Boka Kotorska Bay

COASTAL MANAGEMENT PLAN

SUMMARY

med PROGRAMME
2.1 Mediterranean Coastal Zones Climate Resilience Water Security and Habitat Protection
SCCF Enhancing regional climate change adaptation in the Mediterranean Marine and Coastal Areas
gef
UN environment programme
Mediterranean Action Plan Barcelona Convention
PAP/RAC
Ministarstvo turizma, ekologije, održivog razvoja i razvoja sjevera

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PAP/RAC would like to express its gratitude to all stakeholders from Herceg Novi, Kotor and Tivat municipalities of Boka Kotorska Bay, as well as national institutions and organisations, especially the Ministry of Tourism, Ecology, Sustainable Development, and Northern Region Development and all the members of the National Working Group on ICZM in Montenegro for their contribution. We also extend our thanks to scientific institutions, academia, NGOs, the private sector, and all other stakeholders who contributed to the preparation of this Plan. Additionally, we want to thank our colleagues from Plan Blue for organising workshops and live discussions, as without their help, this Plan could not have been developed.

Boka Kotorska Bay

Boka Kotorska Bay is a unique part of the Adriatic Sea, distinguished by its specific geomorphological, climatological, hydrological, and biotic characteristics. The bay is highly enclosed, surrounded by the Orjen and Lovćen mountains, which descend into the sea. The Boka area is renowned for its many underwater springs, such as Škurda, Široka rijeka, Ljuta, Gurdić, Sopot. Within the Bay, there are historical settlements featuring old palaces, churches, cathedrals, fortresses, and defensive walls. This was why the inner part of Boka Kotorska Bay (Kotor Risan Bay) was inscribed on the UNESCO World Heritage List, while Tivat Bay and Herceg-Novi Bay create a buffer zone. Boka is also adorned with the slopes of the Lovćen National Park, Tivat Saline (Tivatska solila) (included in the Ramsar List), and marine protected areas – Sopot and Dražin Vrt.

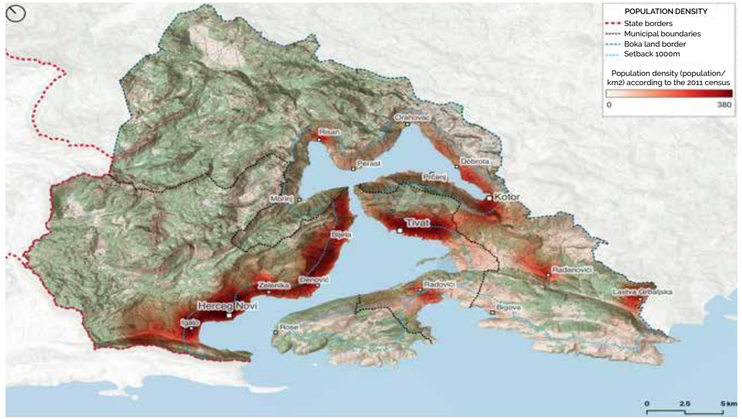
The old town of Kotor (provided by MERT)

Why a Coastal Management Plan?

Challenges in the Boka Kotorska Bay Coastal Zone

After the 1979 earthquake in Boka, the construction of residential settlements for collective housing, as well as individual homes, rapidly expanded, driven by the needs of the local population and the growth of tourism. This **urbanisation** not only fills the spaces between traditional architecture in coastal areas but also extends into pristine natural areas along the coast and onto the slopes and hills of the hinterland.

Like the rest of the Mediterranean, Montenegro experiences migratory pressure on its coast, with depopulation occurring in areas further inland. Additionally, within the coastal municipalities, there is noticeable depopulation in the hinterland and population growth in the urban coastal centres. In the Boka Kotorska Bay area, this is reflected in the high population density along the bay's coast.



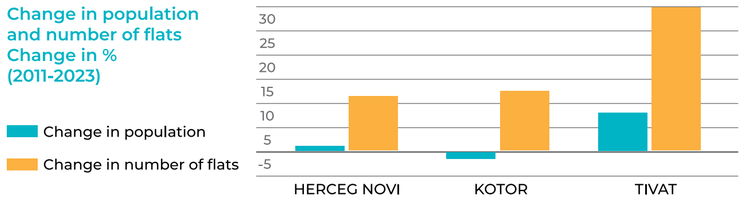
Population density in Boka Kotorska according to the 2011 census (prepared by MonteCEP)

According to the latest preliminary census, from 2011 to 2023, the municipalities in Boka saw a disproportionate increase in the number of flats relative to population. In the Herceg Novi municipality, the population increased by about 2%, while the number of flats rose by 24%. In the Kotor municipality, the population decreased by around 3%, while the number of flats grew by approximately 26%. In the Tivat municipality, a population increase of about 16% was accompanied by a 60% increase in the number of flats.

The data above shows that, in addition to population changes, seasonal housing and coastal development (often for tourism purposes) are major drivers of coastal urbanisation. These processes have led to the erosion of traditional architecture and alterations to the overall landscape. They have also created various communal and other pressures, such as: unplanned construction; strain on infrastructure systems (such as transport, energy, water supply, and sewage); problems with solid waste disposal; the development of semi-urban areas on the outskirts of larger cities; and the complete merging of larger villages into cities, among others.

In the context of climate change, the problem takes on a new dimension, especially considering the increasing frequency of extreme weather events. Coastal development is increasingly exposed to the impacts of the sea, which is particularly alarming given the rising sea levels associated with climate change.

Sea level rise impact on the built environment (prepared by MonteCEP)

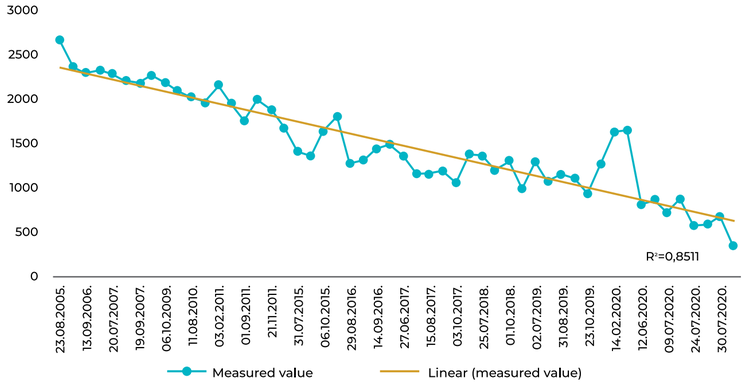


Variation in population size and number of flats in the three municipalities of Boka Kotorska from 2011 to 2023

Another important topic for the future of Boka, especially in the context of climate change, is the issue of **water resources**. This area, which is rich in water during winter (with the small town Crkvice being one of the wettest places in Europe), becomes water-scarce in summer, precisely when water demand increases due to the influx of tourists. Climate change will further reduce water availability in the summer, which is particularly worrying given that the abundance of the regional water source "Bolje sestre" is decreasing from one year to the next. The water supply is currently further impacted by substantial losses in the water supply network.

The transport infrastructure should also be mentioned as a major issue in the Bay. Traffic in Boka is primarily managed through the Adriatic Highway, which passes through all populated coastal towns and villages and lacks alternative routes. This results in severe traffic jams and congestion at "bottlenecks", especially during the summer, which can significantly impact air quality and human health.

[1] CEMA (2020) Analysis of natural and anthropogenic impacts on the abundance regime of the "Bolje sestre" (Better Sisters) water source. CEMA d.o.o., Podgorica.



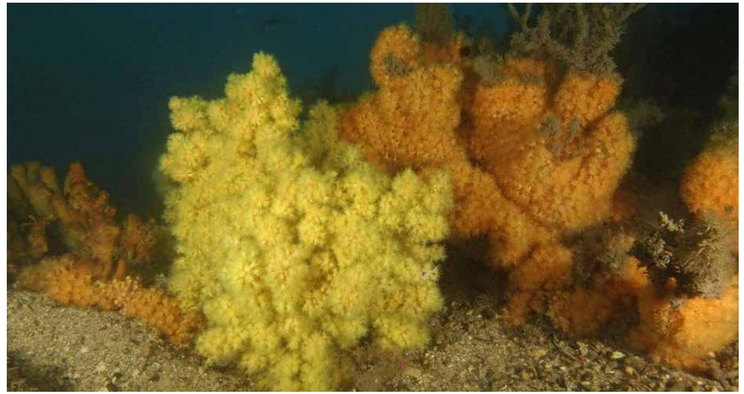
Declining trends in the flow at the "Bolje sestre" water source (2005-2020)[1]

Waste presents another significant challenge – the volumes of deposited waste are substantial, with only a minimal percentage of recyclable materials recovered (approximately 5%). A location for the disposal of construction waste has not been established in Boka either. Additionally, there are illegal (both small and large) landfills from which waste sometimes ends up in the sea due to heavy rains.

Alongside waste, the **marine environment** in the Bay also faces other significant pressures, particularly from land. The average connection rate to sewerage systems in Boka is just below 50%, which further underscores the pollution problem in the Bay. There are also mechanical damages from both land-based sources (such as construction along the coast) and sea-based activities (such as anchoring), which significantly impact the marine

environment. All these pressures make Boka Kotorska Bay extremely vulnerable, especially given its indentation into the mainland, the limited exchange of water masses with the open sea, and the richness of its marine life. For example, at the Sopot and Dražin Vrt sites, coralligenous communities host around 70 identified benthic species, including a significant number of protected species. The population of the gold coral Savalia savaglia at these sites is among the largest and most significant in the Mediterranean. Consequently, Sopot and Dražin Vrt are designated as Marine Protected Areas (MPAs). Benthic habitats will be particularly affected by climate change, especially due to heat stress, as benthic organisms cannot move or 'escape' to more favourable conditions.

To address all these issues, the development of Boka Kotorska Coastal Management Plan (CMP) was initiated, with a twofold purpose: promoting more sustainable development of the coastal area and enhancing resilience to climate change. Such a Plan allows for an integrated approach to addressing issues and prioritising measures to resolve them.



The gold coral Savalia savaglia
(photo by Egidio Trainito)

The old town of Kotor
(provided by MERT)

The Plan Baseline

The Coastal Management Plan has been developed in accordance with Article 18 of the Protocol on Integrated Coastal Zone Management (ICZM) in the Mediterranean, which calls for the development of such plans. Montenegro ratified the ICZM Protocol in 2012, and in 2015, it developed and adopted its National Strategy for Integrated Coastal Zone Management. According to the Strategy, the pilot project for adapting to the impacts of climate change should be implemented **at a selected site or in one of the coastal municipalities in such a way that an operational programme for implementing climate change adaptation measures is developed for the selected location.**

During the development of the GEF MEDProgramme Child Project 2.1, Boka Kotorska was selected as the relevant site in Montenegro. In this area, the last 40 years have been marked by rising temperatures (particularly in the summer), and a decrease in total annual precipitation, leading to more frequent dry days. Additionally, extreme events such as torrential floods and sea flooding, combined with rising sea levels, will further endanger its coastal area, particularly sites such as Kotor Old Town, Igalo, Morinj, Tivat, and others. The development of this Plan represents a new approach to preparing for adaptation to the impacts of climate change and contributes to spatial and development planning practices, both in Boka Kotorska and across Montenegro.

The Protocol on ICZM in the Mediterranean was signed in Madrid in 2008 by the Contracting Parties to the Barcelona Convention as its seventh Protocol. This Protocol is the first international legal document to introduce the obligation of integrated coastal zone management, thereby improving the management of Mediterranean coasts and providing additional tools to address new challenges. It has been ratified by 13 Mediterranean countries and the European Union, making its provisions internationally binding in these countries.

Flooding in Kotor Old Town (photo: bokanews.me)

Objectives of the Plan

The objectives of the Boka Kotorska Coastal Plan are as follows:

> guide the development of the Boka Kotorska coastal area towards sustainability and enhance resilience to climate change;
> support the formulation of sectoral policies and their integration into sustainable development policies for coastal areas; and
> propose priority responses to major environmental pressures and the impacts of climate change.

A coastal management plan is not a "normative" plan (prescribed by law), but rather an "indicative" plan. Such plans offer guidelines for managing specific issues and outline measures to be incorporated into normative plans. Drawing on past experience, such plans can serve as a basis for securing funds for implementing defined measures, primarily from the European Union but also from other donors.

The Plan is primarily intended for decision-makers in three municipalities: Herceg Novi, Kotor and Tivat, stakeholders from (national) institutions and associations involved in any kind of coastal activity, as well as all residents of the Boka Kotorska coastal area, and visitors coming for work, investment, or leisure and recreation.

Key Partners

The Plan was developed under the MED-Programme funded by the Global Environment Facility (GEF) and led by the Mediterranean Action Plan of the United Nations Environment Programme (UNEP/MAP). The Plan was developed by the MAP Priority Actions Programme Regional Activity Centre (PAP/RAC) from Split, in cooperation with Montenegro's Ministry of Tourism, Ecology, Sustainable Development and Northern Region Development, and the MAP Plan Bleu centre in Marseille, which led the "Climagine" participatory workshops attended by numerous local and national stakeholders.

How the Plan was Developed

What is "Climagine" and Why Does it Matter?

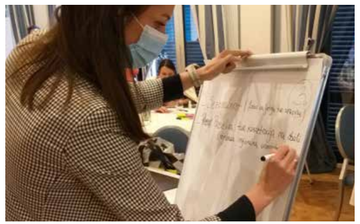
Concurrently with the development of the Plan, the "Climagine" participatory method was implemented. This method aims to identify and review the past, present, and future levels of sustainability of the project area. Through four workshops, around 50 local and national stakeholders discussed critical issues related to coastal development in Boka Kotorska and collaboratively sought solutions to achieve coastal sustainability and resilience. At the first workshop in Tivat, held in December 2021, priority topics for the Plan were identified: space and transport; water; waste; sustainable tourism and the marine environment.

*The advantage of an **integrated approach** is that it takes participatory approach to identify priority areas, particularly those that present the greatest challenges for sustainable development. In this case, the identified priority areas are space, transport, and tourism, as the basis for the economic development of Boka Kotorska; water, as its valuable natural resource; waste, as a problem that needs to be resolved to improve the quality of life in this area; and marine environment, which is extremely vulnerable to various pressures in this "enclosed basin". Climate change has been recognised as a topic that impacts, to varying degrees, all other identified areas.*

How the Plan was Developed

Discussions at the Climagine workshops aligned with the stages of preparing the CMP for Boka Kotorska, and the key outcomes of these discussions were incorporated into the Plan. Following the identification of priority areas at the initial Climagine workshop, local and national experts were engaged to contribute, while PAP/RAC coordinated the overall development of the Plan.

The plan was developed following the stages proposed by the Integrated Coastal Zone Management (ICZM) process, comprising five key planning stages: introductory activities - establishment; situation analysis, setting the vision, designing the future and realising the vision.



The participatory workshop "Climagine" (Tivat, 2021)

Interviews with representatives of the Kotor municipality (left) and the Tivat municipality (right), July 2023

Establishment	Conduct a stakeholder analysis to ensure the full engagement of all stakeholders in the planning process and the implementation of the plan.
Analysis & futures	Involve all stakeholders in the process of analysis and scenario development to encourage discussion about a shared future, expand the range of adaptation options, and identify existing conflicts and ambiguities.
Setting the vision	Stakeholders should actively contribute to defining adaptation options by sharing diverse views and interpretations of coastal measures.
Designing the future	Engage stakeholders to review, select, and build consensus on the most favourable adaptation strategy to be adopted.
Realising the vision	At this stage, stakeholders consider the follow-up and evaluation of the results of the adopted strategy.

Participation in five stages of the ICZM process (adapted from PEGASO project)

Scope of the Plan

Early into the CMP drafting process, its scope was defined according to the ICZM Protocol ratified by Montenegro:

> on the landward side, it covers all local administrative units bordering the sea (the Herceg Novi, Kotor and Tivat municipalities);
> on the seaward side, it covers the area up to the external limit of the territorial sea (12 nautical miles from the baseline).

In certain topics (such as water supply), a broader scope is considered following the ecosystem approach (the Boka Kotorska catchment area extends beyond the scope described in the two points mentioned above).

Indicative CMP scope (prepared by MonteCEP)

"Pet Danica" Promenade, Kotor (provided by MERT)

Measures for Addressing Key Issues in the Boka Kotorska Coastal Zone

These measures aim to achieve balanced and sustainable development, as well as enhance the climate resilience of the coastal area. The measures are categorised according to the topics identified as priorities by local and national stakeholders during the development of the Plan.

Sustainable Use and Protection of Coastal Zone

Given the impacts of climate change, one of the priorities in the narrow coastal zone is to protect the population and coastal settlements, with a focus on mitigating flooding and erosion. One of the key measures to achieve this is the **implementation and compliance with coastal setback zone**. Specifically, construction of facilities is prohibited within 100 meters from the coastline outside the settlements in Montenegro, in accordance with the criteria outlined in the Special Purpose Spatial Plan for Coastal Area of Montenegro (2018). Adhering to the coastal setback reduces new coastal developments, thereby mitigating their vulnerability to flooding and erosion. Coastal setback zones also contribute to biodiversity conservation and create opportunities for new habitats. These zones do not hinder or limit tourism development. On the contrary, they enhance the potential for high-standard tourism projects, which indeed require setbacks to accommodate public, green, recreational, and beach facilities, with accommodation located behind the setback zone.

To mitigate coastal erosion, it is crucial to **preserve coastal forests and natural beaches** in narrow coastal zones, promote the natural regeneration of forests and indigenous vegetation, and undertake **afforestation** where necessary. Some beaches prone to erosion may require sediment nourishment; however, this approach can potentially adversely affect coastal wildlife, including commercially valuable species. To minimise this impact, it is essential to **develop a formal procedure and guidelines for beach nourishment** in the Boka Kotorska Bay area. An alternative option is the establishment of alternative beach areas - **floating pontoons**, or smaller portable swimming pontoons, which are believed to have a lesser environmental impact compared to beach nourishment. In the most vulnerable areas of the coastal zone, **coastal protection structures** (e.g., groynes) should also be considered to prevent major coastal flooding.

Illustration of the coastal setback concept (illustrated by Luka Duplančić)

In the hinterland of Boka, future development should be planned in the context of existing traditional settlements or agricultural activities, including the cultivation and processing of typical agricultural products (such as olives, citrus fruits, etc). This approach combines agricultural production with tourist attractions (**agritourism**) and various forms of outdoor recreation. In the hinterland, **preserving forests and other vegetation** is crucial, along with **afforesting low-productive degraded soil**, which helps mitigate rapid runoff, and prevent significant erosion effects. Other flood prevention measures, such as **cleaning drainage canals**, should also be implemented.

Green spaces should be preserved and expanded throughout urban areas. They cool the air by providing shade and increasing water evaporation, thereby reducing the incidence of heat-related health problems and lowering cooling costs during the summer. The ability of green infrastructure (Nature-based Solutions - NbS) to retain and absorb water into the soil is crucial also for **preventing urban flooding and reducing torrential flows**, while roots stabilise the soil and thereby **reduce erosion.**

The fire above Perast (photo by bokanews.me)

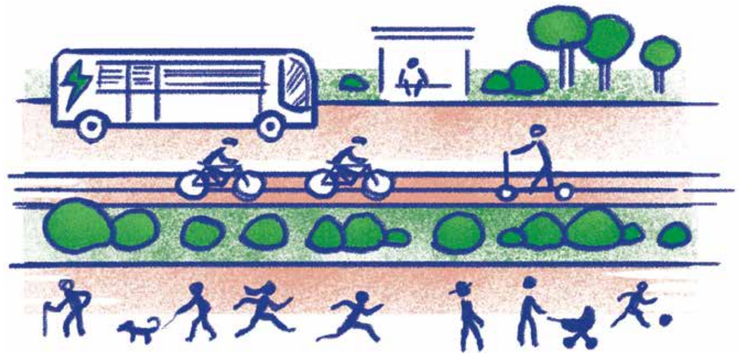
In addition to the mentioned issues of heat, floods, and erosion, climate change in Boka could exacerbate the problem of **wildfire spread** due to the increase in dry days. Therefore, **fire prevention measures** are important, such as clearing dry vegetation, removing woody debris, establishing fire protection corridors, etc. It is also necessary to plant protective vegetation – such as olive groves, vineyards, and orchards, along with establishing a hydrant network, retention systems, and an early warning system – including a video surveillance for early fire detection. Furthermore, it is important to implement burned area rehabilitation measures by establishing new forest or agricultural lands and imposing **construction bans in burned areas**.

Transport System

To alleviate traffic congestions along the Bay coast, it is **essential and urgent** to **construct bypass routes** around urban areas and highway "bottlenecks". The Adriatic Highway corridor route is planned to run through the hinterland to preserve valuable coastal territory and minimise adverse environmental impacts.

Organising public maritime passenger transport would also help reduce road traffic on coastal roads. Additionally, **public bus transport** should be made more accessible and frequent, supported by transitioning the bus fleet to new technologies and cleaner fuels.

An **integrated public transport system** is therefore needed to enable integrated local bus and maritime transport services, as well as ferry services, cycling, walking, etc. The fundamental requirement for establishing such a system is the creation of an **integrated tariff system for the local public transport network**, covering both road and maritime passenger transport across all municipalities in Boka Kotorska Bay.



Schematic illustration of integrated public transport (illustrated by Luka Duplančić)

As for electromobility, one of the main barriers is the limited number of charging stations, which hinders the wider adoption of electric and hybrid vehicles. Therefore, it is necessary to assess the requirements in studies, planning, and technical documents to identify the **optimal locations for installing electric and hybrid vehicle charging stations.**

Water

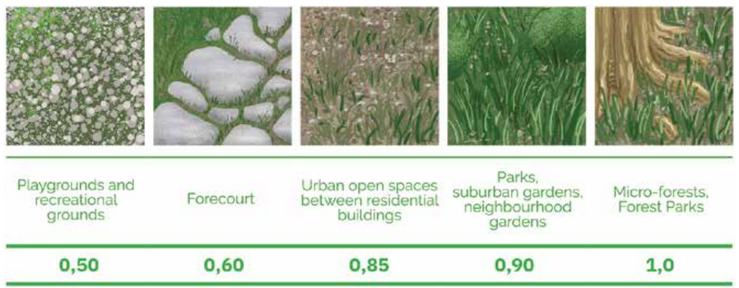
The issue of water in the CMP was addressed comprehensively, following the *"from source to sea"* principle, which encompasses water supply, wastewater management, and stormwater drainage.

More severe droughts resulting from climate change, coupled with heightened demand for drinking water during warmer months due to increased tourism, will further aggravate the issue of water supply in Boka Kotorska. Given the drastic decline in the abundance of the regional source "Bolje Sestre", coastal municipalities inevitably face the challenge of maximising water extraction from local sources. This requires full commitment to **harnessing local water sources for extraction**, including the development of technical infrastructure, minimising network losses, and delineating, establishing, and monitoring sanitary protection zones for all public water supply sources in accordance with regulations. In addition to analysing the potential of existing water sources, it is important to **explore potential sources in the Boka Kotorska area** that have not yet been investigated but are believed to be promising in terms of both the abundance and quality of drinking water.

Considering the health problems caused by high temperatures, it is crucial to **maintain existing public fountains and install new ones** in public areas with high concentrations of both local residents and tourists. For **watering public green spaces**, rational water consumption should be encouraged (considering the current high losses in the network) – by implementing a 'drip' irrigation system. Additionally, it is important to consider using non-potable water (such as collected rainwater or treated wastewater) for irrigation to promote more efficient water consumption.

Regarding municipal wastewater, it is imperative to promptly **increase the coverage of collection and treatment services**. For Boka Kotorska Bay, this is a crucial aspect of preserving marine water quality, making it imperative to prioritise efforts to improve sewer connection rates.

Intense precipitation, which could be exacerbated by climate change, results in sewage and stormwater spills, leading to flooding in surrounding areas and subsequent pollution of the environment and marine waters. Therefore, it is urgent to develop comprehensive documentation for a general concept of a **separate drainage system** in the area covering all three municipalities, so that sewage and stormwater are managed separately (with green infrastructure absorbing excess water).



Coefficient of permeability for stormwater across different materials (illustrated by Luka Duplančić)

Waste

Regarding municipal waste, efforts should focus on **preventive measures to reduce the amount of waste sent to landfills**. It is essential to prioritise **primary waste selection**, making it more straightforward and accessible to the population, while continuously raising public awareness about the importance of this practice and the benefits it offers.

It is crucial to complete the construction of recycling yards and planned waste collection and transfer stations (for s**econdary waste selection**) in all municipalities, and to procure the necessary equipment for collecting recyclable materials (bins and containers, vehicles, etc.). This should lead to an increase in the collection of secondary materials, as many private companies recognise the profit potential in collecting recyclables and set purchase prices for these materials based on market rates, which is becoming increasingly important to citizens.

Additionally, it is necessary to **rehabilitate or remove existing unregulated landfills** through relocation (for smaller landfills) by partial or complete rehabilitation of the landfill.

Finally, it is crucial to **raise public awareness** – through campaigns and forums, informing citizens through the media, hosting waste collection events for specific types of waste, and other engaging initiatives. In addition to educating the public, it is also important to educate large manufacturers on reducing the use of single-use plastic products or transitioning to more environmentally friendly alternatives.

Photo:
Jelena Radunović

Sustainable Tourism

In Boka, the trend of "apartmentisation" is particularly pronounced on the coast. Therefore, it is important to **improve the accommodation structure and increase the share of beds in collective accommodation**, by renovating old hotels or constructing new high-end ones, and converting individual accommodation into larger hotels. Developing hotel accommodation would also enhance year-round offerings by promoting health (for example, Igalo Institute), sports, congress, excursion, and cultural tourism. This approach could help mitigate overtourism during the summer months (seasonality), particularly through the implementation of price measures.

To alleviate pressure on the coast, it is imperative to **develop tourism offerings in the Boka hinterland** by integrating villages and agriculture into tourism development (such as Gornja Lastva and other Luštica rural settlements). It is also desirable to redistribute tourist traffic to the interior of Boka Kotorska and Montenegro through excursions (e.g. Njeguši, Grahovo, Orjen, Krivošije, Lovćen), primarily by developing a network of observation points, excursion corridors, and excursions for independent visitors, and improving mobility options (such as cycling, offering electric and other vehicle rentals, constructing cable cars, and establishing promenades ("lungomare") along the entire length of the riviera).

It is also crucial to enhance the quality of the tourism offerings, such as **increasing the average green space per visitor and resident** (e.g. 100 m2 per accommodation/housing unit) which would, among other things, offer protection from the sun during the summer months and provide more opportunities for activities in these areas during the summer heat.

Improving the infrastructure for marine tourism (cruising, yachting, diving, etc.) is necessary and should be **aligned with the limited carrying capacity of the bay waters**. Existing ports, marinas, and other infrastructure must be substantially improved in terms of service quality, safety, underwater protection, and the authenticity of experience.

There is a pressing need for addressing deviations in the business and destination management (such as the shadow economy, inadequate visitor tracking, lack of digital solutions to these problems, etc.),

Tivatska Solila (provided by MERT)

which can be achieved through **sustainable tourist destination and visitor management by introducing "smart" and other digital solutions** or systems.

Finally, it is crucial to **raise awareness and improve understanding of the risks associated with (un)sustainable tourism practices, as well as climate change** among visitors, the local population, the economy, civil society, and the public sector.

Marine Environment

Boka Kotorska Bay is relatively enclosed, making it extremely vulnerable to pollution and other pressures. Therefore, it is crucial to protect the marine environment from all land and sea pressures.

First and foremost, it is necessary to protect zones that are particularly sensitive to pollution: **peloids and healing mud in the Igalo Bay, shellfish farms** and **beaches**. Tivat Saline (Tivatska solila) (special nature reserve) should be better protected by implementing measures to prevent wastewater pollution through canals from the hinterland, as well as Sopot and Dražin Vrt, where measures should be taken to address seabed marine litter accumulation. **To prevent marine environment pollution by waste**, efforts should focus on improving waste management on land and implementing regular monitoring of waste on beaches, in the water column, and on the seabed. Additionally, it is important to involve as many stakeholders as possible in cleanup efforts. Regarding pollution from vessels, it is crucial to enhance **the control and supervision of wastewater discharges from ships and yachts** throughout Boka Kotorska Bay.

"Eco-friendly" buoys in the Kornati archipelago, Croatia (photos: Interreg SASPAS project)

Considering climate change, measures should be taken in the fisheries sector to mitigate pressures and promote more sustainable fisheries. This includes **controlled harvesting of certain species that are non-native to the Adriatic Sea** or have seen a significant increase in abundance, and exploring the potential of harvesting and exporting new species to areas where they are valued as food. **Mariculture sites** should be located in areas less vulnerable to the impacts of climate change, given the risk of damage to the cages.

One of the most reliable approaches to preserving the marine environment in Boka Kotorska Bay is to place as large an area as possible under protection. This approach prevents human disruptions to the balance, allows for the possibility of restoring populations, and enhances the system's resilience to change for as long as possible. It is essential to **monitor the distribution and status of valuable species and communities in both pelagic and demersal habitats**. In Boka Kotorska Bay, these are coralligenous habitats among which *Savaglia savaglia* (gold coral) is recognised as the dominant species, as well as Posidonia seagrass meadows. Demersal communities are significantly threatened by vessel anchoring, so **converting nautical anchoring spots into buoy fields** should be considered to direct nautical vessels to specific locations and minimise damage to important demersal habitats.

Measures for Establishing a Coastal Zone Management System

Who should lead coastal management initiatives? Experience has shown that this primarily involves a lot of coordination. Various sectors, including spatial planning, environmental protection, sustainable development, maritime, or regional development, may all be suitable for coordinating these efforts. Leadership should be assumed by those who possess the capacity, knowledge, and capabilities.

Measures to establish a coastal zone management system aim to create conditions for effectively managing coastal development and promoting sustainability. Their successful implementation greatly facilitates the execution and monitoring of all other measures proposed in the Coastal Management Plan (CMP).

Implementing CMP recommendations and measures will mitigate the damage caused by climate change, help internalise costs for better and more sustainable development, and pave the way for a more resilient economy in Boka Kotorska.

Topic	Measures
Coordination mechanism	- Establish a permanent coordination mechanism for managing the coastal and marine areas of Boka Kotorska Bay, ideally with a "rotating" leadership model (e.g. each of the three municipalities takes on the rotating leadership on a yearly basis) - Strengthen horizontal integration among municipalities, as well as among sectors within municipalities - Strengthen vertical integration with relevant national institutions and the coordination mechanism on the national level (e.g. National Council for Sustainable Development or one of its working groups)
Advisory committee	Establish an advisory committee for the coastal and marine management of Boka Kotorska, which includes both academia and scientific institutions (universities, Institute of Marine Biology, Institute of Hydrometeorology and Seismology, and others), and representatives from the private sector and non-governmental organisations
Developing an electronic information and document management system	Establish a publicly accessible internet (web) portal to familiarise citizens with the plan's concept and inform them about the state of the coastal environment in Boka Kotorska.
Monitoring system	Establish a harmonised system for monitoring the state of coastal and marine ecosystems and processes
Establishing an early warning system	Build a joint early warning system for natural disasters and catastrophes to prevent or minimise damage caused by floods, torrents, storms, wildfires, heatwaves, and droughts
Strengthening the capacities and human resources of public administration	Mobilise resources to support the development of (municipal) capacities and enhance the overall involvement of municipalities in the preparation, development, and implementation of projects through various training programmes, consultations, and the provision of technical assistance
Improve the effectiveness of inspections	Strengthen the work of inspection services through education, particularly at the local government level; enhancing technical and human resources, and professional capacities; improving coordination between inspection and other relevant services; and better enforcement of prescribed penalties, i.e. imposing stronger sanctions
Raising awareness – communication with citizens	Effectively inform citizens through transparent management plans and processes - workshops, seminars, and conferences on sustainable coastal development, climate change adaptation, and the consequences of coastal resource degradation

Next Steps?

Given the challenges arising from the uncertainty of climate change impacts on one hand, and the short decision-making cycles on the other, it is evident that the role of the public is paramount in addressing climate risks. The impact of the Plan on raising awareness of the far-reaching impacts of climate change, and sustainability in general, is already evident. There has been significant interest among stakeholders across the Mediterranean in the development of this Plan, evident from various international conferences and workshops. This is because, globally, practitioners have observed very few integrated coastal plans focusing on climate change. In conclusion, it is important to emphasise that this Plan also serves as a strategic document that can lay the foundations for accessing funds from the EU (and other sources) to implement climate adaptation measures and measures for addressing other challenges. Given the scale of the problem, substantial resources will be required.

Gospa od Škrpjela, Kotor (provided by MERT)

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management

med PROGRAMME

2.1 Mediterranean Coastal Zones Climate Resilience Water Security and Habitat Protection

SCCF Enhancing regional climate change adaptation in the Mediterranean Marine and Coastal Areas

gef

UN environment programme

Mediterranean Action Plan
Barcelona Convention

PAP/RAC

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