

Touristic Fluxes and Carrying Capacity

Circeo scale, Italy





Co-Evolve4BG

Analysis of Threats and Enabling Factors for Sustainable Tourism at Pilot Scale

Touristic fluxes and carrying capacity

Circeo scale, Italy



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OVERVIEW

The present document was produced in the framework of **Co-Evolve4BG** project “*Co-evolution of coastal human activities & Med natural systems for sustainable tourism & Blue Growth in the Mediterranean*” in relation to Threats and Enabling Factors for maritime and coastal tourism development on a national scale” Co-funded by ENI CBC Med Program (Grant Agreement A_B.4.4_0075).

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REVIEW

Contributors

Serena MUCCITELLI, PhD

📍 U-Space, Italy

Stefano MAGAUDDA, PhD

📍 U-Space, Italy

Carolina POZZI, Architect

📍 U-Space, Italy

Reviewers

Erica PERONI, Engineer

📍 Lazio Region, Regional Tourism Agency, Italy

Mohamed Amine HELALI, PhD

📍 University of Sousse, Faculty of Earth Sciences, Tunisia

Nahed MSAYLEB, PhD

📍 Lebanese University, Faculty of Agriculture and Veterinary Sciences, Lebanon

Supervisors

Bechir BEJAOU, PhD

📍 National Institute of Marine Sciences and Technologies, Tunisia

Giuliano TALLONE, PhD

📍 Lazio Region, Regional Tourism Agency, Italy

LAYOUT

Khouloud ATHIMEN, Engineer, Technical Coordinator

📍 National Institute of Marine Sciences and Technologies, Tunisia

Houaida BOUALI, Engineer

📍 National Institute of Marine Sciences and Technologies, Tunisia

Mohamed ALI BRIKI, Engineer

📍 Coastal Protection and Planning Agency, Tunisia

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Abstract

Circeo National Park is a MAB reserve dating back to 1977. In 2013 it has extended its territory to the current boundaries today, which include Sabaudia and San Felice Circeo municipalities as well as some parts of Latina and Terracina municipalities. In fact, the area is endowed with beautiful landscapes, rich biodiversity, cultural and historical heritage. It has become a popular destination as well for tourists thanks to its proximity to Rome. In fact, tourism is the main activity with about 2 million people visiting the reserve every summer. Besides, beach tourism has become the main tourist activity in the area, and it represents an important economic driver and an employment source for the local population especially during summer months. Other tourist activities include boat tourism, nature tourism, school tourism and archaeological tourism.

ISTAT data show that the accommodation establishments number, in the municipalities of the MAB area, has increased over the past years. For example, in 2009 there were only 173 lodging establishments, while in 2019 there are 277. This increase is mainly due to the shortage in appropriate hotel establishments. Undoubtedly, Tourism in the Pontine area plays a key role in Latina province economy, but at the same time it is characterized by its seasonality, which generates significant pressures, especially in the seaside resorts. The Circeo MAB Nature Reserve has one of the few dune systems which are still intact on the Pontine coast. Yet, it has been exposed to more significant anthropogenic influences and climate change. Besides, the beach cleaning and levelling, often carried out by mechanical means, leads to the beach's natural morphology destruction.

The main limiting factors for the coastal tourism sustainable development Circeo MAB Reserve are mainly: i) poor accessibility, ii) climate change, iii) seawater quality degradation, iv) coastal erosion, and v) seasonality.

The main opportunities related to the MAB area are mainly: i) The Circeo MAB Reserve, ii) Sustainability, iii) De-seasonalization and tourist service diversification. Therefore, in order to promote Blue Tourism, it is necessary to adopt measures that aim not only at promoting the tourist season extension (de-seasonalization), but also technologies and tourist activities with lower environmental impact.

I. Touristic fluxes and carrying capacity

I.1. Characteristics of Coastal tourism in Circeo MAB Reserve

Circeo National Park is a MAB reserve dating back to 1977. In 2013 it has extended its territory to the current boundaries today, which include Sabaudia and San Felice Circeo municipalities as well as some parts of Latina and Terracina municipalities. In fact, Circeo National Park was established in 1934 (Law 285/1934) to preserve, to protect, and to enhance. Besides, it is established to maintain the natural heritage as well as to promote and develop tourism and its related activities.

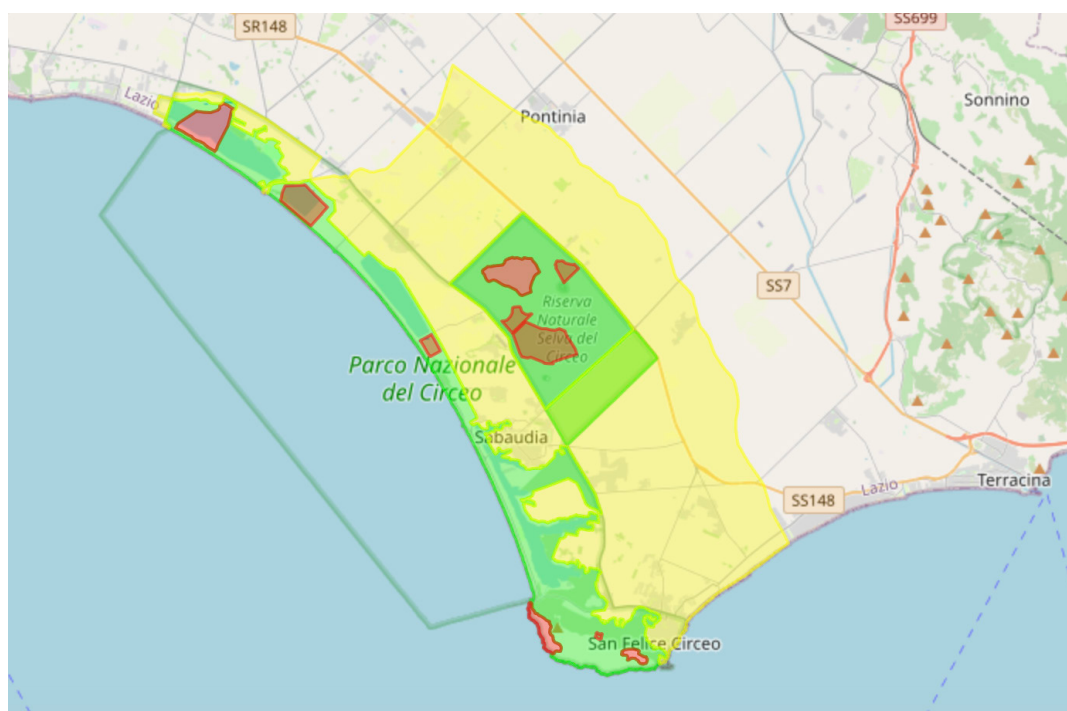


Figure 1. Boundaries of the MAB Reserve (sito del Parco Nazionale Circeo)

The Circeo Biosphere Reserve has a territory zoning that reveals the gradual human presence in the area. Thus, the reserve central areas are uninhabited, while the buffer zones are populated by about 250 inhabitants (increasing to about 3,000 in summer). The transition zones include the villages of Sabaudia and San Felice Circeo, which are home to about 8,000 and 4,000 people respectively.

The area is endowed with beautiful landscapes, great biodiversity, and cultural and historical heritage. It is also a popular destination for tourists due to its proximity to Rome. In fact, tourism is the main activity with about 2 million people visiting the reserve every summer.



Figure 2. Panoramic view of the *Promontorio del Circeo* (Piano Parco Nazionale del Circeo)

I.1.1 Beach tourism

Beach tourism is the main tourist activity in the region, and it represents an important economic and employment factor for the local population especially during the summer months. From the latest statistics of the National Institute for Tourist Research ISNART (Report on the mapping of the Province of Latina), it revealed that the Latina Province coastal area generally registered 2.1 million stays, with 605 thousand arrivals, and more than 1,900 operating tourist establishments. Therefore, it stands for 6% of the tourist traffic in the region, the largest tourist flow to Rome and its province.

The beaches are mainly sandy and there are numerous bathing establishments, equipped with sunbeds and umbrellas at various areas offering appropriate services and amenities. The crystal clear and transparent sea has a shallow and sandy seabed, ideal for bathing and swimming. In addition, various water sports such as canoeing, kite surfing, windsurfing, sailing, and diving can be practiced on the coast.

All four municipalities (Latina, Sabaudia, San Felice Circeo, Terracina) have been awarded the 'Blue Flag' recognition by the Foundation for Environmental Education (FEE). "Blue Flag" is a voluntary ecolabel awarded to seaside resorts that meet sustainable land management criteria, such as bathing waters quality criteria as well as the available services such as the beaches cleanliness and tourist landings.

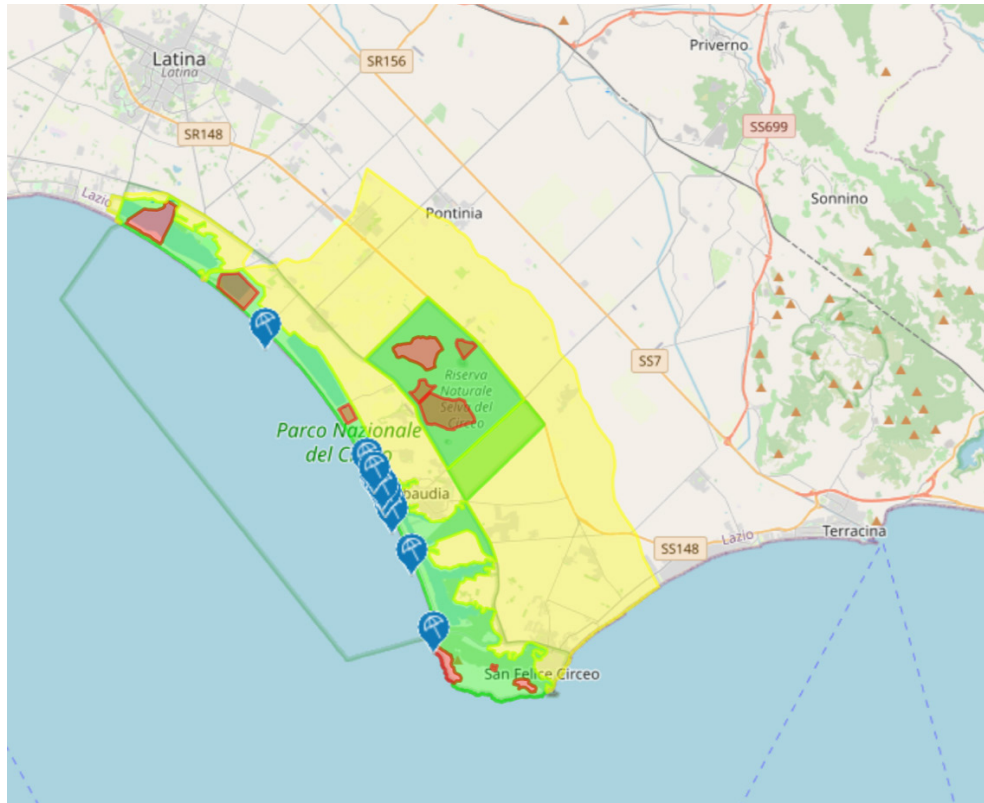


Figure 3. Bathing facilities



Figure 4. Bathing facilities in the Circeo National Park

I.1.2 Yachting tourism

The Pontine coastline is of great interest for tourist activities related to recreational boating, mainly focused on the connections with the Archipelago Ponziano. This is thanks to its territorial proximity, and in general the possibility of maintaining boats throughout the year. The main existing port structure is that of San Felice Circeo. There is also the canal port of Rio Martino in Sabaudia and that of Porto Badino in Terracina, as well as the port of Terracina itself. Moreover, over the last few years, on Lake Paola after a first temporary authorization in 1985, a de facto situation has developed that has led to a significant increase in boats number. The demand for berths in this sector exceeds the availability of existing structures, which has led to numerous initiatives in the area aiming at the construction of new tourist ports: the Foce Verde port in Latina, the new Rio Martino port between Latina and Sabaudia (with ferries to Ponza), the planned permanent port on Lake Paola, the doubling of the port of San Felice Circeo and the Torre Olevola port in San Felice Circeo.

Table 1. Marina and touristic harbors

Municipality	Marina Name	Capacity of the Port: Number of BERTHS
Latina	Porto di Rio Martino	200
Sabaudia	Torre Paola	N/A
San Felice Circeo	Darsena Soc. Neanderthal Beach s.a.s.	30
	Darsena "Circeo Park Hotel": La Stiva	30
	Darsena "Stabilimento Il Cormorano"	20
	Darsena Soc. Lido del Circeo s.n.c	30
	Porto di San Felice Circeo	250
Terracina	Darsena Traianea/Foce Sisto	1,000
	Porto Badino/Canale Portatore	800
	Darsena Quattro Stelle	200

I.1.3 Nature tourism

Other tourist unseasonal activities are offered by the Circeo National Park, a protected area of great naturalistic and cultural importance. The Park Administration organizes activities and environmental education and interpretation programs for all age groups, to reach as many visitors as possible and to exhibit the park natural beauty and its value. The Park Administration also manages the Sabaudia Visitor Centre and Museum

and collaborates with associations and institutions in the region through the Dissemination and Participation Service to plan, implement and offer contribution, awareness, promotion, education, and environmental interpretation activities for both tourists and the local population.

The area also offers numerous opportunities for sports and hiking activities. The roads network of the Circeo promontory extends for 21 km in a very evocative and fascinating environment, crossing the entire promontory, and connecting the most interesting interest with natural landscapes. Through this network it is possible to reach places of great historic and cultural value, such as the historic center of San Felice Circeo, the Acropolis of Circeo with its Cyclopean walls, the 16th century coastal fortifications of Torre Paola and Torre Fico or the Napoleonic outpost of the “Batteria” at the foot of the promontory, directly into the sea. In addition to places of great historical value, shrouded in mysterious and legendary aura, we pass through natural environments of great ecological and scenic value. The path goes through holm oak and cork oak woods, with very old trees, to the typical Mediterranean scrub and every step along the way opens new panoramic views and offers the opportunity to discover the local living fauna. In fact, nature and protected area tourism have increased steadily in recent years. The value of the park from an ecological point of view (dunes, lakes, marshes, forests, promontory) in moving specific tourism related to the use of natural assets (outside the summer) has yet to be evaluated, but certainly present and relevant at least for tourism institutions. From the CFS surveys at the Visitor Centre in loc. Pantalone in Sabaudia it is estimated that about 100,000 specific visitors come to visit the Park. In fact, 12,500 among them come from schools specifically in the spring. For the Borgo di Fogliano, it is estimated 40 to 50 thousand visitors are estimated mainly in spring and bridge weekends, on Sundays in summer and until the end of September and the beginning of October. In 2008 about 10,000 people participated in events organized by the park and about 25,000 people participated in guided tours held by the Park Authority in collaboration with ARP, the Pangea Institute (which alone guided about 15,000 people), the Literary Parks, Legambiente, LIPU and WWF. About 8,500 people visited the Park Museum.



Figure 5. Back-dunes and lakes (Parco Nazionale del Circeo Plan)

I.1.4 School tourism:

School tourism is already a reality for the park, especially at the Visitor Centre where every spring (late March to early June) about 250 buses arrive transporting almost 12,500 school children and teachers.



Figure 6. Environmental education and interpretation (Circeo National Park Archives)

1.1.5 Archaeological tourism

Other important values with great potential for tourism, especially out of season, are the prehistoric and archaeological features of the area. The fulcrum as an “attractor” in this regard is undoubtedly the Villa of Domitian. In fact, it is an exceptionally complex value known only to experts. Yet, it would have a potential equal to the famous sites for numbers of visitors quite different from the current ones (in the order of a few thousand: about 4,000). In addition, there are many other potential “secondary” attractions in the area for archaeological tours and the like. They are currently being catalogued to offer tourists a tour that can strengthen tourist potential. There are also numerous pre-Roman sites such as the Acropolis of Circeo (monumental), the Baths of Torre Paola (which can only be visited occasionally), the caves on the Promontory (the most famous is the Grotta delle Capre) or the prehistoric sites on the plain.

1.2. Coastal tourism fluxes and activities in the Circeo MAB Reserve

1.2.1 Accommodation

ISTAT data show that the number of lodging establishments in the municipalities of the MAB area has increased over the last years. In fact, in 2009 there were only 173 accommodation facilities while in 2019 there are 277. This increase is mainly due to hotel establishments shortage, which has increased more than twice as much as in 2009, the year in which data regarding “other accommodation establishments” were not considered. The number of hotels, on the other hand, remained virtually unchangeable. It has been recorded that the largest number of establishments is scored in Terracina Municipality, with 29 hotels and 143 nonhotel establishment, followed by Latina with 18 hotels and 36 nonhotel establishment. Sabaudia and San Felice Circeo both have only 12 hotels and 46 and 52 nonhotel establishments respectively. This is because the municipalities of Latina and Terracina have larger areas, more inhabitants and they are generally easier to reach from the capital. It should also be noted that Terracina is not part of the Circeo National Park, and it has a higher percentage of building areas.

Table 2. Capacity of accommodation structures, by type of accommodation and by municipality: Year 2019 (ISTAT)

Municipalities	Hotels				OTHER													
					Camping		Accommodation for rent		Agritourism		Vacation house		Other		Bed & Breakfast		Total	
	N.	Beds	Rooms	Bathrooms	N.	Beds	N.	Beds	N.	Beds	N.	Beds	N.	Beds	N.	Beds	N.	Beds
Latina	18	1,807	798	805	9	2,997	6	52	2	35	:	:	14	55	5	27	36	3,166
Sabaudia	12	945	453	454	5	1,602	5	42	7	137	:	:	17	88	12	49	46	1,918
San, Felice, Circeo	12	641	332	327	1	184	6	49	2	14	1	54	25	135	17	89	52	525
Terracina	29	1,834	899	852	15	7,248	18	245	6	120	:	:	82	426	22	113	143	8,152

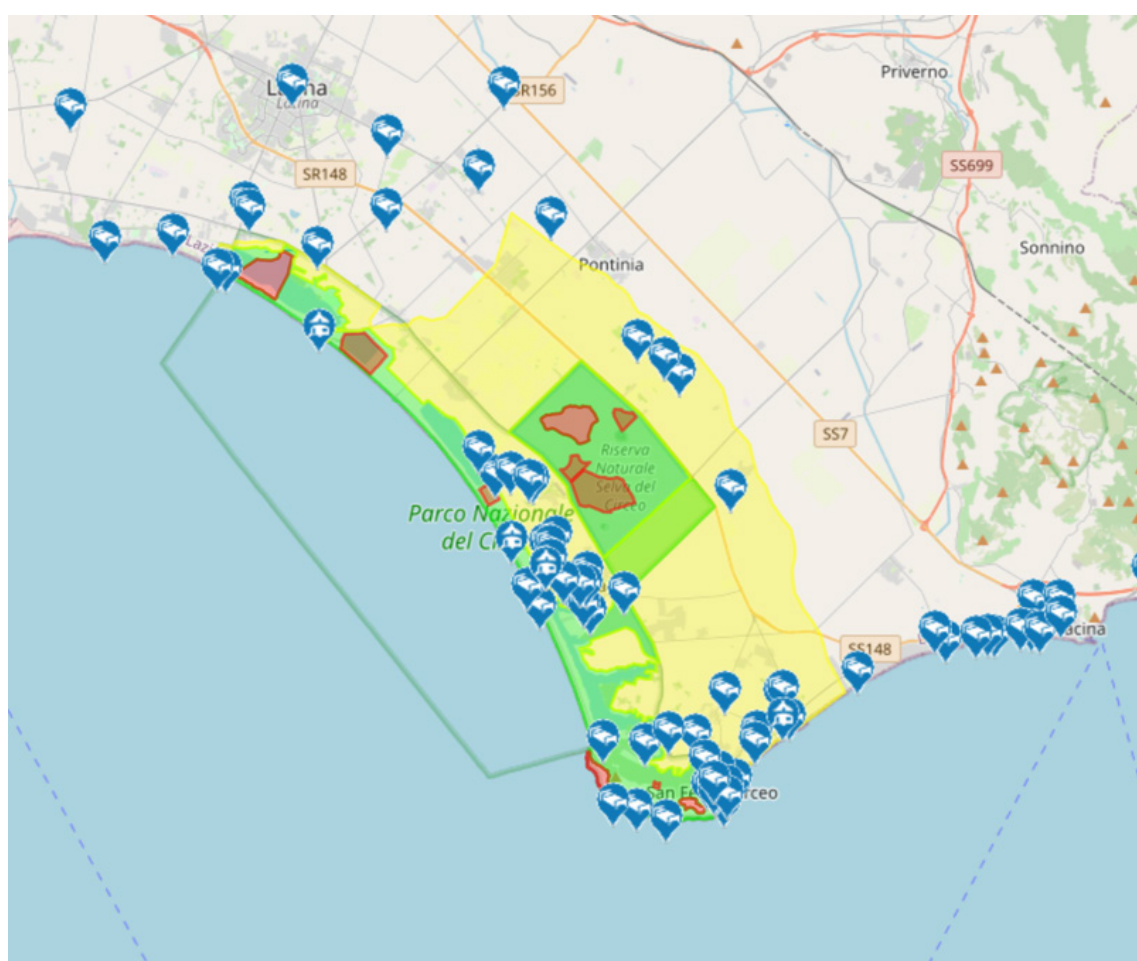


Figure 7. Hotels and campsites (Circeo National Park website)

There are few campsites and holiday villages, 15 in Terracina, 9 in Latina and 5 in Sabaudia, and only one in San Felice Circeo. On the other hand, referring to the 2008 data in the Circeo Park Plan, it can be easily noted that there is a strong dependence on second homes (private accommodation facilities), amounting to 2,759 in Latina, with 13,491 beds, 1,992 in Sabaudia, with 9,741 beds, and no less than 4,671 in San Felice Circeo, with 22,841 beds (APT estimates based on ISTAT data).

1.2.2 Number of movements and presences

ISTAT data show that tourists number registered in the four municipalities showed that the highest was in Terracina (224,382), followed by Latina (184,613). On the other hand, Sabaudia (136,502) and especially San Felice Circeo (72,301, the unique municipality which recorded less than 100,000 admissions in 2019) are much lower, probably due to the lower availability of accommodation facilities. The number of guests recorded in hotels is also particularly higher than that of nonhotel guests. Yet, it is worth mentioning that the evident difference between the total presences of residents and that of nonresidents should be underlined, which confirms that tourism in the MAB Circeo area is mainly local and related to second homes.

Table 3. Presences 2019 (ISTAT)

Municipality	Presences								
	Total			Hotel			Other		
	Resident	Non-resident	Total	Resident	Non-resident	Total	Resident	Non-resident	Total
Latina	162,100	22,513	184,613	116,383	21,445	137,828	45,717	1,068	46,785
Sabaudia	120,372	16,130	136,502	108,863	15,731	124,594	11,509	399,000	11,908
San Felice Circeo	62,485	9,816	72,301	53,542	9,565	63,107	8,943	251,000	9,194
Terracina	181,069	43,313	224,382	102,765	38,273	141,038	78,304	5,040	83,344

Table 4. Arrivals 2019 (ISTAT)

Municipality	Arrivals								
	Total			Hotel			Other		
	Resident	Non-resident	Total	Resident	Non-resident	Total	Resident	Non-resident	Total
Latina	51,918	8,552	60,470	44,764	8,096	52,860	7,154	456,000	7,610
Sabaudia	44,320	6,747	51,067	42,224	6,597	48,821	2,096	150,000	2,246
San Felice Circeo	25,861	4,058	29,919	23,451	3,949	27,400	2,410	109,000	2,519
Terracina	56,433	17,288	73,721	44,361	15,911	60,272	12,072	1,377	13,449

According to ISTAT data it is also possible to check Tourism seasonality in the province of Latina, whereby out of a total of 2,213,779 annual presences, 1,927,637 are registered in the summer period, between May and September, with a peak in August and July.

Table 5. Arrivals and presences in the Province of Latina, 2019 (ISTAT)

Indicators	Arrivals			Presences		
Typology	Total	Hotels	Other	Total	Hotels	Other
2019	626,503	397,953	228,550	2,213,779	976,850	1,236,929
Jan:2019	11,244	10,630	614	26,002	24,740	1,262
Feb:2019	10,900	10,292	608	23,526	22,250	1,276
Mar:2019	15,997	14,323	1,674	34,297	31,685	2,612
Apr:2019	41,749	29,555	12,194	93,880	63,376	30,504
May:2019	61,922	42,941	18,981	131,371	93,507	37,864
Jun:2019	118,138	64,328	53,810	301,724	149,457	152,267
Jul:2019	120,072	63,926	56,146	512,563	181,388	331,175
Aug:2019	120,072	64,392	55,750	742,516	171,774	570,742
Sep:2019	78,488	53,388	25,100	239,403	138,111	101,292
Oct:2019	19,698	17,945	1,753	46,114	42,411	3,703
Nov:2019	12,717	11,816	901	28,431	26,457	1,974
Dec:2019	15,436	14,417	1,019	33,952	31,694	2,258

The same data for the province of Latina, also show a difference between the number of Italian tourists, which amounted in 2019 equal to 1,990,416 and tourists from foreign countries, for which only 223,363 stays were recorded.

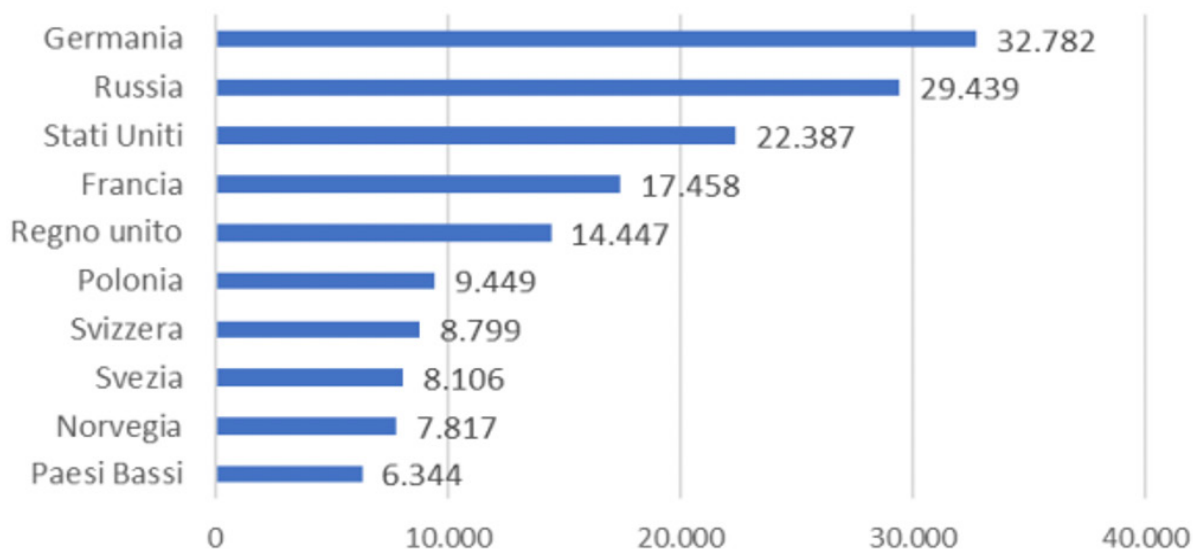


Figure 8. Arrivals and presences in the Province of Latina by origin (2018) (Mapping Report of the Province of Latina: ISNART for the Chamber of Commerce of Latina)

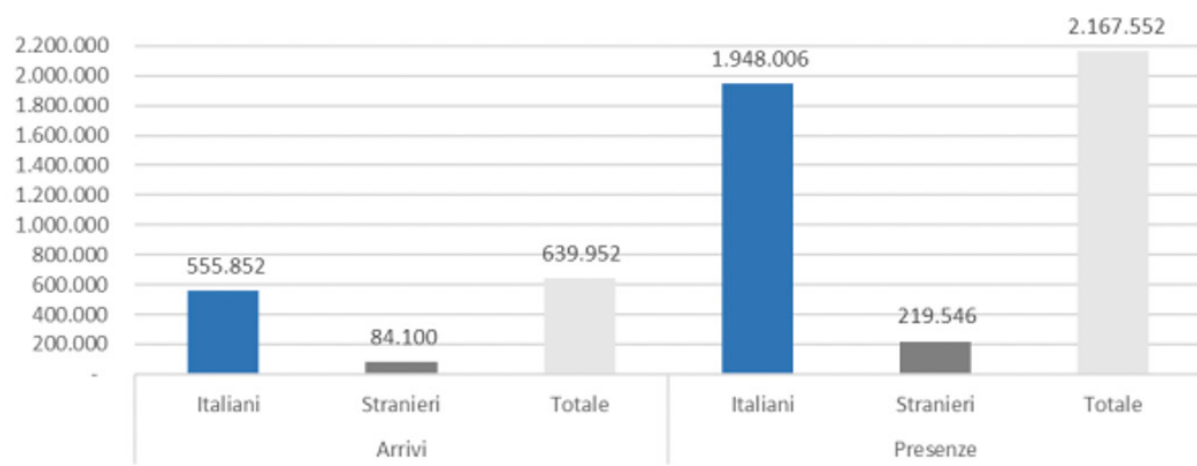


Figure 9. Main foreign markets in the Province of Latina, presences 2018 (Mapping Report of the Province of Latina: ISNART for the Chamber of Commerce of Latina)

I.3. Socio-Economic & Environmental impacts of Coastal tourism activities in Circeo MAB Reserve

Although tourism is considered a “soft” industry, it has a strong impact on the environment in many coastal areas, which are particularly vulnerable to the pressures associated with its growth. The relationship between tourism and the environment can be best described as one of mutual dependence. In fact, tourism is not only highly dependent on environmental quality, but also on environmental quality, that is also highly vulnerable to tourism development. Coastal communities certainly benefit from tourism through the job opportunities creation, increased revenue, infrastructure development, improved health and safety conditions, improved aesthetic standards, *etc.* In fact, raising coastal populations awareness of the coast value under the visitors influence and the resulting investment in environmental protection are other positive effects of tourism development. On the other hand, along with urbanization, mass tourism is considered as one of the main causes of both littoralization and severe ecological losses in coastal areas. Major tourism developments have dramatically altered not only the visual appearance of many coastlines around the world, but also the coastal ecosystems’ natural dynamics. Land grabbing and the demand for resources have led to severe erosion, loss of valuable habitats (such as sand dunes, coral reefs, wetlands, and mangrove forests), the irretrievable destruction of pristine areas, and the loss of rare animal and plant species.

The main impacts of coastal and beach tourism on coastal ecosystems are the following:

1. Ecosystem fragmentation and degradation
2. Disturbance and exploitation of wildlife
3. Solid waste production
4. Water Pollution
5. Air Pollution
6. Alien species
7. Noise Pollution
8. Light Pollution
9. Overuse of natural resources

The Circeo MAB Reserve presents one of the few dune systems still quite intact on the Pontine coast but at the same time exposed to significant degradation both by irresponsible man behavior and climate change.

The main causes of impact are due to anthropogenic actions mainly related to beach tourism. Moreover, construction activity, pollution and beaches trampling have been increasing. In addition to the strong anthropogenic origin disturbances. In some areas the coastal erosion effects can be easily traced. Hence, leading to dunes morphological change and to a relative loss or even total disappearance of some or all the plant communities present.

In the beach area itself, between the sea and the first dunes, the beach cleaning and flattening, offered for bathers and often carried out mechanically, necessarily lead to the beach natural morphological degradation. As a result, plant communities may totally disappear completely due to the progressive fragmentation. In cases where the disturbance is less intense, replacement communities can be observed. Linked to the impact of summer tourism and in particular to the alteration due to excessive trampling for example the replacement duet of *Pycnocomo rutifolii*:*Crucianelletum maritimae*, typical of southern Latium, located in the transition zone between shifting sand dunes and stabilized dunes, usually replacing the *Crucianelletum maritimae*. In this sense, the consequences induced by tourist pressure are less severe, as they often lead to the disappearance of communities, but do not always lead to the complete destruction of species' populations. As for stabilized dunes, there are several forms of disturbance in addition to mowing and fire that affect communities. The settlements and urban centers construction impacts generally entail the complete destruction of these environments, with the flattening, cementing, and waterproofing of sandy coastline vast stretches. The coastal dune of Circeo Park is overlooked by the coastal road built in the 1930s. In the past, the asphalted road caused rainwater runoff, resulting in erosion furrows between the dune and the beach. The people who visited the beach contributed, with their trampling in deepening these furrows and creating new ones. The wind did its part, channeling and eroding the dune in its turn. At the foot of the dune, the use of the beach and mechanical cleaning had almost contributed to the seed dunes disappearance with their herbaceous vegetation which are crucial in dampening the winds parallel to the coast, and the beach. Hence, leading to the loss of its natural profile. In this context, sea erosion could cause severe damage, even at the level of collapsing roads stretches that had to be closed to traffic.

I.4. Issues and key limiting factors of sustainable coastal tourism development in Circeo MAB Reserve

Tourism in the Pontine area undoubtedly has a leading role in the provincial economy, but at the same time it is characterized by its seasonality which generates significant pressure factors, especially in seaside resorts.

Overall, the tourism sector is characterized by:

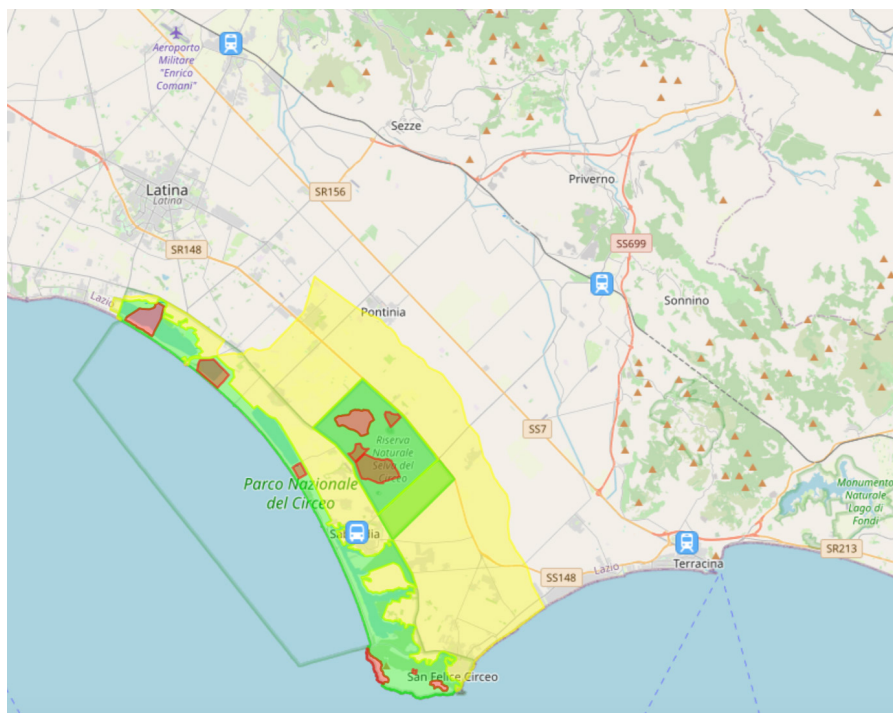
- Strong seasonality, with a tourist season limited mainly to the main bridges and weekends of spring during July and August.
- low availability of facilities opens in periods not of high season.
- Hotel accommodation throughout the province is mainly located in seaside resorts such as Sabaudia, San Felice Circeo and Terracina.
- Strong dependence on second homes, especially in Terracina and San Felice Circeo.
- Constant growth of extra hotel structures, farmhouse accommodation, bed & breakfast, vacation homes, hostels, and vacation homes).

The Pontine Plain coast is characterized by a substantial reliability regarding the sea health state and bathing. Reports on the bathing water state continue to provide significant and steady improvements, with a slight recovery of the stretches of bathing water (at the mouths of rivers and canals). Some beaches have been officially recognized with the awarding of the “sails” of Legambiente and the “blue flags” of Europe, including those of Sabaudia and San Felice Circeo. In addition, the Pontine coast is of great interest for tourism activities related to recreational boating, which is mainly focused on the connections with the Archipelago Ponziano, given the territorial proximity, and in general the possibility of maintaining boats throughout the annual cycle. Of great interest for the connection between pleasure boating activities and the marine environment are the diving activities. From a first survey, in the area there are 5 diving in Cisterna di Latina, 3 diving in San Felice Circeo, 3 diving in Latina and 1 diving in Terracina. A strong attraction is undoubtedly the Circeo National Park, especially as far as nature tourism is concerned. The entire coastal strip is public a property of the Lazio Region and the state concessions, managed by the municipal PUAs. In fact, tourist (bathing) purposes, are mainly located in Marina di Latina (Municipality of Latina), in the southern section of Lungomare Pontino near Lake Sabaudia (Municipality of Sabaudia), in the built-up area of San Felice Circeo (Municipality of San Felice Circeo), along Lungomare Circe up to the mouth of Fosso Canneto and in Badino (Municipality of Terracina).

Specifically, in the Circeo MAB Reserve area:

I.4.1 Poor accessibility

The road network is the main means of access to the area. Yet, there are significant problems, particularly in the summer period, related to the car traffic impact on the coastal area. Moreover, the poor and complicated connections to the neighboring railroad stations, to Rome, to the airports and to the port of Civitavecchia are an important deterrent to the tourist development of the area.



I.4.2 Climate Change

The scenario of a temperature increase has clear direct implications on beach tourism, as a decrease in flows from countries with temperate climates is expected, and there is a change in the seasonality of flows, which will increase during periods of milder temperatures. In addition, several indirect impacts are expected. In fact, they could cause the following: Aggravation of erosion phenomena, leading to the reduction or disappearance of coastal areas (and consequently of infrastructures relevant to tourism); Expansion of the desertification phenomenon and water resources decline, leading to competition between alternative energy uses (and consequently to higher costs for tourism services); Contribution to the population explosion of organisms such as algae and jellyfish (which do not mix well with tourism).

I.4.3 Marine water quality degradation

According to the analyses carried out under the Regional Water Protection Plan (PTAR), the coastal waters related to the area of intervention are found to be in “good” ecological status, as well as the reports on bathing by ARPA, which see the marine coastal area is very reliable in terms of marine health and bathing waters. 97% of the coast is designed for bathing, negative points are found especially in correspondence to the rivers mouths and canals, with problems accentuated at the discharge of the Acque Alte channel. The reports concerning bathing water state continue to provide significant and steady improvements, with a slight recovery of bathing areas (at the mouths of rivers and canals). Among the four municipalities, the only one in which the bathing establishments

report a water quality that is not excellent (but good) is Terracina. Whereas, Latina, i Foce del Rio Martino is considered as the only place with poor water quality. The deterioration and pollution of water quality is a critical issue that affects the coastal tourism bathing, decreasing the attractiveness of the landscape for tourists (in terms of perception of naturalness and cleanliness of beaches and dunes) and compromising their perception of wellbeing (examples are unpleasant odors and respiratory problems), and recreational activities (bathing, snorkeling, walks on beaches and dunes).

Table 6. Water quality (ISMAR)

Municipality	BW Name	y2013	y2014	y2015	y2016
LATINA	1400 MT DX ACQUE ALTE: FOCE VERDE	excellent	excellent	excellent	excellent
LATINA	400 MT SX VIA CASILINA	excellent	excellent	excellent	excellent
LATINA	200 MT SX IDROVORA CAPOPORTIERE	excellent	excellent	excellent	excellent
LATINA	800 MT DX IDROVORA CAPOPORTIERE	excellent	excellent	excellent	excellent
LATINA	150 MT SX FOCE DEL DUCA	excellent	excellent	excellent	excellent
LATINA	800 MT DXS FOCE3 CANALE ACQUE ALTE	excellent	excellent	excellent	excellent
LATINA	500 MT SX FOCE RIO MARTINO	excellent	excellent	excellent	excellent
LATINA	FOCE IDROVORA CAPOPORTIERE	excellent	excellent	excellent	excellent
LATINA	FOCE DEL DUCA	excellent	excellent	excellent	excellent
LATINA	FOCE RIO MARTINO	poor	poor		
LATINA	FOGLIANO	excellent	excellent	excellent	excellent
LATINA	550 METRI DX FOCE ASTURA	excellent	excellent	excellent	excellent
LATINA	200 METRI DESTRA FOCE ASTURA	excellent	excellent	excellent	excellent
LATINA	VALMONTORIO	excellent	excellent	excellent	excellent
LATINA	400 METRI SX FOCE ACQUE ALTE	excellent	excellent	excellent	excellent
SABAUDIA	2300 MT DX RIO MARTINO	excellent	excellent	excellent	excellent
SABAUDIA	100 MT SX IDROVORA LAVORAZIONE	excellent	excellent	excellent	excellent
SABAUDIA	200 MT DX FOCE LAGO CAPROLACE	excellent	excellent	excellent	excellent
SABAUDIA	S. ANDREA	excellent	excellent	excellent	excellent
SABAUDIA	300 MT SX CATERATINO IDROVORA	excellent	excellent	excellent	excellent
SABAUDIA	300 MT DX CATERATINO IDROVORA	excellent	excellent	excellent	excellent

SABAUDIA	LE DUNE	excellent	excellent	excellent	excellent
SABAUDIA	RIMESSAGGIO	excellent	excellent	excellent	excellent
SABAUDIA	VILLA VOLPI	excellent	excellent	excellent	excellent
SABAUDIA	TORRE PAOLA	excellent	excellent	excellent	excellent
SABAUDIA	500 MT DX RIO MARTINO	excellent	excellent	excellent	excellent
SABAUDIA	FOCE IDROVORA LAVORAZIONE	excellent	excellent	excellent	excellent
SABAUDIA	600 MT DX IDROVORA LAVORAZIONE	excellent	excellent	excellent	excellent
SABAUDIA	FOCE LAGO CAPROLACE	excellent	excellent	excellent	excellent
SABAUDIA	FOCE IDROVORA CATERATTINO	excellent	excellent	excellent	excellent
SAN FELICE CIRCEO	500 MT DX GROTTA DELLA MAGA CIRCE	excellent	excellent	excellent	excellent
SAN FELICE CIRCEO	550 MT SX FARO DI TORRE CERVIA	excellent	excellent	excellent	excellent
SAN FELICE CIRCEO	SPIAGGETTA A SX PORTO DI S. FELICE CIRCEO	excellent	excellent	excellent	excellent
SAN FELICE CIRCEO	CENTRO SPIAGGIA MAGA CIRCE	excellent	excellent	excellent	excellent
SAN FELICE CIRCEO	SPIAGGETTA HOTEL CIRCE	excellent	excellent	excellent	excellent
SAN FELICE CIRCEO	SPIAGGETTA LA BUSSOLA	excellent	excellent	excellent	excellent
SAN FELICE CIRCEO	SPIAGGETTA LIBERA SOTTO TORRE VITTORIA	excellent	excellent	excellent	excellent
SAN FELICE CIRCEO	50 MT SX CANALE RIO TORTO	excellent	excellent	excellent	excellent
SAN FELICE CIRCEO	50 MT DX CANALE RIO TORTO	excellent	excellent	excellent	excellent
SAN FELICE CIRCEO	COLONIA MARINA	excellent	excellent	excellent	excellent
SAN FELICE CIRCEO	SAN VITO	excellent	excellent	excellent	excellent
SAN FELICE CIRCEO	TORRE PAOLA SFC	excellent	excellent	excellent	excellent
SAN FELICE CIRCEO	ALFONSO AL FARO: FARO P. CERVIA	excellent	excellent	excellent	excellent
SAN FELICE CIRCEO	FOCE RIO TORTO	good	excellent	excellent	good
SAN FELICE CIRCEO	PUNTA ROSSA	excellent	excellent	excellent	excellent
TERRACINA	MT.100 SX FIUME SISTO	good	good	good	excellent
TERRACINA	MT.100 DX FIUME SISTO	good	good	good	excellent
TERRACINA	VIA VENETO	excellent	excellent	excellent	excellent

TERRACINA	V.LE EUROPA	excellent	excellent	excellent	excellent
TERRACINA	500 MT SX BANCHINA PORTO DI TERRACINA	excellent	excellent	excellent	excellent
TERRACINA	1300 MT SX FOCE CANNETO	excellent	excellent	excellent	excellent
TERRACINA	100 MT SX FOCE CANNETO	excellent	excellent	excellent	excellent
TERRACINA	250 MT SX FOCE FIUME PORTATORE	good	good	good	good
TERRACINA	500 MT DX CANALE PORTATORE	good	good	sufficient	sufficient
TERRACINA	FOCE SISTO	good	good	good	excellent
TERRACINA	FOCE FOSSO ACQUE ALTE DELLA VALLE	excellent	excellent	excellent	excellent
TERRACINA	FOCE CANNETO	excellent	excellent	excellent	excellent
TERRACINA	SCAFA DI PONTE	excellent	excellent	excellent	excellent
TERRACINA	TUMULETTI	excellent	excellent	excellent	excellent



Figure 8. Map of bathing areas Municipality of Sabaudia, San Felice Circeo and Terracina (ARPA, 2018)

I.4.4 Coastal erosion

The greatest impact of coastal erosion on tourism is the reduction in the reception capacity of the bathing establishments due to the setback of the beach. More generally, this phenomenon may lead, in the long term, to a reduction in the reception capacity of the entire coastal system and its related activities, currently mainly characterized by seaside and pure seasonal tourism.

On the other hand, the anthropic impact from tourism pressure appears to be, as highlighted in the ISPRA study ("Anthropic impact from tourist pressure in protected areas: interference on the territory and biodiversity"), particularly affecting the state of the dune beach system. from the point of view of biodiversity and erosion control capacity.

It is therefore essential to identify strategies capable of balancing the functionality of the dune and the effective use of the beach dune system.



Figure 12. Dune erosion



Figure 13. The coastline between Foce canale Caterattino and Torre Paola

I.4.5 Seasonality

The tourism sector image in the area under consideration seems to be conditioned by some obvious factors illustrated as follows: a very strong seasonality, with seasonal tourist limited to the main bridges and weekends only in spring and summer, and during July and August (maximum from mid-July to August 20). It is as well related to a consequent lack of available facilities outside the high season (hotels). Besides, it is related to the hotel system structure that is quite articulated, rather fragile, due to the scarcity of large facilities suitable for the organization of group standard tourist packages. The state of the facilities in Lido di Latina, Sabaudia and San Felice Circeo does not allow the district to be highly competitive in terms of conference tourism offer. The offer is limited by the lack of large halls (400:500 seats and at least one around 1,000 seats), that should be provided in sufficient number, essential infrastructure for national and international conferences organization. It is possible to create a network between the facilities in the city of Latina and those along the coast, to develop a specific project that will lead to significant flows of nonseasonal tourism, along with other initiatives in the same direction.

I.5. Opportunities related to Coastal tourism activities in Circeo MAB Reserve

Today's tourists seek a variety of experiences including cultural and natural attractions, gastronomy, sports, *etc.* in addition to a well preserved and distinctive natural environment. At the same time, people living in traditional tourist areas are increasingly aware of and more concerned about their natural, historical, and cultural heritage. In this context, curbing tourism growth, enhancing tourism product value, attracting a diverse clientele, and improving the offer and services quality are seen as priorities that enable tourism development that satisfies both visitors and those who make a living from it. This is the very essence of the definition of "sustainable tourism". To minimize tourism induced problems and to ensure both Tourism sustainability and coastal resources preservation, more attention needs to be paid to provide proper planning and better integration of tourism into coastal development. Negative impacts and conflicts are primarily due to coastal environments and inadequate planning effectiveness.

I.5.1. The main opportunities related to the area are

Circeo is part of the MAB Program and represents one of the Biosphere Reserves. The MAB (Man and the Biosphere) Program was initiated by UNESCO in the 1970s with the aim of improving the relationship between man and the environment as well as reducing the biodiversity loss through research and capacity building programs. UNESCO then launched the recognition of Biosphere Reserves stating that marine and terrestrial should be managed with a view to the conservation of resources and sustainable development and with the full local communities' involvement.

The Reserve proclamation purpose is to promote and demonstrate a balanced relationship between the human community and the ecosystems, to create privileged sites for research, training, and environmental education, as well as poles of experimentation of targeted development policies and land planning. Biosphere Reserves are therefore aimed at encouraging the natural spaces conservation but also at promoting the territory, its economic development, and its cultural specificities. The Biosphere Reserves are therefore real laboratories of sustainable development, able to combine the ecological values conservation functions of the territory with the enhancement of its natural features and local activities addressed in the sense of sustainability.

On January 19, 2017, the seminar “Rural development 2014/2020 and Man and biosphere UNESCO program” was held at the Circeo National Park Area MAB UNESCO: Sabaudia (LT). Experiences, good practices, and opportunities for the rural areas’ sustainable development with high natural value. The seminar outcome revealed concrete opportunities to integrate and share the objectives of the RDP 2014/2020 and the Man and biosphere UNESCO Program. It is possible thanks to the construction of a positive relationship between man and environment, in the wake of the territory development that provides the integration of natural capital, cultural capital and agriculture through the traditional agricultural practices’ protection. It is desirable that the MAB areas, created in 1971 to improve the relationship between man and the environment and reduce the loss of biodiversity growth to become a real sustainable development “laboratory”. Hence, safeguarding local ecosystems and promoting innovative development criteria thanks to a multidisciplinary and transversal approach at economic, environmental, cultural, and social level. The Circeo National Park, which collaborated in the event organization, is proceeding to implement effective interventions especially in the field of water cycle management, organic crops, and rural tourism. The culmination of this path, that the park wants to promote and support, is the creation of a Rural Touristic BioDistrict on the territory with the enhancement of the UNESCO MAB area of the Circeo National Park. This in its turn has become the main objective of the action plan for the implementation of the European Charter of Sustainable Tourism. In fact, the achievement of the latter objective requires the willingness and ability of agricultural and tourism businesses to work together to achieve quality objectives. Which in their turns can make the productions and the entire territory highly competitive both on the national and international market by making superior synthesis of the relationship between conservation and socio-economic cultural development.

1.5.2. Sustainability as an opportunity

Sustainability is a driver of development and a factor of increased turnover. From the data of the National Observatory of the Tourism Chains of Unioncamere revealed that sustainable enterprises grow at least 2% more than the others (Italian average) and sell 1 more room every 10.

The growing attention paid both to sustainability and to the social, economic, and ecological impacts of tourism leads a new tourism culture based more and more on a

greater sensitivity and a further renewed environmental awareness, which is considered as one of the most crucial Tourism components. In fact, Italian and foreign tourists give a score of 8 to the attention paid to the environmental sustainability of Italian tourist destinations, underlining the importance of this aspect in the decision to choose a vacation (National Observatory of Tourism Supply Chains of Unioncamere).

The sustainability culture has become much more widespread than it was until a decade ago. Yet, it is still to be built, explained, and made “familiar” to a system of supply that, due to small and medium size, sometimes struggles to keep up with a necessary “innovation”. It is therefore unequivocal that the binomial “attention to the environment and tourism” is not only a winning choice but a compulsory one, at a time when being sustainable becomes an element of competitive advantage for businesses and local communities.

I.5.3. Seasonal adjustment and diversification of the tourist offer as an opportunity

The Circeo MAB Reserve seem to be subject to significant seasonal tourist flows, concentrated in the summer months. Hence, causing damage not only to the tourist sites but also to the environment and the economy. Moreover, as the potential of the area is not exploited throughout the year, but only in short periods, it can be managed through policies of tourist de-seasonalization, which allow the redistribution of flows on different or longer periods. It is therefore convenient to differentiate the tourist offer by focusing both on cultural sustainable tourism and naturalistic kind as well as on activities that can be carried out throughout the year and not exclusively in the summer season.

- Develop extra seasonal accommodation.
- Promote ecotourism.
- Promote birdwatching.
- Promote Sea diving/Sea Watching.
- Promote Fishing Tourism.

I.6. Policies, plans and programs for sustainable coastal tourism activities

I.6.2. Three-year tourism Plan 2020:2022 of the Lazio Region

The three-year tourism plan is the key tool for the Lazio Region Tourism planning that is provided by the regional law August 6, 2007, n. 13.

The three-year tourism plan 2020-2022 of the Lazio Region defines the most important guidelines, the action strategies, the different clusters, and the objectives for the coming years, starting with an in-depth analysis of the international, national, and regional contexts. This can be achieved through a shared path, initiated by the Department of Tourism through the States General of Tourism within the tour “Lazio, la Regione delle

Meraviglie”, carried out in the summer of 2018. In fact, it represented a moment of listening and comparison in the five provinces of Lazio, and it involved operators, associations, and local administrations, gathered to deeply study the strengths and critical points of the region’s tourism system.

Consistent with the National Strategic Plan of Tourism 2017-2022, the key words of the territorial meetings were the following: SUSTAINABILITY, ACCESSIBILITY, & INNOVATION.

Among the specific objectives of the National Plan is the promotion of integrated and participatory management aimed at the theme of sustainable innovation. This is reflected in a growing attention to sustainability and the social, economic, and ecological impacts of tourism. In fact, setting up a green culture, perfectly integrated with the sustainable growth of the marine and maritime sectors (blue growth) on the socio-economic side in tourist areas, means making the territory highly competitive on tourist markets and against new international competitors.

The perspectives that are intended to be attributed to the three-year tourism plan are numerous. First, focus on the innovative tourism products development, reinvigorate the more mature ones, and renew the use of mono product tourist destinations (e.g.: coastal municipalities seaside tourism through the transformation of seaside tourism in integrated tourism that includes offers and services of complementary chains). Besides, it focuses on developing a balanced economic growth of the entire regional territory and allowing the most marginal areas and / or those that have suffered from the earthquake devastating effects to be able to opt for a new economic and social rebirth.

Objectives are illustrated below:

- Strengthen the brand of the Lazio destination.
- promote the growth of local communities.
- Support the seasonal adjustment and relocation of the tourist offer.

Strategic lines:

- Accessible tourism
- Qualification of workers and entrepreneurs
- Economic growth of local communities
- Specialization of tourism products at territorial level
- The new mobility for tourism

1.6.2. Circeo National Park Plan

The plan (2017) identifies both the strategies and actions that should be implemented for sustainable economic activities with the park’s values, and promotes the following actions:

- 1) “European charter of sustainable tourism” of the park, in collaboration with Europarc
- 2) The brand of the national park as a territorial marketing and tourist destination label (and wider area networks)
- 3) Environmental quality certification of hotels and other accommodation facilities
- 4) Park services and naturalistic tourism and “365 days”.
- 5) Standards for park signage
- 6) Visitor centers and park museums
- 7) Nature trails
- 8) Nature trails
- 9) Areas and structures for birdwatching
- 10) Sport tourism
- 11) Archaeological tourism
- 12) Sustainable beach management as a tool for the defense of the dunes

The activity of the Park Authority aimed at

- Implementing the guidelines of the plans as a prerequisite for a plan revision
- Using of the banks in the Municipalities of Latina, Sabaudia and San Felice, to achieve the best possible environmental compatibility of the structures.
- Providing alternative solutions for those facilities that may be incompatible with the current location.
- Proposing solutions aiming at transforming the structures envisaged by the P.U.A. into a sort of territorial protection capable of preventing and containing uses that could potentially cause damage to the dune system.
- Elaborating an intervention proposal to tackle beach stretches where coastal erosion puts at risk consolidated activities or the waterfront road currently used.
- Preparing an analysis and a proposal on how to manage and use the free beach.
- Preparing a proposal for intervention and environmental recovery for those stretches of dune that have been characterized by forms of degradation and/or erosion.
- identifying those areas where it may be deemed appropriate to ensure more pronounced forms of protection, including identification and perimeter of multifunctional “islands of nature». In fact, these should be not only useful for the conservation of endangered species, but also for portions of dune habitat considered “priority” for the Habitats Directive.
- Preparing an analysis and consequent proposals to improve the environmental insertion and the level of naturalness of the housing and hotel structures that insist on the dune system.

I.6.3. Agro Pontino Coast Contract

The start of Agro Pontino Coastal Contract process is the result of coordinated activities between local stakeholders that began in March 2019 within the European project Interreg Med Coasting “Coastal Integrated Governance for sustainable tourism” coordinated by Lazio Region (Directorate for Housing Policy and Spatial, Landscape and Urban Planning).

The organization of the project workshops led to the signing of the Agro Pontino Coasting Contract Memorandum of Understanding by 20 stakeholders in July 2019, formally entrusting the Province of Latina with the role of coordinating body (PHASE A). The results of the Coasting Project also included the Integrated Preliminary Knowledge Analysis elaboration (PHASE B) as well as the strategy document definition that establishes the medium-term development scenario. The latter was shared and approved by the local stakeholders in October 2019 (PHASE C). The local stakeholder’s involvement process and negotiation coordinated by the Province of Latina within the regional funding framework led the Action Program definition 2022:2025 and the Negotiated Programming Agreement signing on February 23, 2022.

The shared goals are as follows:

- Protection and improvement of surface and groundwater quality.
- Sustainable water resources use.
- Protection of the coastal and marine ecosystem.
- Enhancement of the Pontine Marshes green and blue infrastructure.
- Awareness of the climate change phenomenon.
- Increase in the resilience to climate change in urban, agricultural and tourist areas.
- Mitigation of landslides and flooding events risks.
- Mitigation and monitoring of coastal erosion.
- Improvement of accessibility and sustainability of the coastal area use by reducing human pressure.
- Diversification and seasonal modification of the tourist destination “Agro Pontino” offers and promotions.
- Preservation and enhancement of the landscape’s historical and cultural heritage.
- Improvement of governance and local cooperation for the territory sustainable development.

Specifically, the Strategic Document identifies the following specific objectives and measures related to the strategic axis “Sustainable Tourism”:

Table 7. Agro Pontino Coast Contract Strategic Document: objectives and measures related to the strategic axis “Sustainable Tourism”

Specific objective		Measure	
C.1.1	Improving accessibility and sustainable use of the coastal area, reducing anthropic pressure.	C.1.1.1	Limit vehicle access to the Strada Lungomare and enhance sustainable mobility systems connecting the coastal area.
		C.1.1.2	Evaluate the human load limit that the coastal area can support (carrying capacity of the environment) to develop strategies and actions to increase the sustainability of tourism loads.
		C.1.1.3	Promote communication campaigns and awareness of beach operators and users for Plastic Free beaches.
C.1.2	Diversifying tourism offers and promoting the tourist destination “Agro Pontino”.	C.1.2.1	Draft a regulation for waterways use for sport activities such as rowing and canoeing.
		C.1.2.2	Create and strengthen a mixed mobility network that can connect the inland areas with the coast in a sustainable way (cycle: pedestrian paths, walking paths, coordinated and sustainable public transport).
		C.1.2.3	Map and connect sites of interest in the Agro Pontino (natural, cultural, historical, and architectural) promoting integrated tourist itineraries between the coastal and inland areas.
		C.1.2.4	Develop a common tourist brand for the whole province of Latina that unites the inland areas with the coastal ones.
		C.1.2.5	Capacity building of administrations, tour operators, environmental guides, and schools in order to prepare figures able to know and enhance the values and opportunities of the territory.
		C.1.2.6	Develop 4.0 technologies for a low environmental impact tourism, promote territory management in terms of tourist flows, perception and use, site attraction power analysis.

In addition, the 2022-2025 Action Program identifies the following actions related to the “Sustainable Tourism”:

Table 8. Agro Pontino Coast Contract 2022-2025 Action Program: actions related to the “Sustainable Tourism”

Name	Coordinator	Budget	€ available	Funding source	€ to be found	Possible funding source
CICLOVIE DEL MARE Lotto A	Comune di Sabaudia	754,753.67€	754,753.67€	Ministero Per la Transazione Ecologica (Collab. PNC)		
CICLOVIE DEL MARE Lotto B	Comune di Sabaudia	743,246.33€	743,246.33€	Ministero Per la Transazione Ecologica (Collab. PNC)		
COMPLETAMENTO PERCORSO PEDONALI STRADA VIA DEL LIDO	Comune di Latina	1,456,000.00€	1,456,000.00€	Presidenza Consiglio dei Ministri: Bando Periferie		
CICLABIE S. ANDREA	Comune di Sabaudia	400,000.00€	400,000.00€	Fondi regionali e comunali		
BELLA FARNIA	Comune di Sabaudia	355,000.00€	355,000.00€	Fondi comunali		
BIKE LINE	Comune di Sabaudia	260,000.00€	260,000.00€	Finanz. DL 34/2020		
LUNGOMARE PONTINO	Comune di Sabaudia	2,627,067.00€	2,627,067.00€	Fondi regionali		
Monitoraggio degli Indicatori Europei per il Turismo (ETIS) e lo sviluppo sostenibile delle destinazioni.	Riviera d’Ulisse	50,000.00€	25,000.00€	Banca	25,000.00€	Progetti Europei Contributi regionali o da parte di Enti locali Sponsorizzazioni
Premio Lido Green Marina di Latina	ABC Latina	24,000.00€	24,000.00€	Contratto di Servizio con il Comune di Latina		
Ri:CreAzione	Comune di Terracina	50,000.00€			50,000.00€	Fondi europei o regionali
SPIAGGE E FONDALI PULITI & RECICLAESTATE	Circolo Arcobaleno Pontino Legambiente Aps	11,000.00€	1,000.00€	Fondi propri	10,000.00€	Sponsorizzazioni di attività economiche, altri fondi pubblici, POR FESR
PERCORSI CICLOPEDONALI CANALE ACQUE MEDIE E FIUME ASTURA	Comune di Latina	9,000,000.00€			9,000,000.00€	POR FESR LAZIO 2021:2027 (Mobilità sostenibile), Regione Lazio

Valorizzazione della Mobilità Sostenibile Studio per una "Mobilità Dolce" e della Micromobilità	Comune di Latina	883,000.00€	501,000.00€	MIT, MinAmbiente, Bilancio Comune	382,000.00€	Fondi nazionali e regionali
Percorso ciclabile lungo la ferrovia pedemontana dismessa Velletri:Terracina da Cisterna di Latina (Ninfa) a Terracina (tratto 17 km)	Comunità Montana	913,557.00€			913,557.00€	ASTRAL, POR FESR, PNRR
Stazione del Sole	Pro Loco Borgo Grappa	30,000.00€			30,000.00€	tesseramento soci
L'informazione e la formazione turistica: la mappatura dei PDI (Punti di interesse) e le verifiche sul campo delle emergenze storiche, archeologiche, architettoniche e naturalistiche della Riviera d'Ulisse	Riviera d'Ulisse	100,000.00€	15,000.00€	fondi propri	85,000.00€	fondi europei e regionali
Sentiero di Circe	APS Circe	150,000.00€	1,500.00€	Sponsorship private delle aziende del territorio	148,000.00€	fondi regionali o europei
La Riviera d'Ulisse : Ente Turistico di Terzo Settore : Brand di Certificazione della classificazione delle strutture ricettive e degli stabilimenti balneari e accreditamento delle imprese turistiche	Riviera d'Ulisse	240,000.00€	40,000.00€	fondi propri	200,000.00€	Partecipazione delle imprese ai costi della certificazione
Formazione e comunicazione	ABC Latina	24,000.00€	24,000.00€	Contratto di Servizio con il Comune di Latina		

Diffusione del Sistema ETIS (European Tourism Indicators System)	Riviera d'Ulisse	100,000.00€			100,000.00€	Progetti Europei Contributi regionali o da parte di Enti locali Sponsorizzazioni Contributi CCIAA per l'alternanza scuola:lavoro
Escursionismo sostenibile, canoa sui fiumi e sulle coste	AIGAE Nicola Tasselli (Nick Adventure)	5,000.00€	1.500.00€	fondi propri	3,500.00€	Crowdfunding:pnrr
BANDIERA BLU DEGLI APPRODI da parte dell'organismo internazionale FEE (Foundation Environmental Education)	Comune di Terracina	150,000.00€			150,000.00€	PNRR, fondi Regionali
SMART BEACH	Comune di Latina	300,000.00€			300,000.00€	POR FESR LAZIO 2021:2027
Archivio pubblico delle immagini e video per la promozione del patrimonio culturale ed enogastronomico.	Riviera d'Ulisse	50,000.00€			50,000.00€	Progetti Europei Contributi regionali o da parte di Enti locali Sponsorizzazioni Contributi CCIAA per l'alternanza scuola:lavoro
Slow Food Travel Monti Lepini e Piana Pontina	Slow Food Latina	120,000.00€	45,000.00€		75,000.00€	Bandi e fondi regionali ed europei
TOTALE		18,796,624.00€	7,274,067.00€	,	11,522,057.00€	

The DestiMED project, financed by the European Regional Development Fund within the INTERREG MED program, aims at making ecotourism in the Mediterranean Sea a concrete and valid development alternative, as well as building on the results of previous experiences. DestiMED collects the project MEET legacy (Mediterranean Experience of Ecotourism), which has developed a model for ecotourism promotion in the Mediterranean to improve both quality and sustainability.

As part of this project, the park authority has developed in collaboration with local tour operators and the Lazio Region an ecotourism package: “Water Tales around Circeo National Park and the Agro Pontino”. Immerse yourself in nature, history, and water flow. Discover a diversity of habitats that has no match in Italy, a wonderful and varied ecosystem in perpetually sunny Southern Italy. Each day brings a new way of exploration and discovery: enjoy the beauty of Villa Fogliano and its lake and learn about the history of the noble family, hike to the Circeo promontory to see a wide variety of landscapes, explore the wonders of the lowland forest by bike and Lago di Paola by dragon boat. Learn about the legend of Circe and the local history through the centuries. Smell the scents and colors of the cultivated countryside and farms, and of course taste the typical Italian cuisine of the Agro: Pontino.

Promoting tourism in Protected Areas such as the Circeo National Park, and ecotourism, if well managed, can be part of a strategy to address problems such as excessive seasonality and tourist flows concentration.

The protected area of Circeo can therefore serve as an experimental site and a catalyst to reduce detrimental impacts and improve sustainability. There is a potential for the ecotourism development activities not fully exploited in the Mediterranean. This requires higher quality ecotourism “products” within the protected areas, with an emphasis both on nature and culture. Hence, contributing positively to local economies conservation and ensuring low environmental impacts.

Therefore, in Circeo Park, the sustainable activities, facilities and services offered by ecotourism packages are to be evaluated at the local level, through the calculation of the Ecological Footprint.

The Ecological Footprint (EF) is a natural resource use accounting tool, used by governments, corporations, institutions, and NGOs to measure how much of the planet’s ecological capacity is required and consumed for a given activity or population.

The Ecological Footprint is assessed using “Biocapacity”, which estimates the capacity of ecosystems to produce biological materials and resources, and to absorb waste and CO₂ emissions.

Therefore, the Ecological Footprint methodology is adapted and applied to calculate the theoretical land area needed to support the different components of an ecotourism package (accommodation, catering, transportation and transfers, different activities, and services).

I.7. Blue Economy and Coastal Tourism activities

The Blue Economy is mainly based on a new possible alliance between the marine conservation and coastal environment and the innovative techniques development, with high technological content and low environmental impact, in all daily life aspects.

Therefore, the entrepreneurship contribution in the tourism sector is not only paying attention to environmental concerns but also it is willing to offer advanced and clean solutions. Thus, it has become central in the sustainable development concept applied to the territories, especially in the coastal areas, that are subject to the greatest anthropogenic pressure in the Mediterranean countries.

To promote Blue Tourism, it is necessary to implement policies aimed not only at promoting the tourist season extension, but also at providing technologies and tourist activities with lower environmental impact. Hence, requiring more effective environmental resources use which are a key element of tourism development. Besides, it aims at maintaining essential ecological processes and helping in natural heritage and biodiversity conservation. Indeed, Sustainable tourism in Protected Areas, such as the Circeo MAB Reserve, represents an entrepreneurial opportunity, especially for the young people. Hence, promoting new job opportunities in the tourism sector. Another activity related to the blue economy that can be an opportunity for the Circeo MAB Reserve area is the fishing tourism. In fact, it is a tourist recreational activity that takes place on artisanal fishing boats boards. Yet, it is still underdeveloped. This sector has significant potential for expansion and could offset an expected decline in traditional fishing over the next decade.

II. Sources of parameters data templates

Table 9. Touristic fluxes and carrying capacity

Threats	Parameters	Data Type / Formula / Unit	Source
Touristic fluxes and carrying capacity	Touristic Zone Name	Name	/
	Touristic Zone Area	ha	ISTAT
	Number of Establishments during 2009 (Hotels + Accommodations + Holiday homes + Camping and cabins... etc.)	Number	ISTAT
	Number of Establishments during 2019 (Hotels + Accommodations + Holiday homes + Camping and cabins... etc.)	Number	ISTAT
	Tourism Establishment Growth (2009:2019)	$[(N_{Establishment_nf} - N_{Establishment_ni}) / N_{Establishment_ni}] * 100(\%)$	ISTAT
	Number of beds in total Tourism Establishment in 2019	Number	ISTAT
	Number of overnights per year in total Tourism Establishment in 2019	Number	ISTAT
	Number of tourists per year in 2014	Number	ISTAT
	Number of tourists per year in 2019	Number	ISTAT
	Growth of tourist arrivals (2014:2019)	$[(N_{Tarrivals_nf} - Tarrivals_ni) / N_{Tarrivals_ni}] * 100(\%)$	ISTAT
	Tourism seasonality	Possible value: Yes/No	ISTAT
	Length of season	Number in Months	ISTAT
	Number of Hotels in 2019	Number	ISTAT
	Number of beds in hotels in 2019	Number	ISTAT
	Number of overnights per year in hotels in 2019	Number	N/A
	Average length of stay in 2019	%	N/A
	Visitor expenditure in 2019	€	N/A
	Quantity of energy used by hotels in 2019	kwh	N/A
	Volume of water used by Hotels in 2019	103 x m ³	N/A
	Volume of solid waste produced by Hotels in 2019	103 x m ³	N/A

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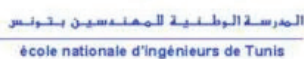
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