



**CLIMAGINE Workshop IV**  
**Kotor Bay Coastal Management Plan**  
**GEF MedProgramme, Child Project 2.1**

*Hotel Regent – Tivat, Montenegro - 4 July 2023*

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**Reviewed by: Michael Karner, Plan Bleu/RAC**



Mediterranean  
Action Plan  
Barcelona  
Convention



Global Water  
Partnership  
Mediterranean



**2.1**

Mediterranean  
Coastal Zones Climate  
Resilience Water Security  
and Habitat Protection"

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## I. INTRODUCTION

Coastal planning in Kotor Bay (*Boka Kotorska*), Montenegro is currently being supported through the Global Environmental Facility (GEF) [MedProgramme](#): Enhancing Environmental Security, implemented by the UNEP Mediterranean Action Plan (UNEP/MAP). One of the main goals of the MedProgramme's Child Project 2.1 is to drive the implementation of the Protocol on Integrated Coastal Zone Management (ICZM Protocol) among Mediterranean countries, notably to address the impacts of climate change and economic activities on coastal hotspots, while seeking to enhance sustainable living conditions for the coastal populations concerned.

The Boka Kotorska Coastal Management Plan's (CMP) development is led by PAP/RAC, in parallel with a similar effort in the context of the MedProgramme: the elaboration of the *Schéma régional du littoral* of the Tangier-Tetouan-Al Hoceima Region, Morocco. In both cases, the elaboration of these strategic ICZM documents is supported by Plan Bleu/RAC's [Climagine](#) methodology. This participatory foresight methodology approach applies the bottom-up principle of stakeholder involvement to support the Coastal Plan elaboration processes, coupled with local and national data collection. Moreover, these efforts are also informed by the MedProgramme SCCF Project, with work on climate risks, climate and gender, and coastal, ecosystem- and nature- based adaptation solutions.

The fourth Boka Kotorska CMP workshop was held on July 4<sup>th</sup>, 2023 in Tivat, Montenegro. It welcomed 29 participants, was organised by PAP/RAC and Plan Bleu/RAC, and co-hosted by the Ministry of Ecology, Spatial Planning and Urbanism of Montenegro. Held in Montenegrin, it aimed to capitalise and integrate the work and results from the previous CMP/Climagine and SCCF workshops:

1. the [CMP Scoping/Climagine 1](#) workshop (3 December 2022, Tivat)
2. the [CMP Diagnostic/Climagine 2](#) workshop (4-5 July 2022, Kotor)
3. the [CMP Monitoring/Climagine 3](#) workshop (18-19 January 2023, Herceg Novi)

The fourth and final Climagine workshop engaged national and local stakeholders to discuss and validate the Sustainability Indicators (SI) and associated values provided by the sectoral experts of the Boka Kotorska CMP, which will be used to track and evaluate the area's trajectories in environmental and socio-economic terms, offering insights into the Kotor Bay's state by 2030 and beyond. In addition, Plan Bleu presented the participants with an analysis of the sustainability thresholds for each SI that had been identified and validated during the preceding workshops, and subsequently associated with a priority sector. Participants also discussed alternative, more sustainable development scenarios for the Bay based on the latter, so as to make informed decisions that will protect its ecological integrity and biodiversity, while implementing sustainable and inclusive economic activities that will safeguard the Bay's cultural heritage and the wellbeing of its local communities.

## II. WORKSHOP SUMMARY



The workshop was opened by Milica Rudić, (Head of the Department for Marine and Coastal Ecosystems, Ministry of Ecology, Spatial Planning and Urbanism), who welcomed the participants and emphasised the importance of the CMP and Climagine participatory approach for the future sustainability of Boka Kotorska and coastal management in Montenegro. Ivan Sekovski, Programme Manager at PAP/RAC, then welcomed participants on behalf of the MedProgramme and PAP/RAC, and provided a brief overview of the CMP's progress in terms of the proposed indicators and measures for the five priority sectors that form the backbone of the CMP.

Both representatives pointed out that clear and measurable SI have several valuable benefits, namely:

- to enable the assessment and monitoring of the impact of human activities in the Bay;
- to foster the establishment of specific goals and targets for the sustainable development of the Bay;
- to facilitate informed decision-making by providing data and insights into the current state of the Bay;
- to support adaptive management approaches, allowing for timely adjustments and response strategies;
- to bolster engagement and collaboration between local and national stakeholders, by providing a common language and framework for discussions.

### **Part 1: Coastal Management Plan – progress on priority sectors and indicators**

The morning sessions of the workshop provided the participants with an overview of the main expert findings related to the indicators selected for each selected priority sectors: Sustainable Tourism, Spatial Planning and Transportation, Water Supply and Wastewater, Waste Management and Environment and the Marine Environment). The report pertaining to this session can be accessed [here](#).

## Part 2: Climagine 4 Workshop I

Plan Bleu's Climagine 4 workshop was opened by Michael Karner, Project Manager at Plan Bleu/RAC, who provided a brief summary of the Climagine process and its state of advancement in Boka Kotorska. Plan Bleu's national consultant and Climagine facilitator, Dr. Srna Sudar then presented the workshop's aims and the previous workshops' main results. Overall, this session allowed the workshop participants to better understand the area's current condition, and which efforts should be prioritised to safeguard the Bay's ecological integrity, biodiversity, and cultural legacy while advancing the welfare of the Bay's population and fostering new and sustainable economic opportunities.

The workshop participants were divided into 5 groups to discuss the proposed current and future 2030 values of the Sustainability Indicators for each priority sector, taking the Band of Equilibrium (BoE) into consideration (cf. Figure 1 below). Based on the outcomes of the discussions, these results were visually represented with "amoeba diagrams", which are presented below for every sector. During the workshop, participants were encouraged to reflect on the area's future development based on two scenarios:

- i) a "business as usual" scenario, in which current, often unsustainable trends are maintained and no further actions towards sustainability are taken.
- ii) an alternative scenario, based on coordinated and far-reaching efforts to achieve sectoral and overall sustainability in Boka Kotorska.

Colour	Number	Ranking of the SI on the Band of Equilibrium
Dark Blue	1	Unsustainable by default
Blue	2	Low sustainability by default
Light Green	3	Lower sustainability threshold
Green	4	Sustainable
Olive Green	5	Upper sustainability threshold
Yellow	6	Unsustainable by excess
Red	7	Very unsustainable by excess

**Figure 1. The Climagine Band of Equilibrium (BoE)**

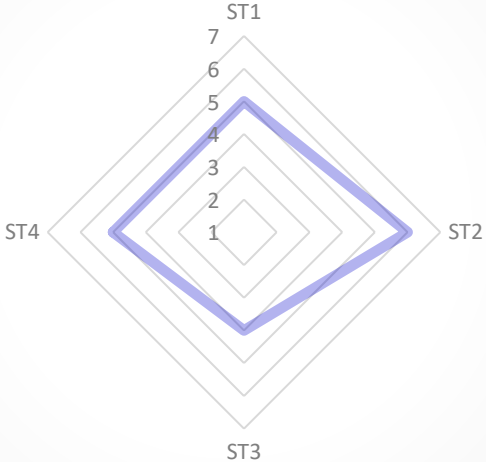
- In the Climagine BoE, categories 3-5 represent different levels of sustainability, with 4 constituting the "ideal situation" in terms of sustainability, and 3 and 5 representing the respective lower and upper sustainability thresholds for each SI value.
- Unsustainability can be described in two different manners:
  - "Unsustainable by default" (1-2 in the BoE) refers to activities that are inherently unsustainable due to their design, nature or characteristics. Examples of such activities are the clearing natural areas for constructions, bottom trawling in fisheries, or investing in highly polluting activities, such as coal-fired power plants.

- "Unsustainable by excess" (6-7 in BoE scale) concerns practices that become unsustainable when their rate exceeds sustainability levels. For instance, excessive water consumption, deforestation rates that exceed the regenerative capacity of natural systems, or overfishing fall into this category.

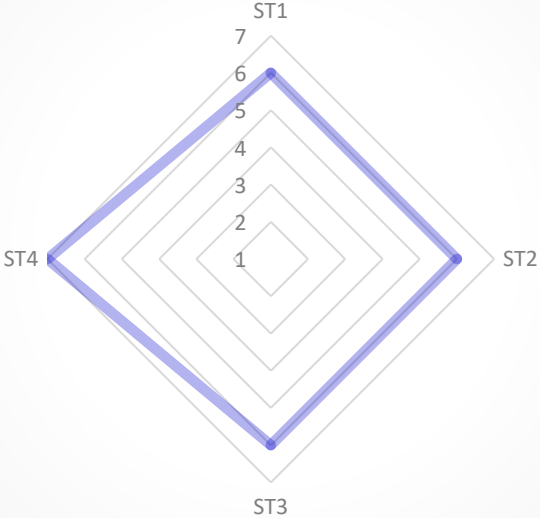
During the group activities, Dr. Sudar supported the group activities by further clarifying the BoE logic and encouraged discussions on setting the values for SI that would support the area's overall resilience and sustainability. The main outcomes of the discussions are detailed below in the form of amoeba diagrams for every priority sector and based on two scenarios: the present scenario and a 2030, business as usual scenario, which is assumed to be unsustainable. For numerous SIs, the numerical values were standardised into percentages to allow for the placement of the SIs in the amoeba diagrams.

Group 1: Sustainable Tourism								
Sustainability Indicators	Current value	Minimum value	Maximum value	Current BoE value	2030 business as usual scenario	Minimum value	Maximum value	BoE 2030 value
ST1. The relationship between the number of inhabitants and the number of tourists/ <i>Odnos broja stanovnika i broja turista</i> <i>Prosječna godišnja razina korištenja vodnih bogatstava (%)</i>	10.45	2	10	5	15	2	12	6
ST2. The relationship between the number of beds in collective accommodation and the number of residents/ <i>Odnos broja ležajeva u kolektivnom smještaju i broja stanovnika (%)</i>	6.39	2	5	6	8	3	6	6
ST3. Share of overnight stays in the region in the total number of overnight stays/ <i>Udio noćenja regije u ukupnom broju noćenja (%)</i>	34.27	25	40	4	45	25	40	6
ST4. Number of beds in collective accommodation per km of coast/ <i>Broj ležajeva u kolektivnom smještaju po km obale (%)</i>	51.98	30	60	5	120	50	70	7

### Sustainable Tourism-current state



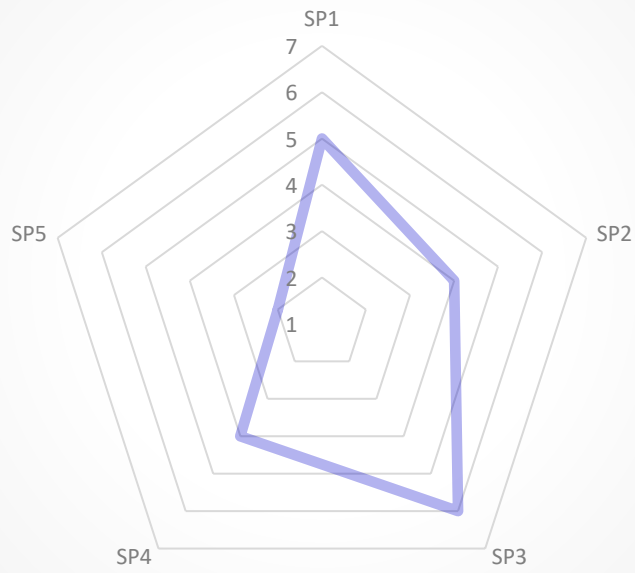
### Sustainable Tourism-2030 BAU scenario



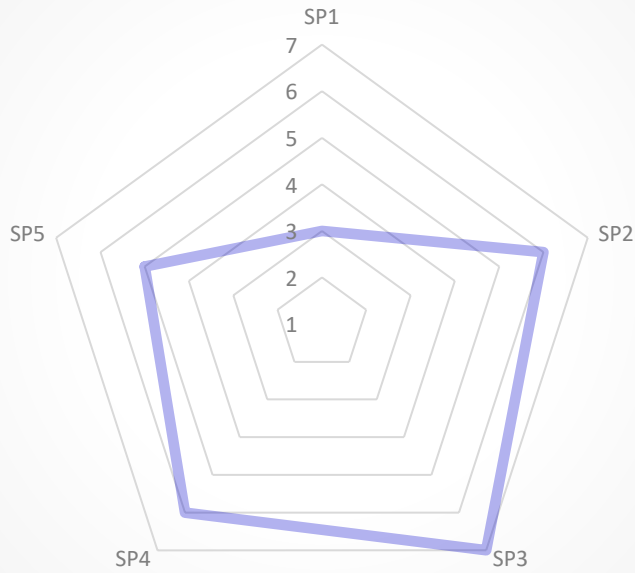
Group 2: Spatial Planning and Transportation								
Sustainability Indicators	Current value	Minimum value	Maximum value	Current BoE value	2030 business as usual scenario	Minimum value	Maximum value	BoE 2030 value
SP1. Population in 1000m of coastal area/ <i>Populacija obalnog pojasa od 1000 m (%)</i>	87	70	90	5	70	70	90	3
SP2. Share of apartments for permanent residence/ <i>Udio stanova za stalno nastanjenje (%)</i>	48	30	50	4	60	30	50	6
SP3. Share of the built/planned construction area in the 1000m zone/ <i>Udio izgrađenog/planiranog građevinskog područja u 1000m pojasu (%)</i>	20	10	15	6	30	10	15	7
SP4. The length of the local road network in relation to the area of the municipality/ <i>Dužina putne mreže u odnosu na površinu opštine (in km)</i>	44.3	30	55	4	60	30	55	6
SP5. The number of local maritime traffic piers/ <i>Broj pristaništa lokalnog pomorskog saobraćaja (number)</i>	9	15	25	2	30	15	25	5



Spatial planning and transportation-  
current state

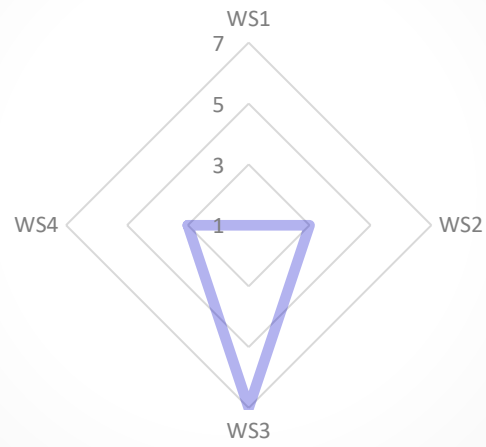


Spatial planning and transportation-2030  
BAU scenario

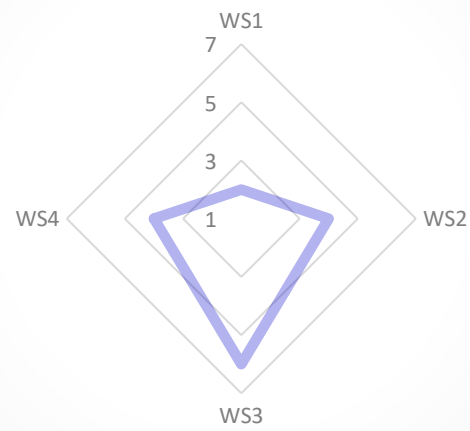


Group 3: Water supply and wastewater								
Sustainability Indicators	Current value	Minimum value	Maximum value	Current BoE value	2030 business as usual scenario	Minimum value	Maximum value	BoE 2030 value
WS1. Rate of connection to sewage systems (average for all three municipalities)/ <i>Stopa priključenja na kanalizacione sisteme (prosjeak za sve tri opštine) (%)</i>	49.7	80	100	1	65	80	100	2
WS2. The number of sanitary protection zones established at the fresh water springs/ <i>Broj uspostavljenih zona sanitarne zaštite sa izvorišta (%)</i>	54.5	60	100	3	72.7	60	100	4
WS3. Non-revenue water or Total losses: (leakage, burst pipes and poor water management, as well as illegal connections and unauthorized consumption)/ <i>Neprihodovana voda ili Ukupni gubici: (curenje, pucanje cijevi i loše upravljanje vodom, te nelegalni priključi i neovlašćena potrošnja) (%)</i>	76	10	30	7	45	10	30	6
WS4. The number of modernised precipitation stations in the Boka Kotorska basin/ <i>Broj osavremenjenih padavinskih stanica u slivu Boke Kotorske (%)</i>	3	3	10	3	8	3	10	4

### Water supply and wastewater-current state

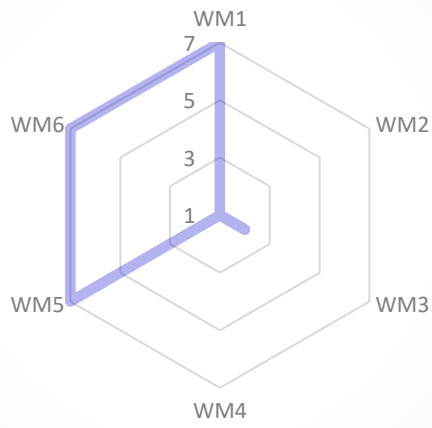


### Water supply and wastewater-BAU 2030 scenario

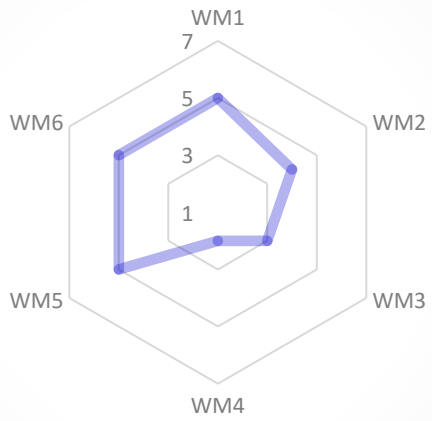


Group 4: Waste Management								
Sustainability Indicators	Current value	Minimum value	Maximum value	Current BoE value	2030 business as usual scenario	Minimum value	Maximum value	BoE 2030 value
WM1. Reduced amount of deposited waste/ <i>Smanjena količina deponovanog otpada (%)</i>	95	40	60	7	60	40	60	5
WM2. Establishing the necessary infrastructure for processing bulky and construction waste/ <i>Upostavljanje potrebne infrastrukture za obradu kabastog i građevinskog otpada (number of treatment sites)</i>	0	1	3	1	3	1	3	4
WM3. Increase in the control policy - operational inspection services/ <i>Povećanje kontrolne politike – djelovnije inspeksijske službe (number of inspectors)</i>	6	9	15	2	9	9	15	3
WM4. Intensive informative and educational campaigns in the field of sustainable waste management/ <i>Intezivne informativne-educativne kampanje u oblasti održivog upravljanje otpadom (number)</i>	3	6	10	1	5	6	10	2
WM5. Produced waste per inhabitants / <i>Proizvedenog otpada po stanovniku (kg)</i>	489	150	250	7	300	150	250	5
WM6. Number of illegal landfills/ <i>Broj ilegalnih deponija (number)</i>	69	10	20	7	25	10	20	5

## Waste management-current state

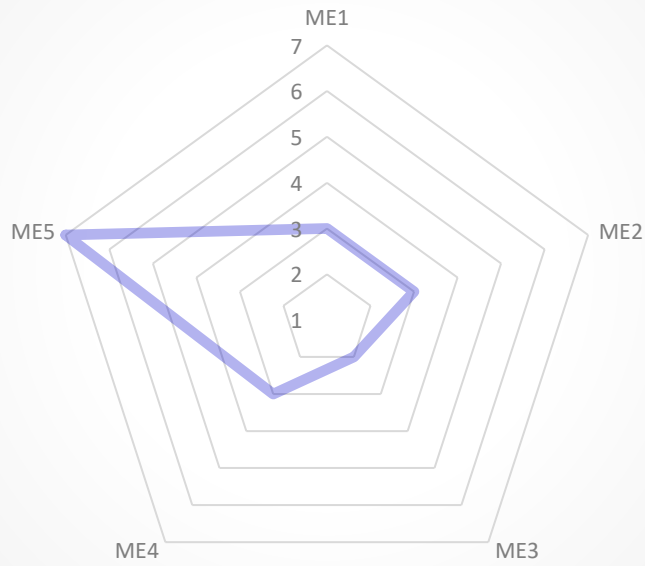


## Waste management-2030 BAU value

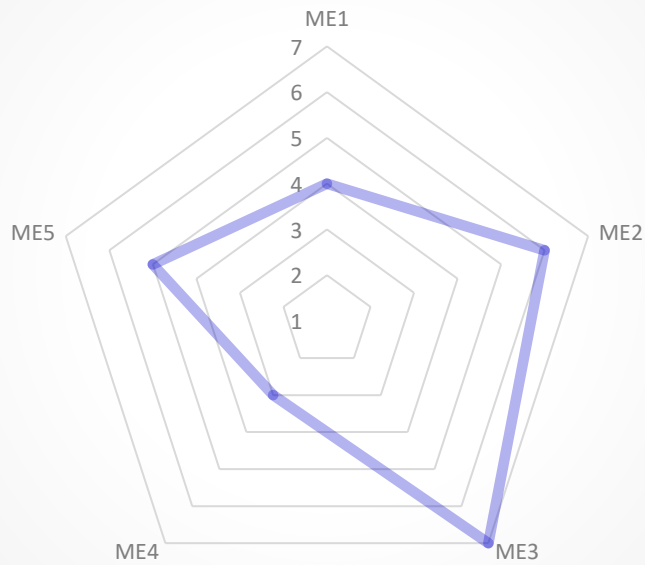


Group 5: Environment and the Marine Environment								
Sustainability Indicators	Current value	Minimum value	Maximum value	Current BoE value	2030 business as usual scenario	Minimum value	Maximum value	BoE 2030 value
ME1. Habitat distributions - posidonia seagrass/ <i>Distribucije staništa-posidonija (%)</i>	70	50	100	3	100	50	100	4
ME2. Density trends, temporal occurrence and spatial distribution of non-indigenous species/ <i>Trendovi gustoće, vremenske pojave i prostorne distribucije neautohtonih vrsta (%)</i>	5	3	6	3	8	3	6	6
ME3. Population size of phytoplankton species that determine habitat and community species composition/ <i>Veličina populacije fitoplanktona koje određuju stanište i sastav vrsta zajednice (%)</i>	100000	100000	1 mil	2	60000	100000	1 mil	7
ME4. Assessment of the natural coastline/ <i>Procjena prirodne obale (%)</i>	52	50	60	3	50	50	55	3
ME5. Beach litter/ <i>Čvrsti otpad na plažama (in pieces/100)</i>	671	50	70	7	90	50	70	5

### Environment and the marine environment-current state



### Environment and the marine environment-2030 BAU scenario



### **III. CONCLUDING REMARKS AND FINAL STEPS**

The Concluding Remarks were given by Michael Karner (Plan Bleu), Ivan Sekovski, (PAP/RAC) and Milica Rudić (Ministry of Ecology, Spatial Planning and Urbanism of Montenegro). Climagine's participatory foresight approach is supporting stakeholder engagement around the CMP development process, contributing to setting a sustainability roadmap backed by data and indicators that can be tracked over time in the coming years. Indeed, this process provides a standardised framework for stocktaking, goal-setting, decision-making and adaptive management, within which stakeholders can work together to ensure the long-term ecological integrity and socio-economic well-being of Boka Kotorska and its inhabitants. As a next step, the project team will work together to elaborate the final list of Climagine SIs and alternative scenario values and amoeba diagrams, which will serve as inputs to the Boka Kotorska CMP. Finally, we can report that among the 29 participants in the workshop, 19% of them were male and 81% female.



## Annex 1. Event agenda

Time (CET)	Session
<b>10:00-10:15</b>	<b>Welcome and Registration</b>
<b>10:15-10:30</b>	<b>Opening Remarks</b> <ul style="list-style-type: none"> <li>● Milica Rudić, Head of the Department for marine and coastal ecosystems, MESPU</li> </ul>
<b>10:30-11:30</b>	<b>The Boka Kotorska Coastal Management Plan - Step 4</b> Ivan Sekovski, Programme Officer, PAP/RAC <ul style="list-style-type: none"> <li>● Overview of progress on the CMP</li> <li>● Brief presentation on proposed measures</li> </ul>
<b>11:30-13:30</b>	<b>Climagine 4 Workshop Part 1: Sustainable Development Indicators Equilibrium</b> <ul style="list-style-type: none"> <li>● Overview of indicators and Equilibrium</li> </ul> Group Activities followed by Plenary Discussions
<b>13:30-14:00</b>	<b>Lunch</b>
<b>14:00-16:00</b> <i>Ongoing coffee break from 15:30-16:00</i>	<b>Climagine 4 Workshop Part 2: Elaboration of Strategic Recommendations for the CMP</b> Group Activities followed by Plenary Discussions
<b>16:00-16:15</b>	<b>Concluding Remarks and Next Steps</b> <ul style="list-style-type: none"> <li>● Michael Karner, Plan Bleu/RAC</li> <li>● Ivan Sekovski, PAP/RAC</li> <li>● Milica Rudić, Head of the Department for marine and coastal ecosystems, MESPU</li> </ul>

## Annex 2. List of Participants

Name	Institution
Milica Mandić	Ministry of Agriculture, Forestry and Water Management
Zorica Đuranović	Ministry of Agriculture, Forestry and Water Management
Draga Kolorogić	Ministry of Agriculture, Forestry and Water Management
Bojana Malidžan	Ministry of Agriculture, Forestry and Water Management
Milica Divanović	Ministry of Agriculture, Forestry and Water Management
Nada Vušurović	Ministry of Agriculture, Forestry and Water Management
Lidija Petrone Kolar	Ministry of Interior, Directorate of Rescue and Protection – Section in Tivat and Herceg Novi
Luka Mitrović	Institute of Hydrometeorology and Seismology
Mirjana Ivanov	Institute of Hydrometeorology and Seismology
Milica Rudić	Ministry of Ecology, Spatial Planning and Urbanism of Montenegro
Đurđina Bulatović	Ministry of Ecology, Spatial Planning and Urbanism of Montenegro
Sandra Kovačević	Ministry of Ecology, Spatial Planning and Urbanism of Montenegro
Biljana Krivokapić	Municipality Tivat
Patricia Pobrić	Municipality Tivat
Aleksandra Janičić	Crnogorski jedriličatski savez
Sofia Hajrizaj	Administration for Cultural Heritage, Kotor
Aleksandra Đaković	Administration for Cultural Heritage, Kotor
Slavica Petović	Institute for Marine Biology
Vesna Mačić	Institute for Marine Biology
Jelena Radunović	Communal Services Kotor
Sanja Marković	PKCG
Marina Krivokapić	Opština Kotor
Aleksandra Ivanović	JPMD
Đorđije Kalezić	MonteCEP
Saša Karajović	MonteCEP
Petar Raičević	Plan M

Michael Kerner	Plan Bleu
Ivan Sekoviski	SPA/RAC
Srna Sudar	Expert/Plan Bleu