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Supporting the development of territorial Responsible Research and Innovation

WBC-RRI.NET
Responsible Research and Innovation in the Western Balkans

Deliverable 4.1 – Report on implemented RRI 'anchor' initiative in the Kune-Vain-Tale Lagoon wetland ecosystem

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List of abbreviations used in this document

CS: Citizen Science

ES: Ecosystem Services

ESF: European Science Foundation

KPI- Key performance indicators

INCA- Institute for Nature Conservation in Albania

IPCC – Intergovernmental Panel on Climate Change

MTE: Ministry of Tourism and Environment, Albania

QH: Quadruple Helix

RAPA: Regional Administration of Protected Areas *(for the Qark of Lezhë)*

R&I: Research and Innovation

S3: Smart Specialization Strategy

SEERC: South-East European Research Centre

STI: Science Technology and Innovation

TAW: Tirana Architecture Weeks

TEV: Total Economic Value

RRI: Responsible Research and Innovation

SDGs: Sustainable Development Goals

WB: Western Balkan

WBCs: Western Balkan Countries

WP: Work Package

ZSI: Center for Social Innovation

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Executive summary

This document presents ***Deliverable 4.1– Report on implemented RRI 'anchor' initiative in the Kune-Vain-Tale Lagoon wetland ecosystem***. It is developed in the context of *Work Package 4 (WP4) - Implementation of RRI 'anchor' initiatives towards more efficient and inclusive R&I eco-systems* under ***Task 4.1 - Citizen science activities on the participative assessment methods for the ecosystem services in the Kune-Vain ecosystem, Albania***.

This deliverable presents the following outline:

Section 1 – Introduction

This chapter provides a clear overview of the activities in Work Package 4, aiming to implement Responsible Research and Innovation (RRI) initiatives in the Western Balkan territories. Task 4.1, led by Co-PLAN and the Albanian Ministry of Tourism and Environment (MTE) focused on public engagement and science education, as two core pillars of RRI. The target territory is the wetland ecosystem of Kune-Vaini

Section 2 – Overview of Big Vision/Future scenario

This chapter capitalizes on the activities conducted in WP3 – Task 3.2 Reflection and participatory co-design of the RRI 'anchor' initiatives during the co-design process with local stakeholders, enhancing the main findings from the scenario development process, and highlighting the context in which the target territory was selected and studied.

Section 3 – Overview of all realized Actions/Activities

This section provides the description of 5 activities performed within Work Package 4 as follows:

Activity 1: Co-develop and complete the methodology for ecosystem services (ES) mapping and assessment based on the co-design process with quadruple helix (QH) stakeholders.
Activity 2: Implement the participatory mapping and the Total Economic Value (TEV) survey with the community and local businesses.
Activity 3: Test the results of the mapping and assessment of the selected ES conducted through citizen engagement and establish a platform of ES for the Kune-Vaini Lagoon.
Activity 4: Organize learning and awareness raising activities on the lagoon ES importance and workshop/s to discuss the results of the ES mapping and assessment, as well as the achievements and challenges of public engagement for citizen science.
Activity 5: Co-design with the Regional Administration of Protected Areas (RAPA) recommendations for an institutional action plan to include ES knowledge in the management of protected areas, climate change actions, and in territorial planning.

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Section 4 – RRI-driven institutional/territorial transformations

The section describes how the WBC-RRI.NET project objectives are translated into the work conducted by MTE and Co-PLAN within the anchor initiative, and beyond.

Section 5 – Future actions and regional take-up

This chapter describes the future steps undertaken by the consortium, as well as from endorsement of regional stakeholders, to further promote RRI actions and citizen science in the region.

Section 6 - Concluding remarks and reflection on the road to future scenario/big vision

This section provides an outlook of how close to initial scenario the anchor initiative reached, as well as the conclusions.

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1. Introduction

1.1 Work Package 4

Work Package 4 aimed to implement the RRI 'anchor' initiatives in the 5 Western Balkans (WB) territories. The activities drew on the input of the co-design process, and the aim was to trigger RRI-driven institutional and territorial changes and a multi-level R&I governance framework in the WB territories.

Three horizontal consortium partners (SEERC, ESF, ZSI) provided their support and RRI-related experience throughout the implementation of the anchor initiatives. Moreover, sustainability actions were developed in parallel in other WPs, fostering the creation of 'self-sustaining' ecosystems and the preservation of achieved changes beyond the project's life-span.

'Anchor' initiatives were based on the RRI conditions and RRI keys, leading to the development of open, transparent and democratic R&I systems, while promoting sustainable transformations at institutional and territorial levels.

Task 4.1, led by Co-PLAN and MTE, focused on 2 main RRI keys: public engagement and science education. The co-designed activities of this anchor initiative, titled '***Citizen science activities on the participative assessment methods for the ecosystem services in the Kune-Vain ecosystem'*** were about enabling citizen science for climate change mitigation and disaster preparedness. The scientific research centered around knowledge on ecosystem services provided by the lagoon, which would capacitate the local stakeholders (residents, local businesses, the fishing community, and the regional administration of protected areas) in preventing, mitigating, and/or adapting to upcoming changes. The major challenge in fostering citizen science was the conveying of scientific information to citizens, followed by engaging them in scientific research. The latter seemed of no interest to communities at first. Furthermore, citizens also found it difficult to understand the technicalities of the research and the respective information. Therefore, the processes behind citizen science were very much processes of communication and learning targeted to specific communities and needs.

1. Selected images from the target territory of Kune-Vaini lagoon

Source: RAPA

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By working with the RAPA, we intended to empower them in their conservation practices through fostering scientific research and knowledge in their daily activities. In this way, we aimed to achieve:

- participatory governance of the research on ecosystem services in the lagoon;
- transparency of local processes and their effects on ecosystem functions; and
- enhanced accountability and responsiveness of the stakeholders towards the environment and of the RAPA towards the local community that affects the lagoon ES and benefits from them.

So far, RAPA has been actively engaged in the co-creation processes and has slowly taken a leading role throughout co-development activities of the anchor initiative.

2. Overview of Big Vision/Future scenario

The anchor initiative for the Kune-Vain-Tale Lagoon in Albania sought to address critical regional needs and challenges stemming from environmental and ecological issues. This initiative was driven by the pressing need to protect and manage the Kune and Vaini lagoons, which has remained under protection as a national park and managed nature reserve, respectively, while the Tale lagoon has lost its protected status due to anthropogenic changes.

Covering an area of approximately 4,393 hectares along the Adriatic Sea coast, the Kune-Vain-Tale Protected Lagoon is renowned for its rich biodiversity, including a variety of habitats, species of plants, mammals, birds, amphibians, insects, and fish. The lagoon is crucial for fisheries, pollination, the production of medicinal plants, and carbon sequestration, playing invaluable roles for both natural and anthropogenic habitats.

The local residents, who depend on fishing, agriculture, and tourism – all linked to the lagoon's ecosystem – faced increasing pressure due to climatic changes and human activities. The initiative, therefore, had a significant focus on designing climate mitigation strategies and disaster risk reduction for the lagoon to address flooding risks and climate change.

The lagoon ecosystem was particularly vulnerable to climate change impacts, such as rising temperatures leading to increased water evaporation and salinity, which threatened the ecosystem services vital for the community and the region. The potential sea-level rise was a significant concern, as it could escalate coastal erosion and floods, diminishing the lagoon's capacity to protect surrounding communities.

Despite its importance, there was no management plan in place for the protected area. Only a few international and national initiatives, like those supported by GEF, UN Environment, and UNDP, had contributed to preliminary assessments and strategies for the ecosystem. However, there was a general lack of awareness and mobilization among stakeholders regarding the lagoon's ecosystem services.

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2. Information on the target territory – challenges and opportunities to be faced by the Big Vision

Source: RAPA, own elaboration

The anchor initiative aimed to strengthen institutional capacities in managing the protected area by employing RRI approaches. This initiative was seen as a test-bed for applying RRI principles in Albania, with a focus on environmental sustainability rather than industrial or digital innovation. The initiative involved citizen science activities to foster participative assessment methods for ecosystem services and aimed to empower local stakeholders with knowledge for decision-making and resource governance. This was part of a broader vision to enhance research and innovation in line with Albania's national priorities for climate change adaptation and risk reduction.

The Big Vision and Future Scenario were designed with QH participation during 2 co-design workshops, and with continuous consultation with RAPA and local representatives (from environmental expertise). The Scenarios were elaborated following 2 main axes:

1- Local and institutional capacities:
   a. What is the level of awareness and understanding among the local population about the impacts of climate change and the associated ecological repercussions specific to the lagoon ecosystem?
   b. To what extent are the management and governance entities equipped with the necessary capabilities and resources to effectively respond to and mitigate the impacts of climate change on the lagoon ecosystem?
2- Physical and Ecological Characteristics of the Lagoon in Relation to Climatic Variability
   a. What are the direct and indirect influences of climate change on the physical and ecological integrity of the lagoon?
   b. What is the inherent capacity of the lagoon ecosystem to act as a natural buffer or mitigating agent against the adverse effects of climate change?

   Subsequently the following scenarios were elaborated:

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Scenario 1: Socio-Ecological System prone to being affected by hazards
Ecosystems sensitive to climate and hazards & Low knowledge and apathetic society.

Scenario 2: Socio-Ecological System with high adaptive capacity
Hazard and Climate Resilient Ecosystems & Highly Knowledgeable and Active Society

Scenario 3: The Climate Miracle
Hazard and Climate Resilient Ecosystems & Low Knowledge and Apathetic Society

Scenario 4: Ready for Disaster
Ecosystems sensitive to climate and hazards & Highly Knowledgeable and Active Society

Two primary scenarios emerged as focal points: Scenario 2, "Highly Resilient Socio-Ecological System," and Scenario 4, "Ready for Disaster." The first was assigned as 'most desirable scenario', which may be reached within the upcoming 20 years, while the second as 'most realistic'. Stakeholders unanimously identified Scenario 2 as the most desirable, emphasizing a Climate and Disaster Resilient Ecosystem and a Knowledgeable and Responsive Society. Key features of this scenario include EU membership for Albania, meeting global temperature rise targets, integration into Natura 2000, and various environmental restoration efforts (dune restoration; water purification, etc.). However, recognizing the ambitious nature of these goals, stakeholders acknowledged that achieving such a scenario by 2024 might be unrealistic. Consequently, stakeholders gravitated towards Scenario 4 as a more realistic yet preferred future. This scenario encompasses the challenges of unmet environmental goals, ongoing coastal erosion, and the need for disaster preparedness and responsiveness. Key elements include partial success in ecosystem management and adaptation, ongoing challenges with environmental changes, and active stakeholder engagement in ecosystem service research.

Governmental institutions at both national and local levels emphasized their role in informed decision-making, utilizing bottom-up knowledge and evidence. Academic institutions that were part of the discussion (including Polis University, the Agricultural University of Tirana, and University of Shkodra) agreed to share ongoing research and contribute to open data repositories, enhancing collective knowledge and future collaborations. Private stakeholders, including restaurant owners and fishery representatives, discussed the importance of sustainable practices for the longevity of their businesses, even though they were initially reluctant on the produced results. However, they expressed support for participatory mapping and surveys, and have been engaged relatively smoothly throughout the research.

The chosen scenarios reflect a balanced view of aspirations and realistic expectations, setting a clear path for future collaborative efforts in ecosystem service assessment and management.

Hence, the vision for the territory was formulated as follows:

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*"Our **vision** is that of climate change related regional institutions, local communities and research actors with enhanced research and innovation (R&I) capacities for evidence-based decisions on the management of protected areas in view of climate mitigation and adaptation, with a particular focus on mapping and assessing lagoon ecosystem services vis-à-vis climate change risks and losses. Participatory mapping and assessment for citizen science, R&I governance instruments and public engagement in R&I ensures the RRI in the anchor initiative.*

*The **objective** is to co-design and establish a scientific platform for mapping and assessing ecosystem services in the lagoon, with information produced through citizen science and public engagement, involving all actors of the quadruple helix, and to be endorsed by the RAPA.*

Participatory mapping and assessment methods used for ecosystem services through citizen science will be tested, contributing to societal preparedness for socio-ecological resilience in a context of climate change/disasters, rather than merely for disaster response. These methods enhance societal knowledge on ecosystems [services] and their relation to climate change effects mitigation, while also producing local knowledge on how disasters have influenced or may affect the future of the territory and communities."

3. Overview of all realized Actions/Activities

The activities within the anchor initiative are designed in incremental form, whereby the results of one group of activities are to be used as basis for the following ones.

Activity 1. Co-develop and complete the methodology for ES mapping and assessment based on the co-design process with QH stakeholders

The methodology for mapping and assessing ecosystem services (ES) in the Kune-Vain-Tale lagoon was successfully co-developed and completed through a collaborative process with quadruple helix (QH) stakeholders from May to December 2021. The primary goal was to co-design a detailed methodology for mapping and assessing ecosystem services, by engaging local communities and stakeholders as 'citizen scientists'. This multifaceted activity comprised four sub-activities:

Activity 1.1: Elaborate and test the methods of mapping the selected ES, including the participatory mapping.

From May to June 2022, the working team developed and tested methods for mapping selected ES, incorporating participatory mapping. Five ES were mapped, including biodiversity protection, carbon sequestration, water treatment, flood protection, recreational land-use, and fishing areas. The mapped ES were not necessarily the same ones that were used for assessment purposes, but rather emerged as a current need from RAPA. The methodology was drafted jointly with RAPA and tested in co-design workshops with local experts and community representatives (within WP3 co-design activities, Task 3.2)

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Activity 1.2: Concurrently, the team established and tested methods for assessing the selected ES. This involved various approaches, including market-based methodology for fisheries, direct measurements, and participatory mapping for flood protection and water treatment, and survey-based approaches for tourism and recreational services. While establishing the methodology and developing an extensive database, the methods and datasets were validated with local community within the 2nd co-design workshop (Task 3.2). The comprehensive set of methods that were deliberated/ tested can be found here.

Activity 1.3: From May to September 2022, we focused on engaging stakeholders in the ES mapping and assessment. This included the development of the Total Economic Value (TEV) survey, integrating with the outputs of activities 1.1 and 1.2. The TEV survey (translated in English) can be found here.

Activity 1.4: The knowledge base was established from May 2022 to May 2023, consolidating existing information on the lagoon's ecosystem services. This involved collecting data from various regional directories and existing strategic documents. The statistical data on fishery production was the most difficult to access, while the data on forestry, owned by RAPA in hard-copy, was the easiest to access, yet the most time-consuming to digitize.

One of the most time-intensive activities carried out within this scope was developing a basemap of current forestry land use through drone imagery; and assessing for pre-selected samples the size of the homogenous forest ecosystems. The data gathered would inform the assessment of carbon sequestration in the lagoon biomass. The process was conducted with students from environmental studies, within the course of 'Environmental planning'. A total of 34 students were engaged during the process.

The success of Activity 1 was measured by specific indicators aligned with the WBC-RRI.NET's KPI-s. Key outcomes included:

- The development of a comprehensive set of methods for ES mapping and assessment,
- The publication and testing of the TEV survey methodology, and the
- The establishment of a baseline map with all relevant data layers

A link with the baseline information produced throughout A1 can be found here. Currently RAPA has full access and is managing this folder.

In terms of stakeholders engaged, the core team comprised Co-PLAN (2 F+2 M) and MTE researchers (3 F), and the RAPA team (2 M + 1 F). The extended team included U_POLIS researchers and students (34), fishermen (2), local recreational businesses (4+), and local households (up to 10). Impacted stakeholders encompassed the local community, municipal and district authorities, national and regional environmental inspectorates, and more.

During the implementation of Activity A1 it was observed that engaging local communities in scientific methods and sensitive survey questions was challenging. The reluctancy to collaborate was a factor that was already anticipated by the team. Mitigation involved involving RAPA and local environmental experts

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to build trust and facilitate the process. Moreover, timely access to existing information from public institutions was difficult, even with the intermediation of MTE as project partner.

Activity 2. Implement the participatory mapping and the TEV survey with the community and local businesses

Activity 2, which took place between September 2022 and May 2023, successfully involved the following four sub-activities:

Activity 2.1 The Total Economic Value (TEV) appraisal was carried out with (almost) all households in the area, fishermen, and local businesses. Completed in February 2023, the TEV appraisal provided insights into the perceived value of the lagoon ecosystem from the perspective of local stakeholders. Participants were encouraged to think beyond the individual ecosystem services they use daily, considering broader aspects such as their willingness to pay for protecting ecosystem services, the impact of conservation on their welfare, property values, and the attributed value to each ecosystem service. Fishermen were specifically asked about opportunity costs.

Activity 2.2 Mapping of the area, covering aspects like vegetation/habitats, flood events exposure, waste water discharges, and tourism land use, was conducted from June 2022 to February 2023. This process involved families affected by floods, fishermen, RAPA experts, and local environmental experts. A survey was also conducted among tourists in the Vaini lagoon, focusing on their expenditure and visit duration. The survey is recurrent and can be accessed here.

Of specific importance is the flood mapping conducted throughout this activity, which constitutes the main citizen science action of the anchor initiative. All households were asked to map out the most relevant flood that affected their residence and/or agricultural land and declare the financial damage incurred during the process. While not all households filled in this part of the survey, more than 60 inputs were selected, and further triangulated with data from experts and mapping with RAPA, in a context of flood data scarcity. A bathymetric and flood map were designed for this purpose, in support of the assessment of the ES of flood mitigation.

Activity 2.3 The assessment of ecosystem services, including the value of fisheries, carbon sequestration, flood event moderation, and waste water treatment, was conducted using the methodologies outlined in Activity 1. This assessment also included an optional evaluation of tourism based on the travel costs of tourists visiting Vaini Lagoon.

The completed activities aligned with Goal 2: To enable a model of public engagement and citizen learning through co-developing ecosystem services mapping and assessment in the Kune-Vaini lagoon.

The success of Activity 2 was measured using several indicators:

- A model of public involvement in R&I development and decision making was established.
- Citizen Science activity was delivered through environmental/ecological observation with citizen participation.

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- A GIS database for the lagoon ecosystem land use and five ecosystem services was established and published in an online repository.
- Approximately 100 households and local community representatives, including fishermen and businesses, engaged in project meetings and ecological monitoring.
- At least three RRI-related meetings were conducted, fostering collaboration between R&I and territorial actors.

The core team included Co-PLAN (2 F+2 M) and MTE researchers (3 F), and the RAPA team (2 M + 1 F).. The extended team comprised the local community, including households (110+), fishermen (4), and local recreational businesses (6). Impacted stakeholders included civil society, local and regional governments, and academia in Shkodra and Tirana.

Several challenges were encountered during this phase and effectively addressed:

- Unexpected complications during fieldwork affecting timelines by several months were mitigated by close cooperation between Co-PLAN, MTE, and RAPA, with a contingency plan for extending fieldwork by an additional month.

- To counteract a lack of interest from the local community in the mapping process, RAPA and a local environmental expert were involved to facilitate engagement.

- Concerns from fishermen about exposing business data were addressed by collecting fishing statistics from the regional directorate of agriculture.

- The low response from tourists regarding expenditures in the Lagoon was mitigated by extending the survey period. The survey is still recurring and accessible via a QR code.

Activity 3. Establish a platform of ES for the Kune-Vaini Lagoon.

This activity was conducted between September 2022 and April 2023, and included the following sub-activities:

Activity 3.1 Processing of the information produced from the co-development activities for mapping and assessment of lagoon ES was completed in September 2022 – January 2023. This involved organizing and analyzing data collected during the participatory mapping and TEV survey by Co-PLAN team and sharing it with RAPA for comments.

Activity 3.2 The results of the mapping and assessment process were examined against the initial strengths and challenges identified in the SWOT analysis of the R&I and STI for the region. This examination took place during September 2023 providing critical insights into the effectiveness of the strategies used and the potential areas for improvement.

Activity 3.3 Analysis of the stakeholders' knowledge on ES in the lagoon and its contribution to achieving the future scenario selected by the stakeholders was carried out from January to April 2023. This analysis helped in understanding the real impact of stakeholder involvement in environmental decision-making.

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The completed activities aligned with Goal 3: Strengthening scientific research and learning capacities of RAPA and other stakeholders on ecosystem services in the Kune-Vaini lagoon, thereby enabling the protection of the natural ecosystem from climate change and disasters in a participatory, transparent, and accountability-building manner.

The success of Activity 3 was measured using several indicators:

- Establishment and publication of a comprehensive database (including excel tables, word documents, and GIS maps/database) in an open repository, contributing to the "Scientific Impact" as per WBC-RRI.NET indicators. Main findings of the report can be found here (in Albanian)

- Publication of a scientific paper on RRI, based on project activities, in an open repository and preparation for submission to an open-access scientific journal. This also contributed to the "Scientific Impact."

The core team included Co-PLAN and MTE researchers, along with the RAPA team. The extended team comprised researchers from POLIS University. Impacted stakeholders included the local community, fishermen, local recreational businesses, civil society, and academia in Shkodra and Tirana.

The main challenge was related to timing issues, particularly due to uncertainties surrounding the evolution of the pandemic. This was mitigated by initially planning for a restricted period, allowing for the flexibility to extend the production of outputs beyond the planned period if necessary. This proactive approach ensured that the project could adapt to unforeseen delays while maintaining its objectives and quality of outputs. In terms of publication of scientific papers, the process is still ongoing.

One paper was sent to be published in the Proceedings of the International Conference for Green Agenda in WB (UB-GEF); while an abstract was sent to the AESOP Congress 2024. The focus of the papers was on citizen science activities and enabling knowledge transfer.

Activity 4. Organise learning and awareness raising activities on the lagoon ES importance and workshop/s to discuss the results of the ES mapping and assessment, as well as the achievements and challenges of public engagement for citizen science.

Activity 4, spanning from December 2022 to September 2023, focused on enhancing awareness and understanding of the Kune-Vaini Lagoon's ES. The activity included the following sub-activities:

Activity 4.1 A workshop was organized and held with stakeholders involved in the co-design and co-development processes to discuss the results of the ES mapping and assessment. This workshop, conducted in September 2023, also addressed the achievements and challenges of public engagement in citizen science. See in more detail in the Annex.

Activity 4.2 Two open polls were organized for assessing 1) future scenarios of the Lagoon, and 2) the importance of Lagoon ES. These polls were conducted from December 2022 and are still open.

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Activity 4.3: The results of the Kune-Vaini ES assessment were shared through local/national media and social media from November 2022 todate, fostering a national dialogue on the ES-based management of protected areas. A very detailed list can be found in Annex – activity 4.

The completed activities contributed to Goal 3: Strengthening the scientific research, learning, and capacities of RAPA and other stakeholders on ecosystem services in the Kune-Vaini lagoon. This initiative aimed at protecting the natural ecosystem from climate change and disasters in a participatory, transparent, and accountable manner.

The results include:

- A public event where societal and other Quadruple Helix actors collaborated/shared knowledge on ES importance for lagoon management in view of climate change and disaster risk reduction.
- Engagement of at least 40 local, regional, and national QH actors, contributing to "Democratic R&I Systems."
- Reaching up to 50,000 regional, and national actors, including social media
- 10 public broadcasts where societal and other Quadruple Helix actors discussed and shared knowledge on ES importance for lagoon management.
- CS workshop organized with students within TDW
- Social media posts on CS activities in the Kune-Vain Lagoon (around 50 posts reached along all platforms)
- 2 polls designed and disseminated via Co-PLAN page, RAPA social media page; associated projects web pages
- Up to 50,000 persons reached through dissemination in social media and in situ interaction

The core team included Co-PLAN and MTE researchers, along with the RAPA team. The extended team consisted of the local community, households, fishermen, and local recreational businesses. Impacted stakeholders comprised the extended team, civil society, local and regional governments, and academia in Shkodra and Tirana.

Action 5. Co-design with RAPA recommendations for an institutional action plan to include ES knowledge in the management of protected areas, climate change actions, and in territorial planning.

Activity 5 conducted from September to December 2023, focused on integrating ES knowledge into institutional policies for managing protected areas, addressing climate change, and enhancing territorial planning. It included:

Activity 5.1: A policy brief with recommendations for institutional changes, which was drafted and shared with MTE. These recommendations aimed to incorporate ES knowledge into the management of protected areas, climate change mitigation and adaptation, territorial planning, and the national/regional S3.

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Activity 5.2 Recommendations were drafted regarding the Protected Area Management Plan of the Kune-Vaini Lagoon, in line with legal provisions for revision.

The activities contributed to Goal 3: Enhancing the scientific research, learning, and capacities of RAPA and other stakeholders on ecosystem services in the Kune-Vaini lagoon. This effort supports the protection of the natural ecosystem from climate change and disasters in a participatory, transparent, and accountable way.

The products initiated within this activity include:

- Draft recommendations for including RRI dimensions, specific environmental proposals into the action plan of S3
  Written recommendations were sent to the S3 Working Team, following a joint forum with environmental CSO-s, which was co-organized by S3 Working team and Co-PLAN.
- Draft recommendations of enhanced ecosystem service assessments for Kune Vaini, to include in the upcoming Protected Area Management Plan (which is expected to be initialized mid-2024) – ongoing still, since the process is in inception phase from MTE.
- Draft recommendations for local governments in developing climate action plans and DRR plans (as per national legislation) – these guidelines are in draft format and are expected to be validated with MTE
- Guidelines designed on how to assess ecosystem services in similar contexts in Albania (to be formatted and disseminated)

The core team included Co-PLAN and MTE researchers, along with the RAPA team. The extended team comprised the Municipality of Lezha. Impacted stakeholders will include civil society, local and regional governments, academia in Shkodra and Tirana, but are yet to be reached. The impact of this activity will be observed outside of the duration of the project.

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4. RRI-driven institutional/territorial transformations

Co-PLAN, RAPA and MTE have been diligently working to sustain citizen science activities in the Lagoon of Kune-Vaini for ecosystem service assessment, reflecting the ethos of RRI driven institutional and territorial transformations. This effort aligns with the objectives set in the WBC-RRI.NET project, focusing on enhancing local/regional Research and Innovation (R&I) ecosystems' capacity to address contemporary societal challenges, particularly in the realm of environmental conservation and sustainable development.

RRI-Driven Institutional Transformations

Co-PLAN, in collaboration with RAPA and the Ministry of Tourism and Environment, has focused on institutional transformations guided by RRI principles. This includes the integration of citizen science into the core strategy for ecosystem service assessment in the Lagoon of Kune-Vaini. These institutions have established frameworks and protocols to ensure that research and activities conducted are ethically sound, transparent, and inclusive, engaging a wide range of stakeholders including local communities, fishermen, and civil society organizations.

Specifically, Co-PLAN has implemented a series of training workshops aimed at enhancing the skills and knowledge of RAPA staff and local stakeholders in citizen science methodologies. This has enabled more effective and participatory data collection and analysis, crucial for the assessment of ecosystem services in the Lagoon of Kune-Vaini.

RRI-Driven Territorial Transformations

At the territorial level, these institutions have worked closely with local communities to integrate their knowledge and perspectives into the management and conservation strategies for the Lagoon of Kune-Vaini. This has been achieved through regular community engagement events, workshops, and public consultations. These interactions have not only fostered a sense of ownership among the local population but have also enriched the scientific data with local traditional knowledge.

Moreover, Co-PLAN, in partnership with RAPA and the Ministry, has been instrumental in advocating for the inclusion of RRI principles in regional policy-making. This is exemplified by the integration of the citizen science data into the development of the new Protected Area Management Plan for the Lagoon of Kune-Vaini, which is aligned with the broader regional development strategies and environmental policies. The development of the new plan will be supported by ADF (French Development Association) and implemented by Baastel, in partnership with AOS-Albanian Ornithology Society. While the implementation of the plan is yet in inception phase (MTE is still deciding on the protected areas in Albania that will be further supported with a new management plan), through WBC-RRI.net support it became evident that the baseline information, the methodologies and assessment are an excellent basis to facilitate the process of the new Management Plan, prioritizing the target territory. Co-PLAN experts

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conducted interviews with Baastel and shared the current 'scientific platform' created with citizen science activities.

Moreover, Co-PLAN has capitalized on the best practice of science education in the lagoon to propose new action plans for environmental protection in the S3 process in Albania. In this framework, Co-PLAN is partnering up with the national S3 working team and with an extended network of environmental organizations to develop a more sustainable, ecology-oriented S3 plan for the country. It is yet to be seen if the written recommendations are eventually included in the S3 or not. The document will be published in June 2024.

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5. Future actions and regional take-up

The sustainability of the anchor initiative in the Kune-Vaini lagoon and its regional uptake will be realized by further skill development, enhanced monitoring, more academic engagement, enhanced and informed decision-making, more private sector involvement, and heightened societal awareness (as per Big Vision that was declared).

Central to this initiative is the RAPA team's commitment to developing and refining their skills in assessing ecosystem services. This expertise is not only crucial for the lagoon's management but also holds potential for replication in other similar ecosystems, thereby broadening the impact of their work. Furthermore, RAPA aims to augment its monitoring and administrative capacities, ensuring a more systematic and effective management approach for the lagoon. This enhancement is vital for maintaining the ecological balance and ensuring the lagoon's long-term sustainability, in coherence with the new Management Plan.

Academic stakeholders within the Quadruple Helix framework are set to benefit significantly from the open data research emerging from the initiative. This will not only improve their research capacities but also foster stronger networking opportunities, leading to a more collaborative and innovative research environment. Concurrently, MTE and other national stakeholders will be equipped with evidence-based knowledge, enabling them to make more informed and effective decisions and investments in the lagoon. Such an approach is expected to fortify the lagoon's preservation and resilience. Moreover the academic curricula was enhanced with tacit knowledge on specific ecosystems, methods, field trips, which may and should be replicated further.

Engagement with private stakeholders is also a key aspect of this initiative. By gaining a deeper understanding of the businesses and fishermen's activities' impacts on both the ecosystem and their livelihoods, these stakeholders are encouraged to adopt more sustainable practices (or less polluting ones) This understanding is crucial for the balanced and responsible use of the lagoon's resources.

Beyond the direct stakeholders, the initiative also aims to enhance the collective societal knowledge regarding the importance of the Kune-Vaini lagoon and similar protected areas. Such awareness is essential for building a community that values and actively participates in environmental conservation, and understands its own role in the long-term sustainability of this environment.

The incremental improvements envisaged for the anchor territory are set to be driven by local actors, including RAPA, the National Agency for Protected Areas, and MTE. Their role in fostering a more resilient lagoon ecosystem is crucial. In this context, academic sector actors are anticipated to deepen their involvement in research activities grounded in citizen science principles, promoting a participatory approach (and further citizen science actions, whenever possible)

A shift in perception is also expected among private actors who will begin to view management bodies like RAPA as allies in their endeavors, rather than as controllers. This change is vital for fostering a cooperative and mutually beneficial relationship in the utilization of lagoon resources.

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Inhabitants of the area surrounding the lagoon stand to gain new insights into how the lagoon affects their livelihood, particularly in terms of flood protection. This knowledge is crucial for building a community that is not only aware of but also actively involved in the lagoon's conservation.

The success of the WBC-RRI.Net network's implementation will be measured through several indicators. These include the sustainability of the QH network's cooperation beyond the project, the widespread dissemination and application of knowledge generated by the initiative, RAPA's effective management of a joint knowledge platform on the lagoon's ecosystem services, and legislative and policy changes informed by the initiative's recommendations. Additionally, the integration of RRI keys in future projects, the adoption of QH practices in similar initiatives, and the application of ecosystem service evaluation methods in other ecosystems in Albania will be significant markers of the initiative's impact and success.

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6. Concluding remarks and reflection on the road to future scenario/big vision

(An outlook of how close to initial scenario the anchor reached)

The WBC-RRI.NET project, particularly through its Work Package 4, focuses on the integration of Responsible Research and Innovation (RRI) within five Western Balkan regions. This initiative utilizes a co-design approach to initiate transformative changes within institutional and territorial domains, fostering a multi-tiered research and innovation (R&I) governance structure across these regions. Each territory is responsible for specific assignments (Tasks 4.1 to 4.5), led by respective Western Balkan partners who concentrate on various elements of RRI. These tasks are supported by horizontal partners (SEERC, ESF, ZSI) throughout their execution. The 'anchor' initiatives, rooted in RRI principles and key elements, aim to establish open, democratic R&I systems that encourage sustainable changes at both institutional and territorial levels.

As outlined in Section 2: Big Vision/Future Scenario Overview, two prospective scenarios have been identified. To realize these scenarios optimally, it's crucial to embed RRI-oriented knowledge base into the RAPA's modus operandi, the MTE vision for environmental protection (national, regional, etc.), and in local stakeholders. Applying citizen science more widely is a must in this regard.

Citizen science activities are crucial, especially in environmental and ecological research contexts like those explored in Albania. These activities, which involve the public in scientific research, enable scientists to collect more data than they could alone, while also engaging and educating the community.

The necessity of citizen science stems from several factors. Firstly, it allows for the collection of vast amounts of data across various locations and times, overcoming the resource limitations often faced by researchers. It also serves as a powerful tool for community engagement and education, raising awareness about local and global environmental issues. Citizen science brings in diverse perspectives, leading to more comprehensive and inclusive research outcomes. Additionally, it promotes environmental stewardship, making community members more informed and motivated to protect their local environment.

Replicating citizen science activities in Albania involves a few strategic approaches. It's crucial to identify local needs and interests to ensure that the projects are relevant and engaging for the community. Collaborating with local institutions, such as schools, universities, NGOs, and community groups, is key to developing and promoting these projects. Providing training sessions and accessible resources ensures participants can effectively contribute to the research. Technology plays a vital role too, with mobile apps and online platforms simplifying data collection and widening participation.

The main triumph of our initiative is rooted in its bottom-up approach to participatory assessment of Ecosystem Services. This strategy has proven to be highly effective in promoting behavioral change, despite the challenges in measuring and monitoring its direct impact. Additionally, the involvement of

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RAPA, an intermediary public body, has been a pivotal factor for success, enhancing the initiative's impact despite RAPA not being a formal project partner.

In summary, our initiative demonstrates the effectiveness of a participatory, bottom-up approach in ecosystem service assessment and highlights the potential for influencing broader policy and planning strategies at both national and European levels.

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Annex - Detailed overview of activities

Activity 1 –Co-develop and complete the methodology for ES mapping and assessment based on the co-design process with QH stakeholders

Description of sub-activities (mention tools and resources used and how sub-activities were monitored/evaluated)	***Activity 1.1***: Elaborate and test the methods of mapping the selected ES, including the participatory mapping. The activity focuses on all preparatory work to elaborate and test the methods of mapping and assessment of the selected ES, including the participatory mapping; which were implemented during May-June 2022. While the process was mainly desk-research, it included initial collaboration with RAPA and initial trust-building efforts with the local community. The selected ES for mapping were: - biodiversity protection (vegetation and habitats land-use); - carbon sequestration (vegetation, lagoon, land – land use; - waste water treatment – quality of the water in 7 specific areas corresponding to agriculture land water discharge in the lagoon from the drainage infrastructure and water exchange between the sea and the lagoon); - flood protection (mapping coastal erosion in the last 30 years, flooded areas and households and businesses impacted, the profile of the flooded/protected area); - land-use of recreational activities; fishing areas. The choice was based on current data availability; skillset and technical knowledge of research team; time-efforts to map out each ES; previous experience (i.e. Co-PLAN capitalized on a best practice for participatory flood mapping to revise the methodology for this component); and the relevance of the mapping process to the assessment of respective ES. RAPA was instrumental in deciding over the above. Co-PLAN undertook a very thorough process of drone-mapping of the existing biodiversity of the lagoon, to later compare it with the forest cadaster of 1970 (which was duly digitized) Moreover, as part of mapping for CO2 sequestration service, a team of researchers from Co-PLAN organized an open classroom with students from Planning and Environmental studies, in the

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	framework of the 'environmental management' course. The students were supported and trained to measure and survey the homogenous pine forest habitat, in order to implement the IPCC methodology duly. ***Activity 1.2*** Elaborate and test the methods of assessing the selected ES. The assessment of the ES was conducted for: 1) Fisheries, through the market-based methodology 2) Carbon sequestration (vegetation through direct measurement and land/lagoon through IPCC 2006 conversion factors); 3) flood protection from storm surges and tide, through participatory mapping and GIS mapping of coastal erosion; 4) water treatment, through direct measurements of the water quality in the lagoon during the three specific seasons; 5) tourism and recreational services through survey and participatory mapping; 6) Total Economic Value (TEV) through an appraisal with citizen engagement, survey-based. The methodologies were mainly desk research, but their validation and consultation was done in the 2nd co-design workshop (Task 3.2) and throughout several informal meetings with local experts and RAPA. ***Activity 1.3*** Elaborate and test the methods of engaging stakeholders (community, fishermen, local businesses and RAPA) in the ES mapping and assessment – the TEV survey. Before introducing methods for citizen engagement, the research team conducted trainings for citizen science and science communication; and made efforts in addressing the local community in an appropriate way. These efforts included: - Selecting a community representative as part of the project team, to follow up all research activities - Having RAPA representatives on board for site visits and inspections, even though no direct contact with households was needed at the time. - Setting connections and organizing pilot meetings in the local restaurants / bars.

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	After these processes, the TEV survey was piloted (and finalized). The researcher of Co-PLAN trained up to 10 individuals to support the process of developing the survey (in house junior researchers, and outside expertise, including students). The TEV survey was modelled as a census of all households within the protected area limits, and a protocol was established on implementing the survey in case there were reluctant respondents. This was necessary, as it turned out that 40% of households were either empty, or not willing to partake. Therefore the final TEV survey included 112 respondents inside the lagoon borders and in an extended 200 meters buffer area. ***Activity 1.4*** Establish the knowledge background (including existing mapping layers) that will support the implementation of action 2. This activity included the development of a structured methodology for the ES mapping and assessment process, which is currently owned by RAPA, and may be exploited in other This repository includes: - Desk review of all methods available for ES assessment - ES categorization protocol - In depth methodology used for the Kune-Vaini case study - Basemaps with information that was produced during the research to create the knowledge base - TEV survey outline - Etc.
KPIs / results achieved and how they can be documented	• The development of a comprehensive set of methods for ES mapping and assessment (realized) • The publication and testing of the TEV survey methodology (realized) • The establishment of a baseline set of maps with all relevant data layers (realized)
Stakeholders involved (quantification, type, gender where applicable)	The focus in this stage was on building trust and capacitating RAPA; as well as making first connection with local households to estimate how it was more feasible to draft the TEV appraisal and other assessment processes. This happened to become crucial in the next steps, when the support of all households was needed for the surveys. In terms of stakeholders engaged, the core team comprised Co-PLAN (2 F+2 M) and MTE researchers (3 F), and the RAPA team (2 M + 1 F). The extended team included U_POLIS researchers and students (34), fishermen (2), local recreational businesses (4+), and local households (up to 10). Impacted stakeholders

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	encompassed the local community, municipal and district authorities, national and regional environmental inspectorates, and more.
Describe challenges / problems in the implementation	Almost all activities were finalized on time, except for the publication in an online repository of the final methodologies. This was postponed due to the fact that data processing and TEV were not yet concluded. The methodology is a dynamic document that can be improved in time.
Mitigation measures and changes compared to the plan / adaptations	The team adapted their time-schedule to fit the demands of acquiring initial information from local stakeholders
Illustrations (Photos, etc.)	 Preliminary meetings with community representatives to set up knowledge base Meeting of extended working group (Co-PLAN+RAPA)

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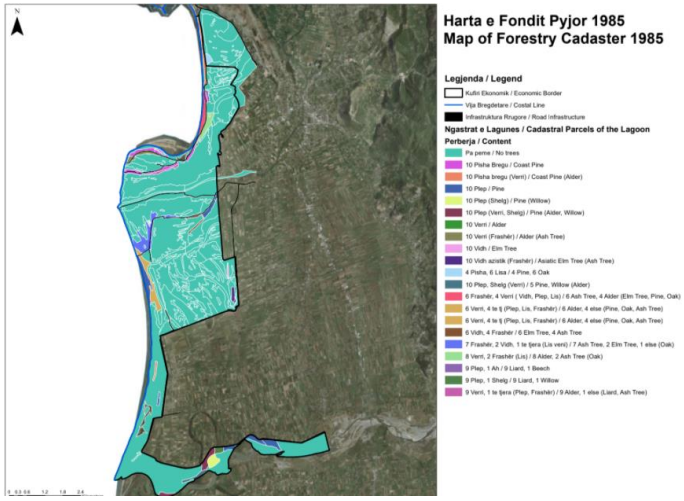
Validation of methodology for mapping and assessment with local stakeholders



Digitization in GIS of existing physical maps to include in basemap repository of RAPA

Pilot of TEV survey

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Drone imagery conducted for biodiversity mapping

Team of students surveying homogenous pine forests in the lagoon

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Activity 2 – Implement the participatory mapping and the TEV survey with the community and local businesses

Description of sub-activities (mention tools and resources used and how sub-activities were monitored/evaluated)	***Activity 2.1*** Implement the TEV appraisal with all households in the area, the fishermen and the local businesses. After finalizing the pilot phase and revising the TEV survey, 112 questionnaires were implemented, along with semi-structured interviews with fishermen and local businesses, finalized during May 2023. Data from these interviews was processed and included in the final study (currently unpublished) In parallel to the interviews, the team conducted the assessment of recreational services, in an online format, activated through a QR code. The number of respondents by January 2023 was lower than the original target (150/200), however the survey remains open. The initial results from the data have been processed and the current findings were presented to the final consultation processes with the communities. ***Activity 2.2*** Map the vegetation/habitats, flood events exposure, wastewater discharges, and tourism land use (bird watching sites, coast, sports and trekking). This mapping differs from the base maps produced for A1.1 because the mapping within this activity displays also findings. The maps covered the following: **a) TEV assessment:** several maps indicating the perceived difference in quality/changes within sub-areas of the lagoons (Kune lagoon; Vain lagoon; Drin River; etc.) were produced. General quality and the perceived changes: households were asked to estimate how they perceived the change in last 5 years in Kune, Vain, Drin river, Coastal area, embankments, etc. ranking them 1-3. A map was produced with these findings Conservative measures, impact and implementation (TEV survey included a section where households were asked on their willingness to pay for ecosystem restoration (mapping the areas where respondents were more eager to pay for improvements in their own ecosystem) Such maps were constructed by capitalizing on the relevant charts and graphs, extracted from the analyses of the TEV questionnaires. **b) Fishery assessment:** conceptual map of fish market flows

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	This map was included in the final assessment of fishery services. **c) Flood mitigation assessment** Map of water volume contained through the lagoon bed in different time-frames Map of the potential location of flood mitigation measures/infrastructure. **d) Wastewater treatment:** Water quality parameters across the lagoon and the 'dilution' factor, i.e. how much of the water pollution is contained within the lagoon and not discharged in the sea This component produced the highest number of maps given the fact that *16 components of water quality* have been measured in three different periods of the year. Currently 5 water quality components have been mapped, that are most relevant in the context of wetlands (EC, COD, NH4, NO3, PO4). In the follow-up period more maps can be produced by RAPA, as the staff was trained how to use GIS-based heatmaps to produce these types of maps. (see more in activity 5 illustrations) **e) Carbon sequestration service:** Mapping results according to the stored and sequestrated values from soil, forestry and water As of now, there are three maps for this component, designed by using the ARIES platform (open access) for mapping ecosystem services through available global data, specifically for vegetation and soil. The other maps, specifically for the pine forest and water vegetation, were capitalized on the collected data through field measurements. **f) Recreation services:** Mapping current touristic land uses Map on findings from the online survey showcasing main activities that tourists choose to do Mind map / perceptive map of lagoon in collage format It is to be noted that these mapping processes were mainly participatory, with a few highlights worth underscoring: c) Flood mapping- this process was an innovative approach developed within the citizen science approach, whereby citizens were asked to map out the frequency of flooding in their property and the most significant ones. The process was done in parallel with the TEV survey and also in the framework of the workshop 'Piloting a citizen science process for flood and

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	recreation services' which was organized in October 2022 by CoPLAN with students from Polis University. Along with participative flood mapping, students were also engaged in sketches, mind-maps and collages of the lagoon to use as mapping of recreational services. ***Activity 2.3*** Assess the value of fisheries, carbon sequestration, moderation of flood events, wastewater treatment, and tourism This assessment was finalized and shared with QH stakeholders for comments. We perceive the assessment as a dynamic document, ever-changing and owned by RAPA. The methods that were piloted previously in A1.2 were fully validated. The assessment suggests that the flood mitigation service of the lagoon is the most valuable; while the recreational service is the least important. The first was assessed by estimating the cost for investing on a coastal barrier that would mitigate the same volume of flood that is currently absorbed by the presence of the lagoon (replacement cost). The latter was assessed through the use cost method, estimating the average expenditure of tourists for the use of recreational services in the lagoon. In any case, the assessment report highlights that the nature of this appraisal is not comparative, but it just aims to highlight the services that are important, yet not fully visible.
KPIs / results achieved and how they can be documented	Maps of assessment of ES designed and formatted TEV survey data published Scanned document with compiled questionnaire and responses (112) Minutes and transcripts of meetings with other stakeholders Data processed from recreational survey (online excel sheet) 110 persons engaged in survey 150 tourists engaged in survey 6 governance actors engaged in tacit scientific research 35+ students engaged in citizen science
Stakeholders involved (quantification, type, gender where applicable)	The core team included Co-PLAN (2 F+2 M) and MTE researchers (3 F), and the RAPA team (2 M + 1 F). The extended team comprised the local community, including households (110+), fishermen (4), and local recreational businesses (6). Around 35 students were engaged in workshop and survey implementation. Impacted stakeholders included civil society, local and regional governments, and academia in Shkodra and Tirana. As for the 112 household surveys:

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	Most of the respondents were male (55%), and in their late 50s (20%). A considerable number of households (50) were reluctant to respond therefore the area of survey was extended. In cases of interviews with fishermen, whenever there was reluctancy to respond, the interviewer took a brief statement and asked some open-end questions.
Describe challenges / problems in the implementation	Building confidence in the fish distribution industry remained difficult throughout the whole research period. Even if they make it possible to contact people and conduct interviews, the information that the research team has sought is sometimes incomplete or inconsistent. Aside from this, the time needed for all activities within this Action were 2-3 months longer than anticipated. This did not pose any challenge to the results, because the planned timeline could be extended with flexibility. Reluctant respondents for the survey were challenging for the validity of results. Therefore the area of survey was extended to 200 meters buffer area outside the lagoon border.
Mitigation measures and changes compared to the plan / adaptations	In order to validate their interviews with representatives from the fish distribution sector, the team had to use the triangulation method. To do this, regional fish production statistics were consulted, and a parallel semi-structured interview was conducted with local environmental experts and RAPA staff to develop the fish production matrix. By using this technique, the results of the interviews with industry representatives were validated.
Illustrations (Photos, etc.)	

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Field work – Semi structured interviews for the assessment of Fishery Ecosystem Service

Focus group with local experts for the assessment of the Flood Protection EC

Monitoring of water quality samples

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Students mapping recreational services through sketches

Infographics with the main findings

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Activity 3 – Establish a platform of ES for the Kune-Vaini Lagoon.

Description of sub-activities (mention tools and resources used and how sub-activities were monitored/evaluated)	***Activity 3.1*** Process the information produced out of the co-development activities for mapping and assessment of lagoon ES. This process was developed in parallel with assessment of findings from the TEV survey and was completed in September 2023. This involved organizing and analyzing data collected during the participatory mapping and TEV survey and sharing it with RAPA for comments. It is a continuation of A2.3, but extrapolates and cross-references information between all primary and secondary sources. This was mainly desk work of the extended research group (Co-PLAN, RAPA) ***Activity 3.2*** Examine the results of the mapping & assessment process against the initial strengths and challenges identified in the SWOT analysis of the R&I and STI for the region. Co-PLAN, together with RAPA designed a revised SWOT analysis for the territory and identified a framework of rehabilitation interventions; as well as needs for capacity development within local stakeholders. This was subsequently validated in a focus group with local representatives, where they were presented the preliminary findings from the research. The discussions emerged on the validity of some results, and on recommendations for future work. All these processes were later re-assessed in the final workshop (A4.1) and integrated in the Final Report on the Assessment of ES (to be published) ***Activity 3.3*** Analyse the contribution of the stakeholders' knowledge on ES in the lagoon to the achievement of the future scenario selected by the stakeholders. A comprehensive report was drafted, bringing together the knowledge gathered through the TEV survey in terms of behaviors, and conservation measures necessary to protect and enhance the lagoon ecosystem Some conclusions include: - While most households use artesian wells for water supply, it is evidenced that the pollution inside the lagoon is quite high, containing even heavy metals. The use of artesian wells would risk contamination of water in case of flooding or erosions - Most inhabitants are not aware of the restrictions posed over the protected area (conservation measures) and act

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	against them (or witness violations periodically). These include illegal hunting; waste discharge; illegal fishing; etc. - Anthropocentric interventions have decreased the quality of the lagoon biodiversity in an observable time-frame (within 5 years), which is seen as problematic by the inhabitants - The perceived value of the lagoon by inhabitants is very high; and the same for the value of their own residences within the lagoon. Most respondents would not sell their property under any circumstance. This data was validated in the focus group with local community, and an exit poll was designed, aiming at measuring the knowledge transfer process for the participants. The outline of this survey can be found here. The self-assessment of knowledge suggests that almost all have gained useful knowledge on the lagoon ecosystems, especially pertaining to climate change effects. Most importantly, the exit poll suggested some slightly positive behavioral change from respondents, when asked if they would prefer to continue building inside the lagoon; or when asked about illegal fishing activities.
KPIs / results achieved and how they can be documented	- Integrated report on the assessment of ES in the lagoon is prepared and distributed for comments (not published yet) - Infographics package developed for exploitation
Stakeholders involved (quantification, type, gender where applicable)	For the implementation of A3.1 mainly academic and research performing actors were involved (4 people engaged from Co-PLAN and peer-review process from MTE; Polis University; RAPA and a local environmental expert) The focus group engaged 26 community representatives (25 M, 1 F)
Describe challenges / problems in the implementation	Activities were postponed because they were linked progressively with each other. Therefore, the challenge lied in the allocation of time for A3.1. Not all the ES assessments were finalized within the expected timeframe, because of the unavailability of data and the need to triangulate most of the information received by secondary sources. Nevertheless, no major obstacles were faced.
Mitigation measures and changes compared to the plan / adaptations	There are no significant changes from the proposed action plan; aside from the postponement of starting and finishing dates of sub-activities.

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Illustrations (Photos, etc.)	 Validation of findings in focus group Informal co-assessment meeting with local businesses and fishermen

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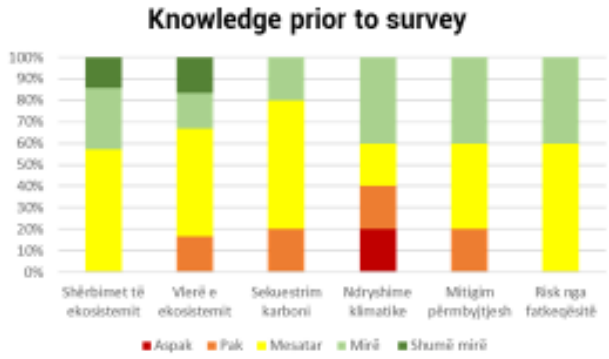

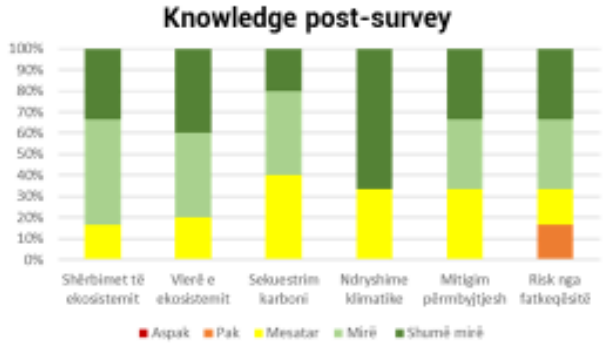

Self-assessment of gained knowledge throughout the anchor initiative – focus group exit poll

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Activity 4 – Organise learning and awareness raising activities on the lagoon ES importance and workshop/s to discuss the results of the ES mapping and assessment, as well as the achievements and challenges of public engagement for citizen science

Description of sub-activities (mention tools and resources used and how sub-activities were monitored/evaluated)	***Activity 4.1*** Organize and hold a workshop with the stakeholders involved in the co-design and co-development processes to discuss the results of ES mapping and assessment and conclude with achievements and challenges of public engagement for citizen science. This activity was slightly postponed in regard to the original date, from May 2023 to September 2023 because of the need to revise, consult and sharpen the findings of the ES assessment in smaller focus groups first. The final co-assessment workshop was organized with a careful selection / invitation of QH representatives (mainly from local level) and served as a milestone event to disseminate and exploit anchor initiative results. Firstly, the methodology of assessment and Big Vision scenario were re-discussed and validated in smaller groups. Secondly, the research findings were presented and shared in online form with the represented participants, and beyond. Thirdly, a collaborative network (informal) was established with academicians who are conducting research on the same area; or in similar topics. They were invited as keynote presenters and exchanged practices and open-source documents subsequently. During the co-assessment workshop, a total of 35 participants were present, predominantly from academia and governance, with a few business owners and some representatives from civil society (CSO-s and local inhabitants). The groups validated most of findings from the previous activities. *Activity 4.2* Organize two open polls for 1) future scenarios of the Lagoon; 2) the Lagoon ES importance The polls were set up in parallel with TEV survey and are still open. These polls indicated the preferred scenarios but also included some reference to the current knowledge on ES-s and the anthropocentric impact towards the ecosystem. Data resulting from the polls suggest that the level of awareness towards the benefits from the protection of the lagoon is higher

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	for the general public than for the inhabitants throughout all the components of the assessment (i.e. for all ecosystem services). Nevertheless, the level of education of the respondent was not indicated in the polls. The processed data (received until December 2023) is part of the findings delivered in the Policy Paper (A5.1) ***Activity 4.3*** Share in local/national media and social media the results of the Kune-Vain ES assessment to enable a national dialogue on the ES-based management of protected areas. Currently, the team has shared information on the ES assessment process periodically on social media (on average with 1 post per 2 weeks). The process of designing infographics with main findings, targeted to a wider audience and communities, has started since spring 2023 and will continue outside project implementation. A total of up to 50 posts were disseminated in 4 social media channels (facebook, Instagram, linkedin and x) with an average outreach of 1000 persons per post. Moreover, the initiative was invited in 2 national forums to be presented as best practice (see in Activity 4.4) ***Activity 4.4*** Disseminate in national and international forums the experience of citizen science activities in the Kune-Vain Lagoon This activity was added as a cross-cutting activity with WP5 and WP2 and focuses on nourishing a platform of citizen science at the national and international level, setting up capacities and financing opportunities for similar initiatives in the Western Balkans. During the project implementation, Co-PLAN and MTE have shared its experience in citizen science in Kune-Vain Lagoon during many events, such as: **Tirana Design Weeks** (September 2021) Co-PLAN researchers organized a workshop titled '*Resilience planning*' where participatory mapping methods for flood mitigation were piloted. Open Science Communication Conference: **Roundtable on Citizen Science** (Center for Promotion of Science, Belgrade, November 2022) Co-PLAN was invited by the Center for Promotion of Science in the roundtable moderated by Elke Dall, to share the preliminary

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	findings from the anchor initiative among other prominent CS initiatives and projects. UB-GEF Scientific conference on **Green Agenda** in WB (June 2023, Belgrade) Co-PLAN experts presented the contribution *'Citizen Science practices for participatory ecosystem service evaluation in wetland areas. Case study: the Kune-Vaini lagoon'* National Forum on **Natura 2000**, Tirana (May 2023) The National forum was organized by the Institute for Nature Conservation in Albania (INCA), and provided a platform for CSO-s to share knowledge on protection of biodiversity. Co-PLAN was invited as panelist to share the ES assessment methods. 2nd National Forum on **Protected Areas**, Tirana (July 2023) The National Forum was organized by Albanian Ornothological Society (AOS), with the aim to discuss the current changes in legislation for protected areas. Co-PLAN researchers presented the findings from the **Earth Week** – Polis University (April 2023) Within the series of events, workshops and conferences organized during Earth Week at Polis, Co-PLAN researchers were invited to present an open lecture on citizen science. **Tirana Architecture Week** (TAW)– Polis University (October 2022) Within TAW 2022 Co-PLAN organized a workshop focused on 'Piloting citizen science in protected areas in Albania', which spanned along 5 days, included 3 open lectures, 2 site visits, and a series of innovative mapping and design outputs. **S3 Forum** with environmental CSO-s (December 2023) Co-PLAN was invited as facilitator in a forum organized by S3 working team in Albania. The scope of the meeting was to introduce environmental CSO-s to the process of S3 and to gain insights from CSO-s on improving the S3 action plan. Co-PLAN presented the CS process and provided written recommendations to be included in S3. Webinar on **Spreading Citizen Science** in WB- organized by WBC-RRI.net in January 2024 The webinar was organized by Jana Prodanova (MASA) and Elke Dall (ZSI) and showcased how citizen science initiatives in STEM and SHS can be supported, promoted and implemented in WB.

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	AESOP Congress in July 2024 (awaiting confirmation) Co-PLAN researchers have applied with the abstract titled *"Citizen Science as a Conduit for Democratic Engagement in Spatial Planning – case studies from EU and WB*" ***Activity 4.5*** Organize learning activities with students from local high schools and environmental studies on CS Within this framework, Co-PLAN and MTE, in collaboration with RAPA, Polis University, other local universities (i.e. Agricultural University of Tirana; University of Shkodra; etc) has organized lectures, workshops and on-site visits for ES assessment through citizen science. 1 workshop was organized with Polis University students as part of Tirana Architecture Weeks in September 2022 (reported as part of WP2 activities). This activity is expected to be replicated in October 2024, within Tirana Architecture Weeks, with a focus on designing Nature Based Solutions to prevent climate change effects in the lagoon, based on citizen science methods. The research team expects to involve high-school students in open classrooms dedicated to ecosystem-service assessments for Kune-Vain Lagoon. Other activities are reported in A4.4. ***Activity 4.6*** Develop synergies with local /regional Research Performing Organizations and Initiatives on similar topics of research: climate change effects mitigation; ecosystem service evaluation, etc. This activity was added to encourage synergies with other activities, stakeholders and initiatives that are ongoing with local and regional partners from Co-PLAN and MTE, concerning either the research topic; or the research territory. In this framework, Co-PLAN was coupled with Polis University in organizing a joint workshop on 'Future scenarios for the development of Lezha in the post-pandemic period', co-financed by Polis through NASRI funding, and WBC-RRI.net. This workshop was held on 28th February in Lezha. Furthermore, the synergies may extend to collaborations with PhD researchers at local institutions; networking with local NGOs that are developing research in the Kune-Vain area, etc.

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	Currently, Co-PLAN has established a network of environmental NGOs which are close collaborators. During May 2023, Co-PLAN organized a National Forum on Climate together with 2 local NGOs. Within this Forum, the anchor initiative of Kune Vain was presented as a success story. Similarly, the synergy was extended to collaborators of MTE and RAPA. During this implementation period, Co-PLAN and Polis jointly participated in the Mutual Learning Event in Banja Luka, 27-28 April 2023, where we were able to share and exchange our experience in citizen science with other counterparts from the Western Balkans Countries. While this activity is not specifically anchored to WP4, the synergies created with local academic partners for the promotion of CS fall under the scope of this activity.
KPIs / results achieved and how they can be documented	A public event where societal and other Quadruple Helix actors collaborated/shared knowledge on ES importance for lagoon management in view of climate change and disaster risk reduction. Engagement of at least 40 local, regional, and national QH actors, contributing to "Democratic R&I Systems." Reaching up to 50,000 regional, and national actors, including social media 10 public broadcasts where societal and other Quadruple Helix actors discussed and shared knowledge on ES importance for lagoon management. CS workshop organized with students within TDW Social media posts on CS activities in the Kune-Vain Lagoon (around 50 posts reached along all platforms) 2 polls designed and disseminated via Co-PLAN page, RAPA social media page; associated projects web pages Up to 50,000 persons reached through dissemination in social media and in situ interaction
Stakeholders involved (quantification, type, gender where applicable)	The stakeholders involved during this reporting period for these activities are mainly research staff from Co-PLAN, 2-3 academic representatives from Polis University, students (20+), etc. It is not possible to quantify the outreach of stakeholders within A4.4 – A4.6, with events varying from 20 to 100 participants. However, an approximate estimation from social media outreach suggests around 50,000 persons engaging in the posts on the

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	anchor initiative activities (agglomerated result, not singled out persons)
Describe challenges / problems in the implementation	The activities within this action were quite diverse and targeted different types of stakeholders, therefore posing different sets of challenges: - Polls did not receive a representative number of responses at first - International Forums to access networking opportunities for CS had high registration costs (i.e., the ECSITE platform) therefore not feasible - Challenges in securing wide participation from QH in final workshop - Focus group was not gender-diverse and it was very difficult to reach community representatives to be part of it
Mitigation measures and changes compared to the plan / adaptations	- Polls were disseminated via alternative channels aside from Co-PLAN: RAPA social media; Polis University social media; etc. - Participation in the co-design workshop was facilitated by RAPA and MTE with a special focus on diversity of representation - Participation in the community-based focus groups was facilitated by the heads of villages, to ensure minimal representation. The fact that the gender balance was off did not affect the validity of responses in the exit poll, as they were filling information representative of their household. The representation was secured by inviting them in a restaurant, relaxed setting. - Infographics and informative materials were disseminated through various channels and provided also in the printed version - The team identified alternative forums (in collaboration with horizontal partners) to broadcast anchor initiative results. Such is the webinar on 'Spreading citizen science in WB' organized by MASA and ZSI in the framework of WBC-RRI.net

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Illustrations (Photos, etc.)	Co-Plan and Polis University joint workshop on 'Future scenarios for the development of Lezha and Kune Vaini in the post-pandemic period', co-financed by Polis through NASRI funding, and WBC-RRI.net Presentation of findings in UB-GEF Scientific Conference, Belgrade

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Co-designing Nature-based solutions against flooding with students in the framework of the workshop 'RRI going high-piloting citizen science in the Kune Vaini Lagoon' – Polis University

Final co-assessment workshop with QH stakeholders

Invitation in National Forum panel on Natura 2000 areas, Albania

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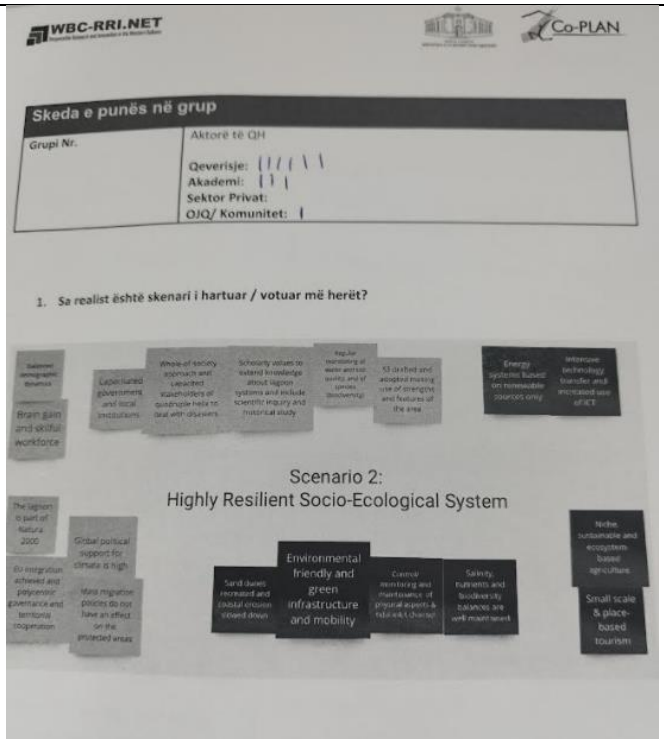

Group work format for co-assessment of Big Vision and Scenarios

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Activity 5 – Co-design with RAPA recommendations for an institutional action plan to include ES knowledge in the management of protected areas, climate change actions, and in territorial planning

Description of sub-activities (mention tools and resources used and how sub-activities were monitored/evaluated)	***Activity 5.1:*** Draft and share at least one policy brief with recommendations for institutional changes that incorporate ES knowledge in the management of protected areas, climate change mitigation and adaptation, in territorial planning and in the national/regional S3 These recommendations aimed to incorporate ES knowledge into the management of protected areas, climate change mitigation and adaptation, territorial planning, and the national/regional S3. The recommendations are drafted in the form of a policy brief and are currently under revision from MTE. ***Activity 5.2*** Draft and share with QH stakeholders locally and at the national level institutions recommendations on the Protected Area Management Plan of the Kune-Vaini Lagoon, to be revised as foreseen by law. Within this activity Co-PLAN has contributed to the following processes: - Draft recommendations for including RRI dimensions, specific environmental proposals into the action plan of S3 - Written recommendations were sent to the S3 Working Team, following a joint forum with environmental CSO-s, which was co-organized by S3 Working team and Co-PLAN. - Draft recommendations of enhanced ecosystem service assessments for Kune Vaini, to include in the upcoming Protected Area Management Plan (which is expected to be initialized mid-2024) – ongoing still, since the process is in inception phase from MTE. - Draft recommendations for local governments in developing climate action plans and DRR plans (as per national legislation) – these guidelines are in draft format and are expected to be validated with MTE - Guidelines designed on how to assess ecosystem services in similar contexts in Albania (to be formatted and disseminated)

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	The activities contributed to Goal 3: Enhancing the scientific research, learning, and capacities of RAPA and other stakeholders on ecosystem services in the Kune-Vaini lagoon. This effort supports the protection of the natural ecosystem from climate change and disasters in a participatory, transparent, and accountable way.
KPIs / results achieved and how they can be documented	- A policy brief on RRI in Albania, focusing on citizen engagement and governance RRI keys (the brief is not yet published by MTE) - Addressing at least two local/regional/national policies (spatial planning and S3) in recommendations for policy influencing by RRI results (3 are ongoing, to be finalized outside of project duration) - A new policy (ES-based management plan) proposed at the regional level in Lezhë District, Northern Albania, for innovation planning through citizen science (ongoing, to be finalized outside of project duration) - At least 5 public institutions at the national/regional level reached by the policy recommendations on ES-based management of protected areas. (not yet reached, 10 expected)
Stakeholders involved (quantification, type, gender where applicable)	The core team included Co-PLAN and MTE researchers, along with the RAPA team. The extended team comprised the Municipality of Lezha. Impacted stakeholders are difficult to assess at this stage, since the policy recommendations are not yet published. The estimated outreach is 10 institutions and +1000 persons (through mailing and social media)
Describe challenges / problems in the implementation	Delays because of the need to validate findings with MTE outside of project team.
Mitigation measures and changes compared to the plan / adaptations	**n/a**
Illustrations (Photos, etc.)	A representation of key findings, included in the integrated study report, and referenced in the Policy Brief:

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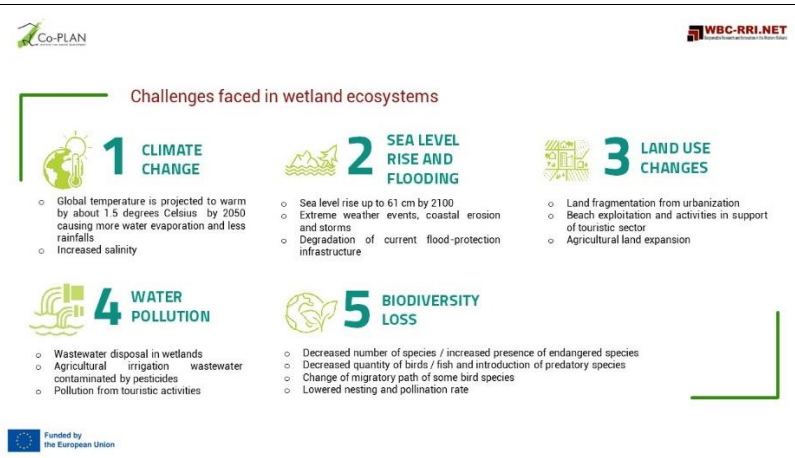

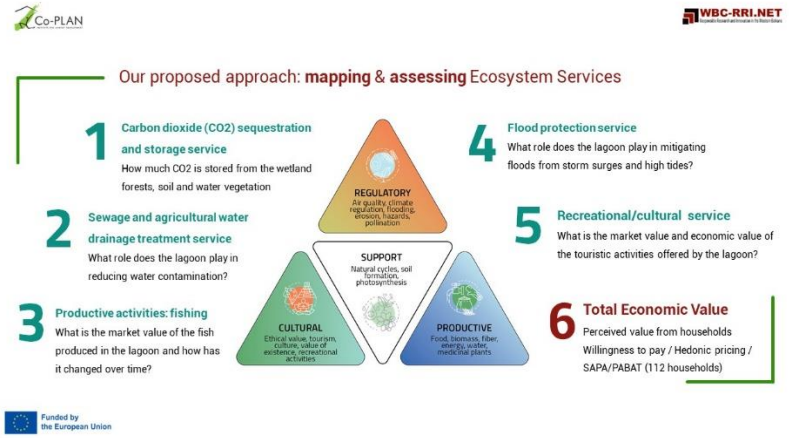

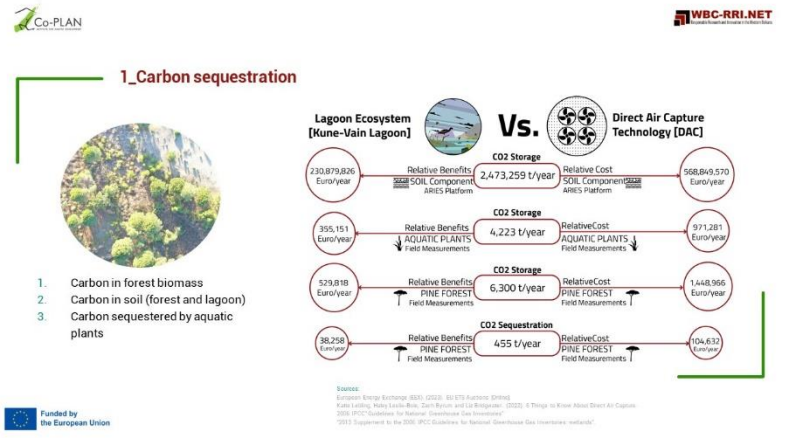

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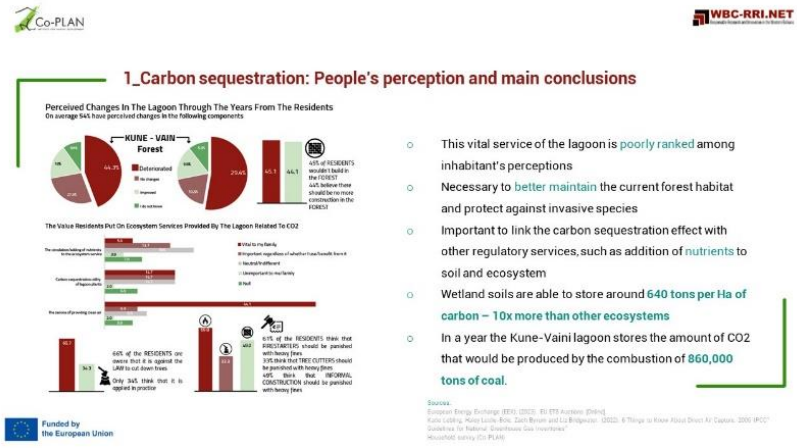

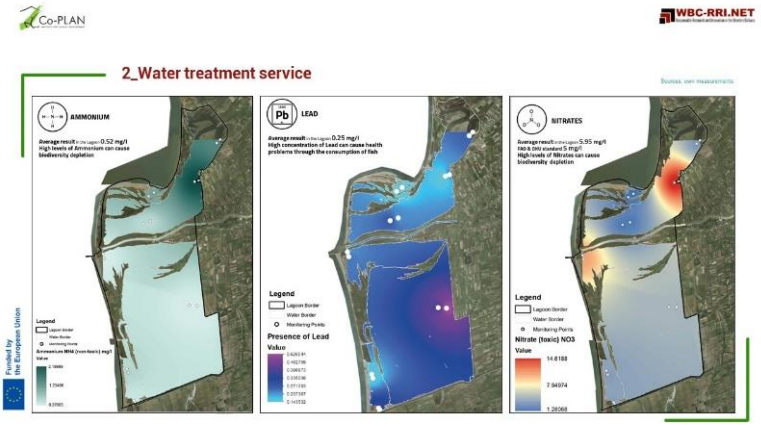

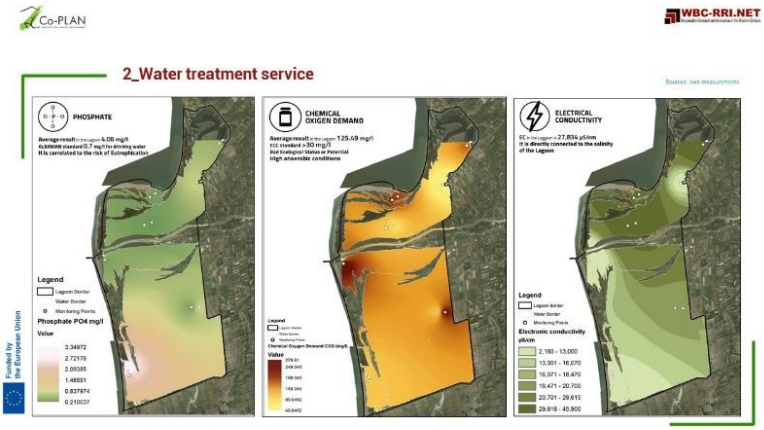

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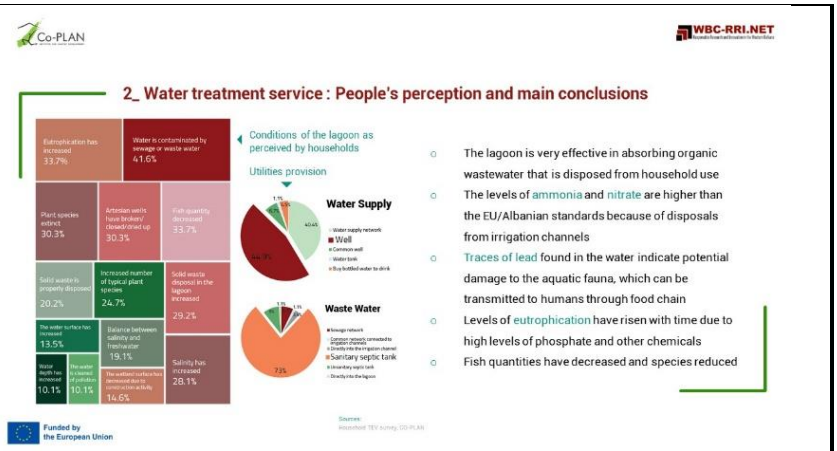

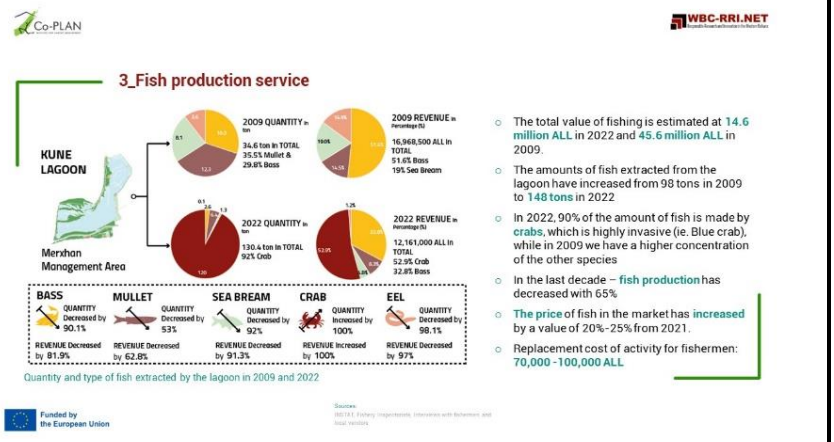

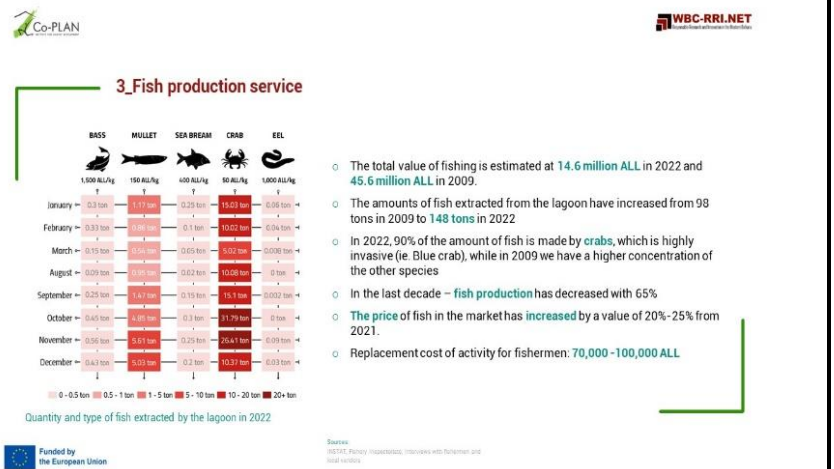

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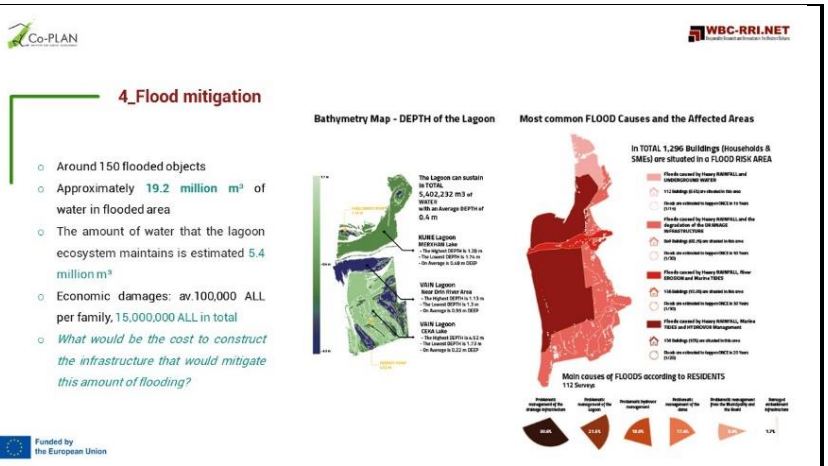
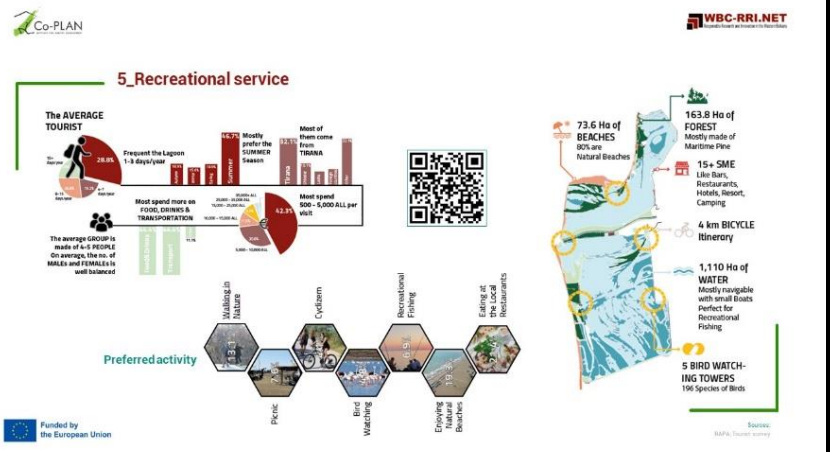
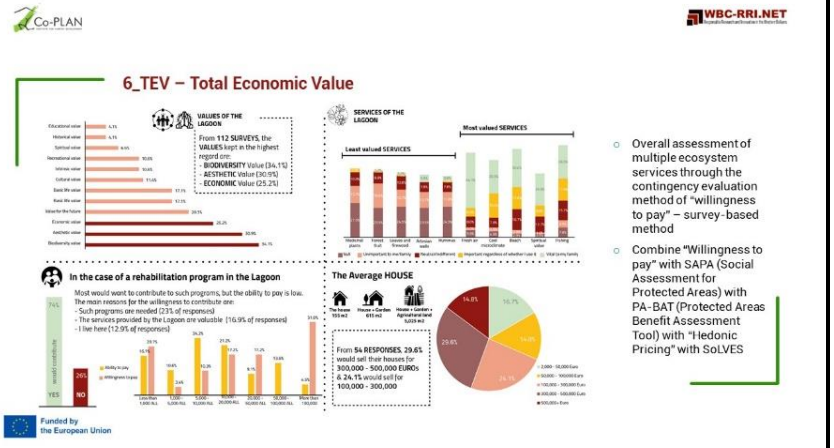
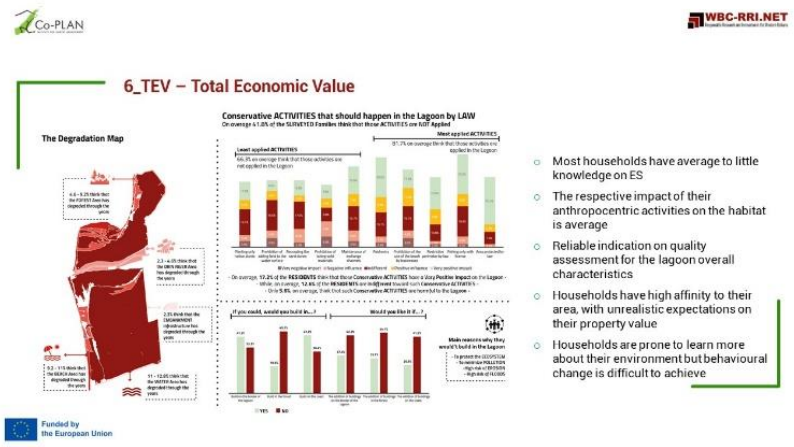

Co-PLAN
WBC-RRI.NET
4_Flood mitigation
Around 150 flooded objects
Approximately 19.2 million m³ of water in flooded area
The amount of water that the lagoon ecosystem maintains is estimated 5.4 million m³
Economic damages: av.100,000 ALL per family, 15,000,000 ALL in total
What would be the cost to construct the infrastructure that would mitigate this amount of flooding?
Bathymetry Map - DEPTH of the Lagoon
Most common FLOOD Causes and the Affected Areas
Main causes of FLOODS according to RESIDENTS
Funded by the European Union


Co-PLAN
WBC-RRI.NET
5_Recreational service
The AVERAGE TOURIST
Preferred activity
73.6 Ha of BEACHES
163.8 Ha of FOREST
15+ SME
4 km BICYCLE Itinerary
1,110 Ha of WATER
5 BIRD WATCH-ING TOWERS
Funded by the European Union


Co-PLAN
WBC-RRI.NET
6_TEV – Total Economic Value
VALUES OF THE LAGOON
SERVICES OF THE LAGOON
In the case of a rehabilitation program in the Lagoon
The Average HOUSE
Overall assessment of multiple ecosystem services through the contingency evaluation method of "willingness to pay" – survey-based method
Combine "Willingness to pay" with SAPA (Social Assessment for Protected Areas) with PA-BAT (Protected Areas Benefit Assessment Tool) with "Hedonic Pricing" with SoLVES
Funded by the European Union



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