



# Marine spatial planning in the Eastern Caribbean: Trends and progress

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## ABSTRACT

Within the last decade, several members of the Organization of Eastern Caribbean States (OECS) have initiated marine spatial planning (MSP) processes. Through a literature review and document analysis, this paper traces the evolution of MSP policy in the region and analyses the plans focusing on the drivers, scale, legislation, authority and spatial outputs. A developing policy framework, increasing political will, the growing Blue Economy development agenda and strong leadership by the OECS Commission have provided the impetus for progress. Further advancement however is threatened by ongoing capacity constraints and questions over plan implementation and the delivery of subsequent planning cycles, with uncertainty over the future direction of MSP in the region. The experiences of these Small Island Developing States (SIDS) provide valuable lessons for others just embarking on MSP.

## 1. Introduction

The full member countries of the Organization of the Eastern Caribbean States (OECS) are highly dependent on the ocean and its resources. Situated in the Lesser Antilles of the Caribbean archipelago, the islands are bounded by the Atlantic Ocean and the Caribbean Sea, their waters providing food, supporting livelihoods, driving economies and defining the island's very identity.

Collectively the islands of the OECS have jurisdiction over approximately 234,038 km<sup>2</sup> of Exclusive Economic Zone (EEZ) waters, around eighty-one (81) times the size of their land territory. Fisheries, shipping and tourism comprise the bulk of maritime activity and many uses are heavily concentrated in the nearshore area resulting in conflicts and harmful impacts to the marine environment [1]. In line with Blue Economy development ambitions, expansion of these traditional sectors and introduction of new ones such as aquaculture, renewable energy and extractive industries [2] will bring additional activity to the waters of the islands. Intensification of uses inevitably leads to greater user conflicts and increased pressure on the very ecosystems which support development. Increasingly busy seas and growing environmental threats require an integrated approach to marine management [3,4]. Marine spatial planning (MSP) is one such approach which facilitates multiple objectives while reducing sectoral conflicts and minimising the impacts of human activities on the environment [5].

MSP has been on the rise over the last three decades with progress in developing plans made across the globe [6,7]. Twenty countries have approved plans under implementation and a further eighty-two (82)

have committed to moving forward with MSP processes in their maritime jurisdictions and where planning is at an early stage [7]. In the Eastern Caribbean, several initiatives have been undertaken over the last decade, however academic research on MSP in the region is limited. There are just over a handful of papers focusing either on particular elements of the process and outputs of plan-making [8–10] or the use of participatory mapping tools for data collection [11–13]. No research has ever comprehensively examined the development of MSP across the OECS region. This paper is an attempt to begin to fill this void through an examination of MSP processes in the OECS full member countries since 2010. The paper traces the evolution of the policy landscape for MSP and then goes on to review the MSP initiatives, assessing specific elements including authority for planning, drivers, legislative framework, scale, data, spatial output and plan implementation. It concludes with a discussion on the observed trends and the implications of these for the progress of MSP in the region.

### 1.1. Methodology

A literature review was conducted using peer-reviewed articles, project reports and policy and planning documents. A two-part documentary analysis was undertaken as follows:

1. The method of historical evolution was applied to trace the emergence and evolution of MSP policy at the OECS (regional) level and in its full member states (national level). The analysis of academic literature and policy documents focused on the environmental and

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fisheries management policy discourses of the OECS and the regional and national ocean policies.

- For the MSP initiative analysis, policy and planning documents, project reports and peer reviewed articles were analysed, but not subjected to a full content analysis. Rather main themes were identified to develop an overall understanding of the planning context, process and output. These themes correspond to some of the steps of a typical MSP process including drivers, authority for planning, legislative framework, scale, data acquisition and analysis, spatial output and plan implementation. The focus was on MSP initiatives undertaken in the full member countries of the OECS since 2010.

## 2. Context

Located in the southern half of the Caribbean archipelago, the OECS comprises eleven (11) members - seven (7) full members being Antigua and Barbuda, Dominica, Grenada, Montserrat, St Kitts and Nevis, St Lucia and St Vincent and the Grenadines; and four (4) associate members which are Martinique, Guadeloupe, Anguilla and the British Virgin Islands (Map 1 refers).

This paper will focus on the seven (7) full members, which are among the smallest territories in the world, whether measured in terms of land area, population or Gross Domestic Product (GDP). All the full members with the exception of Montserrat which is an Overseas British Territory, are independent sovereign nations (Table 1 refers).

The islands are part of the Caribbean Large Marine Ecosystem (LME), a major global marine biodiversity hotspot, characterised by tropical ecosystems including coral reefs, mangrove and seagrass forests, sandy beaches and rocky shorelines [17]. These marine and coastal ecosystems produce and sustain goods and services which contribute to the economies and livelihoods of the people of the region. Traditional maritime uses make up the majority of the activities in waters of the islands. Tourism is the anchor of the economies, contributing heavily to GDP and employment [18]. Fisheries is the oldest and most common maritime

**Table 1**

The population sizes, land and maritime areas of the OECS full member states

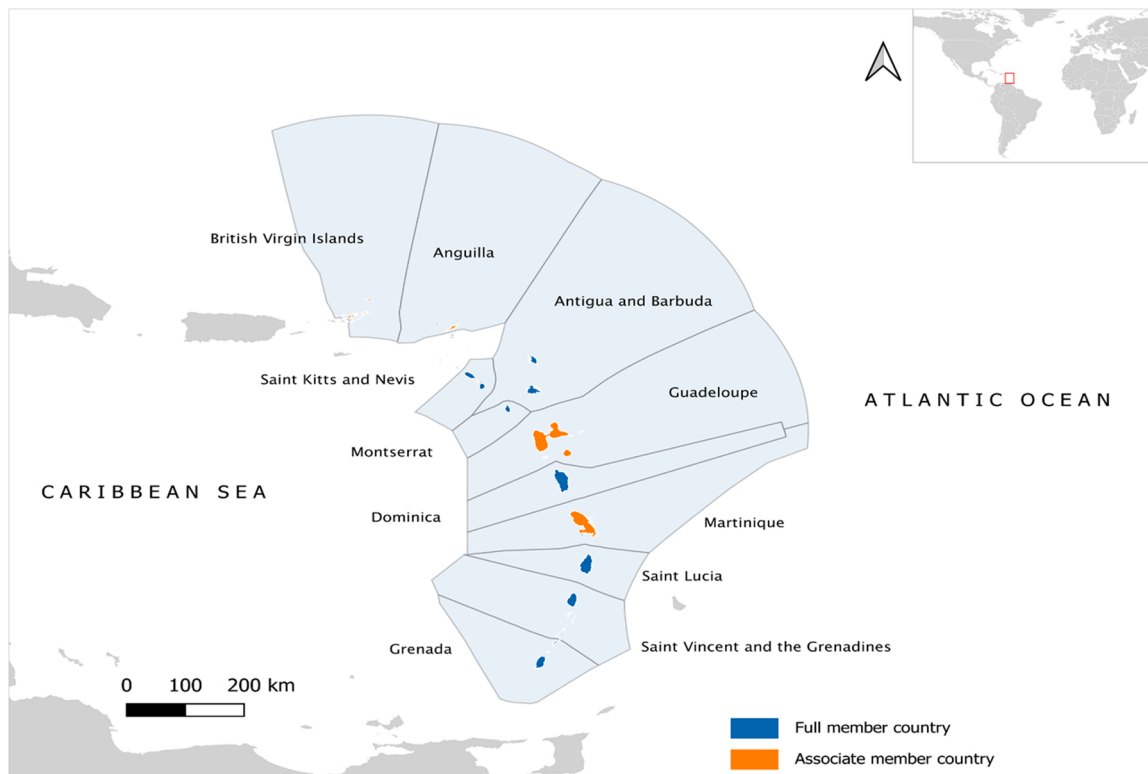
| Country                       | Population* (1000 s) | GDP*  | Land Area (km <sup>2</sup> ) | EEZ (km <sup>2</sup> ) | Land to Sea Ratio |
|-------------------------------|----------------------|-------|------------------------------|------------------------|-------------------|
| Antigua and Barbuda           | 97.93                | 1.460 | 440                          | 111,568                | 1:254             |
| Dominica                      | 71.99                | 0.581 | 750                          | 28,552                 | 1:38              |
| Grenada                       | 112.52               | 1.056 | 340                          | 25,571                 | 1:75              |
| Montserrat                    | 5.0                  | 1.3   | 102                          | 7188                   | 1:70              |
| St Kitts and Nevis            | 53.19                | 0.910 | 260                          | 9502                   | 1:37              |
| St Lucia                      | 183.63               | 1.667 | 610                          | 15,413                 | 1:25              |
| St Vincent and the Grenadines | 110.95               | 0.768 | 390                          | 36,244                 | 1:93              |
| Total                         | 635.21               |       | 2892                         | 234,038                |                   |
| Average                       |                      |       |                              |                        | 1:81              |

\*Data for 2016

Sources: [14–16]

activity and while representing comparatively limited contributions to GDP and employment [19], the sector is of great cultural importance to the islands, being a generational activity, a source of nutrition and for maintaining the region’s food culture. Maritime transport is an important sector for the OECS, owing to their strong dependence on external international and regional markets. Cruise tourism is a significant contributor to visitor numbers in the region [18] and inter-island transport is the primary means of moving both cargo and people between the islands.

The OECS as an intergovernmental body established in 1981 via the Treaty of Basseterre, has a mandate to facilitate regional integration and cooperation among its members. Areas of integration include currency and banking, education, research and international transport, among others. More recently, marine management has been in focus, in recognition that the regions marine space and its resources are the foundation of the islands, and by extension, the region’s economic development. Having re-branded as ‘large ocean states’ owing to their



**Fig. Map 1.** The OECS member states Data: [14]. \*Some EEZ limits asdepicted based on claims Source: Author

**Table 2**  
OECS full member states national ocean policies

| Year           | Country                       | Policy   |
|----------------|-------------------------------|--|
| 2017           | Antigua and Barbuda           | Draft Maritime Policy Statement (to be updated to a National Ocean Policy) |
| 2019           | Dominica                      | Dominica National Ocean Policy   |
| 2019           | Grenada                       | Grenada National Ocean Policy  |
| In preparation | Montserrat                    | Montserrat Sustainable Ocean Policy  |
| 2019           | St Lucia                      | St Lucia National Ocean Policy   |
| 2019           | St Kitts and Nevis            | St Kitts and Nevis National Ocean Policy                                   |
| 2019           | St Vincent and the Grenadines | St Vincent and the Grenadines National Ocean Policy                        |

Sources: [26–32]

disproportionately large ocean space relative to land area, the islands have signaled their intent to move towards economic expansion through development of ocean-based economies [20]. The Blue Economy is seen as the way for achieving economic growth, poverty reduction and improved livelihoods for the citizens of the region [2] and MSP has been identified as a key tool for delivering these benefits.

### 3. The rise of MSP in the OECS

#### 3.1. The evolving regional and national policy landscape for MSP

##### 3.1.1. OECS policy

The MSP policy landscape in the OECS is relatively young and is still being developed as ocean governance is being strengthened across the region at both the regional and national levels. Since the formation of the OECS, work has been ongoing for developing regional ocean governance policies. The origins of MSP policy can be traced back to several regional sectoral policies for fisheries and environmental protection [20] which later led to an OECS regional ocean policy.

Early efforts on fisheries management where some progress has been made include the OECS harmonised fisheries legislation of 1983 and Common Fisheries Surveillance Zones (CFSZs) developed in 1991 to facilitate regional collaboration for surveillance and enforcement across the region [21]. In the same year, there was also a move towards adopting Common Fisheries Zones (CFZs) but these were never implemented. CFZs would comprise four separate zones based on the regions geography. However, while stock assessments existed, they were not appropriate for regional-level assessment as is required to pursue a CFZ policy [21] and so the CFZs were never formalised. A Fisheries Management and Development Strategy was later developed in 1999 with the aim of growing a more diversified regional fisheries sector for the OECS [22].

The move towards more sustainable ocean management in the region was advanced with the 2001 St. George's Declaration of Principles for Environmental Sustainability in the OECS (revised in 2006). As the overarching regional environmental policy framework, it outlines a holistic approach to natural resource use and management, encompassing the space from the ridge of the mountains to the outer limits of the EEZ [23]. Promoting Island Systems Management (ISM), it was an attempt at integrated management, extending across both land and sea in an effort to capture the complexity of island socio-ecological systems and the multitude and variety of interactions across the land-sea continuum.

Policy relating to integrated ocean governance and MSP was established in 2013 with the Eastern Caribbean Regional Ocean Policy (ECROP). This policy applies to the coastlines and marine waters within the 200 nautical mile (nm) limit (and to the continental shelf beyond 200 nm if applicable) of the organisation's members [24]. It clearly articulates the intent for implementing MSP in the region in item 4, Adopt multiple-use ocean planning and integrated management, in which goal 4.3 directs that 'OECS member countries explore and build on multiple-use marine spatial planning and zoning mechanisms' [5 p.5]. The ECROP was revised in 2019, the aim being to integrate the principles of the Sustainable Development Goals (SDGs) in recognition that for island

states, oceans are the foundation of a sustainable ocean economy.

##### 3.1.2. National ocean policies

Within the OECS full member countries, national policy supporting MSP implementation has only recently been developed in response to the objectives of the revised ECROP. Countries view MSP as the path towards developing sustainable Blue Economies, where planning their vast jurisdictional waters through a more integrated, multi-sectoral, ecosystem-based approach is required. The aim is to go beyond the application of other smaller-scale, area-based management tools which were undertaken since the early 2000's. Marine protected areas (MPAs) and marine managed areas (MMAs) were introduced then in limited geographic areas, primarily for environmental protection and the reduction of user conflicts [25].

In 2019, five countries adopted National Ocean Policies (NOPs) which outline the principles for future directions of their marine spaces (Table 2 refers). The NOPs were developed within the Caribbean Regional Oceanscape Project (CROP) in parallel with the revision of the ECROP, strongly reflecting the principles of the regional policy. The NOPs establish a framework for integrated marine planning and management for the islands from 2020 to 2035 [26–30]. Policies cover the marine space from the baselines to the limits of the EEZ and are to be reviewed once every five (5) years. Each outlines a vision, series of principles, policy outcomes and goals, sector statements, actions and indicators to track progress. The responsibility for delivering the NOP lies with all relevant government departments overseen by a National Ocean Governance Committee (NOGC) [26–30]. Antigua and Barbuda developed a Maritime Policy Statement in 2017, still in draft, which is to be transformed into a NOP [31]. Montserrat's ocean policy is currently under preparation [32].

#### 3.2. The marine spatial plans of the OECS

MSP in the OECS has evolved over two very distinct phases. The initial phase saw implementation of small-scale MSP processes between 2010 and 2015, involving St Kitts and Nevis, Barbuda, St Vincent and the Grenadines, Grenada and Montserrat. The second phase which commenced in 2017 with the CROP, resulted in plans for the entire marine jurisdictions of Dominica, Grenada, St Kitts and Nevis, St Lucia and St Vincent and the Grenadines (Table 3 refers). Other than the scale of plans, there are other notable differences, as well as some similarities between the phases.

##### 3.2.1. Authority for planning

One of the early steps of a typical planning process is establishing the authority for planning [7]. This may be in the form of a new entity or the expansion of the mandate of existing organisations. Within the OECS, new institutions for planning have not been created or designated. Rather, planning has been undertaken by external contractors in partnership with national governments and/or the OECS Commission.

For the earlier, small-scale MSP processes, non-governmental organisations (NGOs) carried out the planning with a government entity as an authority over the process. The arrangement for the CROP was different and is a special case for MSP, perhaps a first of its kind. After

**Table 3**  
Marine spatial plans of the OECS

| Year* | Country/<br>Countries                     | Plan   | Spatial Extent   | Government Institution<br>Lead   | Planning<br>Partner          | Funders  |
|-------|---|--|--|--|------------------------------|--|
| 2010  | St Kitts and Nevis                        | The St Kitts and Nevis Marine Zoning Plan                                | Baseline out to depths not exceeding 30 m                                  | Department of Physical Planning and Environment  | The Nature Conservancy (TNC) | United States Agency for International Development (USAID)   |
| 2012  | Barbuda                                   | The Barbuda Marine Spatial Plan  | Baseline out to 3 nm   | The Barbuda Council  | The Waitt Institute          | The Waitt Foundation   |
| 2012  | St Vincent and the Grenadines and Grenada | Comprehensive Marine Multi-Use Zoning for the Grenadine Islands          | The Grenada Bank area, from the baselines out to the 50–60 m depth contour | The governments of Grenada and St. Vincent and the Grenadines                                | Sustainable Grenadines Inc   | National Oceanic and Atmospheric Administration (NOAA) Coral Reef Conservation Program, the Global Environment Facility (GEF) Small Grants Program and TNC |
| 2015  | Montserrat                                | Montserrat Marine Zoning Plan  | Baseline out to 3 nautical miles (nm)                                      | Ministry of Agriculture, Trade, Lands, Housing, and Environment                              | The Waitt Institute          | The Waitt Foundation   |
| 2017  | Dominica                                  | The Dominica Coastal Master and Marine Spatial Plan                      | Baseline to the outer limits of the EEZ                                    | Ministry of the Blue & Green Economy, Agriculture & National Food Security.                  | Dillion Consulting           | GEF through the World Bank   |
| 2017  | Grenada                                   | The Grenada Enhanced Coastal Master and Marine Spatial Plan              | Baseline to the outer limits of the EEZ                                    | Ministry of Climate Resilience, the Environment, Forestry, Fisheries and Disaster Management | Dillion Consulting           | GEF through the World Bank   |
| 2017  | St Kitts and Nevis                        | The St Kitts and Nevis Coastal Master and Marine Spatial Plan            | Baseline to the outer limits of the EEZ                                    | Ministry of Tourism and International Transport  | Dillion Consulting           | GEF through the World Bank   |
| 2017  | St Lucia                                  | The St Lucia Coastal Master and Marine Spatial Plan                      | Baseline to the outer limits of the EEZ                                    | Ministry of Education, Innovation, Gender Relations and Sustainable Development              | Dillion Consulting           | GEF through the World Bank   |
| 2017  | St Vincent and the Grenadines             | The St Vincent and the Grenadines Coastal Master and Marine Spatial Plan | Baseline to the outer limits of the EEZ                                    | Ministry of National Security, Air and Sea Port Development                                  | Dillion Consulting           | GEF through the World Bank   |

\* refers to the year planning process began

Sources: [9,10,16,33–40]

the earlier smaller-scale MSP plans, the project represented a move to large-scale implementation of MSP in the region. It adopted a novel approach for planning, with a regional-level authority overseeing the process to develop marine spatial plans for five (5) sovereign states. As a regional project under the management of the OECS Commission, the institutional arrangements for planning differ from conventional national MSP processes. At the level of the OECS, project management was through the Project Implementation Unit (PIU) of the Environmental and Sustainability Cluster of the Ocean Governance and Fisheries Program of the Commission. Working with the PIU is the OECS Ocean Governance Team (OGT), comprising focal points for ocean governance designated by the five participating members, with the responsibility to represent their countries interest in the planning process [41]. They also have an important role as a link between the technical and political sides to facilitate information-sharing and understanding between both. At the national level are the government ministry focal points designated to liaise with the consultants engaged in undertaking the planning. These government ministries supported the process through coordinating with other ministries, agencies and departments in their government for data, information and for facilitating engagement with stakeholders [41].

### 3.2.2. Scale

The boundaries of the early plans do not extend to the limits of the jurisdictional waters of the country, which for these island states is the 200 nm limit of the EEZ. Rather, the boundary has been the three (3) nm limit, 30 m depth, 60 m contour or the 200 m contour, with planning confined primarily to the nearshore area, within the limits of the territorial sea (TS). The St Kitts and Nevis Marine Zoning Plan was developed for the marine space extending from the baseline out to depths not exceeding 30 m around the islands [33] as beyond this, depths increase dramatically, with there being limited data and less possibilities to

obtain data. Barbuda, which is a part of the country of Antigua and Barbuda, is a semi-autonomous department with limited jurisdiction over its maritime territory. The Barbuda Council has limited jurisdiction of the waters from the baseline out to three (3) nm, with authority to regulate marine uses in line with national laws and regulations [10] and so this primarily determined the limits of the plan. The Barbuda plan encompassed all of the waters under the jurisdiction of the Council, including an inland lagoon, a total area of 456 km<sup>2</sup> [10]. The British Overseas Territory of Montserrat marine plan covered the marine space out to the three (3) nm limit as well, which is the area under its jurisdiction. The Comprehensive Marine Multi-Use Zoning for the Grenadine Islands plan covered the area of the Grenada Bank, approximately 2000 km<sup>2</sup>, measured from baselines out to the 50–60 m depth contour [40]. Conversely, the five plans developed under the CROP are of a larger scale, covering the extent from the baseline out to the 200 nm limit of the EEZ [35–39], based on claims, as some maritime boundaries have not yet been delimited.

### 3.2.3. Drivers and objectives

There has been a perceptible shift in the drivers, and consequently the objectives, for MSP from the first phase compared with the more recent plans under the CROP. In the early processes, the main aim of planning was for reducing sectoral conflicts and negative impacts on the environment, while achieving conservation objectives. Most notable were the objectives to achieve conservation targets, for example, a third of the planning area under protection and a third of critical habitats protected, which was clearly stated in the Barbuda plan [10] (Table 4 refers). Within these early plans, specific targets achieved include four (4) habitats which meet the 30% protection goal for Montserrat [9] and 33% of Barbuda's waters are under protection in five (5) coastal sanctuaries [10].



**Table 4**  
Marine spatial plan objectives\*

| Year | Plan   | Objectives  |
|------|--|---|
| 2012 | The Barbuda Marine Spatial Plan  | <ul style="list-style-type: none"> <li>• Fully protect one-third of the marine area</li> <li>• Protect one-third of each type of habitat</li> <li>• Ensure a minimum reserve diameter of approximately 3.2 km and ideally over 3.8 km to protect species with a spectrum of ranges</li> <li>• Protect as much nursery habitat as possible</li> <li>• Minimize conflict between ocean users</li> </ul>   |
| 2015 | Montserrat Marine Zoning Plan  | <ul style="list-style-type: none"> <li>• Maintain or enhance biomass of species targeted by fisheries</li> <li>• Protect species diversity</li> <li>• Conserve live coral and healthy reefs</li> <li>• Implementing Marine Management Areas to appropriately balance tourism, transportation, recreation, fisheries, biodiversity management.</li> <li>• Addressing marine water quality and the integrated system of freshwater lagoons, salt ponds, mangrove systems, coral reefs and seagrass beds.</li> </ul>   |
| 2017 | The St Kitts and Nevis Coastal Master and Marine Spatial Plan            | <ul style="list-style-type: none"> <li>• Revitalising the fisheries and agricultural sectors, including building connections to the tourism sector.</li> <li>• Investing in marine research to pursue new sectors (e.g., marine renewable energy, resource exploration, marine biotechnology) and innovations in traditional sectors of coastal and marine-based tourism.</li> <li>• Developing an integrated framework for the coordination of policies and programmes that flow from the Coastal Master Plan and Marine Spatial Plan.</li> <li>• Protecting the management of coastal and marine resources through conservation efforts and sustainable, wise use.</li> <li>• Reducing risk in the coastal and marine environments via ecosystem-based mitigation, engineered and soft measures.</li> </ul> |
| 2017 | The St Vincent and the Grenadines Coastal Master and Marine Spatial Plan | <ul style="list-style-type: none"> <li>• Developing and maintaining a vibrant fisheries sector especially small-scale fishing, in the coastal and marine waters, including the EEZ.</li> <li>• Promoting sustainable, climate-resilient, aesthetically-pleasing coastal tourism development that benefits tourists and locals.</li> <li>• Facilitating safe, reliable and timely movement of goods and people in coastal and marine areas via efficient maritime transportation.</li> </ul>   |

\*Objectives of selected plans as examples  
Sources: [9,10,37,39]

Under the CROP, the plans which were informed by the earlier work in MSP, additionally have a strong development emphasis. In line with Blue Economy policy objectives, they are described as tools for achieving economic growth [35–39]. Each of the plans outline a series of national strategic objectives (see Table 4 for examples), noting that actions and measures to achieve these should be consistent with the sector-specific guidance of the NOPS [35–39]. Implementation of MSP is viewed as critical for reaping the desired ecological and socio-economic benefits envisioned in the region in developing the Blue Economy [2]

which is reflected in the objectives of the plans. Through the planning process, a series of projects were identified in the nearshore areas of the islands for investment based on these strategic objectives.

### 3.2.4. Legislation for planning

Legal instruments for planning and plans, including any law, decree or order which applies to either differ across contexts. According to the Environmental Law Institute (ELI) [42], MSP may be done under new legislation, through the amendment of existing legislation or by proceeding without legislation. MSP across the OECS has progressed largely without supporting legislation. No authority for planning has been legislated in any of the territories for the planning processes undertaken. Two of the earlier small-scale plans are supported in law for plan implementation. For the Barbuda and Montserrat marine spatial plans, the legal instruments were developed in parallel with plan preparation. The Barbuda (Coastal Zoning and Management) Regulations (No. 34/2014) [43], was drafted by the ELI (contracted for the project) and approved in 2014. The legislation for Montserrat, also prepared by the ELI, was drafted in 2017 and is awaiting approval. The five plans produced under the CROP are not legislated. There is a human resource deficit across the region for maritime law which has hindered progress on developing legislation to support MSP [25].

### 3.2.5. Data

Obtaining new data and filling data gaps for the early plans was done through participatory processes involving key stakeholder groups. The design process of the St Kitts and Nevis Marine Zoning Plan was stakeholder-guided, using spatial data collected from expert mapping and fisher surveys [8]. In Barbuda, there was significant input from the fisheries and tourism sectors through surveys and participatory mapping [10]. The Montserrat process employed ocean use surveys using the participatory mapping tool SeaSketch [44] to determine the spatial distribution of fishing and diving activities. Community consultations were also undertaken to engage with citizens and gain an understanding of local issues and priorities for marine management [9]. One of the most participatory of these early processes was that undertaken for the Grenadines Bank project. A participatory geographic information system (PGIS) was used to map the marine resources of the transboundary Grenadine Islands with multi-level stakeholder involvement from across Grenada and St. Vincent and the Grenadines [13].

The plans out of the CROP built upon the work undertaken for the smaller-scale processes and other area-based management zoning available for nearshore areas. Additionally, they incorporated the outputs of activities undertaken by The Nature Conservancy (TNC) to map the high-value areas of the sea, [45] as well as modelling of the relationships between human activities and their impacts on the coastal and marine environment developed through combining ecosystem-based management (EBM) with the drivers, pressures, states, ecosystem services, and responses (DPSEER) concept [35–39]. Participatory stakeholder mapping and engagement was disrupted for the CROP due to the COVID pandemic and consequent restrictions on in-person meeting [41].

### 3.2.6. Spatial outputs

All the plans produced a zoning map for the nearshore area (Table 5 refers). The plans out of the CROP were more strategic for the offshore area, identifying zones similar in nomenclature to those for the nearshore area, but not spatially allocating them, referring to this as the Zoning Strategy. A harmonised approach and methodology was applied across all five (5) plans towards the creation of the zones. GIS-based risk mapping informed by EBM-DPSEER models were analysed to determine hot-spots and areas of compatibility and conflicts. Zones were identified and scenarios developed based on plan objectives for each of the countries. The exercise included describing the proposed marine zones, where definitions were developed and examples of activities representative of the zones identified [35–39].

**Table 5**  
Marine spatial plans and zoning designation types

| Year | Plan   | Zoning Designations   |
|------|--|---|
| 2010 | The St Kitts and Nevis Marine Zoning Plan                                | Single sectoral activities including conservation, transportation, tourism and fishing as well as multi-use zones such as for allowing tourism, conservation and fisheries in the same space                      |
| 2012 | The Barbuda Marine Spatial Plan  | shipping, mooring and anchoring, sanctuary and no-net areas. The plan established specific restrictions for 56.5% of Barbuda's waters and designated a third of the space (33%) as protected sanctuaries          |
| 2012 | Comprehensive Marine Multi-Use Zoning for the Grenadine Islands          | Tourism/recreation, conservation, offshore aquaculture, transport/ industrial, fishing  |
| 2015 | Montserrat Marine Zoning Plan  | A third of the area (33%) for MPAs with the remaining space designated as multi-use zones (52%) where all activities are permitted or as restricted access (15%) which is necessary for a volcanic exclusion zone |
| 2017 | The Dominica Coastal Master and Marine Spatial Plan                      |   |
| 2017 | The Grenada Enhanced Coastal Master and Marine Spatial Plan              |   |
| 2017 | The St Kitts and Nevis Coastal Master and Marine Spatial Plan            | Zones in both the nearshore and offshore areas: conservation, transportation and infrastructure, tourism and recreation, fishing, industrial activities, reserved area  |
| 2017 | The St Lucia Coastal Master and Marine Spatial Plan                      |   |
| 2017 | The St Vincent and the Grenadines Coastal Master and Marine Spatial Plan |   |

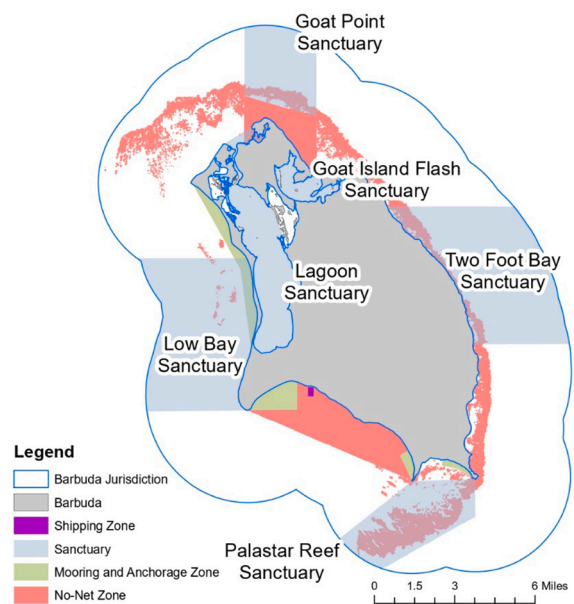
Sources: [9,10,16,33–40]

No zoning was done for the offshore areas as there was not enough data to support analysis and modelling, with the plans noting that they are to be updated as more data becomes available [35–39]. The lack of a spatial dimension for the offshore area raises questions on how development of this area will proceed in the immediate and short term if no allocations were made for uses.

It is important to note that for the earlier, small-scale processes, planning was strictly limited to the planning area under consideration. This was due to various factors including jurisdiction (for Montserrat and Barbuda limited up to 3 nm); spatial data limitations; and project objectives and constraints. Map 2 shows the final zoning plan produced out of the Barbuda MSP process.

### 3.2.7. Plan implementation

The Barbuda and Montserrat processes dedicated project time for consideration of key aspects of plan implementation. The Barbuda process had two years of the project devoted to developing implementation, with the Waitt Institute engaging external consultants to help with considering enforcement options [10]. For Montserrat, the third phase of the project was designated for implementation, whereby policy implementation to build capacity for ocean management, compliance and enforcement was undertaken [46]. The plans out of the CROP project included integrated implementation frameworks which comprise a roadmap and schedule for NOGC-led implementation of capacity development activities and recommended interventions identified as critical to achieving countries' Blue Economy policy objectives



Map 2. Barbuda zoning plan [10]

[35–39]. Each roadmap and schedule are aligned with the revised ECROP, country NOP and associated Strategic Action Plan. The fifteen-year schedule is broken down into short (2020–2025), medium (2020–2030) and long-term (2020–2035) reflecting that the roadmap is to be reviewed and revised every five (5) years.

Implementation of the recent plans out of the CROP positions the OECS Commission with a major coordinating role in spearheading the overall implementation effort for developing the Blue Economy in the islands. This includes mobilising resources and investments, collecting and sharing of information and overseeing any technical and policy interventions required. To facilitate plan implementation, the OECS Commission has rolled out several strategies for capacity development and financing. These include The Green-Blue Economy Strategic Action Plan of 2020, the OECS Blue Economy Strategy and Action Plan [47] in 2021 and an assessment on sustainable financing options for the Blue Economy [48] that describes an OECS Catalytic Blue Finance Facility (OECS-CBFF), also in 2021. At the national level, the NOGCs set up in alignment with the NOPs and with the mandate to oversee the delivery of NOP objectives have a role in supporting and providing guidance in plan implementation as well. As a part of this, they will continue to carry on the Grievance Redress Mechanism (GRM) set up during the CROP, which allows those affected by planned activity to raise their concerns with the relevant authorities [35–39].

## 4. Discussion

### 4.1. Progress and challenges

#### 4.1.1. Significant progress

This assessment of MSP processes which have been undertaken in the OECS across the last decade has revealed several trends which may have implications for the future development of MSP in the region. Most encouraging is that MSP has seen much progress in a relatively short time. Over the course of a decade, planning has moved from a smaller scale covering just part of the islands' TS, to five countries now having plans covering their entire marine jurisdiction. Additionally, clear objectives for achieving the goals of environmental targets is a welcome sign of making progress on these commitments. A lack of political will and a governance framework to support MSP have been cited as limitations to the development of MSP in the past [12,49]. However, the progress in the early phase has been in large part due to the efforts of

NGOs, matched by a willingness of national governments to support the processes. In the more recent phase of the CROP, along with the support of national governments, the OECS Commission has been the driver, spearheading the search for funding and assuming the role of project manager of the process. Political will has been on the rise alongside the growing Blue Economy ambitions of the countries and the OECS Commission. A constantly evolving policy framework to support MSP in recent years has also been a positive sign for advancing an integrated marine management approach in the region.

#### 4.1.2. Human resource capacity constraints

While much progress has been made, challenges remain. Capacity for MSP continues to be a major obstacle across the Eastern Caribbean region. MSP requires a range of knowledge and technical skills which up until the start of the CROP, had not been developed across the region. A project feasibility report prior to the CROP in 2017, notes a lack of technical skills in the region for MSP and that there was limited opportunities for locals to upskill [25]. This has resulted in the use of extra-regional planning experts almost exclusively for the projects. Government ministries and agencies have adopted a coordinating or consultative role, primarily to facilitate data collection and access to stakeholders and with a decision-making function, to validate work produced, while the technical planning is undertaken by the contracted specialists. Reliance on contractors for facilitating the planning process presents a problem for the long-term development of MSP in the region. Additionally, most of the plans are non-legislated due to capacity constraints, which places MSP in a precarious position. MSP is more likely to achieve its goals when planning processes and enforcement of plans are grounded in legislation [42]. The legal system across the full member states of the OECS are similar as they are all former British colonies (or an existing Overseas Territory as is the case of Montserrat). A training programme can contribute to developing the required capacity for maritime law. However, it must be coupled with incentives to retain talent, as 'brain drain' is a perennial challenge [15,25]. The region can benefit from a long-term plan for developing capacity for a range of competencies required for MSP where the focus is on facilitating knowledge and skill transfer to locals.

#### 4.1.3. Data limitations

Data is another major constraint adversely impacting MSP outputs. The region is data limited [9], with basic data gaps [49] particularly for the offshore area, which has resulted in comprehensive zoning within plans for the nearshore areas only, as noted in the CROP [35–39]. Data availability stems from capacity constraints as environmental monitoring, which besides being human resource and technology intensive, is also quite expensive due to the sharp increase in depths in the offshore area as the continental shelf falls away. Additionally, climate change modelling is a key decision-support tool for climate-smart MSP not yet included in planning in the region due to challenges of obtaining data at appropriate resolutions for the islands [10]. While participatory planning tools were heavily employed to fill data gaps, future planning cycles will benefit greatly from resolving issues related to baseline data availability, scale issues, access and formats. Data was obtained from various government agencies and ministries for all of the MSP processes as there is no central marine spatial data repository at either the regional level of the OECS or within the countries. There is a critical need for a common marine spatial data repository in the region and data collection standards [25].

#### 4.1.4. Limited funding options

Financing is an ongoing challenge for the countries with all the MSP processes undertaken through external financing. Though now choosing to identify as "large ocean states", these territories of the Eastern Caribbean are among the small island developing states (SIDS) of the world, with small, specialised economies vulnerable to external shocks and with limited resources. Based on this and other limiting human

resource and technical capacity constraints, planning through partnerships has been the way MSP has progressed in the region. External organisations, typically international NGOs, development banks and governments of developed countries, collaborate with the islands to provide funding, technical expertise and facilitate the planning process on a project basis. However, while such arrangements have provided the impetus for advancing MSP in the region, how sustainable this approach is in the long-term is questionable [49]. Project-based funding places uncertainty on continuity of the planning cycle. Projects, with few exceptions, usually end at the planning stage when the plan is produced. Moving beyond the planning phase to implementation remains a challenge for all the processes [8,9]. As yet, there has been no move to insert MSP within any national government structures for allocation of a dedicated budget to support planning, which is a further challenge for the institutionalisation of MSP in the respective countries. MSP in the region appears to have inadvertently been placed on a project cycle, only to be advanced if and when the next project is financed.

#### 4.1.5. Managing offshore development and addressing cumulative impacts

Besides these challenges, there is much at stake for these Caribbean territories as they seek to move forward with their Blue Economy development agenda. There is a risk that activity in the unplanned offshore areas will be led by investors. The region is actively seeking investment to drive blue growth, but ad hoc, piecemeal development in areas where little is known about the environment and marine resources jeopardises efforts to sustainably develop ocean-based economies, even threatening existing uses on which the islands heavily depend. Additionally, the recent plans have not described how cumulative impacts will be assessed, only that individual projects will require an environmental impact assessment (EIA) [35–39]. Before any large-scale projects are initiated, priority must be given to filling critical data gaps and updating the plans for the offshore areas, which must include a Strategic Environmental Assessment (SEA) considering the impacts of the plan proposals.

#### 4.2. OECS-led MSP

Across the two distinct phases of development, MSP in the OECS has shifted from being country-led to being led by the OECS Commission. In the smaller-scale processes, project partners as funders and/or facilitators of the process worked directly with national governments. In the case of the CROP, the OECS Commission was the link and while member states interests were represented through the OGT, the Commission represented a high-level third part with a powerful role in the process as the overall project manager.

The greater influence of the Commission in plan making and implementation may have both benefits and disadvantages. Through OECS-led planning there has been the delivery of plans for countries that did not have the technical capacity to undertake a large-scale MSP process. There was little need for human resources and specialist technical skills from the national level. Additionally, plans have been developed simultaneously, on the same timeline and using the same conceptual frameworks and planning principles, meaning there is a certain degree of coherence among them. While the CROP did not feature transboundary MSP, coherence in planning can greatly facilitate transboundary efforts [50] in subsequent planning cycles. A Regional MSP framework has been developed within the CROP to be used as a guide to developing transboundary MSP. As an organisation with a strong mandate for regional integration, there is little doubt that the OECS will have a major role to play in any successful transboundary planning initiatives across the region.

However, precedent has been set and whether plan-making has now been moved from under the direct control of the countries to the OECS Commission remains to be seen. If subsequent planning cycles proceed as the CROP, then there will be little opportunity for institutionalisation of MSP in the countries. While they must validate plans and will



implement them under the leadership of their NOGC and various sectoral ministries and agencies, some degree of autonomy has been lost with respect to MSP, the long-term effects of which will only be apparent later.

Additionally, the unique planning arrangement under the CROP, coupled by the lack of legislative grounding of MSP means that there is much ambiguity surrounding who has the authority or the mandate for planning at the national level. Institutions should have straightforward and transparent mandates [1] to deliver effective outcomes, and it is debatable whether this has been achieved under the CROP. While it has not affected the delivery of this first iteration of plans, how plan implementation, review and subsequent cycles will be carried out is not known. Developing national capacity for MSP can contribute to moving towards co-managed MSP where, through a clear mandate, national agencies have a more substantial role in the planning process.

The marine spatial plans out of the CROP have been delivered since December 2021 and should now be in the implementation phase. However, the lack of training undertaken before and during the planning process means that stakeholders are ill-equipped to effectively carry out their roles for plan implementation. The OECS Commission has an important role in supporting its member states moving forward, including facilitating capacity development [47]; preparing for progress through the remaining stages of the planning cycle (monitoring, review and evaluation); as well as for obtaining financing for projects identified as priority for investment in the plans [48].

## 5. Conclusions

Significant progress has been made in initiating MSP in the OECS within the last decade. Supported by a developing policy landscape, the islands have advanced from small initiatives focusing on the nearshore area to the CROP, a pioneering project which has put the participating five OECS members ahead of other island states in the Caribbean in implementing large-scale MSP. MSP has been evolving in response to increasing demands on space and resources, driven initially by the need to reduce conflicts and protect the environment, but more recently to also facilitate delivering a Blue Economy. Other than producing plans to fulfill national policy objectives, the various processes have also advanced marine data collection, ocean literacy and ocean governance in the region.

While MSP in the OECS has progressed, its future direction remains uncertain. The approaches taken to planning reflect the particularities of the context, most notably the capacity challenges of the islands. Human resource deficits, data limitations, long-term funding constraints and the lack of MSP legislation must be addressed if MSP is to become institutionalised. How MSP evolves despite these challenges will depend on how far national governments advance with developing capacity and plan implementation in the immediate to short term. The continued leadership of the OECS Commission in line with its ambitions of integration and development of the region will be critical for extending efforts.

## CRedit authorship contribution statement

Sarah Mahadeo: Conceptualization, Investigation, Writing – original draft, Writing – review & editing.

## Data availability

Data will be made available on request.

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