

Report on social and economic challenges and solutions in the case study countries

WP4 – D4.2

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1. Introduction

Marine environments are subject to growing pressures as traffic, increasing resources demand and changing land-use of coastal areas, seabed exploitation, dredging or mining, fishing, tourism, development of renewable energies, etc. Sustainably managed oceans and seas can contribute to economic growth and employment, allowing the international community to meet its global targets, including the reduction of poverty and hunger as detailed in the global 2030 Sustainable Development Agenda. Thus, marine environments are opportunities for future growth not only in Continental Europe, but also in nearby marine areas like the tropical Atlantic.

Therefore, new frameworks will be increasingly needed to regulate and optimize the range of feasible uses of marine areas and resources.

Marine Spatial Planning (MSP) aims at reconciling human uses and conservation and offers an attractive setting to combine different uses of marine resources within a single area.

There is an urgent and critical need for research on the application of MSP in tropical areas. The research should critically address the fact that the policy framework originally designed for the European Union (EU) may not fit the specificities of other countries, but adaptations and local tailoring methods are the solution.

PADDLE brought together internationally renowned researchers and actors, from countries bordering the tropical Atlantic and from the EU, to create a network and a collaborative platform, in order to build theory and methods for pertinent MSP in tropical areas. This interdisciplinary team represents a pillar of knowledge-based MSP by providing critical analyses of the tools and methods used, and by designing innovative approaches to efficient MSP.

The PADDLE project is the first North-South interdisciplinary consortium on MSP in the tropics, highlighting opportunities and limits of tropical MSP and producing toolboxes for a broad range of stakeholders. The project started on July 1st, 2017.

2. WP4 Challenges and Solutions

Leader: UAc – Helena Calado

Objectives/ Key words:

This WP sought to understand the involvement and equilibrium of Tropical Stakeholders (T4.1), their views on- and potential involvement in – the development of the maritime economy (T4.3) and in the emergence of conflicts (T4.4), in order to harmonize information gathering and communication, one task (Task 4.2) is entirely dedicated to mapping such 6 concerns. A final task (T4.5) focuses on exchanges concerning innovation in stakeholder interactions.

WP4 emphasized on action-oriented research. The aim was to bring about concrete change (and to support or empower decision-makers and stakeholders) by identifying challenges and possible solutions at case-study level in Cape Verde, Senegal, and Brazil, and by working with a broad range of decision makers and stakeholders to define ways to break through the barriers posed by competition for allocation of space between different uses and the environmental conditions.

WP4 - Challenges and Solutions for Tropical Atlantic MSP

In the Blue Growth Communication (COM 2012-494) there are several potential synergies to be created between maritime economic activities. Mapping of uses in marine environments plays an important role by giving a picture of spatial allocation of uses but still needs some improvement to fully represent the three dimensions of maritime uses (the sea surface, the water column, the seabed) and timeline. Conflict matrices have been developed for the purpose of MSP showing “spatial compatibilities” but also “spatial incompatibilities” (BaltSeaPlan Findings, 2013). Usually, the conflict matrix identifies both the real conflicts and where compatible sea uses are necessary. However, conflicts and conflicts solving strategies need to be more deeply addressed to achieve both Blue Growth and Ecosystem-Eased Management (EBM). To succeed in any conflict solving strategy, it is necessary to involve both the stakeholders who are involved in the conflict and the stakeholders who might facilitate success and failure. Consequently, innovative ways of assuring effective engagement and participation are not only highly desirable but indispensable. This WP sought to understand the involvement and equilibrium of Tropical Stakeholders (Task 4.1), their views on- and potential involvement in – the development of the maritime economy (Task 4.3) and in the emergence of conflicts (Task 4.4). To harmonize information gathering and communication, one task (Task 4.2) was entirely dedicated to mapping such concerns. As space is of the outmost importance in the core of MSP process mapping. Task 4.5 focused on exchanges concerning innovation in stakeholder interactions.

2.1. Task 4.1 – State of the art

In this task, researchers assessed and compared different strategies used in existing experiences to identify successful cases of conflict solving and stakeholder engagement. The second focus of this task was on methods for stakeholder identification, weighting, and representation.

Results

Task 4.1: State of the art: Involvement of stakeholders	
September 2017	Bibliographic research on fisheries economy
January 2018	Organising the workshop "Local communities and the use of marine environment"
April 2018	Port and maritime governance
June 2018	Gathering statistical and spatial data, prior to mapping present and future users and conflicts
July 2018	Part 1: Interviews with the stakeholders of the blue economy, Cape Verde
August 2018	Bibliography on women role in artisanal fishing
August 2018	From the Azores to Brest - ongoing collaborations

2.2. Task 4.2 – Mapping of Marine Uses

Based on the presentation support developed in Task 3.2, the following actions for the mapping of marine uses were taken: (1) to present the approach taken to administrations and stakeholders to evaluate and analyse needs linked to MSP; (2) to elaborate on a model of requirements specifications for the implementation of such studies.

Results

Task 4.2: Mapping of marine uses	
January 2018	Understanding stakeholders' views on blue growth and blue economy
July 2018, June 2019, Sept. 2019	Part 2: Review of the situation with the stakeholders of the blue economy, Cape Verde
January 2019	Part 2: Review of the situation with the stakeholders of the blue economy, Brazil
April 2019	Bibliographic and field work on Senegalese maritime activities
June 2019	Environmental protection and tourism development: comparative approach Cape Verde/Brazil

2.3. Task 4.3 – Critical review of economic trends in the blue economy within marine spatial planning

Traditional activities like coastal artisanal fisheries are an important part of local economies in tropical regions. However, in several cases, poor coordination, lack of supporting infrastructure and even less environmentally friendly practices seriously threaten these activities. "New users" (i.e., heavy shipping traffic, offshore oil & gas industry, bunkering, sea mining and even massive tourism) represent both opportunities and threats. Along with an assessment of the development of these uses, the identification of other potential uses (such as aquaculture) represents a significantly step forward

for these nations in terms of both social and economic development. Therefore, the following actions were developed:

- A1: Identification of existing Blue Growth /Economy sectors and uses as well as the identified potential ones.
- A2: Analyses of the links between globalisation and MSP.

Results

Task 4.3: Critical review of economic trends in the blue economy in marine spatial planning	
July 2018	Interviews with the stakeholders of the blue economy, Cape Verde

2.4. Task 4.4 – Mapping of present and future users and conflicts

In the marine environment mapping involves challenges that are not yet fully understood, such as: how to represent the three-dimensional aspects? How to represent different use timelines?

Another aspect of the co-allocation of uses, or multiple uses in the same maritime space, concerns conflicts arising from different and cumulative impacts, specific needs, constraints imposed on the use of space etc. To achieve transparency, promote economic activities and environmental conservation all at the same time, existing and potential conflicts and synergies first must be identified. When no better solution existed and if used as a basis for exchanges between actors, the compatibility matrix has showed interesting outputs in Europe PADDLE also aimed at identifying conflicts in typologies beyond the “Uses-Uses” and “Uses- Environment” as well as solutions for conflict solving (e.g from the use of AIS data to show how large-scale fisheries operate in competition with small-scale fisheries, to the identification of a hierarchy of objectives and multiple criteria analysis).

Results

Task 4.4: Mapping of present and future users/conflicts	
January 2019	Part 2: Review of the situation with the stakeholders of the blue economy, Brazil
September 2022	Capacitation Workshop in Cape Verde with a zoning exercise

2.5. Task 4.5 – Innovation in stakeholders interactions

Several secondments were conducted in Senegal, Cape Verde, and Brazil to pursue the following:

- A1: New technical to human options for blue growth.
- A2: Innovation in the participation of local stakeholder to limit Bandwidth and stakeholder burnout. Use of serious games.
- A3: Cross-analysis of conflict matrix in tropical zones.

Results

Task 4.5: Innovation in stakeholders’ interactions

Based on the insights from the previous sub-items the theme of searching Marine Protected Areas (MPAs) was chosen. The three countries have participatory management models in their (MPAs), with some differences between them (more details in subsection 4 Lessons Learned). Another point of

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cooperation between the countries is the fact that in many areas there are management plans involving zoning, constituting at some level a maritime spatial plan.

A governance analysis in the four different systems of MPAs design and on the impact of the Sangomar (Senegal) oil and gas field in the study area were performed. The interviews made it possible to gauge the extent to which the commencement of offshore oil works was considered by local people in the decision-making process and the participation of communities in MPA decisions.

The different perceptions of port management between countries were also considered in this task. In the case of Brazil, the Suape Project is considering becoming a pilot MSP project and a preliminary study is being conducted.



3. Publications and Achievements

3.1. WP4 Challenges and Solutions publications

Book Chapter

- (in press) The Diverse Legal and Regulatory Framework for Marine Sustainability Policy in the North Atlantic – Horrendograms as Tools to Assist Circumnavigating Through a Sea of Different Maritime Policies. CALADO, H., MONIZ, F., GRIMMEL, H., MONWAR. M. MD., LOPES, F., VERGÍLIO, M., PAPAIOANNOU, E.A. In: "Ocean Governance: Pasts, Presents, Futures", S. Partelow et al. (eds.), Ocean Governance, MARE Publication Series 25, https://doi.org/10.1007/978-3-031-20740-2_7.

Scientific papers

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- (in prep.). Perceptions and expectations of the Cape-Verdean ENGOs concerning their involvement in local MSP. Maria Anunciação Ventura; Andrea Zita Botelho; Ana Cristina Costa; Daniela Casimiro. To be submitted to: Special Issue entitled "Advanced Studies in Maritime Spatial Planning Processes", to be published in the Journal of Marine Science and Engineering (ISSN 2077-1312, IF 2.744).

Communications in scientific conference

- 2022. Spring Seminar. Seminário - Biodiversidade e Ilhas. Envolvimento das ONGA na gestão do turismo em destinos insulares atlânticos. Comunicação Oral: Maria Anunciação Ventura, CIBIO-Açores.
- 2022. Step Zero for Getting Marine Conservation Right. A contribution from across the Atlantic. Trouillet, B. "Getting it right", 4th World Small-Scale Fisheries Congress, Regional Congress (America), Jun 2022, St. John's NL, Canada.
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- 2022. Pathways Europe - Session Conservation and Natural Resources : Topic Natural Resources and Conservation Stakeholders: Managing and Engaging. Engagement of ENGOS in tourism management in small Atlantic islands' destinations. Oral communication : Maria Anunciação Ventura, CIBIO-Açores.
- 2023. Perceptions and expectations of the Cape-Verdean ENGOS concerning their involvement in local MSP. Maria Anunciação Ventura; Andrea Zita Botelho; Ana Cristina Costa; Daniela Casimiro. submitted for oral presentation at the Final International Conference of PADDLE, March, 15th- 17th, 2023, Brest, France

3.2. WP4 Challenges and Solutions Achievements

Some of the achievements of this project have enabled the creation, elaboration, or proposal of:

- new partnerships between countries; For instance, a double degree between Masters in coastal and maritime planning in France (Nantes University) and in Senegal (Cheikh Anta Diop University) will be signed in March-April 2023 / is about to be signed. This double degree will allow the collaboration initiated within the PADDLE project to be extended in time and in terms of people implied (notably to the benefit of graduate students).
- MSP Pilot Project in the Port of Suape; 2 MSP-OR Project; 2 MSP4Bio Project; 2 teacher exchanges and shared classes;
- discussion of ecological corridors in Macaronesia;
- curricula enrichment of several Msc and Phd Students leading to new positions/jobs;
- new training in partnership/ stakeholder interaction with the Government of Senegal (planned to take place in 2023);
- new proposal for a Blended Intensive Programme on MSP.

This project also allowed for others results and experiences, such as:

- “LOCAL COMMUNITIES AND THE USE OF THE MARINE ENVIRONMENT” Workshop – held in Mindelo (São Vicente Island, Cape Verde), between 5th and 7th February 2018 ([final report](#)).
- “WORKSHOP DE FORMAÇÃO” – held in Praia (Santiago Island, Cape Verde), between 13th to 15th September 2022 ([final report](#)).

A training in Senegal on MSP in March 2023 has been requested (to be confirmed).

4. Lessons learned

During the project implementation, it was possible to identify some synergies between the countries and the possibility of exchanges and learning about the different governance models. Each country presents a different solution to the management model of MPAs.

However, a central theme that can be highlighted in Cape Verde, Senegal and Brazil is the co-management and integrated management model.

Partnerships are fundamental management strategies inherent to all three countries. It is possible to build a collaborative management agenda and integrate communities and government spheres in the benefit of conservation.

From the Paddle Project secondments and expeditions there are lessons to be shared from each one of the countries.

4.1. Brazil

4.1.1. Fernando de Noronha National Marine Park

The Fernando de Noronha National Marine Park is one of the world's successful examples of a public-private partnership. This management model can be controversial (Fioravanzo & Nicolodi, 2021), in case it lacks an effective monitoring of the management contract. A positive point of the terms of reference for the concession in Noronha, is the mandatory hiring of a large part of the staff from local labour, which values the island community. In addition, both the Park and the Fernando de Noronha Environmental Protection Area have approved Management Plans, which include zoning, and involved the participation of stakeholders. Some partnerships were established during the Paddle missions. For instance, an exchange of methodologies for monitoring diving activities and biodiversity between the Azores and Noronha, which will be part of a PhD research plan.



Photo 1: Fernando de Noronha National Marine Park (©Débora Gutierrez)

4.1.2. Marine Extractive Reserve of Soure

The Extractive Reserves in Brazil are an excellent example of co-management, where the community has an active voice in decision-making regarding the management of MPAs. The Soure's Marine Reserve had its management plan conceived, elaborated, and implemented with the main community's participation. The management plan contains zoning and delimitation of areas for specific activities. Besides, the beneficiaries of the RESEX are approved by the Deliberative Council itself, a forum in which the community has most of the voting seats (50% + 1). Another important concept widely explored in the RESEX is community-based tourism, where local culture is inserted into self-managed ecotourism activities. Finally, the involvement of local people in monitoring biodiversity, such as the spawning of crabs, should also be mentioned.



Photo 2: Marine Extractive Reserve of Soure (©Débora Gutierrez)

4.1.3. Porto de Suape

A first diagnosis of the MSP pilot case study of Porto de Suape was developed. Due to conflicts that have lasted for decades, the District Attorney was called to intervene and mediate the dialogue and actions between the harbour and its surrounding community. Within Suape Harbour there is an entire team of social scientist able to help the stakeholder engagement, which must be consulted before the first approach. In order to have a just MSP in this region, it is fundamental to have the community support that can be fomented by some researcher in the area.

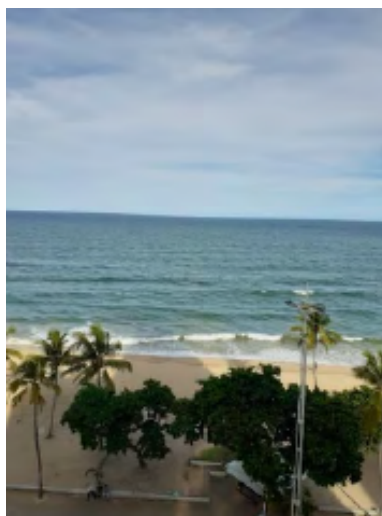


Photo 3: Boa Viagem Beach, part of the experimental MSP (©Débora Gutierrez)

4.2. Cabo Verde

The complex of MPAs is managed by the national environmental directorate and decentralised at the island level with the support of local environmental offices. It is also strongly influenced by conservation NGOs, which provide technical support, resources and often labour for the implementation of integrated management. Some islands also have an integrated enforcement nucleus, which includes environmental police, environmental directors, and NGOs. In addition, Cape Verde, through international programmes such as Global Environment Facility (GEF), has been investing to consolidate the management of MPAs. As an example, the Bio-Tur Project has the principle of strengthening ecotourism in the region with community support and partnerships. The project is also proposing specific zoning areas for MPAs.



Photo 4: Boa Vista Island, Cape Verde (©Débora Gutierrez)

The Port of Mindelo is an important hub of local development. The most diverse uses observed in the region were mapped with stakeholders during the developed activities using the SeaSkecht tool.

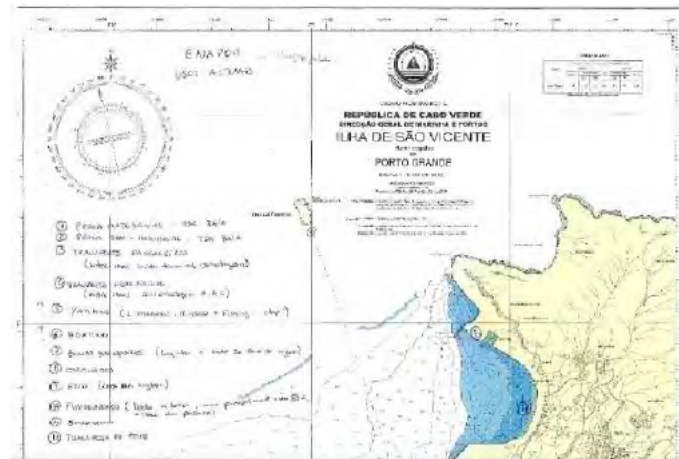


Photo 5: Uses Map of Mindelo Bay (©Mario Caña-Varona)

4.3. Senegal

Coastal MPAs in Senegal have been proposed by the community, with a management committee composed exclusively by local people. Community Natural Spaces are areas that include a fully protected area and riparian lands opting for the extension of the effects of conservation. The state supports the creation and invests in building community capacity. Decision-making is carried out by

the management committee, which must closely follow it to avoid problems such as non-renewal of local leadership, management committees' lethargy and the failure to respect the legal status (Deme et. al, 2021). The system also relies on participatory monitoring and community monitoring. This management system has already shown scientific results of improvement in local biodiversity (DAMCP, 2016). Senegal also invests in community-based tourism.



Photo 6: Dakar, Senegal (©Débora Gutierrez)

The port of Dakar is an Autonomous Port, which is a public enterprise with a legal personality and a body managing a port area, i.e., an autonomous management with management autonomy from its supervisory authority.

4.4. Portugal

The Berlenga Nature Reserve is an example of integrated management in Portugal which has a management committee, although the final decision is ultimately made by the institute responsible for conducting the management of protected areas. In addition, Portugal's experience in carrying out MSP stands out, being one of the pioneering countries to incorporate MSP into its legislative system.



Photo 7: Berlenga, Portugal (©ICNF Official WebSite)

5. Take Home messages

Marta Vergilio (Phd now Program and Project Manager at Trisolaris Advanced Technologies, Lda.) – Fernando Noronha

“My secondment in Brazil, more specifically in Fernando de Noronha, showed me a case of integrated management of the island and its coastal waters, balancing the anthropogenic pressure, especially from tourism activities, and the need to preserve natural assets and resources, which is also an objective of the MSP process.

The activities developed in Fernando de Noronha contributed to increase my professional skills related to stakeholders’ involvement processes, which I have been using during my career, including in projects’ implementation after my work at the University of the Azores”.



Photo 8: Fernando de Noronha, Brazil (©Marta Vergilio)

Mario Caña Varona (Msc, now Officer at Grid Arendal) - Mindelo

“My secondment in Cabo Verde in 2018 showed me how challenging it is for a Small Island Developing State to initiate integrated management approaches at sea, such as Marine Spatial Planning (MSP).

PADDLE gave me my first work experience in Marine Spatial Planning (MSP) in a developing context. This was very useful to gain my current position at GRID-Arendal, where I support international cooperation initiatives for strengthening MSP capacities globally.”

Claudia Hipólito (MSc. now Phd Student at University of the Azores” - Santo Antão

“Through the PADDLE project I was able to conduct one of the most exciting assignments I have ever done. With the mission to Cabo Verde, I realized that there is still a lot to do in terms of maritime spatial planning (MSP). In Cabo Verde, MSP is scarce and what is seen is rudimentary, which has to change as this archipelago has huge potential.

The PADDLE project allowed me to deepen my knowledge about MSP, which opened doors for another project I have been working on, namely my PhD project.”

Debora Gutierrez (MSc. now Researcher at University of the Azores) – Senegal

“My experience with the Paddle project was very enriching, besides the expected technical knowledge and valuable exchanges, it also brought me other unexpected capacities, such as learning a new language and new communication skills.

With the understanding of a new language, it was possible to broaden my horizon of dialogue and networking, helping fundamentally in my admission to the new European project MSP4BIO.”



Photo 9: Dakar, Senegal (©Débora Gutierrez)

6. Conclusion

The Paddle Project was able to conduct in-depth exchanges between the countries that are a real success on their own. In addition, it was possible to acquire valuable lessons and absorb some of the good practices of each country, which has enormous potential for the future.

It is important to continue integrated exchanging projects like this one and to deepen these themes, has the subject of MSP is dynamic and evolving everyday worldwide.

Ocean management requires continuous work and knowledge and needs ongoing cross-border investments for effective change.

Moreover, the solutions found in the case of MPAs management show that these tropical countries have very valuable experiences that should be adopted in the EU Countries (as Co management and Co creation). Hence the two-way sharing of experiences has enriched both the Tropical Countries in the project as well as the EU Partners.

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