Report identifying innovative policy options, designs and/or guidelines for MSP in the Tropical Atlantic, including a critical reflection on whether and how MSP (as it is broadly defined today), is applicable in the Tropical Atlantic

WP3 – D3.2

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1. Introduction

1.1. Marine Spatial Planning: beyond "governance-by-government"?

The world ocean forms one living system, yet it needs to be spatially delineated into more manageable units. Following the Ecosystem Approach (EA), units of concern are demarcated by boundaries of ecosystems, so specific areas with strong biogeographically distinct affinities. Initiated in the mid-1990s following the Rio Conference (1992), the EA has developed into an important framework for the orchestration of attempts to preserve and manage our planet's ecosystems (see Box 1).

According to Kay & Schneider (1995), EA is based on the idea that:

'[...] ecosystem behaviour and development is like a large musical piece such as a symphony, which is also dynamic and not predictable and yet includes a sense of flow, of connection between what has been played and what is still to come, the repetition of recognizable themes and a general sense of orderly progression. [...]. Ecosystem self-organization unfolds like a symphony. Our challenge is to understand the rules of composition and the limitations and directions they place on the organization process, as well what makes for the ecological equivalent of a musical masterpiece that stands up to the test of time. [...]
We must always remember that left alone, living systems are self-organizing, that is they will look after themselves. Our responsibility is to not interfere with this self-organizing process or better yet, to enhance it. (Kay & Schneider, 1995, p. 54-55).

Box 1: Ecosystem Approach as orchestration, following Kay & Schneider (1995).

When presenting the (at that time newly developed) EA, Kay and Schneider (1995) stated it is our responsibility to not interfere in self-organizing processes of (marine) ecosystems. However, they also suggested that "enhancing" these processes is the better option (see box 1, final sentence). In practice, non-interference is not a real option and the popularity of the EA is therefore also due to its explicit attention for humans who, by resource use but also by interference via management efforts, are considered to be integral part of ecosystems. The EA has fostered multi- and interdisciplinarity research collaborations, enabling sociologists, political sciences and the broader group of social science scholars to seek (and find) a role at the central stage of ocean research. Social-Ecological Systems (SES) thinking (Glaser and Glaeser, 2014) and relational and social constructivist perspectives (Pauwelussen, 2016; Toonen & Bush, 2020; Song et al, 2018) are examples of social sciences approaches pertinent in the study of human-nature interactions in coastal and marine environments.

However, one of the key challenges remains to answer the question what is an appropriate delineation to manage and restore marine ecosystem functionality, while considering human impact by use of space and resources. In legal terms, the United Nations Convention on the Law of the Seas (UNCLOS) defines distinct jurisdictions of marine areas (UN, 1982). UNCLOS prescribes the roles, rights and responsibilities of different actors, most importantly focusing on nation states in areas that border their terrestrial territories e.g., Territorial Seas, Continuous Zones, and Exclusive Economic Zones (EEZs). While state authority as defined by UNCLOS is more limited if compared to land, UNCLOS emphasizes that states have both responsibilities to protect and conserve natural values, and rights over the exploration and exploitation of marine resources of any economic value within the areas that fall under their jurisdiction (commonly covered by only the term EEZs). Moreover, UNCLOS highlights the need for international cooperation between nation states at the level of Regional Seas, seen as units to implement global and regional cooperation, as well as in the High Seas.

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Following calls for instruments enabling implementation of the EA, Marine Spatial Planning (MSP) emerged in the early 2000s as one of the main policy tools to balance nature conservation and economic growth (Jay et al, 2013). In its dominant definition, MSP is defined as "a public process of analyzing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic and social objectives that have been specified through a political process" (UNESCO-IOC, 2022; Douvere and Ehler, 2009)[1]. Although not explicitly mentioned in this definition, states are directing the political process in MSP practice (McAteer et al, 2022; Toonen and Van Tatenhove, 2020). MSP has been developed, implemented, and accepted as management regime across the world, mostly in the Global North, and particularly with a high uptake by European countries (McAteer et al, 2022). MSP in Europe has been spurred by the adoption of the EU's Integrated Maritime Policy in 2007 (European Commission, 2007), and particularly its Marine Spatial Planning Directive in 2014, the latter stipulating that "Each Member State shall establish and implement maritime spatial planning" (European Commission 2014, Article 4.1). A similar trend seems to have occurred in Africa with Africa's Integrated Maritime Policy 2050, which was approved in 2012, and the Africa Blue Growth Strategy adopted in 2019 in which the need for MSP was emphasized (Guerreiro 2021, 2022).

State authorities taking up the role as planning authority implies their EEZs become highlighted as units of management. Whilst uptake shows that MSP has been a popular management approach, the question raised above, still holds: so, in rephrased form, whether EEZs provide appropriate delineation to manage and balance the different spatial needs, for both nature values and human use. McAteer et al (2022) concluded that their reviews of 12 regional areas 'illustrate how MSP processes are not evolving consistently and suggest that some systems are not fit for purpose' (p. 376). This suggestion is important to take up, particularly in the context of the tropical Atlantic, a bioregion characterized by unique ecosystems and its key function in regulating the planet's climate (Hoyle and Duncan, 2019; Soliveres et al, 2016). State-led MSP only recently took off in the tropical Atlantic and is facing particular challenges (Guerreiro et al, 2021). While this does not rule out the role of the state in implementing EA, we argue that we need a broader understanding of MSP. Such understanding should include "governance-by-government" (Kooiman, 2003; Kooiman et al, 2005) but at the same time go beyond a focus on state authority and state-led decision-making. In a broader governance understanding, MSP is defined as a political process of spatial delineation at sea by a diverse set of actors (state, industry, civil society), at different levels (local, national, regional, international) and scales (coasts, basins, ecoregions, bioregions, large ecosystems) (Toonen and Van Tatenhove, 2020). This perspective allows for an exploration of a wider set of factors and dynamics, that is affecting, and affected by spatial claims and conflicts in the tropical Atlantic.

1.2. Governance perspective in PADDLE

The PADDLE (Planning in a liquid world with tropical stakes) project enables joint exploration of MSP in the tropical Atlantic. PADDLE is an EU Horizon 2020-funded Research and Innovation Staff Exchange (RISE) project, bringing together researchers from 17 partner organizations. PADDLE's Work Package 3 (WP3) entitled "Policy and governance dynamics in tropical MSP" is aimed to knowledge exchange by building joint understanding and critically analysing, evaluating and comparing political, legal and governance frameworks in MSP. Ongoing staff exchange through research visits (secondments) to partner institutes in Cape Verde, Senegal and Brazil facilitates study and knowledge exchange about MSP as a process of governance.

[1] The definition presented here comes from the UNESCO-IOC website. It follows the definition in the MSP guide by Douvere and Ehler (2009), though the difference is that the definition given by the guide states "... objectives that are usually specified through a political process", p. 18).

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This report is Deliverable 3.2, formally entitled "Report identifying innovative policy options, designs and/or guidelines for MSP in the Tropical Atlantic, including a critical reflection on whether and how MSP (as it is broadly defined today), is applicable in the Tropical Atlantic". The report provides a synthesis of our joint explorations in WP3 by capturing different themes that are within the wider set of factors and dynamics related to MSP. While it is not a complete overview, the report sheds light on the complexity of MSP in a different way than state-focused analyses do. We argue that these perspectives will contribute to an improved understanding of what MSP is and does, which is important baseline knowledge to be able to formulate actionable insights.

Given the formal title of the report, it is important to mention that a substantial number of secondments in WP3 (particularly in the first half of the project's life span) have been dedicated to the understanding of the institutional settings in which MSP emerge, because MSP, as any governance process, is contextualized (Guerreiro et al, 2021; Van Tatenhove, 2022). The insights from these collaborations have been shared and captured in multiple publications, including the journal article by Guerreiro and PADDLE colleagues. This journal article sets out overviews of strengths, weaknesses, opportunities and threats for MSP in the three tropical Atlantic countries part of the PADDLE project (Table 2, 3 and 4 in Guerreiro et al, 2021). These overviews provide insights that may serve as guidelines for MSP in the tropical Atlantic. It has to be noted that the article includes overviews of several EU countries as well, and a comparative analysis leading to possible lessons, also from the three tropical Atlantic countries to be taken up by others, including the EU (Guerreiro et al, 2021).

1.3. Outline of this report

This report is based on ongoing secondment work in PADDLE's WP3, on knowledge sharing in the interdisciplinary workshop and related writing workshop held in Brazil (February 2019, see Photo 1), the Dakar Interdisciplinary Workshop (Senegal, April 2022) and on related publications from project partners and others.

Photo 1: PADDLE's Interdisciplinary Workshop Brazil, Recife. Photo credits: Sebastien Herve

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Section 2 of this report follows a thematic structure, as will be outlined below. However, it first has to be noted that there is no particular order in terms of importance. We think the four themes, or perspectives, presented below are all relevant to shedding a light on factors and dynamics that we found to influence, and to be influenced by MSP in the Tropical Atlantic. Next to that, our theme descriptions are open-ended, as they are product of ongoing explorations and knowledge exchange. While some accounts are published in international peer-reviewed journals, other examples come from secondment work, including informal encounters with locals, which need to be further studied and substantiated. Also, while the premise of this report is to *not* take the state as focal or starting point, governments are not left out of our accounts.

The outline of the remainder of this report is as follows. Section 2 discusses the following themes (or perspectives/angles) to understanding MSP: (2.1) Power dynamics; (2.2) Information and technology; (2.3) Fisheries from a food systems perspective; and (2.4) Blue Growth as newly emerging paradigm. Section 3 concludes with some reflections on our findings and insights, and future research outlook, including the topics highlighted at the PADDLE Final Conference.

2. Governance dynamics in tropical MSP

2.1. Power dynamics

MSP is a process that is "political", like any other (planning) process associated with decision-making about public interests and societal concerns. Whether and to what extent actors are included in a political process is already a key indication of the power dynamics at play. Power is a crucial concept for understanding MSP yet often underestimated or ignored (Van Tatenhove in Flannery et al., 2016; Jentoft, 2017). Power is difficult-to-grasp, since it is a "multi-layered phenomenon" (Van Tatenhove, 2022; cf. Arts and Van Tatenhove, 2004; Queffelec et al, 2021). It refers to the ability to influence others and to achieve an outcome, through deliberation, negotiation, norm setting, social pressure, or even by force. But power is also about access and use of resources like money, materials and knowledge, as well as the pre-set or gained positions by which some actor groups are more included than others and/or have privileged positions. In MSP, as argued in section 1.1, governments fall into that group, most often (like in the EU) even leading the political process with a key position to determine in- and exclusion.

In understanding governance as a broader concept, the (possible) power position of non-state actors, like non-governmental organizations (NGOs), local communities, and sectors/industries can be foregrounded. In Cape Verde, for example, environmental concerns are expressed and addressed first and foremost by NGOs, like the well-connected and internationally-funded Cape Verdean NGO Biosfera. They appear to be a key actor in driving various forms of change on the island, including the education of fishers to take on alternative practices to balance fisheries and nature conservation (e.g., releasing sharks back into the sea), advocating for Marine Protected Areas (MPAs), shark- and ray monitoring or collecting scientific evidence about the amount and type of plastic pollution on the shores of Sao Vicente and its neighboring islands. The latter takes place in the form of monthly beach clean-ups which attracts local youth, and where the NGO catalogues the amount and type of refuse found (See Figure 2). Another key area of work is turtle protection by educating fishers about the value of turtle tourism. Biosfera is well-connected to other NGOs, both nationally and internationally. However, connections with various state agencies are mixed. For example, it seems difficult to get in contact with the Ministry of Agriculture and the Environment.

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Photo 2: Beach clean-up, Sao Vicente, Cape Verde. Photo credits: Amanda Schadeberg.

In- and exclusion may refer to determine who has a seat at the table (Queffelec et al, 2021) or the strong ability to engage others in achieving one's goals, like NGOs are often able to (Calado et al, 2012; Toonen & Mol, 2013). But power in MSP also materializes in physical sense, so whose activity literally has or gets a place on the map. The physical and socio-political are closely interlinked, in words of Jay (2019): 'the spatial incorporates both the physical arrangements of activities and the social processes that shape those arrangements' (p. 256). In the PADDLE project, Queffelec and colleagues looked into the extent to which MSP enhances or diminishes the risk of "ocean grabbing" in the tropical Atlantic. Ocean grabbing refers to the displacement of traditional users, such as small-scale fishers by new development activities (Queffelec et al, 2021; cf. Bennett et al, 2015). Queffelec et al (2021) discussed the power of big economic sectors to gain a place at sea, enabled by social–economic and ecological specificities of the tropical Atlantic context. Another enabler is so-called business-as-usual, where it is difficult for newcomers or the less powerful to change the status quo. Queffelec et al (2021) concluded that, in Senegal and Brazil, local communities are at risk of ocean grabbing by sectors like oil and gas industry. They suggested that 'a bottom-up process to develop MSP can integrate more effectively specific needs of local communities while a national driven process can invisibilize them under global blue growth benefits' (Queffelec et al 2021: 1205). This recommendation is in line with findings by Glaser et al (2018). They studied perceptions of ecosystem users at the Brazilian Coral Coast (Brazil), and found the government-led, centralized management structure led to a feeling of being subject to high "force and control", while ecosystem users perceived environmental education and capacity-building by (local) NGO and university successful to change destructive behaviour towards the reef (Glaser et al, 2018; Glaser et al, in press 2022).

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2.2. Information and technology

Information is a main resource for decision-making, it is therefore considered to be one of the key principles of the EA: 'The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices' (CBD, 2007) Accordingly, collection and mapping of biophysical and socio-economic data is an important step in MSP, leading to insights in current and future claims and conflicts in a marine area. In line with the argument in the previous section (Section 2.1), to focus on power, information is not to be mistaken for 'an empty carrier, but as a mediator with power, that finds its way into different knowledge frames and decision-making processes' (Toonen & Van Tatenhove 2020, p.; see also Trouillet, 2019; Said and Trouillet, 2020). Focusing on the formative force of information and related processes of collection, processing, interpretation, use, dissemination et cetera (cf. Mol, 2008) allows for a better understanding how units of concern are spatially delineated and made "manageable", and by whom (Toonen & Bush, 2020). In particular, the conditions of today's Information Age are to be considered, that are, the impacts of a high-tech global economy and digitalization, and strong calls to enhance knowledge democratization (so including indigenous and local knowledge, next to scientific expertise) (Mol, 2008; Trouillet, 2019; Toonen & Bush, 2020).

In the PADDLE project, the life cycle of geographic information (GI) embedded in MSP processes, focusing on Senegal, has been examined (Trouillet et al, in press). The life cycle of information is classically formed by collection, processing, representation (mapping), circulation, and transversally by its use. Trouillet and colleagues identified three major issues. Firstly, there is a chronic lack of GI in general, and there is a particular need to better document both the interactions between uses (especially in regard to the offshore oil and gas activity, or all kinds of major industrial projects). This is particularly true in the marine realm where phenomena are difficult to grasp (cumulative effects, long-term / long-distance impacts, etc.). Secondly, beyond the simple question data availability, there is a question of misuse or non-use of the existing GI. Indeed, the ways of capturing and coding the fishing practices and grounds can be diverse but, even interesting, these ones often neglect fishers' knowledge. Thus, it appears that some information (some knowledge) is qualified for MSP processes and some not. The informational issue is therefore both a mirror and a furthering of the power issues discussed above. Thirdly, GI should perform to document the social dynamics over a long period of time, as well as to consider fisheries beyond its sole economic dimension. Fisheries are obviously much more than an assemblage of resources, goods, markets, regulations and economic agents, while data about fisheries only deal with that approach. What appears to be at issue here is the principle of "using the best scientific knowledge" (for MSP purposes), which reproduces inequalities through the definition of what is 'best', what is qualified (the scientific knowledge) and what is already available (at minimum cost). So, a closer and critical look on the way diverse and complex 'realities' of fisheries are coded, translated and transcribed into GI embedded into MSP processes, is a core need for future MSP developments, especially in the tropical Atlantic considering its role in the overall food system (see Section 3.3).

Considering technology in MSP, Queffelec and colleagues (2021) discussed the reliance on Decision Support Tools (DST) as "optimalization solvers" in MSP in the tropical Atlantic. They argue that by the use of DST, planning conflicts run the risk of becoming mathematical problems, and that possible solutions are pre-set by the modelling and numerical paradigms underpinning the chosen DST, as well as data availability. Moreover, in using DSTs, like the case of GI discussed above, some experts are more qualified to participate, while for others DSTs remain black boxes, because a DST 'requires a significant "scientific cuisine" from the users on input data and solver parametrization' (Queffelec et al 2021: 1204). However, the value of DSTs should not be dismissed beforehand, as the lack of data and of experienced DST users are obstacles that might be overcome by investing in data collection and

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training. At the same time, a critical perspective is still important because techno-optimism can obscure fundamental power dispositions, which are inherent to a DST given its technical possibilities and limitations, and underlying paradigms (Queffelec et al, 2021).

PADDLE participants have experimented with alternative methods such as participatory mapping in Brasil and serious gaming in Senegal (Glaser et al, 2018; Toonen et al, in press; PADDLE Dakar Interdisciplinary Workshop, 2022). Non-tech methods e.g., net-mapping (Glaser et al, 2018) and drawing (Toonen et al, in press), were used to elicit and visualize participants' perception of reef/coastal areas in Brazil, highlighting use but value of the ecosystem. Clearly, these methods are more limited in terms of scale, if compared to high-tech DSTs, however their relative simplicity seems more in line with the desired knowledge democratization in the EA and MSP. While the serious game (the "Marine Spatial Challenge"), played in the Dakar Interdisciplinary Workshop, has been a board game version, a digital game variant is also available (Toonen et al, in press). This digital game integrates geoinformation, maritime and marine data with simulation models for ecology, shipping and energy production which allows participants to simulate informed negotiations about marine protection, and spatial use in a transboundary setting (BUas, 2022).

2.3. Fisheries from a food systems perspective

Putting fisheries on the map is considered one of the biggest challenges in MSP (Trouillet, 2019; Toonen and Mol, 2013). Understandably, fisheries is a mobile activity, more difficult to chart than shipping, following pre-set lanes, or fixed structures like oil platforms or wind turbines. Fishers have often been characterized as reluctant to share information about their fishing grounds, although current digitalization trends might make such secrecy less relevant as new monitoring, control and surveillance technologies (satellites, fish attraction devices, drones) open up GI about fishing locations and vessel movement (Toonen & Bush, 2020). In the tropical Atlantic, however, there is a large artisanal fleet which remains out-of-sight. Given their great amount, their great diversity, and that they are often small-scale, information about fishing effort of artisanal fishing is very hard to collect, and consequently, hard to map.

In PADDLE, we tried to come to different, additional insights by understanding fisheries differently. Next to fisheries as users of ocean space and marine resources, they can be seen as a food system. At sea practices and land-based activities are connected, and fisheries are one system in a web of food systems. From that angle, the implications of MSP that aims to map and border fisheries become more connected to wider societal issues, like the need for nutritious, healthy and sustainably-produced food. This is in line with recent attention for the food systems approach (FSA). According to the FAO (2018), food systems consist of interlinked activities and feedbacks in production, trade and consumption, not limited to one food sector, market, or value chain. In the FSA, it is recognized that a change in one food sector might come from a change in another sector or system, and therefor suggests to broaden scope by focusing on food-related challenges, like food security and nutrition. This means that all sectors affecting these societal challenges, whether their impact is reinforcing problems or resolving issues (or both at the same time), are taken into consideration (FAO, 2018).

PADDLE partners focus on understanding the connection between two "blue food" systems, fisheries and aquaculture. Aquaculture is often presented as a solution to overfishing by wild capture fisheries, as farmed fish and shellfish can be a good alternative source for nutritious, healthy and sustainably-produced food. In Senegal, for example, fishery products in general cover 75% of the population's protein needs. However, the supply of fish is increasingly in deficit due to the continuous decline in capture fisheries (marine and continental) linked mainly to the effects of climate change and a high

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fishing effort. Aquaculture production remains low, despite high ambitions. In 2016, the government announced they envisioned a tilapia production of 50.000 tonnes in 2023, but in 2017, 222 production sites were registered in Senegal with a productivity of 2080 tonnes. While regulations seem to be in place, industry activities do not seem to take off. Private sector and investments are seemingly absent. Most of farms produce small amounts and many of these farms are shut down for a variety of reasons, the most common of which is the problem of supplying fry and quality fish feed.

Moreover, the two blue food sectors in Senegal seem to present a joint crisis. In the last 15 years, small scale pelagic fisheries in Saint Louis have mainly provided input for the international fish meal industry (See Figure 3). This links via telecoupling the food system of Senegal with Western or global aquaculture markets, as the fish oil is used to a large extent for salmon production and fish meal is strongly used for shrimp production. It also shows potential downsides of aquaculture in relation to food security, if it focusses on the production of species on high trophic levels. The prior establishment of EEZ according to UNCLOS in Mauritania and the emergence of an important aquaculture industry, requiring FMFO (fish meal and fish oil) created a very valuable asset, which Mauritania could only exploit, first, with the help of the Senegalese artisanal fleet and, second, with the help of foreign capital. The huge demand for FMFO led to a boom-and-bust cycle for the small pelagic artisanal fishery sector, which only emerged around 2007 and is in constant decline since 2017. This cycle changed financing and supply chain structures, which in Saint Louis rely heavily on partly formal, but largely informal relationships between Mauritanian, who hold the licenses, have the necessary capital and connections to the fish meal industry, and the Senegalese fishers, who often find themselves in a rather weak bargaining position (see also Section 2.1).

Photo 3: Djiffer harbour, Senegal. Photo credits: Sebastien Herve.

Another example in the PADDLE project, indicating a positive development, comes from Cape Verde. On the island of Sao Vicente, near the village of Calhau, is a large shrimp aquaculture enterprise. Several shrimp ponds take up more land area than the settlement of Calhau, producing large fresh shrimp that are sold locally and to other islands in the country. Conversations with local contacts revealed this development to be quite popular, as it employs local people and is perceived to be less destructive than fishing. This is a joint venture co-funded by the Cape Verdean, Brazilian and Dutch national governments. The shrimp were being served at a local street party and were available to purchase frozen in local supermarkets. There is also a tuna ranching enterprise in development, run by Norwegians, but indications are that locals are more skeptical about the sustainability and social contribution of the tuna mariculture, and have reservations about the environmental impact given that they would be in sea cages.

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2.4. Blue Growth/Economy as newly emerging paradigm

The rise of the EA has been accompanied by different management paradigms to make "enhancement" possible (as suggested by Kay and Schneider, 1995 – see box 1). Most notably are MPAs and MSP, which serve the same purpose and both refer to spatially explicit planning processes, however they are different since some for example argue that MSP is a management framework while MPAs are seen as a spatial tool (Gubbay, in Trouillet and Jay, 2021). Also, MPA puts nature protection before economic interests, while MSP aims to balance economic activities, with each other, and with nature conservation. Trouillet and Jay (2021) argued that these differences do not mean that the two are incompatible. However, 'relationships between MPAs and MSP are complex, multiple, changing, and must be viewed from various angles' (Trouillet and Jay 2021: 9)[2]. Recently, a new paradigm on "Blue Growth/Economy" is emerging, emphasizing the need to accommodate economic use of seas space and exploitation of marine resources. We suggest the same statement about the relationships between MPAs and MSP applies to MSP and Blue Growth/Economy: these relationships are also complex, multiple and changing.

A first step in understanding these relationships is to explore what Blue Growth looks like in the context of the tropical Atlantic. While MSP is still being discussed or underway in the tropical Atlantic (Guerreiro et al, 2021; Guerreiro, 2022), Blue Growth/Economy seems to be a particularly attractive concept for African countries. The African Union adopted a "Africa Blue Economy Strategy" in 2019, and specifically African Small Island Developments States (SIDS) embraced the Blue Economy 'as a booster for economic growth, employment and social welfare as well as political priority' (Guerreiro, 2022). For Cape Verde, a SIDS in the tropical Atlantic, legislation for, and institutional embedding of MSP is still under development, however development of a Blue Economy strategy seems to go quickly, as a Chart to Promote Blue Growth was adopted already in 2015, and two other dedicated Blue Growth programmes in 2018, and a new ministry and governmental agencies were created dedicated to enhancing blue economy (Guerreiro, 2022).

In practice, the examples of eco-tourism and fisheries (but also aquaculture, as discussed in Section 2.3) are indicative of Cape Verdean blue economy. Mostly foreign actors appear to extract benefits from Cape Verde's local environmental assets, while it seems there are mixed benefits for locals. There are many fishing villages in Cape Verde, and the country's fleet is mostly artisanal. However, international fleets visit Cape Verdean waters to exploit migratory pelagic fish stocks. Large quotas are sold to industrial vessels from Europe and China who catch and freeze the fish for their own markets. For coastal tourism, there are two scuba operators on Sao Vicente Island, with one employing Portuguese nationals as managers and employing Cape Verdeans as operators and instructors. The second is run by another European national and also employs locals. They each take groups of tourists to secluded bays for diving trips. There is also a large Sheraton Hotel under construction opposite Laginha Beach, which will be a 5 stars resort. This will create local jobs in coastal tourism, but is owned by an American company.

[2] Secondment work in PADDLE's WP4 has focused on the relations between MPA and MSP, see Deliverable 4.2

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3. Reflections

In this report, we discussed four themes (or perspectives) to gain a better understanding of MSP in the tropical Atlantic (see Figure 4). Various partners involved in PADDLE's WP3 have explored these themes in their research visits (secondments) to Senegal, Cape Verde and Brazil. This work is complementary to secondments related to institutional analysis highlighting the role of the state (published by Guerreiro et al, 2021). The four themes presented in this report are by no means the only perspectives (see Figure 4, which includes "governance-by-government" perspective and possibility to capture new themes). However, by elaborating on the four themes, we have shown that they provide an alternative and complimentary lens to the dominant perspective on state actors as directors of MSP. Importantly, it sheds a different light on what are units for the sustainable management, use and protection of the world's ocean. Taking "power" as focal point for analysis means that actors seeking/having influence, such as NGOs or industry, co-determine what (and who) is "in-and-out", both spatially as politically. Also, based on our ongoing research, we can argue that state boundaries (a country's EEZ) do not match the way in which flows of information and (blue) food move, as these flows blur boundaries between states and between sea and land. Looking into the popularity of Blue Growth/Economy as newly emerging paradigm, shows that there might be a shift towards ocean management wherein spatial delineation is less foregrounded.

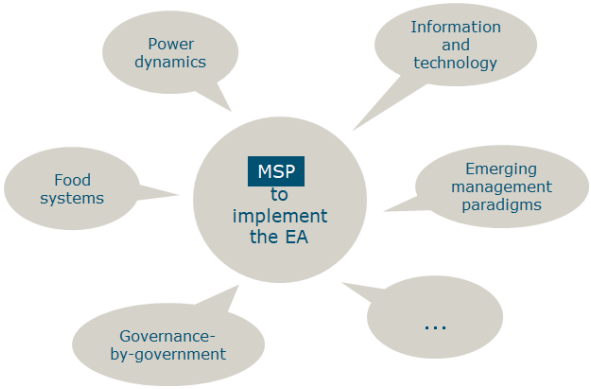

Figure 1: Themes/perspectives for understanding MSP in implementing the EA in the tropical Atlantic

The aim of the report was to identify innovative policy options, designs and/or guidelines for MSP in the tropical Atlantic, including a critical reflection on whether and how MSP (as it is broadly defined today), is applicable in the tropical Atlantic, our focus being on the question whether MSP is applicable in the tropical Atlantic. Given the work by Guerreiro and PADDLE partners (2021), we do not answer this question with a definite "no". However, the answer is not a definite "yes" either. Our explorations show the power dynamics spurred by non-state actors as well as the reliance on information and technologies, which can be beneficial as well as worrying in terms of achieving the EA's objectives. Also, the role of information and technology, as well as of fisheries within the wider context of food security and nutrition, need to be further scrutinized to better understand what MSP is and can do in ocean management. Furthermore, the rise of Blue Growth/Economy as management paradigm poses new questions to MSP and the relations between the two approaches. Whether the interactions between MSP and Blue Growth/Economy will be reinforcing, conflicting, or of no consequence, is still open to research.

By a broader understanding of governance (so beyond governance-by-government), there is little to no distinction made between those who govern and are being governed. Both state and non-state

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actors have steering power to various extents, and both are bound as well as enabled by their relations and interactions with each other. Outlining concrete policy options, designs and/or guidelines for MSP for specific groups therefore goes beyond our scope, however several reflections can be derived from our insights.

By each of the themes, this report has shown the connectedness of today's reality and we also highlighted some connections between themes. This is important because there is a need to go beyond piecemeal or single-focus approaches in understanding MSP as an approach to implement the EA. In the tropical Atlantic, and the EU alike, biodiversity concerns (e.g., the 30/30 agenda), regional and global food production and consumption, Blue Growth aspirations, are all coupled. It is therefore crucial to analyze how those processes are interlinked. This requires collaboration since together we can strengthen our ability to compare and discuss different perspectives. Through the PADDLE project, researchers from many different countries have been enabled to lay foundation for critical social science research on MSP in the tropical Atlantic. The project's networking character has been driving collaborations, by deepening existing connections yet also collaborations newly formed through PADDLE have had time to grow and develop into close partnerships. These collaborations should be continued after the project, and should be supported by new ambitious research projects. Scientists should thus continue to allocate time, and funding organizations should allocate resources on the common aim of building and deepening trans-Atlantic research collaborations.

There is also need to continue training of 'critical minds' in the tropical Atlantic, about MSP and also on other management paradigms, like Blue Growth/Economy. This training is needed for social science scholars, both in tropical Atlantic countries and in Europe alike; it is needed to enhance interdisciplinary research, so should include natural scientists as well; and it is a transdisciplinary effort, hence meaningful engagement of scientists with policy-makers, stakeholders and the public as a whole. PADDLE's Summer School as well as the Interdisciplinary Workshops in Senegal and Brazil have been good examples. In the latter, knowledge exchange was not limited to scientists, but included policy makers and stakeholders, and these experiences have been captured in PADDLE communications (PADDLE, 2022). An overall lesson from our project exchanges is that it is vital to explain and exemplify how critical social science approaches are not about fault finding and critique. Rather, different yet complimentary understandings of the marine reality become apparent when we put on different sets of glasses. Doing so results in more profound discussion and evaluation of what knowledge is available to identify and delineate units of concern and what knowledge gaps exists, how spatial claims and conflicts are valued and whether or not this is different for different groups, and that some planning solutions might seem easy fixes but have no effect in the long term or even negative impacts (and for whom).

Developing a critical mind might be more easily said than done, it requires an open attitude and tolerance to different viewpoints. This is not pregiven in social interaction, but demands (self-) reflection. When we take self-reflection as a starting point, it means that we as social science scholars have to be clearer on our theoretical stances and have a better choice of language to explain ourselves. Examples often work well, as we aimed to show in this report. Also, we need a well-developed set of methods for communication and deliberation with policy-makers, stakeholders and the wider public. This means we need to dedicate time to suitable workshop design, but also time to "wander and wonder", as to have opportunity to meeting local people. The PADDLE project has allowed us to do so. More research based on well-thought study designs is of course still needed to gather evidence and to substantiate findings, and have to result in peer-reviewed publications in renowned academic journals. Yet, to have "science for impact", we should also attempt to transfer our insights into the policy realm. In PADDLE, this will be done through two WP3 policy briefs, which will be produced in the upcoming (and final) months of the project.

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