoting the historical heritage of the salt pans, the production traditions, and the cultural landscape fosters a sense of belonging among local communities and strengthens the territorial identity of western Sicily.

The Reserve also promotes the active participation of citizens, associations, institutions, businesses, and civil society organizations in decision-making processes, promoting a balanced distribution of development opportunities and encouraging the involvement of women and young people in economic, cultural, and educational activities related to the area.

15.5.2 What indicators are used to measure such income or other benefits?

The evaluation of the benefits generated by the economic, cultural, and social activities of the future Biosphere Reserve will be carried out through an integrated system of quantitative and qualitative indicators, summarized in table 54. The indicators will allow monitoring over time the Reserve's contribution to job creation, strengthening local production chains, social cohesion, and improving the quality of life of resident communities.

Table 54. Table of indicators, grouped by area

Goal	Indicator	Purpose
Local economy and employment	Number of people employed in activities directly and indirectly linked to the Reserve	Evaluate the contribution of the Reserve to job creation and maintenance
	Number of enterprises active in the salt, tourism, sustainable agriculture, fisheries and related services sectors	Monitor the vitality of the local economic system
	Turnover from economic activities related to the Reserve's resources	Measuring the economic benefits generated by the territory
	Value of salt production	Evaluating the economic sustainability of the salt supply chain
	Number of new businesses started	Monitor the ability to attract investment and generate entrepreneurship
	Volume of public and private investments activated	Evaluate the leverage effect of the Reserve on territorial development
Social inclusion and employment	Number of jobs created or maintained	Measuring overall employment effects
	Percentage of female employment	Evaluating the contribution to gender equality
	Youth employment rate	Monitor the opportunities offered to new generations
	Number of people involved in training courses	Evaluate the strengthening of local capacities
	Level of stakeholder satisfaction	Verify the perception of the benefits generated by the Reserve

Table 54. (continuation). Table of indicators, grouped by area

Goal	Indicator	Purpose
Sustainable tourism	Number of annual visitors	Monitor territorial attractiveness
	Average visitor stay	Measuring the economic impact of tourism
	Average visitor spending	Evaluate the contribution to the local economy
	Operators adhering to sustainable tourism practices	Measuring the diffusion of responsible use models
	Seasonal distribution of flows	Evaluate the level of deseasonalization of the tourist offer
Local production chains	Number of companies involved in sustainable supply chains	Monitoring the integration between conservation and economic development
	Volume of production certified or promoted through territorial brands	Evaluate the ability to enhance local production
	Share of local products marketed on regional and national markets	Measuring the competitiveness of local supply chains
	Number of trade agreements and partnerships activated	Evaluate the strengthening of local economic networks
Research, training and innovation	Number of research and innovation projects completed	Measuring the contribution to knowledge production
	Number of students involved in educational activities	Evaluate the training impact on the territory
	Vocational training programs activated	Monitor the strengthening of human capital
	Collaborations with universities and research centers	Evaluate the ability to attract skills and knowledge investments
Territorial well-being and ecosystem services	Residents' perception of quality of life	Assess the overall effects on the local population
	Level of satisfaction of the communities with the management of the Reserve	Monitor social consensus and participation
	Conservation status of ecosystems that provide ecosystem services	Evaluate the maintenance of environmental benefits for the community
	Participation in the Reserve's initiatives	Measuring local community involvement
	Indicators of territorial resilience to climate change	Evaluate the adaptability of the territory

Evaluation of benefits for local communities

The data collected through these indicators will be used to periodically assess the Biosphere Reserve's contribution to improving the economic and social conditions of local communities, the inclusion of youth and women in development processes, the enhancement of traditional production chains, and the maintenance of ecosystem services that support the well-being and resilience of the area. The monitoring results will inform adaptive management processes and guide the updating of the Reserve's sustainable development strategies.

15.6 Spiritual and cultural values and customary practices

15.6.1 Describe any cultural and spiritual values and customary practices, including languages, rituals, and traditional livelihoods. Are any of these endangered or declining?

The Trapani and Marsala salt pans constitute a cultural landscape of exceptional value, resulting from the millennia-long interaction between local communities and the coastal ecosystems of the Stagnone lagoon and the salt pans. Traditional production activities, technical knowledge, social practices, and historical and material heritage contribute significantly to the cultural identity of western Sicily and represent an example of sustainable use of natural resources consistent with the principles of the MAB Program, as summarized in table 55.

Table 55. Main cultural values and traditional practices

Cultural element	Description	Community and stakeholders involved
Traditional saliculture	Sea salt production through natural evaporation systems, water level management, harvesting and maintenance of salt basins according to time-honored techniques.	Salt workers, salt companies, families historically linked to salt cultivation.
Traditional ecological knowledge	Local knowledge of winds, tides, water circulation, seasonal cycles, and management of brackish ecosystems.	Salt pan operators, fishermen and local communities.
Artisanal lagoon and coastal fishing	Traditional fishing techniques adapted to the environmental characteristics of lagoons and coastal areas.	Professional fishermen and small local businesses.

Table 55. (continuation). Main cultural values and traditional practices

Cultural element	Description	Community and stakeholders involved
Mediterranean viticulture and olive growing	Traditional agricultural systems that contribute to the conservation of the historic rural landscape and agricultural biodiversity.	Farms and rural communities.
Traditional crafts	Coral processing, wooden shipbuilding, and the production of artefacts based on the area's natural resources.	Artisans, local businesses, and cultural associations.
Linguistic and oral heritage	Specialized vocabulary, local terminology, and oral knowledge related to salt culture and navigation.	Local communities, elders, custodians of historical memory.
Religious and festive traditions	Popular celebrations, religious festivals, and cultural events linked to the sea, work, and seasonal production cycles.	Local communities, religious and cultural associations.
Historical and architectural heritage	Windmills, evaporation ponds, canals, historic production buildings, and salt culture infrastructure.	Salt pan owners, public bodies, foundations, and associations.

Elements at risk or in decline

Despite their cultural and identity relevance, some elements of the material and immaterial heritage are today particularly vulnerable, as summarised in table 56.

Table 56. Elements at risk

Element at risk	Main critical issues
Traditional knowledge of salt cultivation	Progressive reduction in the number of experienced operators and limited generational turnover
Historical lexicon and oral heritage	Decreased daily use and loss of intergenerational transmission
Historical artifacts from the salt pans	Physical degradation of mills, warehouses and traditional infrastructure
Historical craft activities	Reduction in the number of operators and competition from globalized markets
Traditional production practices	Mechanization and transformation of production processes
Local cultural identity	Cultural homogenization and progressive loss of territorial specificities

Safeguarding priorities

The preservation of the salt pans' cultural heritage is a strategic priority for the future Biosphere Reserve. Planned actions include the protection and promotion of traditional salt cultivation, the restoration of historic architectural heritage, the documentation and transmission of local knowledge, the involvement of younger generations, and the support of traditional economic activities compatible with ecosystem conservation.


Ph. Patrizia Galia

15.6.2 Indicates activities aimed at identifying, safeguarding, promoting and/or revitalising such values and practices.

Religious, cultural and food and wine traditions

The communities of Trapani, Marsala, and the surrounding coastal towns preserve an extraordinarily rich intangible cultural heritage, formed through centuries of interaction between traditional production activities, the marine-coastal environment, and Mediterranean trade relations. These practices still contribute to building the territorial identity and maintaining the social cohesion of local communities.

Among the most significant expressions of the local cultural heritage, the Procession of the Mysteries of Trapani (see fig. 63) plays a central role, one of the oldest and most important Holy Week events in the Mediterranean. The event represents a consolidated form of community participation and the intergenerational transmission of artisanal skills, associative traditions, and devotional practices. Particularly significant is the presence of the Salt Workers' Ceto, entrusted with the care and leadership of one of the processional groups, testifying to the close historical connection between the culture of salt and the identity of the Trapani community.



Fig. 63. Procession of the Mysteries, a tradition during Good Friday in Trapani

Alongside religious celebrations, the area preserves a rich heritage of patronal festivals, processions, popular rites, and traditional events that mark the social calendar of local communities and provide opportunities for meeting, sharing knowledge, and strengthening a sense of belonging.

Maritime traditions, fishing culture, coastal navigation, and the relationship with the sea represent further elements of identity that have contributed for centuries to the construction of the cultural landscape of western Sicily.

Food and wine traditions and traditional livelihoods

The cultural heritage of the future Biosphere Reserve also includes a complex set of traditional production practices that reflect the adaptation of local communities to the environmental characteristics of the territory.

Among these, the following are particularly important:

- the traditional production of sea salt;
- the historical viticulture linked to Marsala wine;
- coastal and lagoon fishing;
- the processing of tuna and fish products;
- the Mediterranean couscous tradition, an expression of the historic cultural exchanges between the shores of the Mediterranean;
- local agri-food production closely connected to traditional agricultural landscapes.

These activities are not just forms of economic production, but also a wealth of knowledge, techniques, social relationships, and cultural values that contribute to the resilience of the socio-ecological system of the Sicilian Salt Pans.


Ph: Piero Lazzari

Safeguarding and transmission of cultural heritage

The actions currently underway and planned for the conservation of tangible and intangible cultural heritage are synthetically described in table 57.

Table 57. Areas of intervention and main actions

Goals	Main actions
Documentatio and research	Collecting oral histories; studying traditional salt-making practices; surveying historical and architectural heritage; and documenting traditional ecological knowledge.
Conservation of material heritage	Restoration and repurposing of windmills; restoration of farmhouses, warehouses, and historic infrastructure; protection of the salt pan landscape and cultural trails.
Transmission of knowledge	Educational programs for schools; intergenerational activities; involvement of traditional practitioners in outreach activities; workshops dedicated to historical professions.
Cultural promotion	Exhibitions, museums, interpretation centers, cultural events, promotion of local products, and development of sustainable cultural itineraries.
Participation of local communities	Involvement of cultural associations and resident communities; support for local initiatives; strengthening local networks dedicated to safeguarding cultural heritage.



Ph: WWF Italy - Trapani and Paceco Salt Pans Nature Reserve

The protection of tangible and intangible cultural heritage is an essential component of the future Biosphere Reserve's strategy, as it contributes not only to the preservation of historical memory and local identity, but also to the maintenance of traditional knowledge (see fig. 64) and sustainable management models that have shaped the landscape of the Sicilian Salt Pans over the centuries.



Fig. 64. Artisanal coral processing

15.6.3 How should cultural values be integrated into the development process: elements of identity, traditional knowledge, social organizations, etc.?

The future Biosphere Reserve considers cultural heritage as an essential component of sustainable development and land management. Cultural values will be integrated into planning and development processes by recognizing the role of local communities as custodians of territorial heritage and traditional knowledge.

The ecological knowledge developed over the centuries through salt marsh management represents a strategic resource for ecosystem conservation and climate change adaptation. This knowledge will be enhanced and integrated with the results of contemporary scientific research, using an interdisciplinary approach.


Ph: Salvatore Sinatra

Mozia and the cultural landscape of the Stagnone

The island of San Pantaleo and its archaeological area of Mozia (see fig. 65) are one of the main historical and cultural landmarks of the Trapani and Marsala salt pans landscape, representing an exceptional testimony to the continuing relationship between people, the sea, and coastal resources in the Mediterranean. Founded by the Phoenicians between the 8th and 7th centuries BC within the Stagnone lagoon, Mozia developed its prosperity thanks to its strategic position along Mediterranean trade routes and the integrated exploitation of environmental resources, including fishing, shipping, and salt production.

The close relationship between the urban settlement, the lagoon, and the salt pans is one of the distinctive elements of the cultural landscape that still characterizes the nominated territory today. The geomorphological and hydrological conditions that favoured the establishment of the Phoenician colony are the same ones that, over the centuries, have allowed the development and persistence of the salt industry, giving rise to a territorial system in which natural and cultural heritage are profoundly interconnected.

After the city's destruction in 397 BC, Mozia's legacy continued to influence the organization of the lagoon's territory and economic activities. Subsequent rulers and local communities maintained and transformed this productive landscape, preserving its key ecological and functional characteristics. The historic saltworks therefore represent the outcome of a long-term process, in which technical knowledge, water manage-



Fig. 65. The island of San Pantaleo and its archaeological area of Mozia, Stagnone Islands

ment practices, and adaptation to environmental dynamics were transmitted over the centuries.

Today, Mozia, nestled within the Stagnone Lagoon, takes on a value that goes beyond its archaeological dimension: it constitutes an element of the territory's identity, a fundamental reference for understanding the history of the Western Mediterranean, and a key component of the cultural landscape proposed for the designation as a Biosphere Reserve. Its presence reinforces the site's value as an example of sustainable interaction between human communities and coastal ecosystems, highlighting the continuity between historical heritage, biodiversity, traditional production activities, and responsible management of natural resources.

The Phoenicians' Route is an international project that retraces the history of the Phoenicians, exploring key and representative milestones in their history, serving as a model of interculturality among the countries bordering the Mediterranean. One of the stations on the Council of Europe's cultural itinerary (Phoenicians' Route) is Mozia, the ancient Phoenician settlement whose findings are preserved on the island of San Pantaleo by the Giuseppe Whitaker Foundation.


Ph: Piero Lazzari

The cultural identity associated with salt production, the lagoon landscape, and local traditions will be a key element of territorial development strategies, sustainable tourism promotion, and educational programs.

Particular attention will be paid to:

- the participation of local communities in decision-making processes;
- the involvement of traditional operators in the activities of interpretation and valorization of the territory;
- support economic activities that keep traditional knowledge alive;
- the integration between natural and cultural heritage in the management policies of the Reserve;
- the intergenerational transmission of local knowledge and skills.

From this perspective, cultural heritage will not be considered exclusively as an asset to be conserved, but as a dynamic resource capable of contributing to the social, economic and environmental resilience of the territory.

15.6.4 Specify whether indicators are used to evaluate these activities. If so, which ones, and give details.

The future Biosphere Reserve will adopt a monitoring system aimed at assessing the state of conservation, vitality, and transmission of the tangible and intangible cultural heritage associated with the salt pan landscape. The indicators, as summarized in table 58, will concern both traditional practices and local knowledge, as well as the level of community participation in protection and enhancement activities.

Table 58. Main indicators

Scope	Indicator	Purpose
Traditional practices and livelihoods	Number of active traditional saltworks	Evaluate the continuity of historical activities related to the salt culture
	Number of operators involved in traditional salt production	Monitoring the vitality of traditional professions
	Average age of operators and presence of young people involved	Evaluating generational turnover
	Number of training activities dedicated to traditional knowledge	Measuring the transmission of specialist skills

Table 58. (continuation). Main indicators

Scope	Indicator	Purpose
Material cultural heritage	Number of mills, historic buildings and infrastructure restored or reused	Evaluate the effectiveness of conservation actions
	State of conservation of mills, canals, salt basins and historical artefacts	Monitoring the integrity of the cultural landscape
	Investments for the recovery and maintenance of historical heritage	Measuring commitment to heritage protection
Knowledge transmission and education	Number of students involved in educational programs	Evaluate the involvement of new generations
	Number of educational and outreach initiatives carried out annually	Monitor awareness-raising activities
	Number of workshops dedicated to traditional crafts	Verify the practical transmission of knowledge
	Number of oral testimonies, archives and documents collected	Evaluate historical memory preservation activities
Cultural valorization	Number of visitors to museums and interpretation centers	Measuring public interest in cultural heritage
	Number of cultural events, exhibitions and demonstrations organised	Monitor the cultural vitality of the area
	Participation in cultural itineraries dedicated to the culture of salt	Evaluating the use of cultural heritage
	Presence of local cultural values in territorial promotion activities	Measuring the capacity for communication and valorization of heritage
Community participation and cultural governance	Number of associations involved in the Reserve's activities	Evaluating civil society involvement
	Participation of local communities in cultural and conservation initiatives	Measuring the level of social appropriation of wealth
	Number of partnerships dedicated to cultural protection and valorization	Monitor territorial cooperation
	Level of community satisfaction with cultural conservation and promotion activities	Evaluate the perceived effectiveness of the actions taken

Particular attention will be paid to monitoring religious and popular traditions, which are an essential component of western Sicily's cultural identity. In this context, the Procession of the Mysteries of Trapani, and in particular the historical role played by the Salt Workers' Guild, represents an important indicator of the vitality of intangible cultural heritage, the participation of local communities, and the capacity for intergenerational transmission of cultural values associated with the culture of salt and the sea. It was therefore decided to evaluate this aspect with specific indicators (see table 59).

Table 59. Indicators relating to religious traditions and intangible cultural heritage

Indicator	Purpose
Number of active participants in the Classes and associations involved in the Procession of the Mysteries	Assessing the vitality of traditional forms of community participation
Number of young people involved in organizational and devotional activities	Monitor the intergenerational transmission of traditions
Continuity and regular conduct of the Procession of the Mysteries and the main traditional festivities	Verifying the permanence of living cultural practices
Number of educational and outreach activities dedicated to the history and meaning of the Procession	Evaluate actions for the transmission and valorization of intangible heritage
Number of initiatives for documentation, research and archiving of local religious traditions	Monitor the preservation of historical and collective memory
Involvement of the Salt Workers' Class and other traditional groups in the Reserve's cultural activities	Evaluate the maintenance of the link between salt culture and community identity
Participation of local public and visitors in traditional cultural and religious events	Measuring the ability of traditions to generate social cohesion and cultural attractiveness
Level of perception of local communities regarding the importance of religious and popular traditions	Evaluating the identity value attributed to intangible heritage

Status and Trend Assessment

The data collected will allow us to monitor the persistence of traditional practices over time, the effectiveness of historical heritage conservation efforts, and the ability of local communities to transmit knowledge, skills, and cultural values to new generations. Particular attention will be paid to the most vulnerable elements, such as generational turnover in traditional salt cultivation, the preservation of specialized salt culture vocabulary, and the maintenance of social and associative practices that contribute to the local identity.



Fig. 66. Salt worker and artisanal harvesting tradition handed down



Ph: Salvatore Sinatra

16. LOGISTIC SUPPORT FUNCTION

16.1 Research and monitoring:

16.1.1 Describe existing and planned research programmes and projects, as well as monitoring activitie(s) and the areas where they are (will be) undertaken to address specific questions related to biosphere reserve management and for the implementation of the management plan (refer to the variables in Annex I).

The future "Saline di Sicilia" Biosphere Reserve is designed as a living laboratory for studying Mediterranean coastal wetlands, traditional salt systems, and the interactions between biodiversity conservation, production activities, and climate change. Research and monitoring activities are aimed at supporting the Reserve's adaptive management and the implementation of the Management Plan through the systematic collection of environmental, socioeconomic, and cultural data.

Table 60. Main research and monitoring programs

Plan	Management objectives	Application area	Monitored variables
Biodiversity and habitat	Conservation of species and habitats of community interest	Core and Buffer Zones	Nesting, migratory, and wintering birds; habitat conservation status; halophilous species; invasive species; reproductive success
Hydrology and water quality	Maintaining the ecological functionality of the salt pans and lagoon	Entire Biosphere Reserve	Salinity, temperature, pH, dissolved oxygen, nutrients, turbidity, water levels and ecological quality of water
Climate change and resilience	Assessment of the vulnerability of ecosystems and traditional activities	Entire Biosphere Reserve	Sea level, extreme events, coastal erosion, precipitation, temperatures, salt pan productivity
Traditional salt cultivation and biocultural heritage	Preservation of traditional activities and local knowledge	Core and Buffer Zones	Productive area, number of active saltworks, employment, profitability, traditional management practices
Sustainable tourism and enjoyment	Compatibility between conservation and tourist use	Entire Biosphere Reserve	Tourist flows, carrying capacity, spatial and seasonal distribution of visitors, impacts on habitats, economic benefits
Socioeconomic monitoring and governance	Evaluation of the effects of the Reserve on local communities	Entire Biosphere Reserve	Employment, local businesses, stakeholder participation, sustainable development indicators
Integrated data system and territorial observatory	Decision support and monitoring of the Management Plan	Entire Biosphere Reserve	Georeferenced environmental, economic, social and cultural indicators

Monitoring already operational infrastructures

As part of the European MareMag LIFE project, SOSALT has created a permanent environmental monitoring network consisting of:

- two weather stations located respectively in the Trapani-Paceco salt pans and in the Stagnone lagoon of Marsala;
- nine automatic stations for monitoring water levels, salinity and water temperature;
- Multi-parameter sensors for monitoring pH and dissolved oxygen in specific areas of the salt pans.

Additional environmental monitoring systems are also present within the Stagnone lagoon system and could be integrated into the future observatory of the Biosphere Reserve.

Scientific collaboration and knowledge transfer

Research activities are developed through a collaborative network of public bodies, universities, research institutes, environmental organizations, and local operators, promoting the transfer of scientific knowledge to decision-making processes and traditional production activities.

The contribution of the Trapani Campus of the University of Palermo is of key importance; and in particular the Institute of Marine Biology, which has been working for over forty years in the fields of fisheries resource management, aquaculture, environmental quality, and innovation applied to coastal production systems.

Table 61. Main stakeholders involved

Category	takeholders involved
Public administrations	**Sicilian Region, Free Municipal Consortium of Trapani, Interested Municipalities**
University and research	**University of Palermo (Trapani Campus), CNR, ISPRA**
Protected areas and conservation	**Nature Reserve Managers, WWF Italy, Legambiente**
Territorial operators and stakeholders	**SOSALT, salt companies, local associations and local economic entities**

The future Biosphere Reserve intends to function as a permanent territorial laboratory (living laboratory) for the study of Mediterranean coastal wetlands, climate change adaptation, sustainable salt marsh management, and the relationship between biodiversity conservation and local development. The results of the research activities will be made available through shared monitoring systems, contributing to the dissemination of best practices within the global network of Biosphere Reserves.

16.1.2 Summarize past research and monitoring activities related to biosphere reserve management (refer to variables in Annex I).

The Sicilian Salt Pans area between Trapani and Marsala has been the subject of scientific research and environmental monitoring for several decades, aimed at understanding and conserving coastal and lagoon ecosystems, protecting biodiversity, and enhancing the cultural and productive heritage associated with salt farming.

The activities carried out mainly concerned the coastal wetlands of the Trapani and Paceco Salt Pans Nature Reserve, the Stagnone Lagoon of Marsala, and the still-active historic salt pans, providing essential information for the management of protected areas and for defining the conservation measures adopted in recent decades.

Biodiversity and habitat conservation

Numerous studies have explored the composition, distribution, and dynamics of biological communities in brackish and lagoon ecosystems. Particular attention has been paid to migratory, breeding, and wintering aquatic birds, which use the salt marsh system as an important feeding, breeding, and resting area along Mediterranean migratory routes.

The monitoring activities allowed to:

- periodically update the fauna and flora inventories;
- identify species of community and priority interest;
- assess the conservation status of habitats protected by the Natura 2000 network;
- identify pressures and potential threats to biodiversity.

The data collected contributed to the preparation of management plans for the Natura 2000 sites and protected areas in the area.

Hydrological studies and environmental quality

The research activities analysed the hydraulic functioning of the salt pans and the lagoon, highlighting the role of traditional water management in maintaining habitats and biodiversity.

Over time the following have been carried out:

- monitoring of water levels and salinity;
- water quality analysis;
- studies on sedimentary dynamics and exchange processes between the sea, lagoon and salt pans;
- assessments of the effects of anthropogenic pressures on aquatic ecosystems.

This knowledge has supported the management of traditional hydraulic infrastructures and the conservation of the ecological characteristics of the salt system.

Research on traditional salt cultivation and cultural landscape

Several interdisciplinary studies have documented the historical, cultural, and economic value of traditional sea salt production, analyzing the evolution of the salt landscape and the relationship between production activities and environmental conservation.

Research has highlighted how the continuity of traditional salt pan management has contributed to the maintenance of semi-natural habitats of high ecological and landscape interest, while also promoting the preservation of local knowledge, practices, and skills handed down over time.

Climate change and coastal vulnerability

In recent years, the area has been included in studies dedicated to the effects of climate change on Mediterranean coastal ecosystems, with particular reference to sea level rise, coastal erosion, and variations in local climate regimes.

The research activities have improved our understanding of the vulnerability of the lagoon system and salt pans, providing useful insights for developing future adaptation strategies.

Sustainable use and local development

The monitoring activities also concerned tourist use and the socioeconomic dynamics of the area, analyzing:

- the evolution of visitor flows;
- the impacts of recreational activities on sensitive ecosystems;
- the contribution of salt pans and protected areas to the local economy;
- the perception of natural and cultural heritage by resident communities and visitors.

The results supported the definition of environmental education initiatives, valorization of cultural heritage and promotion of forms of sustainable tourism.

16.1.3 Indicate what research infrastructures is available in proposed biosphere reserve, and what role the reserve will play in supporting such infrastructures.

The area proposed as a Biosphere Reserve has a set of scientific, technical, and operational infrastructures that support research, environmental monitoring, and data collection on coastal and lagoon ecosystems.

Among the main available infrastructures are the protected natural areas and the Natura 2000 network site in the area, which serve as open-air laboratories for studying biodiversity, coastal habitats, and the ecological dynamics of brackish environments. The active salt pans of Trapani and Marsala also represent a unique system for analysing the interactions between traditional production activities, nature conservation, and sustainable landscape management.

Research activities can count on the logistical and operational support provided by protected area management bodies, visitor centers, museums, and observation points throughout the area, as well as on collaboration with universities, research institutes (the University of Palermo and its Trapani campus), and technical organizations engaged in the study of Mediterranean coastal ecosystems (particularly the Sicilian Regional Biodiversity Observatory).

Additional infrastructure includes environmental monitoring networks, meteorological and hydrological sensing systems, GIS tools, and spatial databases used to monitor environmental and socioeconomic components.

The future Biosphere Reserve will play a coordinating and integrating role in existing infrastructure, promoting data sharing, the definition of common monitoring protocols, and the development of interdisciplinary research programs. Through a network of partnerships between public bodies, universities, civil society organizations, and local economic operators, the Reserve will also promote participation in national and international projects, access to dedicated funding, and the dissemination of scientific findings to support adaptive land management.

The Biosphere Reserve area will therefore be used as a territorial platform for applied research on sustainable development, climate change, coastal ecosystem management, biodiversity conservation, and the valorization of the biocultural heritage linked to traditional salt production.



Fig. 67. Maltese Mushroom (Cynomorium coccineum)

16.2 Education for sustainable development and public awareness:

16.2.1 Describe existing and planned activities, indicating the target group(s) and numbers of people involved (as "teachers" and "students") and the area concerned.

Numerous environmental education, public awareness, and sustainable development initiatives are active within the proposed Biosphere Reserve, aimed at students, residents, visitors, businesses, and local administrators. These activities are promoted by a diverse network of public and private entities, including the protected area management bodies, the WWF Visitor Center, the UNESCO Clubs of Trapani and Marsala, schools, the Environmental Education Center (CEA) of Marsala, local salt companies and salt museums (Ettore and Infersa Salt Museum, Culcasi Salt Museum), as well as cultural and environmental associations active in promoting the natural and landscape heritage.

The activities currently underway are summarized in table 62.

Table 62. Main existing activities and their target groups

Activity	Target groups	Affected area	Annual participants (estimated)
Guided tours of the salt pans and protected areas	Students, residents, tourists, organized groups	Trapani and Paceco Salt Pans, Marsala Salt Pans, Natura 2000 areas and Nature Reserves	3,000-5,000
Educational workshops on biodiversity and coastal ecosystems	Primary and secondary schools	Visitor centers (WWF and CEA), salt museums, local schools	1,000-2,000
Environmental education programs for schools (organized by the UNESCO Clubs of Trapani and Marsala)	Students, teachers, educational staff	Municipalities of Trapani, Paceco, and Marsala	1,500-2,500
Outreach events and thematic days	Local communities, visitors, associations	Entire territory of the Biosphere Reserve	1,000-3,000
Awareness campaigns on habitat and species conservation	Residents, tourists, economic operators	Entire territory of the Biosphere Reserve	2,000-4,000
Citizen science activities and participatory monitoring	University students, associations, citizen volunteers	Wetlands, salt marshes and coastal areas	100-300
Interpretation activities of the cultural heritage of salt cultivation	Tourists, schools, local communities	Salt Museums, Historic Saltworks, and Visitor Centers (CEA)	2,000-4,000
Seminars, meetings, and training activities for local operators and administrators	Tour operators, producers, technician and administrators	Trapani, Paceco and Marsala	100-200



Ph: Leonardo Rallo

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The estimated total annual participants are between 10.000 and 20.000 people/year, taking into account possible overlaps between the various initiatives.

As part of the future Biosphere Reserve Management Plan, sustainable development education activities will be further expanded and coordinated, consistent with the objectives of the MAB Program and the 2030 Agenda for Sustainable Development. The planned actions are listed in table 63.

Table 63. Main planned activities

Planned activity	Target groups	Implementing entities	Affected area	Estimated annual attendees	Main SDGs
Permanent sustainable development education programs for schools	Primary and secondary school students	Biosphere Reserve, educational institutions, WWF Visitor Center, Marsala Environmental Education Center, UNESCO Club	Entire territory of the Reserve	2,000-3,000	SDG 4 (Quality Education), SDG 13 (Climate Action), SDG 15 (Life on Land)
Training and refresher courses for teachers and educators	Teachers, educators, school staff	Biosphere Reserve, School District, University, UNESCO Club	Trapani, Paceco, Marsala	100-300	SDG 4 (Quality Education), SDG 17 (Partnerships for the Goals)
Participatory monitoring and citizen science programs	University students, associations, citizen volunteers	Protected area management bodies, universities, environmental associations, WWF	Salt pans, wetlands and Natura 2000 areas	150-500	SDG 13 SDG 14 (Life Below Water), SDG 15 SDG 17
Courses and seminars for local economic operators	Tour operators, salt-producing companies, fishermen, environmental guides, agricultural companies	Biosphere Reserve, Chamber of Commerce, trade associations, local businesses	Entire territory of the Reserve	200-500	SDG 8 (Decent Work and Economic Growth), SDG 12 (Responsible Consumption and Production), SDG 14, SDG 15
Communication and awareness-raising activities on climate change and the conservation of coastal ecosystems	Local communities, visitors, schools, public administrators	Biosphere Reserve, Municipalities, environmental associations, local media	Entire territory of the Reserve	3,000-5,000	SDG 11(Sustainable Cities and Communities), SDG 13, SDG 14, SDG 15
Programs for the valorization and transmission of traditional knowledge related to salt cultivation	Local communities, young people, visitors, cultural operators	Salt companies, Salt Museums, cultural associations, UNESCO Clubs	Historic salt pans of Trapani, Paceco, and Marsala	1,000-2,000	SDG 8, SDG 11, SDG 12
Exchanges, twinning and cooperation with other Biosphere Reserves	Technicians, administrators, students, local associations	Management body of the Biosphere Reserve, National MAB Committee, other Biosphere Reserves	Territory of the Reserve and MAB network	50-200	SDG 4, SDG 11, SDG 17

The total annual number of participants is estimated to be between 6.500 and 11.500.

Through these actions, the Biosphere Reserve intends to strengthen environmental awareness, promote the active participation of local communities, and develop skills useful for ecological transition and sustainable land management.



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Fig. 68. Organizers of the Environmental Interpretation event at CEA Lilibeo

16.2.2 What facilities and financial resources are (or will be) available for these activities?

Sustainable development education and public awareness activities can rely on a consolidated network of structures and infrastructures already operational in the territory of the proposed Biosphere Reserve, as illustrated in table 64.

Table 64. Main structures available for education for sustainable development and public awareness

Structure/Resource	Managing entity	Location	Educational and informative function
Visitor Center of the Trapani and Paceco Salt Pans Oriented Nature Reserve	WWF Italy / Reserve Management Body	Nubia (Paceco)	Environmental education, guided tours, educational activities for schools, visitor information
Ettore and Infersa Salt Museum	Salt companies and private management entities	Marsala Salt Pans	Interpretation of the historical and cultural heritage of salt cultivation, educational visits and dissemination
Culcasi Salt Museum	Private property and salt workers	Nubia (Paceco)	Preservation and transmission of traditional knowledge related to salt production
Marsala Environmental Education Center	Associations and local partners	Marsala	Training activities, educational workshops, environmental awareness
Local schools	Ministry of Education and school autonomy	Trapani, Paceco, Marsala	Environmental education and sustainable development programs
Wildlife observatories and birdwatching spots	Management bodies of protected areas	Wetlands and salt marshes	Naturalistic observation, monitoring, and citizen science activities
Nature trails and themed paths	Public bodies, protected areas and private entities	Entire area of the Reserve	Field education, landscape and biodiversity interpretation
Wetlands and historic salt marshes	Various public and private entities	Trapani, Paceco, Marsala	Open-air laboratories for the study of coastal ecosystems and traditional land management practices
Associations, cultural offices and clubs for UNESCO	UNESCO Club of Trapani and Marsala, local associations	Trapani, Marsala	Public meetings, seminars, cultural events, and awareness-raising activities
Trapani University and partner research centers	University of Palermo	Territorial and regional scale	Advanced training, scientific research and knowledge transfer

The main sources of funding are shown in table 65.

Table 65. Main sources of financing

Financial source	Current/future state	Main purposes
Ordinary budgets of the management bodies of protected areas	Current	Environmental education, visitor center management, outreach activities
Contributions from Municipalities and other public bodies	Current and future	Events, educational programs and local initiatives
Regional programs for the environment, tourism and education	Current and future	Training and awareness-raising activities
National programs dedicated to the environment and biodiversity	Current and future	Conservation, environmental education and monitoring
European Union programs (LIFE, Interreg, Erasmus+, Horizon Europe, and others)	Current and future	Education for sustainable development, research, cooperation and innovation
UNESCO-MAB International Cooperation Projects	Future	Exchange of good practices and capacity building
Agreements with universities and research centers	Current and future	Training, research and scientific dissemination activities
Sponsorships and private partnerships compatible with the objectives of the Reserve	Future	Support for educational projects and public initiatives
Revenue from educational services, guided tours, and sustainable tourism	Current and future	Support for information and awareness-raising activities



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The Biosphere Reserve will promote an integrated approach to planning and resource mobilization, fostering coordination among the various stakeholders, building stable partnerships, and accessing national and international funding opportunities. This approach will help ensure the continuity, effectiveness, and progressive expansion of education, training, and awareness-raising activities aimed at local communities and visitors.

16.3 Contribution to the World Network of Biosphere Reserves:

The Sicilian Salt Pans Biosphere Reserve contributes to the World Network of Biosphere Reserves especially in the areas of (a) the management of wetlands of international importance (in cooperation with the Ramsar Convention) and (b) the activity of salt production using traditional methods.

Furthermore, the inclusion of the two historic centres of Trapani and Marsala contributes to facilitating the functional link between the protected areas and the neighbouring urban centres and to improving the approach to integrated territorial planning.

16.3.1 How will the proposed biosphere reserve contribute to the World Network of Biosphere Reserves, its Regional and Thematic Networks?

The proposed Saline di Sicilia Biosphere Reserve will first actively contribute to

1. **Regional Networks:** the proposed Biosphere Reserve will contribute to *EuroMAB* Network by sharing experience on the integrated management of Mediterranean coastal wetlands, traditional salt-production landscapes, biodiversity conservation, climate-change adaptation, and community-based sustainable development.
2. **Thematic networks:** The Biosphere Reserve intends to contribute particularly to the World Network of Island and Coastal Biosphere Reserves, through expertise in the conservation and sustainable management of coastal saline ecosystems, migratory bird habitats, traditional saltpans as biocultural landscapes, and nature-based solutions for climate resilience in Mediterranean coastal environments.

In addition, the Biosphere Reserve will foster cooperation with other Mediterranean Biosphere Reserves on shared challenges related to wetland conservation, sustainable tourism, climate adaptation, water management, and the safeguarding of traditional ecological knowledge.

The Reserve will make a specific contribution to the international network, particularly in the areas listed in table 66.

Table 66. Contribution of Saline di Sicilia to the MaB Networks.

MAB Networks	Relevance for Saline di Sicilia BR	Main Contributions of Saline di Sicilia
EuroMAB (European and North American Network of Biosphere Reserves)	Saline di Sicilia would be part of the EuroMAB regional network and participate in its exchanges on sustainable development, governance and innovation.	Integrated management of coastal wetlands and cultural landscapes
		Governance models linking conservation and local economic activities
		Climate change adaptation in Mediterranean coastal areas
		Stakeholder participation and community engagement
		Conservation of migratory bird habitats and biodiversity

Table 66. (continuation). Contribution of Saline di Sicilia to the MaB Networks.

MAB Networks	Relevance for Saline di Sicilia BR	Main Contributions of Saline di Sicilia
World Network of Island and Coastal Biosphere Reserves	Most relevant thematic network given the coastal character of the proposed Biosphere Reserve and the importance of its saline ecosystems.	Sustainable management of coastal lagoons, salt marshes and saltpans
		Nature-based solutions for coastal resilience and adaptation to sea-level rise
		Conservation of Mediterranean coastal biodiversity
		Sustainable use of ecosystem services
		Reduction of pressures on coastal ecosystems
		Promotion of traditional livelihoods compatible with conservation
Mediterranean Cooperation among Biosphere Reserves (informal/inter-regional collaboration)	Sicily's central location makes it a strategic hub for cooperation between European and Mediterranean Biosphere Reserves.	Exchange of good practices on wetland conservation
		Sustainable tourism management in sensitive coastal environments
		Water resource management under climate stress
		Conservation of biocultural heritage and traditional ecological knowledge
		Strengthening dialogue between northern and southern Mediterranean regions

Table 66. (continuation). Contribution of Saline di Sicilia to the MaB Networks.

MAB Networks	Relevance for Saline di Sicilia BR	Main Contributions of Saline di Sicilia
Cross-cutting UNESCO-MAB Themes	Saline di Sicilia addresses several priority themes promoted across the World Network of Biosphere Reserves.	Climate change adaptation and resilience
		Biodiversity conservation and ecological connectivity
		Protection of migratory bird flyways
		Safeguarding cultural and biocultural heritage
		Sustainable blue economy and local green livelihoods
		Environmental education, research and public awareness

Thanks to the presence of the Stagnone Lagoon, the Trapani and Paceco Salt Pans, and the Marsala Salt Pans, the proposed Biosphere Reserve will also serve as a Mediterranean-scale laboratory (see fig. 69) for studying the effects of climate change on coastal ecosystems, with particular reference to sea level rise, coastal erosion, salinization, and extreme weather events.

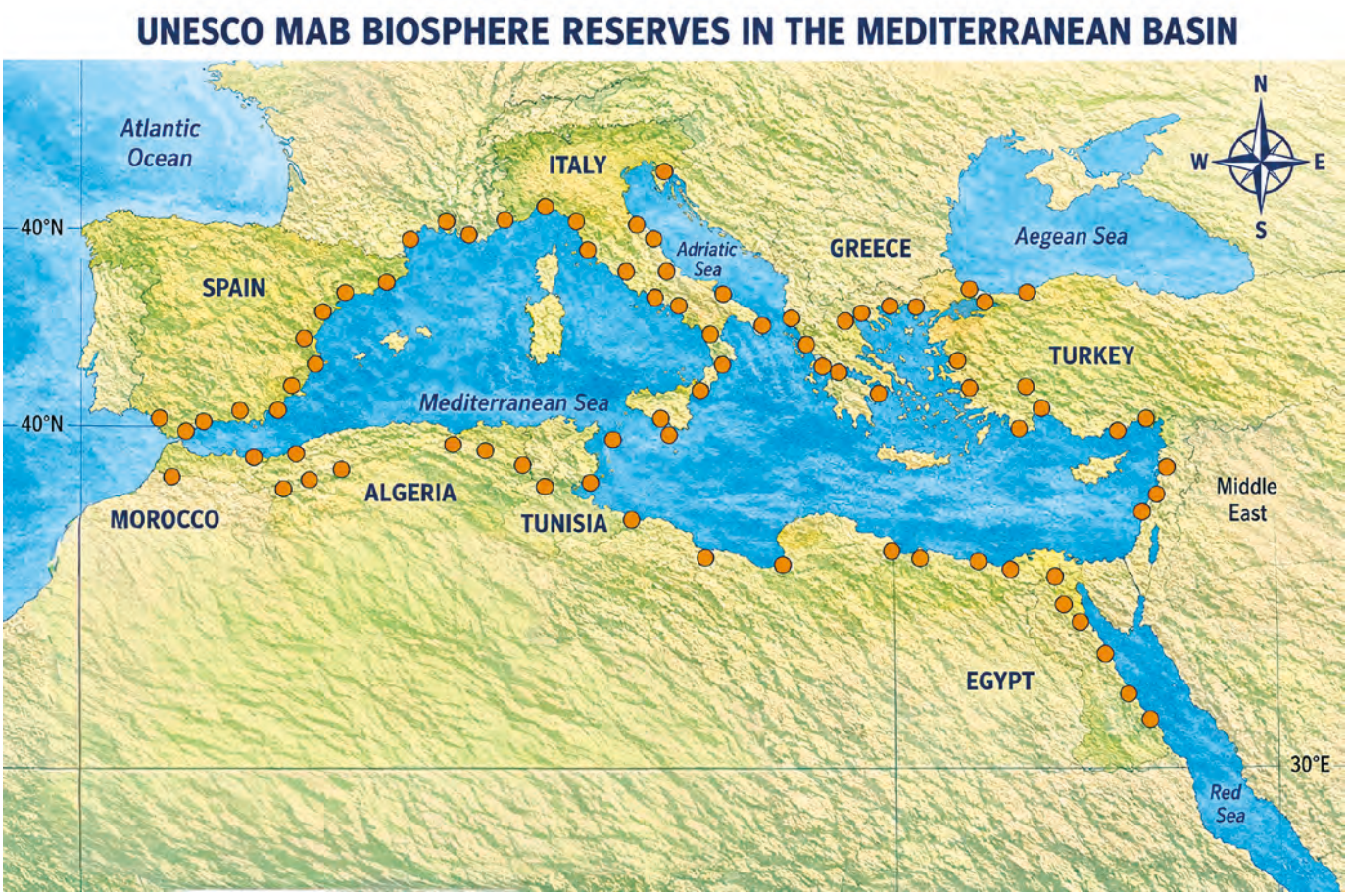


Fig. 69. Distribution of Biosphere Reserves in the Mediterranean basin
(the illustration is generated by AI based on data from Regione Sicilia)

Through the involvement of universities, research institutions, public administrations, businesses, and civil society organizations, the Reserve will promote the production and dissemination of scientific knowledge, the transfer of skills, and innovation in territorial governance practices. In this way, it will contribute concretely to the achievement of the objectives of the UNESCO MAB Programme and the Hangzhou Action Plan 2026-2035, strengthening the role of Biosphere Reserves as international laboratories for sustainable development.

16.3.2 What are the expected benefits of international cooperation for the biosphere reserve?

International cooperation is an essential component of the future Saline di Sicilia Biosphere Reserve Management Plan and a strategic tool for pursuing its MaB objectives. Through participation in the World Network of Biosphere Reserves (WNBR), the EuroMAB network, and the Program's thematic networks, the region will strengthen its role as a hub for exchange, experimentation, and innovation for biodiversity conservation and the sustainable development of Mediterranean coastal areas.

The candidacy of the Saline di Sicilia aims to make a distinctive contribution to the international network, based on the unique integration of natural ecosystems, cultural heritage, and traditional production activities. The area is a living laboratory where salt production, practiced for centuries, continues to ensure the conservation of habitats of high ecological value and sustain the cultural identity of local communities.

In this context, the Biosphere Reserve will be able to contribute to the MAB network through:

- testing climate change adaptation strategies in coastal and lagoon wetlands;
- conservation and valorization of a thousand-year-old biocultural heritage linked to traditional salt cultivation;
- promotion of cooperation between Mediterranean coastal territories sharing similar environmental and socioeconomic challenges;
- development of participatory governance models capable of integrating conservation, economic development, and local community involvement.



The international significance of the proposal is further enhanced by Sicily's geographical location at the heart of the Mediterranean, by the historical and cultural ties that have connected the diverse salt-making traditions of the northern, southern, and eastern shores of the basin for centuries, and by the ecological function performed by salt pans and coastal wetlands along the main bird migration routes between Europe and Africa.

Participation in international networks will enable the development of structured collaborations with other Biosphere Reserves, Ramsar sites, and Mediterranean salt landscapes, fostering the exchange of knowledge and best practices on coastal wetland management, biodiversity conservation, climate resilience, and the enhancement of ecosystem services.

Among the main expected benefits is strengthening the institutional and technical capacities of the entities involved in the Reserve's governance. Through training programs, capacity-building activities, exchanges between managers, and participation in international working groups, it will be possible to increase the effectiveness of management policies and test innovative approaches to the conservation and sustainable use of natural resources.



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International cooperation will also foster the development of joint research and monitoring programs dedicated to coastal ecosystems, Mediterranean wetlands, bird migration routes, and the impacts of climate change. Collaboration with other Biosphere Reserves will allow for the sharing of data, methodologies, and experiences, improving the quality of available knowledge and the ability to respond to emerging environmental challenges.

In this perspective, the initial collaborative relationships established with other Italian Biosphere Reserves are particularly significant. Contacts developed with the Po Delta Biosphere Reserve have already allowed for initial discussions on the management of coastal wetlands and Ramsar sites, while the experience of the Monte Grappa Biosphere Reserve offers interesting insights for developing governance models applicable to contexts lacking protected areas with a single management body.

International cooperation will also contribute to the preservation and promotion of traditional salt cultivation as a defining element of the region's identity and a living cultural heritage. Collaboration with other areas characterized by historic production landscapes will enable the development of shared strategies for protecting traditional knowledge, promoting sustainable supply chains, and enhancing the economic and cultural value of local products.

From a socioeconomic perspective, participation in international networks will strengthen the region's visibility at the European and Mediterranean levels, fostering the development of sustainable tourism, research and innovation activities, educational initiatives, and new funding opportunities related to nature conservation, climate adaptation, and sustainable territorial development.

The future Saline di Sicilia Biosphere Reserve therefore aims to become a Mediterranean platform for international dialogue and cooperation on the management of coastal wetlands, climate resilience, and productive cultural landscapes, actively contributing to the objectives of the MAB Programme, the Hangzhou Action Plan 2026-2035, and the 2030 Agenda for Sustainable Development.

16.4 Internal and external communication channels and media used by the biosphere reserve:

16.4.1 Is (will there be) a website for the biosphere reserve? If so, what is its URL?

The application website is as follows: https://www.candidaturamabsalinedisicilia.it/. The website currently contains general information on the MaB Programme and the Biosphere Reserve concept, as well as the key elements of the application process. It also contains all the application documents.

16.4.2 Is (will there be) an electronic newsletter? If so, how often will it be published?

The Promotion Committee also intends to publish a newsletter and create a co-design platform called MaB LaB to keep all stakeholders constantly involved in future projects.

16.4.3 Does (will) the biosphere reserve belong to a social network (Facebook, Twitter, etc.)?

The MaB Youth Group has been managing social media (especially Instagram: https://www.instagram.com/salinedisiciliayouth/) for some time and has an agreement with the Promotion Committee to continue these activities in the future.



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17. GOVERNANCE, BIOSPHERE RESERVE MANAGEMENT AND COORDINATION

17.1 Management and coordination structure:

17.1.1 What is the legal status of the biosphere reserve?

The nominated territory is not currently subject to a single, unified legal regime. Its protection and management are instead based on an integrated system of protected areas, nationally and internationally recognized sites, environmental and landscape frameworks, as well as territorial and sectoral planning tools, which together ensure the conservation of ecosystems, the enhancement of cultural heritage, and the promotion of sustainable development.

17.1.2 What is the legal status of the core area(s) and buffer zone(s)?

The proposed core and buffer areas fall entirely within the Natura 2000 site consisting of the Oriented Nature Reserve of the Stagnone Islands of Marsala (SAC ITA010001 Stagnone Islands of Marsala and SPA ITA010028 Stagnone of Marsala and Saline di Trapani - marine and terrestrial area) and the Oriented Nature Reserve of the Saline di Trapani and Paceco (SAC ITA010007 Saline di Trapani and SPA ITA010028 Stagnone of Marsala and Saline di Trapani - marine and terrestrial area). These areas therefore benefit from the protection measures provided for by European Directives related to the Natura 2000 Network, as well as the provisions deriving from the protection regimes specific to the two regional nature reserves.

The entire Natura 2000 site is subject to a Management Plan (see the full document in annexes) approved by the Sicilian Region in December 2011. This Plan defines objectives, measures, and guidelines aimed at conserving biodiversity, sustainable management of natural resources, and maintaining the favourable conservation status of habitats and species of community interest.



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17.1.3 Which administrative authorities have jurisdiction over each area of the biosphere reserve (core area(s), buffer zone(s), transition area(s))?

Administrative and management responsibility within the proposed Biosphere Reserve is shared between various institutional bodies, depending on the different zoning and existing protection regimes (for details see the table 67).

As for the core areas, the management of the Trapani and Paceco Salt Pans Nature Reserve is entrusted to WWF Italy, the reserve's managing body on behalf of the Sicilian Region, while the management of the Marsala Stagnone Islands Nature Reserve is entrusted to the Free Municipal Consortium of Trapani, which also operates as the regional reserve's managing body.

The Sicilian Region, through its Department responsible for the environment, land, and nature conservation, maintains the guidance, regulation, and oversight functions required by current legislation and the management tools for Natura 2000 sites.

In the transition zones, administrative and land-use planning responsibilities are exercised by the four municipalities within the nomination area: Trapani, Paceco, Misiliscemi, and Marsala. These entities play a key role in urban planning, management of local services, sustainable development policies, and the implementation of the future Biosphere Reserve's shared strategies.

The overall governance of the candidacy is therefore based on collaboration between regional administrations, protected area management bodies, municipal administrations and other public and private stakeholders present in the territory.

17.1.4 Clarify the respective responsibilities of each of these authorities. Make a distinction between each zone, if necessary, and mention any decentralized authorities.

Administrative and management responsibilities within the proposed Biosphere Reserve are divided between various institutional bodies based on the zoning and existing protection regimes.

Regarding the core areas and their buffer zones, management has been entrusted to the bodies already responsible for the two regional nature reserves included in the nomination territory. Specifically, the Trapani and Paceco Salt Pans Nature Reserve (including Core Areas 1, 2, 3, and 4 and their buffer areas), is managed by WWF Italy, while the Marsala Stagnone Islands Nature Reserve (including Core Area 5 and its buffer area), is managed by the Free Municipal Consortium of Trapani.

In the transition areas, administrative and territorial planning responsibilities fall to the Municipalities of Trapani, Misiliscemi, Paceco, and Marsala, which contribute to the implementation of sustainable development strategies and coordinated land management.

The institutional and management responsibilities are summarised in table 67.

Table 67. Distribution of institutional and management responsibilities in the various components of the MAB zoning

MAB zoning component	Name	Management body Competent authority
Core 1, 2, 3 and 4 (northern sector) and related buffer areas	Trapani and Paceco Salt Pans Nature Reserve	WWF Italy on behalf of the Sicilian Region
Core 5 (Southern Sector) and its buffer area	Stagnone Islands of Marsala Nature Reserve	Free Municipal Consortium of Trapani on behalf of the Sicilian Region
Transition area	Municipal territories	Municipalities of Trapani, Misiliscemi, Paceco, and Marsala

17.1.5 Indicate the main land tenure (ownership) for each zone.

The territory proposed as the Saline di Sicilia Biosphere Reserve features a complex and multifaceted land tenure system, typical of Mediterranean coastal landscapes, characterized by a long history of interaction between human activities and natural dynamics. The ownership structure is highly diversified and includes private, public, and state-owned properties, complemented by various forms of concessions and environmental protection regimes.

The core areas primarily correspond to the areas of greatest naturalistic and functional value within the salt and lagoon system, including active saltworks, evaporation and crystallization basins, wetlands, and coastal habitats of high ecological interest. In these areas, land ownership is characterized by a prevalence of private property for productive use, represented by salt-producing companies and concessionaires operating according to traditional salt production practices. These areas are complemented by portions of public regional property, particularly within protected areas established by the Sicilian Region, as well as stretches of state-owned maritime property relating to bodies of water, canals, and coastal areas, managed through concessions for salt production and biodiversity conservation. The protection of the core areas is ensured by an integrated system of environmental regimes, mostly focussed on the Natura 2000 site management system.

Buffer areas encompass ecological transition zones that include the edges of salt pans, hydraulic connection canals, secondary ponds, peri-fluvial wetlands, and extensive or semi-naturalized agricultural areas. Land tenure is highly fragmented and includes private agricultural property, municipal and regional public property, and portions of public hydraulic and maritime land, often subject to concessions or management agreements. The preservation of ecological functions in these areas is primarily ensured by the integration of land-use planning tools, landscape constraints, and protected area management measures.

The transition areas coincide with the urban and peri-urban contexts of the municipalities of Trapani, Paceco, Misiliscemi, and Marsala, including residential settlements, infrastructure, intensive agricultural areas, and services. The land tenure is dominated by private urban and agricultural property, complemented by municipal and regional public ownership of infrastructure and collective spaces, as well as infrastructure of supralocal interest. In these areas, the sustainability of the Biosphere Reserve system depends on the integration of urban planning, environmental governance tools, and sustainable territorial development policies.



Ph: Salvatore Sinatra

Table 68 summarizes the various land use regimes in relation to the proposed zoning.

Table 68. Land tenure regimes in relation to MaB zoning

MAB Zone	Prevailing land regime	Observations
Core (Saline of Trapani and Paceco)	Private productive property, regional property, maritime state property	Presence of active saltworks managed by salt companies and concessionaires; areas subject to environmental protection
Core (Islands of the Stagnone of Marsala)	Maritime and lake state property, public property, private property	Presence of lagoon bodies of water and coastal areas subject to various protection regimes
Buffer	Private agricultural property, local and regional public property, hydraulic and maritime state property	Fragmented land ownership; ecological connection function
Transition	Mainly private urban and agricultural property; municipal and regional public property	Settlements, infrastructure, services and economic activities



Ph: Giovanni La Francesca

The Saline di Sicilia are characterized by a heterogeneous land tenure regime in which the conservation of biodiversity and landscape does not stem from uniform public ownership, but rather from a multilevel governance system based on coordination between different owners, traditional production concessions, and a complex framework of environmental and landscape regimes. This model allows for the maintenance of the ecological functions of the salt pans and lagoon system, while ensuring the continuity of traditional economic activities and compatibility with the objectives of the MaB Program.



Fig. 70. View from the salt pans onto the city of Trapani

17.1.6 Is there a single manager/coordinator of the biosphere reserve, or are several people in charge of managing it? If one manager/coordinator, who designates and employs him/her (national authorities, environmental management agency, local authorities)?

As an important output of the territorial animation process, the Promotion Committee approved a governance system (see fig. 21) which will characterize the functioning of the Biosphere Reserve once designated. The legal form that this system will adopt is still under discussion: the preferred model is the Participatory Foundation, which in Italy guarantees the opportunity for all interested stakeholders to participate, while also ensuring smooth management. The first planned activity is the preparation of a Management Plan informed by the strategic proposals emerging from the Working Groups.

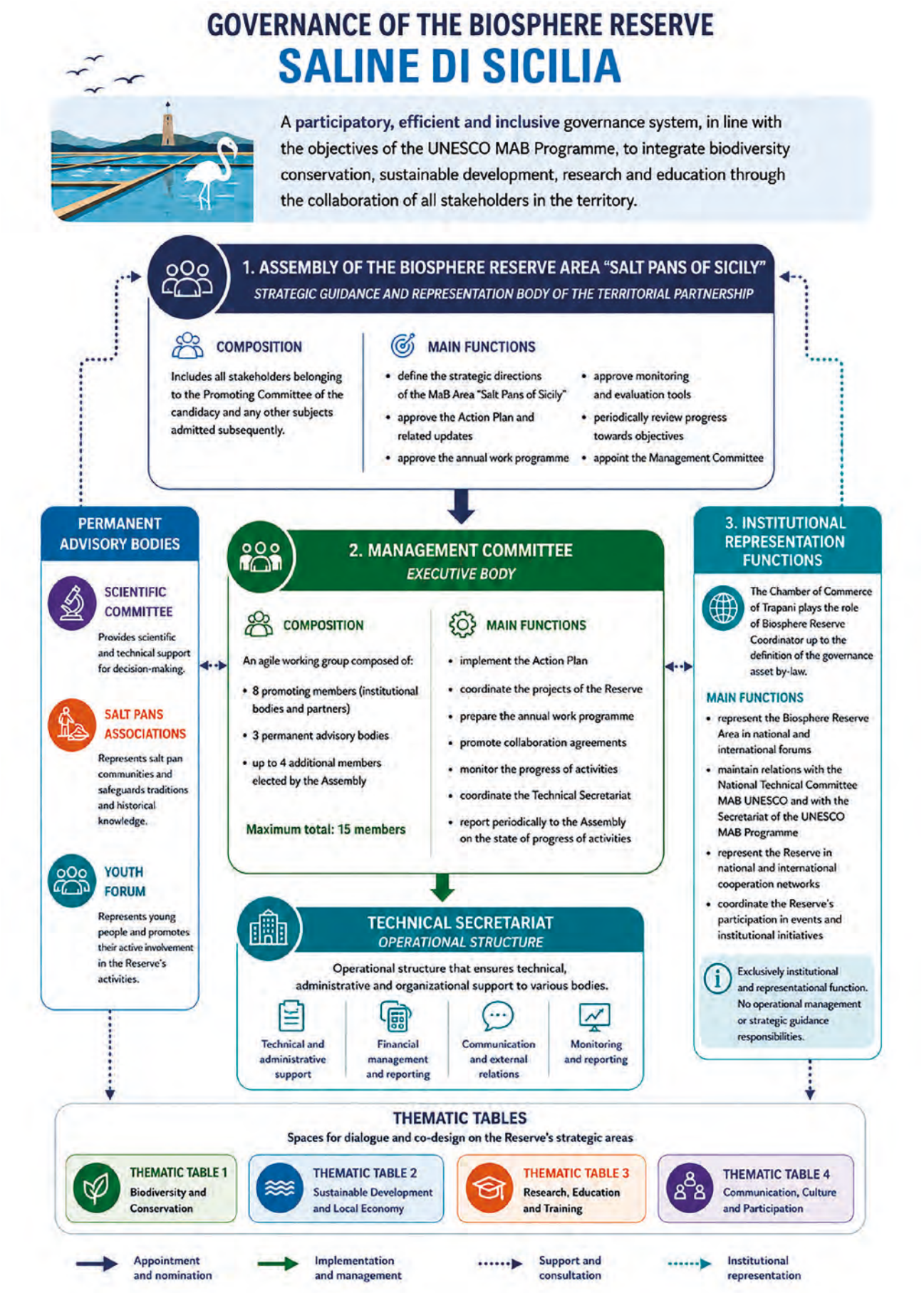


Fig. 21. The proposed governance system
(illustration generated with artificial intelligence based on data of the Nomination Form).

The proposed governance system is based on a participatory approach, with the Assembly as the strategic steering body and the Management Committee as the executive arm. The Trapani Chamber of Commerce will temporarily assume the role of institutional representation, supported by a Technical Secretariat for day-to-day operational activities. The system also integrates several advisory bodies, including a Scientific Committee, the Salt Workers' Legation, and a Youth Forum, to enhance technical expertise and youth engagement. Finally, thematic roundtables open to local stakeholders are envisioned to promote sustainable development, education, and tourism, consistent with the values of the MaB program. The various governance aspects are described in the following paragraphs.

1. Maintain a bottom-up and participatory approach.

To this end, a General Assembly of the "Saline di Sicilia" Biosphere Reserve (hereinafter referred to as the "Assembly") will be established, as the body responsible for strategic direction and representation of the territorial partnership. It will ensure institutional representation of the territorial partnership, define strategic directions, and ensure the integration of biodiversity conservation policies, sustainable development, and support for research and education, consistent with the objectives of the MAB Programme.

Composition

The Assembly will include all current members of the Promotion Committee, the signatories of any endorsement letters, and any additional individuals who request them and are subsequently admitted by the Assembly itself.

Functions

- define the strategic directions of the MaB Area "Saline di Sicilia";
- approve the Action Plan and its updates;
- approve the annual program of activities;
- approve monitoring and evaluation tools;
- periodically check the achievement of objectives;
- appoint the Management Committee.

2. Having an efficient management coordination

For this purpose, a Management Committee will be established, which will be the executive body responsible for implementing the guidelines defined by the Assembly and for the ordinary management of the Biosphere Reserve.

Composition

The Management Committee will be formed by a flexible working group composed of the current members of the Promotion Committee (Municipalities of Trapani, Marsala, Misiliscemi and Paceco, by the WWF of Trapani, by the Free Municipal Consortium of Trapani, by the Regional Department of Terri-

tory and Environment of the Sicilian Region, and by the Chamber of Commerce of Industry, Crafts and Agriculture (CCIAA) of Trapani), supported by representatives of the three advisory bodies (Scientific Committee, Legation of the Salt Workers, and Youth Forum). The Assembly may decide to integrate the 11 members mentioned above by electing up to four additional individual from among its affiliated, thus increasing the Management Committee's membership to a maximum of 15.

Functions

- implement the Action Plan;
- coordinate the Reserve's projects;
- prepare the annual operational programme;
- promote collaboration agreements;
- monitor the implementation of activities;
- coordinate the Technical Secretariat;
- report periodically to the Assembly on the progress of activities.



Ph: Giovanni La Francesca

3. The representative function

The function of national and international institutional representation (the role of Biosphere Reserve Coordinator), which will ensure continuity in institutional relations and guarantee a single representation of the "Saline di Sicilia" Biosphere Reserve in national and international contexts (the UNESCO MAB National Technical Committee, the UNESCO MAB Programme Secretariat, the World Network of Biosphere Reserves, and other national and international cooperation networks), will be carried out by the Trapani Chamber of Commerce until the current Promotion Committee is transformed into a definitive governance structure (with the possible establishment of a Participatory Foundation, as mentioned above). This function is exclusively institutional and representative in nature and does not entail strategic direction or operational management responsibilities, which remain the responsibility of the Biosphere Reserve Assembly and the Management Committee, respectively.

Functions

- Officially represent the future Biosphere Reserve in national and international institutional relations;
- maintain relations with the UNESCO MAB National Technical Committee and with the UNESCO MAB Programme Secretariat;
- represent the "Saline di Sicilia" area within the World Network of Biosphere Reserves and the regional networks of the MAB Programme;
- promote collaboration agreements and partnerships at national and international level;
- promote the positioning and visibility of the Biosphere Area in the main institutional, scientific and cooperation contexts.

4. The operational function

In carrying out these functions, the Institutional Representation will be assisted by a Permanent Technical Secretariat, which constitutes the Reserve's permanent operational structure and ensures technical, administrative, and organizational support to the various governance bodies.

Composition

Dedicated technical and administrative staff, supported, where necessary, by professionals made available by institutional partners.

Functions

- technical-administrative support to governance bodies;
- operational coordination of activities;
- monitoring of the Action Plan;
- preparation of the Periodic Review and the documentation required by UNESCO;
- management of relations with the MAB Program Secretariat;
- project development and funding research;
- institutional communication;
- coordination of sustainable development education activities;
- organizational support for the permanent consultation tables.

5. The three permanent consultative bodieS

The Scientific Committee

Appropriate technical and scientific oversight of the Biosphere Area's various actions and initiatives will be provided by the Scientific Committee, which serves as a technical advisory body. The Scientific Committee supports the governance bodies in defining strategies, evaluating the effectiveness of actions, and monitoring results.

Composition

This Committee will be composed of representatives and experts from the academic and research worlds. Specifically, the general assembly will decide the number of members of the Committee and the procedures by which they will be nominated by universities, ISPRA (Italian National Institute of Environmental Protection), CNR (National Research Council), and other accredited research institutions. The Committee may also draw upon additional experts in the fields of biodiversity, wetlands, climate change, land-use planning, and sustainable development to contribute to its operational composition.

Functions

- provide technical and scientific support to the Assembly and the Management Committee;
- define monitoring indicators;
- evaluate the effectiveness of the actions envisaged in the Action Plan;
- contribute to the preparation of the Biosphere Reserve Periodic Review;
- express opinions on the Reserve's main initiatives.

The Salt Workers' Legation

Fundamental support for the valorization and protection of cultural heritage (tangible and intangible) and the promotion of dissemination and outreach initiatives will be provided by the salt workers sector. These are those who, through their salt cultivation activities, contribute to the maintenance of the unique nature of the salt pans.

Composition

The legation will consist of salt pan owners and managers. They may also expand the group by co-opting other stakeholders, such as salt museum management bodies, socioeconomic operators involved in the salt cultivation sector, and historical heritage experts, with the aim of promoting traditional salt cultivation.

Functions

- provide technical and cultural support to the Assembly and the Management Committee;
- propose possible sustainable development projects for the Biosphere Reserve;
- support the drafting of the future Management Plan;
- promote relationships and collaborations with other saltworks in the Mediterranean;
- experiment with new management systems that adapt to ongoing climate change.

The Youth Forum

In line with the recent strategic documents of the MAB Programme, a dedicated space will be provided for the participation of younger generations. In this regard, the focus on young people, already demonstrated during the candidacy phase, will be continued (and expanded), as demonstrated by the formal establishment of a "Saline di Sicilia Youth Group" that supported the territorial animation activities and participated in the 3rd UNESCO MAB Global Youth Forum.

Composition

The Forum will be formed from the existing "Youth Group", eventually expanded. Specifically, the general assembly will define the number of members of the forum and the procedures for their selection, through the involvement of youth councils, students, youth associations, young researchers, young entrepreneurs, and young representatives of schools and universities.

Functions

- promotes the role of young people in the governance of the Biosphere Reserve;
- adheres to "young UNESCO" initiatives both at national and international level;
- promotes the development of territorial innovation proposals;
- proposes and supports the various communication activities of the Biosphere Reserve;
- promote relationships and collaborations with other youth groups;

6. Thematic roundtables for stakeholder participation

In addition to the three permanent consultative bodies (namely, Scientific Committee, Legation of Salt Workers, and Youth Forum), the assembly may activate additional Consultation Roundtables. These may include additional consultative bodies dedicated to specific issues related to the main areas of intervention of the future Biosphere Reserve, ensuring the involvement of the widest possible number of local stakeholders.

These roundtables represent additional and timely forums for discussion, proposals, and co-planning, operating in conjunction with the Technical Secretariat, which coordinates their work and transmits the proposals and requests that emerge to the governance bodies.

When drafting the "Management Plan for the Saline di Sicilia MAB Area," it may be suggested and indicated the need for any additional thematic working groups. For example, the following are some "thematic working groups" that could be established to support the governance of the Saline di Sicilia Biosphere Reserve.

Education, Training and Research Table

Closely related to the Scientific Committee's activity, this table could involve educational institutions, universities, training bodies and environmental education centres, and UNESCO Clubs (in Trapani and Marsala), with the aim of promoting educational programmes, training activities, scientific research and initiatives in education for sustainable development.

Third Sector Table

This forum could bring together third-sector organizations, volunteer organizations, and cultural and environmental associations to foster a culture of legality, civic participation, and the formulation of proposals for biodiversity protection, environmental awareness, and participatory monitoring.

Sustainable Economy Table

This forum could bring together the Trapani Chamber of Commerce, trade associations, businesses, and organizations related to the primary sector, with the aim of establishing an observatory on sustainable local development experiences to support business innovation and the valorization of local products.

Tourism Table

Trade associations, hotels, companies offering tourist services and more generally organisations in the tourism sector - DMO (Destination Management Organizations) – could form a thematic table to develop ideas and propose projects aimed at promoting sustainable tourism and a consequent tourist offering consistent with the values of the Biosphere Reserve.



Ph. Patrizia Galia

7. How to connect governance and participation

While the Assembly retains the right to undertake any initiative deemed useful for the future "Saline di Sicilia" Biosphere Reserve, to ensure a structured flow of information between the various participation mechanisms and the governance bodies, it is proposed that the coordinators of the three permanent consultation panels (Scientific Committee, Legation of Salt Workers, and Youth Forum) -in addition to being members of the Management Committee -present an annual report to the Assembly on their activities, ongoing projects, and proposals for future initiatives. The Technical Secretariat will review any new project proposals, verifying their technical completeness and financial coverage, and, following approval by the Assembly, ensuring their transmission to the Management Committee for implementation.
A similar coordination will also be reserved for any thematic tables that may be set up and which were mentioned in the previous point.

(d) Programmes for research, monitoring, education and training

The Biosphere Reserve proposal identifies research, monitoring, education, and training as essential elements of the logistical support function envisioned by the MAB Program. The area offers a particularly favourable context for the development of research and experimental activities aimed at understanding the interactions between natural systems and human activities in a coastal landscape of high ecological and cultural value.



Ph: Giovanni La Francesca

17.1.7. Are there consultative advisory or decision-making bodies (e.g., scientific council, general assembly of inhabitants of the reserve) for each zone or for the whole biosphere reserve? If yes, describe their composition, role, and responsibilities, and the frequency of their meetings.

As described in section 17.1.6, the proposed governance model includes both a Biosphere Reserve Assembly, consisting of all the entities (both collective and individual) that have so far joined the Promotion Committee and all those who wish to join, and a Scientific Committee, tasked with advising on the activities to be promoted. The former will meet at least once a year, while the latter will meet at least twice a year (the number of meetings is expected to be greater initially to better organize the scientific work).

The Scientific Committee will include universities already active in the proposed Biosphere Reserve (particularly the University of Palermo, through its Trapani Campus) and other specialized research institutions active in the area (for example, IRVOS (Regional Institute of Wine and Oil of the Sicilian Region). One of the Scientific Committee's main objectives will be to develop a comprehensive system for monitoring environmental and socioeconomic data, which are currently collected in a fragmented manner.

17.1.8 Has a coordination structure been established specifically for the biosphere reserve?

If yes, please describe in detail how it works, the composition and relative proportion of each group in this structure, its roles and competences.

Is this coordination structure autonomous or is it under the authority of the local or central government, or of the biosphere reserve manager/ coordinator?

The current Promotion Committee is expected to be transformed into the Biosphere Reserve Coordinating Unit. The most sustainable option is to create a Participatory Foundation, a hybrid model between a traditional foundation and a more community-based structure to ensure broad participation.

As detailed in section 17.1.6, to ensure effective and participatory governance of the Biosphere Reserve, a Management Committee will be established as the executive body responsible for implementing the Action Plan, coordinating projects, and monitoring activities. It will be composed of the main institutional and local stakeholders promoting the nomination, complemented by representatives of the salt industry, youth, and the Reserve Assembly.

The role of Biosphere Reserve Coordinator, with institutional representation tasks at the national and international level and coordination with the MAB Programme, will be carried out by the Trapani Chamber of Commerce until the final governance structure is defined.

Operational coordination will be ensured by a Permanent Technical Secretariat, responsible for providing technical and administrative support to the governance bodies, monitoring the implementation of the Action Plan, maintaining relations with the MAB network, developing projects and communication activities, and preparing the periodic documentation requested by the MAB Secretariat.

17.1.9. How is management/coordination adapted to the local situation?

The management system of the future Biosphere Reserve was designed to meet the specific territorial, environmental, and socioeconomic characteristics of the Saline di Sicilia territory. The proposed area is characterized by the presence of protected natural areas, traditional salt-making activities still in operation, multiple administrative levels, and a variety of public and private entities participating in the management and enhancement of the landscape.

To ensure effective adaptation to local needs, the Management Committee will include representatives of the competent local authorities, protected area management bodies, the Sicilian Region, the salt production sector, and other key stakeholders. This composition will allow for the integration of biodiversity conservation needs with those related to local economic development, the valorization of cultural heritage, and the sustainable management of traditional activities.

The governance model identified, based on a Participatory Foundation, is particularly suited to the local context of the Biosphere Reserve. This organizational form combines institutional stability, representation of public bodies, and active participation of local stakeholders, fostering inclusive decision-making processes and shared management of sustainable development strategies.

Through its bodies and permanent consultation tables, the Foundation will ensure the ongoing involvement of local communities, salt-producing companies, associations, the research community and economic operators, ensuring that the decisions and actions of the Biosphere Reserve are constantly consistent with the needs of the territory and with the objectives of the MAB Programme.

17.1.10 Is there is a procedure for evaluating and monitoring the effectiveness of management?

The future Biosphere Reserve will have a procedure for monitoring and evaluating the effectiveness of management, which will be approved by the Promotion Committee and subsequently adopted by the Reserve's governance bodies.

The procedure will aim to periodically verify the level of implementation of the Action Plan, the achievement of the Reserve's strategic objectives, and the effectiveness of the measures adopted in relation to the three functions of the MAB Program: conservation, sustainable development, and logistical support for research, monitoring, and education.

The monitoring system will be developed in collaboration with research and scientific institutions operating in the area, starting with the University of Palermo, to identify a shared set of environmental, socioeconomic, and management indicators capable of evaluating the results achieved over time.

The Management Committee will prepare an annual report on the progress of implementation of activities and the achievement of planned objectives. This process will allow for the introduction of any corrective actions and the updating of operational priorities based on the results achieved.

Furthermore, periodic checks, at least annually, and a systematic collection of the data necessary for the preparation of the documentation required by the MAB Programme, including the Periodic Review, are foreseen, thus ensuring a continuous process of learning, adaptation and improvement in the management of the Biosphere Reserve.

17.2 Conflicts within the biosphere reserve:

17.2.1 Describe any important conflicts regarding access to or use of natural resources in the area under consideration (and specify the time period if accurate). If the biosphere reserve has contributed to preventing or resolving some of these conflicts, explain what has been resolved or prevented, and how it was achieved for each zone.

The Saline di Sicilia area constitutes a cultural and productive landscape of high natural value, where traditional economic activities, biodiversity conservation, tourism, and local development coexist. Over the years, several conflicts or potential conflicts have emerged regarding access to and use of natural resources, linked to the need to reconcile environmental, productive, and social needs.

a) Conservation of habitats and production activities of salt pans

Beginning in the 1970s and 1980s, the progressive establishment of environmental conservation policies necessitated the need to identify ways to balance the protection of coastal wetland ecosystems and the continuation of traditional production activities. This 'dialogue' intensified with the establishment of the Stagnone Islands of Marsala Nature Reserve in 1984 and the Trapani and Paceco Salt Pans Nature Reserve in 1995, as well as with the area's subsequent inclusion in the Natura 2000 network.

One of the main points of contention concerns the relationship between protecting habitats and species of community interest and the continuation of salt production activities. Water level management, embankment maintenance, sediment movement, and the interventions required to operate saltworks can impact existing ecosystems, while the abandonment of production activities risks compromising the very survival of habitats that depend on the active management of the salt system.

At the same time, industry players have highlighted the need for technological innovations and infrastructure upgrades to maintain the competitiveness of Trapani's salt production on national and international markets, without altering the area's ecological and landscape balance.

Over time, this conflict has gradually transformed into a complementary relationship through the recognition of the role of traditional saliculture as an essential practice for the conservation of cultural landscapes and wetland habitats. Management measures for nature reserves and Natura 2000 sites have fostered coordination between conservation bodies and economic operators.

b) Abandonment of salt pans and economic sustainability of traditional salt cultivation

Since the second half of the 20th, the Trapani salt industry has experienced a progressive economic crisis due to more competitive industrial production and changes in the international salt market. This process has led to the closure or downsizing of numerous historic saltworks and has raised concerns about the conservation of the cultural landscape and habitats dependent on the active management of the salt pans. The establishment of protected areas also arose in response to the risk of losing a unique environmental and productive heritage in the Mediterranean. The progressive decline in the profitability of traditional salt production and the growing competition from national and international industrial production have led, at certain historical times, to the risk of abandonment of part of the salt industry.

This situation represents a particularly significant threat, as the conservation of lagoon habitats and biological communities depends on maintaining the saltworks' hydraulic and production management activities. The abandonment of the saltworks and historic infrastructure can lead to habitat alterations, biodiversity loss, and degradation of the historic landscape.

For this reason, there has recently been a growing awareness that environmental protection and the economic valorization of the salt industry are closely interdependent objectives. The future Biosphere Reserve intends to further strengthen this approach, promoting the valorization of traditional sea salt, the associated cultural heritage, and the ecosystem services provided by the saltworks system.



Ph: Piero Lazzari

c) Tourist enjoyment and environmental conservation

Since the 2000s, and particularly in the last decade, the Stagnone lagoon has become an international destination for water sports, particularly kitesurfing. The growth in tourism has fuelled a debate on the compatibility between sports enjoyment, local economic development, and the protection of the lagoon's most sensitive ecosystems.

The growing tourist appeal of the area, particularly in the Stagnone lagoon, and in the areas characterized by the presence of historic mills and evaporation ponds, has led in recent decades to increasing human pressure on some particularly sensitive ecosystems.

At certain times of the year, there have been interferences with the nesting, feeding, and resting needs of birds, as well as critical issues related to mobility, access to the most vulnerable sites, and the pursuit of sporting activities, including kitesurfing.

These issues have been addressed through access regulation, activity zoning, environmental monitoring, and the development of education and awareness programs aimed at visitors and tourism operators.

d) Infrastructure development and landscape protection

Urban expansion along the coastal strip has been a historically significant factor of pressure. The establishment of the Trapani and Paceco Salt Pans Reserve in 1995 helped curb territorial transformation processes that could have irreversibly compromised the area's natural and landscape values.

Over time, discussions have emerged regarding the compatibility of infrastructure projects, energy plants, road works, and other land transformations with the landscape, cultural, and ecological values of the salt pans.

The presence of landscape and environmental protection regimes, together with environmental assessment procedures and consultation processes between competent bodies, has generally helped reduce the risk of interventions incompatible with land conservation objectives.

e) Use of water resources and hydraulic management

The ecological and productive functioning of the salt system depends on the proper circulation of seawater and the maintenance of the complex network of canals, reservoirs, and hydraulic structures. In some cases, differing needs may arise between production activities, habitat conservation, management of protected areas, and hydraulic safety.

The cooperation developed between public bodies, protected area managers, economic operators, and local communities has thus far allowed for the maintenance of conditions compatible with the various objectives present in the territory.

Overall, the conflicts recorded in the area have not become permanent or irremediable but have highlighted the need for integrated governance tools capable of reconciling environmental conservation, traditional production activities, and local development. The future Biosphere Reserve is conceived as a permanent platform for dialogue and cooperation between public bodies, economic operators, local communities, and scientific institutions, aimed at preventing the emergence of new conflicts and promoting shared solutions consistent with the objectives of the MAB Program.

17.2.2 If there are any conflicts in competence among the different administrative authorities in the management of the biosphere reserve, describe these.

The area of the future Biosphere Reserve is characterized by multilevel governance involving numerous administrations and stakeholders with varying degrees of responsibility for managing the land, biodiversity, landscape, and production activities.

The main stakeholders involved include the Sicilian Region, the management bodies of protected natural areas, the municipalities of Trapani, Paceco, Misiliscemi, and Marsala, the authorities responsible for Natura 2000 sites, the Superintendencies responsible for the protection of landscape and cultural heritage, the Sicilian Regional Basin Authority, the Port Authority, and other bodies responsible for maritime property and water resource management.

In this context, different institutional priorities or procedural overlaps may emerge, particularly about interventions on salt pans and hydraulic infrastructure, the regulation of tourism and sporting activities, the conservation of biodiversity, the enhancement of cultural heritage, and local economic development initiatives.



Ph: Comune di Misilscemi

These situations have not generally led to structural or permanent institutional conflicts but have sometimes required complex coordination between administrations with competing powers, resulting in delays in authorization and decision-making processes.

The nomination for Biosphere Reserve also stems from the need to strengthen coordination between the various levels of territorial governance. To this end, the proposed governance system provides permanent tools for discussion and cooperation between the relevant bodies, aimed at promoting integrated management of natural resources, reducing administrative overlap, and promoting shared decision-making consistent with the objectives of the MAB Program.

The future Biosphere Reserve will not replace the responsibilities of individual administrations but will provide a coordination platform capable of improving institutional dialogue and the overall effectiveness of conservation and sustainable development policies.

17.2.3 Explain the means used to resolve these conflicts and their effectiveness.

In the Saline di Sicilia area, conflicts have been addressed through a combination of institutional, planning, and participatory tools that have progressively favoured greater integration between biodiversity conservation objectives, traditional production activities, and local development.

Interinstitutional coordination

The main conflicts and potential divergences between environmental conservation, production activities, and territorial development were addressed through coordination between the relevant administrations. A significant role was played by the Management Plan for the Natura 2000 site "Saline di Trapani e Marsala," which provided a shared framework for decisions regarding habitats, species, and human activities.

Similarly, the management of the two nature reserves by WWF and the Free Municipal Consortium of Trapani has fostered ongoing dialogue between management bodies, local governments, and local stakeholders. More recently, the Biosphere Reserve Promotion Committee has provided a further tool for coordination, uniting the municipalities of Trapani, Marsala, Paceco, and Misiliscemi, the Sicilian Region, the Trapani Chamber of Commerce, WWF, and the Free Municipal Consortium of Trapani around a common goal.

Integrated planning

The existence of complementary planning and management tools, including Natura 2000 site management plans, landscape plans, municipal urban planning tools and protected area regulations, has made it possible to define a shared framework for the protection and enhancement of the territory.

This approach has fostered greater coherence in decisions and a progressive integration of environmental, territorial, and economic policies.

Stakeholder engagement

Salt producers, environmental associations, tourism businesses, scientific institutions, local communities, and civil society organizations have been progressively involved in the land planning, management, and monitoring processes.

Stakeholder participation helped improve mutual understanding of the different needs in the area and develop more shared solutions, reducing the risk of conflict and promoting the construction of a common vision of sustainable development.

Scientific monitoring and adaptive management

The research and monitoring activities carried out by management bodies, universities, and scientific organizations have provided objective elements for assessing the effects of human activities on ecosystems and for adopting management measures based on scientific evidence.

The availability of up-to-date data on habitats, species, and the functioning of the lagoon and salt-water system has allowed management practices to be adapted over time and technical disputes to be addressed more effectively.

Overall effectiveness assessment

In the salt pans of Trapani and Marsala, the main historical conflict is not the opposition between salt conservation and salt production, but rather the risk of progressive loss of traditional salt-making activities, on which the maintenance of the cultural landscape and the conservation of a significant portion of the wetland habitats in the area depend.

In this context, the management tools adopted have progressively promoted the recognition of traditional salt production as an economic activity compatible and functional to conservation objectives. Through the planning tools for protected areas, the measures envisaged in the Natura 2000 Management Plan, and the ongoing dialogue between management bodies and salt-producing companies, a shared approach has been consolidated, according to which the maintenance of traditional production activities is essential for the conservation of the area's cultural landscape and biodiversity.

Although challenges remain related to the economic sustainability of the sector, tourist pressure and the complexity of territorial governance, the coordination and participation mechanisms developed in recent years have helped prevent permanent conflicts and promote shared solutions between the various stakeholders.

The future Biosphere Reserve will further strengthen these tools through participatory governance and ongoing dialogue between institutions, economic operators, local communities, and the research community, in line with the objectives of the MAB Program.

17.3. Representation, participation and consultation of local communities:

The Promotion Committee has developed a territorial outreach plan that includes a comprehensive (a) information and (b) engagement effort across the entire territory, in order to reach as many stakeholders as possible, as shown in table 69, which lists all the activities carried out during the candidacy period. Great attention was also paid to media communication, both local and regional, and national.

Table 69. List of local animation activities.

Date	Location and time	Main topics discussed
8 November 2024	**Trapani Chamber of Commerce (10:00 a.m.)**	Informal meeting of key stakeholders (Chamber of Commerce, four municipal administrations, and two managing bodies). Discussion of a preliminary schedule of participatory meetings to be held in 2025.
12 February 2025	**Trapani Chamber of Commerce (10:00 a.m.)**	Meeting of the "MAB UNESCO – Saline di Sicilia" Promoting Committee, formally established in January with the participation of the Sicilian Regional Government. Sharing and planning of the participatory process to be launched across the territory in support of the nomination.
12 February 2025	**Trapani Chamber of Commerce (3:00 p.m.)**	Public conference to present and promote the "MAB UNESCO – Saline di Sicilia" Promoting Committee. Opening the Committee to participation by civil society.
17 March 2025	**Trapani Town Hall (10:00 a.m.)**	Meeting with a first group of young people convened by the municipal administration to present the Biosphere Reserve nomination project.
17 March 2025	**Trapani Chamber of Commerce (3:00 p.m.)**	Meeting with the President of the Unione Maestranze of Trapani to identify a suitable location for an "MAB UNESCO" information stand during the Good Friday procession.
17 March 2025	**Trapani Chamber of Commerce (5:00 p.m.)**	Meeting with representatives of secondary schools (students and teachers). Definition of a programme for school assemblies to present the project and collect students' contributions through a questionnaire supporting the development of the shared vision. Launch of the "Saline di Sicilia" Prize Competition promoted by the Committee and funded by the Chamber of Commerce, including three categories: logo, video and menu.

Table 69. (continuation). List of local animation activities.

Date	Location and time	Main topics discussed
18 March 2025	**Paceco - Nubia (TP), Empire Multiplex Cinema "Le Saline", (10:30 a.m.)**	First working group with cultural and environmental associations from the four municipalities. Activities included vision-building, identification of environmental and cultural hotspots, and preliminary inputs for the territorial SWOT analysis.
18 March 2025	**Paceco (TP) Town Hall (12:30 p.m.)**	Meeting with the Presidents of the UNESCO Clubs of Trapani and Marsala to coordinate activities supporting participation and the nomination process, particularly citizen information stands during Holy Thursday and Good Friday processions.
18 March 2025	**Marsala (TP) Town Hall (5:00 p.m.)**	Meeting with the Prior of the Confraternity of Marsala to identify a suitable location for an "MAB UNESCO" information stand during the Holy Thursday procession.
19 March 2025	**Trapani Chamber of Commerce (10:30 a.m.)**	First working group with salt producers. Future-scenario building activities and discussion of appointing a spokesperson to participate in Committee meetings.
19 March 2025	**Trapani University Centre (5:00 p.m.)**	Meeting with the President of the University Consortium to discuss the essential contribution of academic and research institutions to the nomination process.
20 March 2025	**Trapani Town Hall - Sala Sodano (10:00 a.m.)**	Initial meeting with tourism operators. Introduction to the MAB Programme and coordination with the afternoon working group. Preliminary activities on vision-building and identification of environmental and cultural hotspots for the SWOT analysis.
20 March 2025	**Misiliscemi (TP) Town Hall (4:00 p.m.)**	First working group with tourism operators. Future-scenario building, vision development, identification of environmental and cultural hotspots, and inputs for the territorial SWOT analysis.
16 April 2025	**Marsala (TP) Town Hall (5:00 p.m.)**	Meeting with a first group of young people convened by the municipal administration to present the nomination project.
17 April 2025	**Marsala (TP) Largo Zerilli (2:00-6:00 p.m.)**	"MAB UNESCO" information stand during the Holy Thursday procession. Semi-structured interviews and questionnaires administered to local residents.

Table 69. (continuation). List of local animation activities.

Date	Location and time	Main topics discussed
18 April 2025	**Trapani Corso Italia (2:00-6:00 p.m.)**	"MAB UNESCO" information stand during the Good Friday procession. Semi-structured interviews and questionnaires administered to local residents.
6 May 2025	**Paceco Nubia, Empire Multiplex Cinema "Le Saline" (4:00 p.m.)**	Second working group with cultural and environmental associations. Territorial analysis and preliminary drafting of a community map linked to conservation and sustainable development good practices.
7 May 2025	**Trapani Chamber of Commerce (10:30 a.m.)**	Follow-up meeting with tourism-sector associations to share initial strategic guidelines concerning the MAB UNESCO Programme.
7 May 2025	**Misiliscemi (TP) Town Hall (4:30 p.m.)**	Second multi-stakeholder working group (including tourism operators). From the shared vision developed in March to the identification of local good practices, such as the municipal park.
8 May 2025	**Trapani Chamber of Commerce (10:30 a.m.)**	Second salt producers' working group. Development of the shared vision and preparation of a Community Map. Election of a spokesperson was postponed.
8 May 2025	**Trapani Chamber of Commerce (12:30 p.m.)**	First working group with stakeholders from the primary sector, involving agricultural associations to discuss initial guidelines related to the MAB UNESCO Programme.
8 May 2025	**Trapani Chamber of Commerce (4:00 p.m.)**	First working group with wineries. Presentation of the nomination project and collection of recommendations regarding the three MAB functions (conservation, sustainable development, and logistic support). Proposal to extend the transition area and broaden the thematic focus of the nomination.
9 May 2025	**Trapani Chamber of Commerce (10:00 a.m.)**	Meeting with representatives of a second group of young people to continue the dialogue initiated by the municipalities of Trapani and Marsala.
1 June 2025	**Misiliscemi Festival of Flavours (6:00-10:00 p.m.)**	"MAB UNESCO" information stand during the local Festival of Flavours. Semi-structured interviews and questionnaires administered to local residents.

Table 69. (continuation). List of local animation activities.

Date	Location and time	Main topics discussed
9 June 2025	**Trapani University Centre (5:00 p.m.)**	Second meeting with the President of the University Consortium to plan awareness-raising activities on the MAB Programme for students of the Trapani branch of the University of Palermo.
10 June 2025	**Trapani Chamber of Commerce (10:00 a.m.)**	Meeting with representatives of a second youth group to continue previous discussions and initiate direct engagement with the Committee.
10 June 2025	**Paceco - Nubia, Empire Multiplex Cinema "Le Saline" (4:30 p.m.)**	Third working group with cultural and environmental associations. Development of a repository of ideas as input for the strategic framework of the nomination dossier.
11 June 2025	**Trapani Chamber of Commerce (10:00 a.m.)**	Meeting with tourism operators to introduce the "ideas bank" process and discuss strategic inputs for the nomination dossier.
11 June 2025	**Misiliscemi (TP) Town Hall (4:30 p.m.)**	Third multi-stakeholder working group (including tourism operators). Development of strategic proposals from the "ideas bank".
12 June 2025	**Trapani Chamber of Commerce (2:30 p.m.)**	Second working group with the primary sector. Strategic proposals developed through the "ideas bank" process.
12 June 2025	**Trapani Chamber of Commerce (5:00 p.m.)**	Third salt producers' working group. Strategic proposals developed through the "ideas bank" process.
10 Sept. 2025	**Trapani University Centre (11:00 a.m.)**	Third meeting with the President of the University Consortium, accompanied by two permanent academic staff members, to present the outcomes of the participatory process conducted prior to the summer break. Discussion focused on possible commitments by the University in support of the project's future development.
5 Nov. 2025	**Trapani Chamber of Commerce (3:00 p.m.)**	Meeting with representatives of the youth group to define a work programme for 2026 and to establish future collaborations supporting the activities promoted by the Promoting Committee.

Table 69. (continuation). List of local animation activities.

Date	Location and time	Main topics discussed
6 Nov. 2025	**Trapani University Centre (11:00 a.m.)**	Fourth meeting with the President of the University Consortium to discuss possible commitments within the future governance framework of the Biosphere Reserve and identify good practices to be included in the nomination dossier.
15 Dec. 2025	**Trapani Chamber of Commerce (3:00 p.m.)**	Public conference presenting the results of the participatory process implemented during 2025, sharing the draft strategy and promoting further membership in the "MAB UNESCO – Saline di Sicilia" Promoting Committee.
3 Feb. 2026	**Misiliscemi (TP) Town Hall (10:00 a.m.)**	Fourth Multi-stakeholder Working Group dedicated to the identification and development of good practices to support the strategy emerging from the 2025 participatory process and to be incorporated into the nomination dossier.
3 Feb. 2026	**Marsala (TP), Environmental Education Centre Archaeological Park (4:00 p.m.)**	Meeting with youth representatives and managers of the Environmental Education Centre to discuss the organization of spring awareness-raising activities in schools across Marsala.
4 Feb. 2026	**Paceco Town Hall (4:00 p.m.)**	Fourth Working Group with Cultural and Environmental Associations from the four municipalities. Discussion focused on identifying good practices to support the strategy developed during the 2025 participatory process and to be incorporated into the nomination dossier.
5 Feb. 2026	**Trapani University Centre (4:00 p.m.)**	Fifth meeting dedicated to defining modalities for involving the newly appointed President of the Trapani University Consortium and the Rector of the University of Palermo in the Promoting Committee and obtaining their endorsement of the nomination project.
5 Feb. 2026	**Marsala (TP) "La Vecchia Salumeria" (9:00 p.m.)**	Working dinner with the Presidents of the UNESCO Clubs of Trapani and Marsala aimed at coordinating initiatives to strengthen stakeholder participation and support the nomination process. Particular attention was given to the organization of a travelling awareness-raising event scheduled for 18–19 April 2026.
10 Feb. 2026	**BIT 2026 Fiera Milano Rho**	Public presentation of the ongoing nomination process within the Western Sicily DMO exhibition space, in the presence of Rosalia D'Alì, Councillor of the Municipality of Trapani.

Table 69. (continuation). List of local animation activities.

Date	Location and time	Main topics discussed
11 Feb. 2026	**BIT 2026** **Fiera Milano Rho**	Public presentation of the ongoing nomination process within the exhibition space of the magazine I Love Sicilia, in the presence of Giuseppa Savarino, Regional Councillor of the Sicilian Region.
14 April 2026	**Paceco - Nubia** **Culcasi Salt Museum** **(10:00 a.m.)**	Fourth Salt Producers' Working Group. Discussion of the draft nomination dossier, including the inclusion of historic town centres within the transition area, the governance framework, and the proposed Salt Producers' Council as a permanent advisory body within the future Biosphere Reserve.
14 April 2026	**Misiliscemi Bonacerami** **Social Centre** **(7:00 p.m.)**	Meeting with the Youth Group to discuss the draft nomination dossier and governance framework, including the establishment of a Youth Council as an advisory body of the future Biosphere Reserve. Preparatory activities for participation in the World MAB Youth Forum scheduled for May in the Veneto Biosphere Reserves of the Po Delta and Euganean Hills.
15 April 2026	**Marsala (TP), Environmental Education Centre Archaeological Park (10:00 a.m.)**	Meeting with school principals and teachers from Marsala to provide an update on the nomination process and initiate planning of environmental education activities related to MAB values, with support from the UNESCO Club of Marsala and the Youth Group.
16 April 2026	**Trapani** **Chamber of Commerce** **(3:00 p.m.)**	Meeting with representatives of the primary sector to provide an update on the nomination process and identify potential good practices supporting the strategy developed during previous stakeholder consultations.
17 April 2026	**Trapani** **Chamber of Commerce** **(11:00 a.m.)**	Meeting with stakeholders of the Port of Trapani to present the objectives and contents of the nomination and to discuss how the Biosphere Reserve designation may contribute to a sustainable future for the wider territory.
18 April 2026	**Marsala** **Baglio Oro Winery** **(5:00 p.m.)**	Conference entitled "On the Roads of Tradition", bringing together institutions, associations and local stakeholders to discuss strategies for promoting slow tourism and enhancing the value of the salt-pan landscape, a distinctive cultural landscape characterising the Province of Trapani.
19 April 2026	**Route between** **Trapani and Marsala** **(9:00 a.m.-2:00 p.m.)**	Historic-car tourism event along a themed route connecting the salt pans of Trapani and Marsala. The initiative involved a limited number of vehicles travelling on existing roads while respecting environmental protection measures. Stops included Solsat Salt Company, Culcasi Salt Pans and Salt Museum, Ettore Infersa Salt Pans with the operational windmill, and Genna Salt Pans featuring a salt-basin experiential activity.

Thanks to the contribution of the UNESCO Clubs of Trapani and Marsala, a comprehensive awareness-raising and education program has been developed for the local school system. The Clubs play a strategic role in disseminating UNESCO's principles and values, promoting awareness of the local natural and cultural heritage, the 2030 Agenda for Sustainable Development, and the objectives of the MAB Program.

Through their network of relationships with schools, associations, and local communities, the UNESCO Clubs have contributed to the promotion of an educational program designed to gradually involve all schools in the municipalities included in the candidate area. The program includes environmental education activities, educational visits to the salt pans and protected areas, meetings with experts, workshops dedicated to biodiversity and the cultural landscape of the salt pans, as well as initiatives aimed at promoting active citizenship and the participation of younger generations in sustainable land management.

The involvement of UNESCO Clubs also represents an important tool for connecting the future Biosphere Reserve with civil society, helping to strengthen local communities' sense of belonging and awareness of the candidate territory's international significance. In this way, educational activities go beyond the transmission of knowledge but also foster the development of a culture of sustainability consistent with the principles and objectives of the MAB Program.



Fig. 71 Meeting with stakeholders from the Port of Trapani.

17.3.1 At what stages in the existence of a biosphere reserve have local people been involved: design of the biosphere reserve, drawing up of the management/cooperation plan, implementation of the plan, day-to-day management of the biosphere reserve? Give some specific examples.

Local communities and key stakeholders were involved from the earliest stages of the candidacy through a structured process of territorial animation, public consultation, and co-planning. The sequence of meetings held locally (see table 69) demonstrates a participatory process involving local governments, salt-works operators, environmental and cultural associations, tourism operators, schools, universities, professional organizations, and citizens.

Biosphere Reserve Planning

In the initial phase, engagement aimed to share the principles of the MAB Programme, illustrate the opportunities offered by the candidacy, and gather expectations, concerns, and proposals from the local community. This phase allowed us to build a shared vision based on the recognition of the salt pans as an environmental, cultural, and economic heritage to be preserved and enhanced.

Definition of the Management Plan

Subsequently, the meetings focused on defining the content of a policy document for the Management Plan. Through working groups and discussions, participants contributed to identifying the main strategic priorities of the future Biosphere Reserve.

From this participatory process, nine strategic axes of intervention emerged, organized according to the three fundamental functions of the Biosphere Reserve.

A. Conservation Function - Safeguard

The local community has recognized the central role of protecting the salt pan ecosystems, biodiversity, and associated cultural heritage.

A1. Guardians of Nature
A2. Custodians of Traditional Activities
A3. Custodians of the Cultural Landscape
B. Logistics Function - Promote

The importance of training, scientific research, sustainability education, and raising awareness among new generations was highlighted.

B1. Promoters of Awareness and Legality
B2. Promoters of an Integrated Territorial System
B3. Promoters of Youth Leadership and Research
C. Sustainable Development Function - Leading

Stakeholders have identified the sustainable development of the salt pans and the surrounding area as one of the priority objectives of the candidacy.

C1. Guides in Territorial Integration and the Circular Economy
C2. Guides in Responsible and Quality Tourism
C3. Guides in Investment and Public-Private Collaboration

Implementation and management of the future Reserve

The involvement of local communities will not end with the designation but will continue through the implementation of the Management Plan and the ongoing management of the Biosphere Reserve. The proposed governance model envisages direct stakeholder participation through the Biosphere Reserve Assembly, permanent consultation tables, the Management Committee, and periodic monitoring and evaluation activities.

Particular emphasis will be placed on involving salt workers, local businesses, local associations, the research community, and younger generations, so that the Biosphere Reserve can serve as a permanent space for collaboration between nature conservation, cultural heritage enhancement, and sustainable development.

17.3.2 Describe how local people (including women and indigenous communities) have been and/or are represented in the planning and management of the biosphere reserve (e.g. assembly of representatives, consultative groups).

The Biosphere Reserve candidacy was developed through an open and inclusive participatory process, aimed at ensuring the involvement of the diverse social groups present in the area. All local development meetings were open to citizens, associations, businesses, educational institutions, civil society organizations, and local governments, without distinction of gender, age, profession, or origin.

After an initial information and awareness-raising phase on the UNESCO MAB Programme, the participatory process was divided into thematic groups aimed at exploring the candidacy's main areas of interest. Specifically, dedicated roundtables were set up to:

- cultural, environmental and volunteer associations;
- primary sector and traditional production activities, with reference to the salt supply chain;
- sustainable tourism and territorial development;
- young people and new generations;
- schools, education and training.

Particular attention was paid to the participation of young people, considered a strategic stakeholder for the future of the Biosphere Reserve, through specific listening and co-planning activities. Similarly, local associations played an important role in representing the diverse needs and sensitivities present in local communities.

The governance system proposed for the future Biosphere Reserve envisages the continuation of this participatory approach through the Reserve Assembly, permanent consultation tables, and the presence of representatives of key stakeholders on the Management Committee. Specific representation of young people and salt industry workers is also envisaged, to ensure that strategic decisions reflect the needs of local communities in a balanced way.

There are no indigenous communities in the nominated territory. However, the participatory process was designed to foster the broadest possible inclusion of the territory's diverse social, economic, and cultural components.

17.3.3 Describe the specific situation of young people in proposed biosphere reserve (e.g. potential impacts of the reserve on youth, consideration of their interests and needs, incentives to encourage them to participate actively in the governance system of the biosphere reserve).

Young people are one of the main beneficiaries and, at the same time, one of the strategic stakeholders of the future Saline di Sicilia Biosphere Reserve. From the early stages of the candidacy, the Promotion Committee recognized the need to actively involve the younger generations not only in awareness-raising and training activities, but also in decision-making processes and in building the Reserve's governance.

To this end, two working groups specifically dedicated to young people were established. The first, dedicated to schools, involved school administrators, teachers, and students in developing a sustainability education program and knowledge of the area. This process led, with the support of the UNESCO Clubs of Trapani and Marsala, to a comprehensive awareness-raising project aimed at all schools in the nomination area. The project aims to promote awareness of the natural and cultural heritage of the salt pans, the 2030 Agenda for Sustainable Development, and the values of UNESCO and its MAB Programme.

The second roundtable led to the establishment of the MAB Youth Group of the Saline di Sicilia, a permanent participatory structure composed of young people from the various municipalities involved in the candidacy. The Group has actively collaborated with the Promotion Committee, contributing to the organization of local community outreach, communication, and community engagement activities.

The importance placed on young people is also confirmed by the participation of a delegation from the Group in the 3rd Global MAB Youth Forum, held in Veneto (Italy) in May 2026. This experience allowed young people from the area to connect with the national and international networks of the MAB Programme and to acquire skills and best practices useful for the development of the future Biosphere Reserve.

The candidacy considers youth leadership essential to addressing some of the region's key challenges, including combating depopulation, creating new career opportunities related to sustainability, innovation in the salt industry, responsible tourism, scientific research, and enhancing cultural and environmental heritage.

For this reason, the MAB Youth Group has been included among the key stakeholders in the proposed governance model. Young people will therefore not only benefit from the Biosphere Reserve's activities but will also play an integral role in the decision-making, monitoring, and planning processes, contributing consistently to the definition of the area's future strategies.



Ph. archivio fotografico MAb Youth Forum 2026

Fig. 72. Meeting with stakeholders from the Port of Trapani Salinaio on the embankment of the salt flat' con 'Working Group at the 3rd Global MAB Youth Forum.

17.3.4 What form does this representation take (e.g. companies, associations, environmental associations, trade unions)?

Participation in the Biosphere Reserve nomination was open to both individual citizens and collective bodies representing the main interests in the area. The participatory process involved a variety of stakeholders from the fields of environmental conservation, salt production, agriculture, tourism, culture, education, scientific research, and the third sector.

In particular, the following were represented:

- local authorities and public administrations;
- protected area management bodies;
- companies and operators in the salt supply chain;
- environmental and cultural associations;
- tourism and hospitality operators;
- educational institutions and youth organizations;
- universities and scientific institutions;
- voluntary and third sector associations;
- citizens interested in the protection and enhancement of the territory.

During the application process, an inclusive and open approach was adopted, encouraging the broadest possible participation and allowing free participation in the Promotion Committee's activities and thematic discussions. This approach allowed for contributions from a wide range of stakeholders to be gathered and gradually consolidated a community of interest around the objectives of the future Biosphere Reserve.

In the subsequent phase of establishing the definitive governance system, a clearer structure of stakeholder representation is envisaged through the definition of functional and sectoral categories. Particular attention will be paid to the representation of the salt sector, young people, environmental and cultural associations, the research community, economic operators, and local communities, in order to ensure a balance between different interests and effective participation in the Biosphere Reserve's decision-making processes.

17.3.5 Are there procedures for integrating the representative body of local communities (e.g. financial aspects, election of representatives, traditional authorities)?

The current application phase already includes structured integration of local community representative bodies. Specifically, the Promotion Committee includes the Mayors of Trapani, Misiliscemi, Paceco, and Marsala, ensuring direct communication with their respective municipal administrations and the democratically elected bodies representing local communities.

Through this structure, municipal councils and other local institutional bodies are constantly informed and involved in the development of the candidacy and in defining the main strategic choices regarding the future Biosphere Reserve.

During the final governance phase, it is planned to further strengthen these representation mechanisms through the establishment of a Participation Foundation, which will enable the stable integration of public bodies, organizations representing various economic and social sectors, and other local stakeholders.

The proposed governance model also includes the presence of participatory bodies, such as the Biosphere Reserve Assembly and permanent consultation tables, through which associations, economic operators, scientific institutions, civil society organisations, representatives of the salt industry and young people will be able to contribute to defining the strategies and activities of the Reserve.

Specific procedures are also envisaged for identifying and appointing representatives of the main interest groups, to ensure balanced, transparent, and stable participation in decision-making processes. Particular attention will be paid to the representation of local communities, the salt industry, and younger generations, considered strategic elements for the future of the Biosphere Reserve.

17.3.6 How long-lived are consultation mechanisms (permanent assembly, consultation on specific projects)? Make a complete description of this consultation. What are the roles of involved stakeholders compared to the role of the biosphere reserve?

The public consultation process associated with the candidacy of the Saline di Sicilia Biosphere Reserve was designed as an ongoing process, not limited to the preparation of the candidacy dossier. Launched concurrently with the establishment of the Promotion Committee, it evolved through public meetings, thematic roundtables, regional workshops, and opportunities for discussion with various stakeholders, gradually accompanying the definition of the strategic vision for the Management Plan.

During the candidacy, the consultation involved local governments, protected area management bodies, salt industry operators, environmental and cultural associations, tourism businesses, schools, universities, third-sector organizations, young people, and interested citizens. The contributions collected were used to identify the strategic priorities of the future Biosphere Reserve and to define the axes of intervention related to the three fundamental functions of the Biosphere Reserve: conservation, sustainable development, and logistical support for research, education, and training.

The consultation will not conclude with the recognition of the Biosphere Reserve, but will be made permanent through the governance model envisioned by the Promotion Committee. Specifically, the future Biosphere Reserve Assembly will be the primary forum for stakeholder discussion and will be responsible for contributing to the identification of strategic directions, the evaluation of results achieved, and the periodic updating of the Management Plan.

Alongside the Assembly, there will be permanent consultation groups dedicated to the main issues of interest to the area, such as ecosystem conservation, traditional saliculture, sustainable tourism, scientific research, sustainability education, youth empowerment, and the development of local economic activities. These groups will provide consultative and proactive services and will contribute to the development of the Reserve's projects, programs, and initiatives.

The various stakeholders will play complementary roles within the governance of the Biosphere Reserve. Public bodies will contribute to institutional coordination and territorial planning; salt workers will ensure the continuity of traditional production practices that support the functioning of ecosystems; environmental and cultural associations will collaborate on conservation, awareness-raising, and enhancement of local heritage; scientific institutions will support research and monitoring activities; schools and the MAB Youth Group will promote education on sustainable development and the involvement of younger generations.

This ongoing consultation system will allow the future Biosphere Reserve to function as a stable platform for territorial cooperation, capable of fostering dialogue between the various interests present in the area and ensuring participatory, adaptive, and shared management, consistent with the principles of the MAB Program.

17.3.7 What consultation mechanisms have been used, and who has been involved? Are they for specific purposes or long-term? What impacts have they had on decision-making processes (decisional, consultative, or simply to inform the population)?

The consultation mechanisms adopted during the candidacy were conceived as a progressive and ongoing process, aimed not only at informing the local population but also at gathering useful input for defining the strategy and governance model of the future Biosphere Reserve.



Ph: Salvatore Sinatra

In the initial phase, public informational meetings were organized, open to all citizens and local stakeholders. These meetings aimed to present the MAB Programme, illustrate the significance and opportunities associated with the Biosphere Reserve designation, and promote initial shared reflection on the area's development prospects.

Following this initial phase, thematic consultation and co-planning roundtables were established, involving local authorities, salt industry operators, environmental and cultural associations, tourism operators, schools, universities, young people, third-sector organizations, and interested citizens. The roundtables explored the main themes that emerged during the public meetings, encouraging discussion of different skills, interests, and perspectives.

The consultation mechanisms served both a consultative purpose and a concrete support function for the decision-making processes. The contributions collected guided the development of the Policy Document for the Management Plan and enabled the identification of the nine strategic axes that form the basis of the future Biosphere Reserve Action Plan.

Alongside the working groups, numerous awareness-raising and dissemination initiatives aimed at the local population have been developed. These include events promoted by the UNESCO Clubs of Trapani and Marsala, educational activities for schools, and thematic meetings organized by local associations and environmental education centres, with a particular focus on nature conservation, cultural heritage, and sustainable development.

The consultation mechanisms implemented were not designed as tools limited to the application phase, but as the core of a permanent participatory system. In the proposed governance system, they will be consolidated through the Biosphere Reserve Assembly, permanent consultation roundtables, and the direct involvement of stakeholders in the implementation, monitoring, and updating of the future Management Plan.

The role of the various stakeholders will therefore evolve from a primarily consultative role in the initial phase to a stable participation in the governance of the future Biosphere Reserve, contributing to the definition of strategic priorities, the implementation of projects and the periodic evaluation of the results achieved.

17.3.8 Do women participate in community organizations and decision-making processes? Are their interests and needs given equal consideration? What incentives or programs are in place to encourage their representation and participation (e.g., have gender impact assessments been conducted)?

Participation in the consultation and co-design processes for the candidacy was open to all citizens and local stakeholders, ensuring equal opportunities for involvement regardless of gender, age, or profession.

Women actively participated in public meetings, thematic roundtables, and local outreach activities, contributing to the definition of the future Biosphere Reserve's strategic priorities and bringing skills and experience from diverse fields, including education, research, community organizations, environmental conservation, tourism, cultural activities, and public administration.

Throughout the participatory process, women's interests and needs were given the same consideration as other participants, within an inclusive approach aimed at ensuring open discussion and balanced representation of the various components of the local community.

The governance model proposed for the future Biosphere Reserve is based on the principles of inclusion, participation, and equal opportunities. The composition of the governance bodies and permanent consultation groups will therefore be geared toward gender balance, promoting women's active involvement in decision-making processes and in the planning, implementation, and monitoring of the Reserve's initiatives.

Although no specific gender impact assessments have been carried out so far, the topic of gender equality is considered consistent with the principles of the United Nations 2030 Agenda and with the objectives of the MAB Programme and will be progressively integrated into future monitoring and governance activities of the Biosphere Reserve.

17.4 The management/cooperation plan/policy:
17.4.1 Is there a management plan/policy/cooperation for the biosphere reserve as a whole?

A unified Management Plan for the entire proposed Biosphere Reserve has not yet been adopted. However, during the candidacy and territorial promotion process, a first document was developed that defines its strategic structure, priority objectives, and governance methods.

This document will form the basis for the drafting of the Management Plan and represents the result of a broad participatory process involving public administrations, protected area management bodies, operators in the salt industry, associations, scientific institutions, schools, young people, and other local stakeholders.

The future Management Plan will be designed around the three fundamental functions of the MAB Programme:

- Conservation, aimed at protecting biodiversity, lagoon and salt ecosystems and the cultural landscape of the salt pans;
- Sustainable development, aimed at enhancing traditional economic activities, promoting responsible tourism, the circular economy, and territorial innovation;
- Logistical support, through the strengthening of scientific research, monitoring, environmental education, training, and awareness-raising activities in local communities.

The document also identifies a series of good practices already existing in the key sectors of the future Plan, including the active management of traditional saltworks, conservation activities carried out in protected areas, environmental education programs, youth engagement initiatives, and forms of cooperation already developed between public bodies, economic operators, and civil society.

Particular attention will be paid to nature conservation and coordination with existing protection tools. In this context, the Biosphere Reserve Management Plan will be developed in close coordination with

the Natura 2000 Management Plan and the ongoing process of updating conservation measures by the Sicilian Region, to ensure full integration between the objectives of the MAB Programme and those of the Natura 2000 network.

Once the proposed Biosphere Reserve will be inscribed, the preparation and approval of the Management Plan will constitute one of the priorities for the governance of the Biosphere Reserve and will represent the main tool for coordinating conservation, sustainable development, and territorial participation policies.

17.4.2 Which actors are involved in preparing the management/cooperation plan? How are they involved?

The Management Plan will be developed through a participatory process that will primarily involve the bodies responsible for managing the areas included in the proposed Biosphere Reserve's zoning. These include the municipalities concerned, represented by their respective mayors, WWF Italy, the Free Municipal Consortium of Trapani, and the Sicilian Region's Department of Land and Environment.

The Plan development process also actively involves the main local stakeholders, particularly those operating in the salt sector, trade associations, professional bodies (including the Orders of Engineers and Architects), local businesses, research institutions, and civil society organizations operating within the future Biosphere Reserve.

These entities will contribute to defining the strategic objectives, priority actions, and implementation and monitoring methods of the Plan, in order to ensure shared governance consistent with the principles of the MAB Program.

17.4.3 Do local authorities formally adopt the management/cooperation plan? Are local authorities refer to it in other policies and/or plans? If so, provide details.

The Biosphere Reserve Management Plan will not overlap with existing instruments, but will serve as a coordination and integration tool between the various planning levels already in place in the area. Its development will take into account the management plans of Natura 2000 sites, landscape plans, municipal urban planning tools, conservation measures for protected areas, and other existing sectoral instruments.

The goal is to ensure coherence between biodiversity conservation policies, enhancement of the salt pans' cultural landscape, sustainable development, and local community participation. In this way, the Biosphere Reserve Management Plan will serve as a common framework for future decisions and planning for the area.

It is also expected that the objectives and actions of the Plan will be progressively recalled and integrated into the policies and programming tools of the participating entities, encouraging greater convergence of public and private initiatives towards the objectives of the MAB Program.

The municipalities of Trapani, Marsala, Misiliscemi, and Paceco, together with the other entities participating in the governance of the Reserve, will be required to implement and support the Plan's guidelines within their respective administrative and territorial planning responsibilities.

17.4.4 What is the duration of the management/cooperation plan? How often is it revised or renegotiated?

The Management Plan's duration will be defined during its final development and approval by the governance bodies of the future Biosphere Reserve. A ten-year term is expected, with updates after the first five years and annual evaluation of the results.

The Plan will be conceived as a dynamic and adaptive tool, subject to periodic monitoring and updating based on the results achieved, the evolution of the environmental and socioeconomic conditions of the area, and the input from stakeholders.

A system for periodically reviewing the implementation status of actions and the achievement of objectives is already in place, through annual reports prepared by the management bodies. These activities will allow for the identification of any necessary revisions or updates to the Plan.

The overall review of the Plan will also be coordinated with the evaluation processes foreseen by the MAB Programme, including the Periodic Review, in order to ensure coherence between the management of the Biosphere Reserve and the standards of the World Network of Biosphere Reserves.

17.4.5 Describe the contents of the management/cooperation plan. Does it consist of detailed measures or detailed guidelines? Give some examples of measures or guidelines advocate by the plan.

During the third round of local meetings, the participatory process entered the strategic definition phase of the candidacy. Starting from the shared vision that emerged during the initial meetings and the results of the participatory SWOT analysis, stakeholders identified the main priorities for action and the strategic themes on which to build the future Management Plan for the Biosphere Reserve.

This process allowed to translate the needs, opportunities, and critical issues that emerged during the public consultation into a coherent set of strategic axes, structured according to the three fundamental functions of the Biosphere Reserve: conservation, sustainable development, and logistical support for research, education, and training.

The strategic axes identified constitute the reference framework for the preparation of the Policy Document and the future Management Plan of the Biosphere Reserve and are reported in table 70.

Table 70. Strategic axes of the future Management Plan

CONSERVATION	
Let us become GUARDIANS of our landscape and the ecosystem of the Salt Pans, attentive to biodiversity and to the many living beings (animals and plants) that live alongside us.	
1	Guardians of Nature through improved action by the relevant authorities (Nature Reserves), their cooperation, and greater respect for the rules.
2	Guardians of Traditional Activities, a prerequisite for safeguarding the relationship between salt pans–lagoon–agriculture, with particular benefits for the environment.
3	Guardians of the Cultural Landscape, countering new land consumption and recovering historic buildings and structures (mills, bagli,...).

SUSTAINABLE DEVELOPMENT	
We work as GUIDES in exploring activities that foster socio-economic growth while raising awareness of the value of the Salt Pans.	
1	Guides in the process of territorial integration between new interconnected businesses in the salt, agriculture, energy and tourism sectors, drawing on the centuries-old experience of the salt pans from the perspective of a circular economy.
2	Guides in the development of responsible tourism, with particular reference to quality-certified agritourism, wine and food tourism, and cycling itineraries.
3	Guides in the search for new investments, promoting public-private cooperation aimed at countering the potential marginalisation of the salt-pan territory.

LOGISTICS	
Let us become PROMOTERS of sustainable development, educating and training new generations, fostering research and communicating about the Salt Pans in an informed and responsible manner.	
1	Promoters of greater awareness among local communities in support of the development of a culture of legality and the common good.
2	Promoters of a visible and integrated territorial system which – thanks to a network of centres, structures and professionals capable of maintaining, supporting and communicating its unity and values – can strengthen its identity.
3	Promoters of a renewed active role for young people, through cooperation with schools, the use of new technologies and the development of research and innovation projects with universities.

CONSERVATION
Let us become GUARDIANS of our landscape and the ecosystem of the Salt Pans, attentive to biodiversity and to the many living beings (animals and plants) that live alongside us.

SUSTAINABLE DEVELOPMENT
We work as GUIDES in exploring activities that foster socio-economic growth while raising awareness of the value of the Salt Pans.

LOGISTICS (EDUCATION AND TRAINING)
Let us become PROMOTERS of sustainable development, educating and training new generations, fostering research and communicating about the Salt Pans in an informed and responsible manner.

17.4.6 Indicate how this management/cooperation plan addresses the objectives of the proposed biosphere reserve (as described in section 13.1).

The future Management Plan for the Saline di Sicilia Biosphere Reserve will be designed to contribute to the achievement of the three strategic objectives identified in the candidacy, fully consistent with the conservation, sustainable development, and logistical support functions envisaged by the MAB Programme.

1. Conserve and enhance the cultural landscape of the salt pans and the associated ecosystems

The first objective concerns the integrated protection of the Trapani and Marsala salt pan system as a living cultural landscape, the result of centuries of interaction between humans and nature. Conservation will focus not only on natural habitats and species of conservation interest, but also on the traditional practices that contributed to their formation and maintenance.

In this context, the Management Plan will promote coordination between existing protection tools, starting with the Regional Nature Reserves and Natura 2000 sites, encouraging greater integration of conservation policies within a unified territorial vision. Particular attention will be paid to maintaining traditional salt culture, recognized as a key element for the conservation of coastal wetland habitats, the historic landscape, and associated biodiversity.

The Biosphere Reserve also intends to contribute to the process of updating and improving ongoing conservation measures, promoting an approach capable of integrating nature protection with the sustainability of traditional production activities.



Ph: Michele Fundarò

2. Building a shared territorial agenda for sustainable development

The second objective is to strengthen cooperation between the various local stakeholders by building a shared vision of sustainable development inspired by the principles of the United Nations 2030 Agenda. The Management Plan will act as a platform for coordinating and leveraging the many existing experiences in the area, fostering synergies between projects, institutions, and stakeholders. Priority areas include enhancing the salt supply chain, promoting traditional local products, sustainable innovation in production systems, responsible tourism, and promoting the circular economy.

Particular emphasis will be placed on economic activities that contribute to the active conservation of the territory, such as the production of traditional sea salt, birdwatching, nature tourism, sailing, viticulture, olive growing, and other agricultural productions that are integral to the area's identity.

The goal is to transform the Biosphere Reserve into a tool for integrating territorial policies, promoting a lasting balance between the protection of natural heritage and the socioeconomic development of local communities.

3. Establish a Euro-Mediterranean laboratory for sustainability, research and innovation

The third objective involves transforming the Biosphere Reserve into an open territorial laboratory dedicated to research, training, experimentation, and the exchange of best practices on sustainability issues.

The area already hosts numerous research activities regarding coastal ecosystems, biodiversity, hydrology, wetland management, and climate change. The Management Plan aims to integrate these experiences into a common strategy, gradually expanding its focus to include socioeconomic, cultural, and anthropological aspects.

The establishment of a Permanent Observatory of the Biosphere Reserve has been proposed, coordinated by the University of Palermo, with the involvement of the Trapani University and other interested research institutions. The Observatory could serve as a permanent platform for monitoring environmental and socioeconomic phenomena, generating scientific knowledge, supporting decision-making processes, and disseminating knowledge within the national and international network of Biosphere Reserves.

Through these three objectives, the Management Plan aims to make the Saline di Sicilia a model of integration between biodiversity conservation, cultural heritage enhancement, local community participation, and sustainable development, fully consistent with the mission of the MAB Program.

17.4.7 Is the plan binding? Is it based on consensus?

The Management Plan for the future Biosphere Reserve will not introduce new regulatory or administrative regimes in addition those already provided for by current legislation. Its main objective will be to coordinate, integrate, and provide strategic direction among the various planning and management tools already in place in the area, fostering greater coherence between the objectives of biodiversity conservation, enhancement of the salt pans' cultural landscape, and sustainable development of local communities.

The Plan will be developed through a participatory process involving public bodies, protected area managers, salt industry operators, associations, scientific institutions, businesses, and local communities. For this reason, it will be based on broad regional consensus and the shared strategic objectives of key stakeholders.

In this sense, the Management Plan will primarily constitute a collaborative governance tool, aimed at:

- harmonize the directions of the different planning levels present in the territory;
- reduce possible overlaps or inconsistencies between administrative tools and skills;
- facilitate the resolution of conflicts between different land uses;
- promote shared decisions and integrated long-term strategies;
- strengthen stakeholders' sense of co-responsibility with respect to the objectives of the Biosphere Reserve.

Its effectiveness will therefore derive not from the introduction of new obligations, but from the ability to build consensus, institutional coordination, and cooperation among the various entities operating in the territory.

17.4.8 Which authorities are responsible of the implementation of the plan, especially in the buffer zone(s) and transition area(s)? Please provide evidence of the role of these authorities.

The authorities responsible for implementing the future Biosphere Reserve Management Plan will be the public bodies and institutional entities currently responsible for planning, management, and protection in the affected area. The implementation of the Plan's actions will take place through a coordinated governance model, aimed at integrating existing management and planning tools.

Specifically, the provisions of the Natura 2000 Network Management Plans and other existing environmental protection instruments, implemented by the competent authorities, will continue to apply in the buffer zones. In the transition areas, implementation of the actions will be ensured primarily by the municipalities concerned through their own urban and land-use planning tools, as well as through specific agreements and cooperation initiatives with other entities involved in the management of the Biosphere Reserve.

The role of these authorities is evidenced by the administrative and management powers attributed to them by current legislation and by the planning and protection tools already in place in the candidate territory.

17.4.9 Which factors impede or help its implementation (e.g. reluctance of local people, conflicts between different decision-making levels).

Among the main factors that could influence the implementation of the Management Plan is the perception, expressed by some stakeholders during the consultation process, that the system of existing environmental and landscape constraints could limit some opportunities for economic development and innovation, particularly in the sectors of traditional salt cultivation, sustainable tourism, and recreational activities related to the Stagnone lagoon system.

This perception concerns not so much the conservation objectives, which are widely shared by most local stakeholders, but rather the need to improve coordination between the various protection tools and to make authorization and decision-making processes more understandable and predictable.

A further element of complexity is represented by the presence of numerous institutional bodies with competing responsibilities in land management, a condition that can lead to procedural overlaps and delays in the implementation of interventions and projects.

At the same time, the area presents important factors that favour the implementation of the Management Plan. These include the strong territorial identity associated with the salt pans, the presence of a consolidated system of protected areas, the growing collaboration between public bodies and stakeholders, the vitality of the local community, and the interest shown by younger generations in sustainability and the enhancement of environmental and cultural heritage.

In this context, the future Biosphere Reserve will play a fundamental role as a permanent platform for dialogue, coordination, and mediation between the various interests present in the area. Through participatory processes, ongoing consultation tools, and shared governance, the Reserve will help strengthen consensus around conservation and sustainable development strategies, fostering more shared solutions and a more effective integration of environmental protection, traditional production activities, and local development.

The active participation of local communities and stakeholders will therefore be an essential condition for ensuring the effectiveness and long-term sustainability of the actions envisaged in the Management Plan.

17.4.10 Is the biosphere reserve integrated into regional/national strategies? Vice versa, how are local/municipal plans integrated into the planning of the biosphere reserve?

The proposal for the Sicilian Salt Pans Biosphere Reserve is part of a consolidated framework of strategies and planning tools operating at the international, national, regional, and local levels. The nomination is not an isolated initiative, but represents an element of integration and coordination among existing policies that pursue convergent objectives of biodiversity conservation, cultural heritage enhancement, climate change adaptation, and sustainable development.

At the international level, the candidacy directly contributes to the implementation of the MaB Programme and the Sustainable Development Goals of the 2030 Agenda, as well as to the management of the Ramsar site, promoting a territorial management model based on a balance between ecosystem conservation, the well-being of local communities, and sustainable economic development.

At the national level, the nomination is consistent with the guidelines of the Italian National Biodiversity Strategy, the conservation policies of the Natura 2000 Network, the tools for adapting to climate change, and the strategies for protecting and enhancing historic cultural landscapes. Specifically, the Biosphere Reserve contributes to the protection of one of the most significant historic productive landscapes in the Mediterranean, where biodiversity conservation is closely linked to the continuation of traditional salt production activities.

At the regional level, the proposal is consistent with Sicily's Regional Strategy for Sustainable Development, the planning of protected natural areas, the Trapani Area 2 Landscape Plan, and the management tools for the Natura 2000 sites of the Trapani and Paceco Salt Pans and the Marsala Stagnone. The presence of these tools provides a consolidated institutional foundation on which the future Biosphere Reserve can develop a more effective integration between environmental conservation and territorial development.

At the same time, the future Management Plan for the Biosphere Reserve will be built on the planning and programming tools already adopted at the local level. Municipal urban plans, tourism development strategies, cultural heritage enhancement tools, environmental programs, and economic development initiatives of the municipalities of Trapani, Paceco, Misiliscemi, and Marsala will constitute fundamental references in defining the Reserve's actions.

From this perspective, the Biosphere Reserve will not overlap with existing plans, but will function as a tool for multilevel integration and coordination, fostering the convergence of public policies and initiatives by various local stakeholders toward common goals. The future Management Plan will therefore serve to create operational links between the various planning levels, leveraging existing synergies and promoting a shared long-term vision for the entire Saline di Sicilia area.

17.4.11 Indicate the main source of the funding and the estimated yearly budget.

During the application and launch phase of the future Biosphere Reserve, the main source of funding is the Chamber of Commerce, Industry, Crafts and Agriculture of Trapani, which has allocated a budget of approximately USD 40,000 to support the activities of the Promotion Committee until the new governance system will be fully in place. This financial allocation will ensure the coordination of application activities, the participatory process on the territory, the preparation of governance tools, and the development of future Management Plan.

At the same time, the process of defining the Biosphere Reserve's permanent governance system is ongoing; within this framework, stable funding mechanisms will be established, based on contributions from participating stakeholders, starting with the institutions that have promoted the nomination.

The Sicilian Regional Government has also expressed its willingness to support the future management of the Biosphere Reserve through the provision of human and financial resources, thereby strengthening the initiative's institutional sustainability over the medium and long term.

Under the permanent management framework, the resources required for the operation of the Biosphere Reserve may derive from a combination of contributions from institutional partners, regional, national and European funding programmes, dedicated projects, partnership agreements, and other funding opportunities consistent with the objectives of the MAB Programme.

The final annual budget will be determined upon the establishment of the permanent governance structure and the approval of the Management Plan.

17.5 Conclusions

The effective functioning of the future Saline di Sicilia Biosphere Reserve will be ensured by the presence of a well-established and mature territorial system, characterized by a long-standing tradition of natural resource management, a comprehensive framework of environmental protection measures, and a local community that recognizes the salt pans as a fundamental component of its cultural, social and economic identity.

The nomination does not arise from the need to create a new conservation or territorial development system from scratch. Rather, it seeks to connect and coordinate the expertise, experience, initiatives and governance arrangements already existing within the territory, providing them with a shared strategic vision and enhancing their capacity for cooperation at the local, national and international levels.

One of the main strengths of the nomination lies in the unique nature of the proposed territory. The Trapani and Marsala salt pans represent a rare example of a living cultural landscape, in which biodiversity conservation, traditional salt production, the protection of historical heritage, and the development of local communities have evolved in an interdependent manner over the centuries.
In this context, human presence does not constitute a factor of ecosystem disturbance; rather, it is an essential component of their maintenance and long-term viability.



Ph: Salvatore Sinatra

Conservation Function

Conservation will be ensured by the presence of a natural elements of international significance, already subject to multiple forms of protection and management. The lagoons, salt marshes, halophilous habitats, and coastal wetlands are home to species and habitats of community interest and represent one of the most important ecological systems in the central Mediterranean for migratory birds.

The future Biosphere Reserve will help strengthen coordination between the various existing conservation regimes, promoting integrated management of Regional Nature Reserves, Natura 2000 sites, and other forms of protection in the area.

A central element of the conservation strategy will be the recognition of the role of traditional salt cultivation as an active land management practice. Maintaining salt production, the hydraulic network, the embankments, and historical infrastructure is essential for the conservation of the salt pans' habitats and cultural landscape. For this reason, protecting biodiversity and supporting traditional activities will be considered complementary and mutually dependent objectives.



Ph: Nina Daniloviić

Sustainable development function

The development function will be pursued by promoting economic models compatible with the conservation of the area's natural and cultural resources.

Particular attention will be paid to enhancing the traditional sea salt supply chain, strengthening local production with distinctive identity, developing nature and cultural tourism, promoting environmental education, and promoting innovative forms of circular economy and sustainable entrepreneurship.

The Biosphere Reserve intends to contribute to the development of a shared territorial agenda, capable of networking the numerous existing initiatives and orienting them towards the goals of the United Nations 2030 Agenda. From this perspective, the salt pans could become a model of development in which environmental conservation, innovation, economic competitiveness, and the quality of life of local communities are mutually reinforcing.

Logistics support function

Logistical support will be provided by an existing network of research institutions, universities, schools, environmental education centres, associations, and civil society organizations.

The future Biosphere Reserve will offer a stable platform for environmental monitoring, scientific research, the collection and sharing of territorial data, the testing of innovative sustainable management practices, and the implementation of educational activities aimed at schools and the public.

Of particular importance will be the proposal to establish a Permanent Observatory of the Biosphere Reserve, coordinated by the University of Palermo, aimed at integrating existing research activities and promoting an increasingly in-depth knowledge of the ecological, economic, social and cultural processes that characterise the territory.

From this perspective, the Saline di Sicilia will be able to establish themselves as a Euro-Mediterranean laboratory of sustainability, open to international scientific cooperation and the exchange of best practices with other Biosphere Reserves.

Participation of local communities

One of the main factors that will ensure the long-term sustainability of the Biosphere Reserve will be the direct involvement of local communities in decision-making processes and in the management of activities.

The nomination is the result of a broad participatory process involving local authorities, salt workers, cultural and environmental associations, schools, businesses, young people, universities, and citizens. This legacy of relationships and collaboration forms the foundation upon which the governance of the future Reserve will be built.

Particularly important is the involvement of younger generations, who, already during the application phase, formed their own MAB Youth Group and were involved in defining the region's strategic priorities. Similarly, the involvement of schools, the research community, and civil society organizations will contribute to consolidating a widespread and shared culture of sustainability.

The Reserve's governance will therefore be based on permanent participation, consultation, and co-planning tools, capable of ensuring ongoing dialogue between institutions, local communities, and stakeholders.

Conclusions

The long-term sustainability of the Saline di Sicilia Biosphere Reserve will be ensured by maintaining and strengthening the centuries-old relationship between local communities and the salt pan ecosystems. In this area, biodiversity, cultural landscape, traditional economic activities, and community identity are inseparable parts of a single socio-ecological system.

The future Biosphere Reserve does not aim to introduce new constraints, but to build a shared, long-term vision capable of integrating nature conservation, sustainable development, and social innovation. Through participatory governance, the involvement of younger generations, the contribution of scientific research, and the valorization of traditional activities, the Saline di Sicilia could become a model for the sustainable management of Mediterranean coastal landscapes.

This integration between nature, culture, production, knowledge, and participation represents the main guarantee of the full satisfaction of the three fundamental functions of the MAB Program and the success of the future Biosphere Reserve.

“Salt pans exist because man built them.
Habitats exist because salt workers continue to manage them.”

(Giorgio)



Ph. Patrizia Galia



Ph: Giovanni La Francesca

18. SPECIAL DESIGNATIONS

Name:

UNESCO World Heritage Site

(✓) Ramsar Convention Site on Wetlands: Ramsar Site of the Trapani and Paceco Salt Pans Oriented Nature Reserve

(✓) Other international/regional conservation conventions/guidelines: Natura 2000 Area 'Trapani and Paceco Salt Pans'

(✓) Long-term monitoring site (specify) the Natura 2000 site 'Saline di Trapani e Paceco' is subject to long-term monitoring

Long-Term Ecological Research Site (LTER)



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19. SUPPORTING DOCUMENTATION

The below listed documents are fully provided in electronic form in the candidacy web site (https://www.candidaturamabsalinedisicilia.it/).

19. 1. Location and zoning map with coordinates
19. 2. Land use map
19. 3. List of legal documents
19. 4. List of land use and management/cooperation plans
19. 5. List of species
19. 6. List of main bibliographic references
19. 7. Original letters of approval pursuant to paragraph 5
19. 8. Further supporting documentation
Annex 1
Annex 2



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