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Stakeholders' perceptions of coastal development in relation to marine protected areas

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Abstract
As marine protected areas (MPAs) face various coastal threats, including development, their incorporation into integrated coastal management (ICM) is essential. Stakeholder participation is a major, albeit poorly addressed, component of the integration of MPAs into ICM. Driven by shared interests and values, stakeholders can signal when coastal activities become unacceptable according to good governance principles of MPAs and ICM. This study assessed stakeholders' perceptions of coastal development associated with an MPA in southern Mozambique. Data were collected through face-to-face interviews and focus groups with 31 individuals representing five stakeholder groups. Stakeholders acknowledged the connection of MPAs with ICM at a sophisticated level, identifying coastal development threats potentially affecting the MPA, and proposing mitigation strategies. The results of this study confirmed the qualities of stakeholder participation to complement MPA management and offer guidance on ICM.

Keywords Integrated coastal management · Southern Mozambique · Urban planning · Infrastructure · Port construction · Marine tourism

Introduction

It is often thought that once established, marine protected areas (MPAs) are indefinitely safeguarded from severe human pressures; however, this is hardly the case. Not only are MPAs challenged by the same anthropogenic stressors as any protected area (PA), they are particularly vulnerable due to their connection with the coast, inland and upland areas, facing threats originating from within and outside their boundaries (Salm et al. 2000; Cicin-Sain and Belfiore 2005; Jentoft et al. 2007). Coastal and land activities ranging from littering to tourism, fishing, urban and road development, deforestation, mining, agriculture, aquaculture, wastewater runoff, and port construction have potentially detrimental socio-ecological impacts on MPAs (Jameson et al. 2002). These impacts include pollution and eutrophication; changes in hydrodynamic and sedimentary regimes; disease spread; animal killing and poaching; species disturbance; habitat modification and loss; an uncontrolled influx of people competing for space and resources with local communities and wildlife; land privatisation; relocation of people; crime; environmental degradation caused by inadequate infrastructure; health issues; and loss of traditions, cultural identity and livelihoods (Cater and Cater 2007; Gachechiladze and Staddon 2007; Huang et al. 2008; Gladstone 2009; Shivlani 2009; Seagle 2012; Afreen and Kumar 2016; Le 2016; Mani-Peres et al. 2016; Navarro 2019; Failler et al. 2020).

The place of MPAs in the context of integrated coastal management (ICM) has been argued (Jameson et al. 2002; Cho 2005; Cicin-Sain and Belfiore 2005; Cater and Cater 2007; Gladstone 2009). Cicin-Sain and Knecht (1998) define ICM as "a continuous and dynamic process by which decisions are taken for the sustainable use, development, and protection of coastal and marine areas and resources." ICM is characterised by a governance system of top-down and bottom-up measures through the cooperation of different levels of government, MPA managers, organisations, donors, scientists, educators, the private sector, tourists, local communities and other user groups (Tompkins et al. 2002; Gaymer et al. 2014; Afreen and Kumar 2016; Gonzalez-Bernat et al. 2019).

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Belfiore et al. (2004) describe nine principles for integrating MPAs with ICM grouped into three categories and covering two themes (Table 1). The first theme is MPA governance participation in ICM. MPA managers can preserve ecosystems at the land-sea interface; create relationships with sectors involved in the coastal zone and ensure their sustainable development; and work towards the incorporation of the conservation mandates of MPAs into institutional and policy arrangements for the coastal zone (Graham et al. 2003; Gladstone 2009; Gonzalez-Bernat et al. 2019; Navarro 2019; Failler et al. 2020). These responsibilities may increase when MPAs cover a vast area (which is typical of developing countries) or form part of larger PA networks, requiring substantially more ICM and intensive control (Cicin-Sain and Belfiore 2005). The second theme is stakeholder participation in MPA management and ICM. Stakeholders can be defined as those (e.g. individuals, groups) interested in coastal and marine resources and how these resources are managed, and whose actions can affect or be affected by the marine and coastal environment and its conservation (Pomeroy and Rivera-Guieb 2006; Abecasis et al. 2013). Stakeholders' participation in MPA management and ICM can be effective if underpinned by the consideration of socioeconomic and cultural aspects of MPAs in connection with the coast; positive relationships between stakeholder groups; and quality mechanisms of engagement (e.g. education, information, capacity building, participatory management, citizen science).

Stakeholder participation remains poor, often resulting in conflict or social injustice (Cho 2005; Jentoft et al. 2007; Bennett and Dearden 2014; Gaymer et al. 2014; McNeill et al. 2018). However, it is essential to the implementation and management of MPAs and the mitigation of pressures. For example, it forms a major component of ecosystem-based management and the basis of MPA support and social acceptability (Cicin-Sain and Belfiore 2005; Gladstone 2009; Voyer et al. 2015a; Marshall et al. 2016; Bennett et al. 2019; Staniscia et al. 2019). Stakeholder participation is critical to identify challenges and opportunities in the relationship between MPAs and the coastal zone (Belfiore et al. 2004; Abecasis et al. 2013). Stakeholders can identify coastal threats to MPAs and raise concerns regarding ICM, complementing MPA monitoring and evaluation and offering perspective and guidance on the integration of MPAs in ICM (Vanclay 2012; Mani-Peres et al. 2016; Corrigan et al. 2018; Lotze et al. 2018; Navarro 2019).

Coastal development, including small-scale urban, tourism, infrastructure and mega development, epitomises the threats stakeholders perceive to MPAs and ICM. Their concern may be driven by livelihood, profit, culture, traditions, heritage, history, identity, politics, environmental attitudes and previous experiences (Abecasis et al. 2013; Voyer et al. 2015b; Mani-Peres et al. 2016; Marshall et al. 2016; Gkargkavouzi et al. 2019; Staniscia et al. 2019). Shared interests and values among different stakeholders may result in the identification of serious threats to coastal development, and mitigation actions or proposals (Tompkins et al. 2002; Gachechiladze and Staddon 2007; Bonilla-Moheno and García-Frapolli 2012; Seagle 2012; Afreen and Kumar 2016; Stoa 2016; McNeill et al. 2018).

Stakeholders may be open to some forms of coastal development in MPAs while being opposed to others, potentially adopting a "not in my back yard" mentality towards development (Dear 1992). Their resilience could indicate whether development is within the acceptable limits of good governance principles for MPAs and ICM, provided that they have a sufficient understanding of such principles to apply them to arguments about development.

This study investigated stakeholders' perceptions of coastal development in relation to MPAs. Perceptions here are defined as "the way an individual observes, understands, interprets and evaluates a referent object, action, experience, individual, policy or outcome" (Bennett 2016). An MPA in southern Mozambique was selected as a case study. This location was ideal, as it is a large MPA in a developing country and its coastal zone was undergoing substantial development-related changes at the time of the study. Specifically, the study assessed whether stakeholders create connections between MPA management and ICM; what development threats they identify; and whether they propose sound strategies to mitigate development threats. This study draws from Bennett's (2019) recent call to exploit the marine social sciences to guide ocean and coastal policy through characterisation and assessment of governance and management effectiveness, and the evaluation of conservation, management and development impacts on people relying on the ocean and coastal resources for survival. The results of this study were used to support arguments in favour of decisive stakeholder involvement and participation in MPA management and ICM.

Case study: Ponta do Ouro Partial Marine Reserve

The Ponta do Ouro Partial Marine Reserve (PPMR) in southern Mozambique (Fig. 1) was proclaimed in 2009. It extends for 86 km from the South African border (Kosi Bay) to Maputo Bay, stretching up to 18 nautical miles offshore (PPF 2020) and 100 m inland of the low water mark. It comprises ecosystems from coral reefs and the pelagic zone to intertidal rocky shores, mangrove forests, sandy beaches and coastal dunes. Some communities within these ecosystems are considered unique and several species are listed as threatened by the IUCN (Celliers and Schleyer 2008; Guerreiro et al. 2011).

Table 1 Principles for integrating MPAs with ICM (Belfiore et al. 2004)

Principle	Category	Theme
1. Connectivity between MPAs and surrounding coastal areas should be maintained		MPA governance participation in ICM Stakeholder participation in MPA management and ICM
2. MPA management should be based on the best available knowledge and information also relevant to and drawing from the basis of coastal area management	Strengthening the linkages between MPAs and the wider coastal area	
3. Integration of MPAs and ICM depends on sustained management processes and programmes producing benefits contributing to improved quality of life		
4. Strengthened and effective relationships are needed to allow appropriate stakeholder participation in MPA implementation and to achieve linkages between MPAs and ICM		
5. MPA management should be an integral part of ICM governance	Developing governance plans to embed MPAs into the broader framework of ICM	
6. Planning of MPAs should be participatory and integrated within broader spatial management and economic and social development frameworks to ensure their sustainability		
7. Mobilising adequate resources and capacity is essential for the implementation, sustainability, and integration of MPAs in ICM programmes		
8. The effectiveness of MPAs and their incorporation in ICM frameworks have to be assessed through appropriate tools, guidelines and trained personnel	Fostering the implementation of MPAs through enhanced management tools and policy	
9. Ecologically coherent networks of MPAs provide a spatial management tool to prioritise conservation and ensure maintenance and enhancement of environmental goods and services		

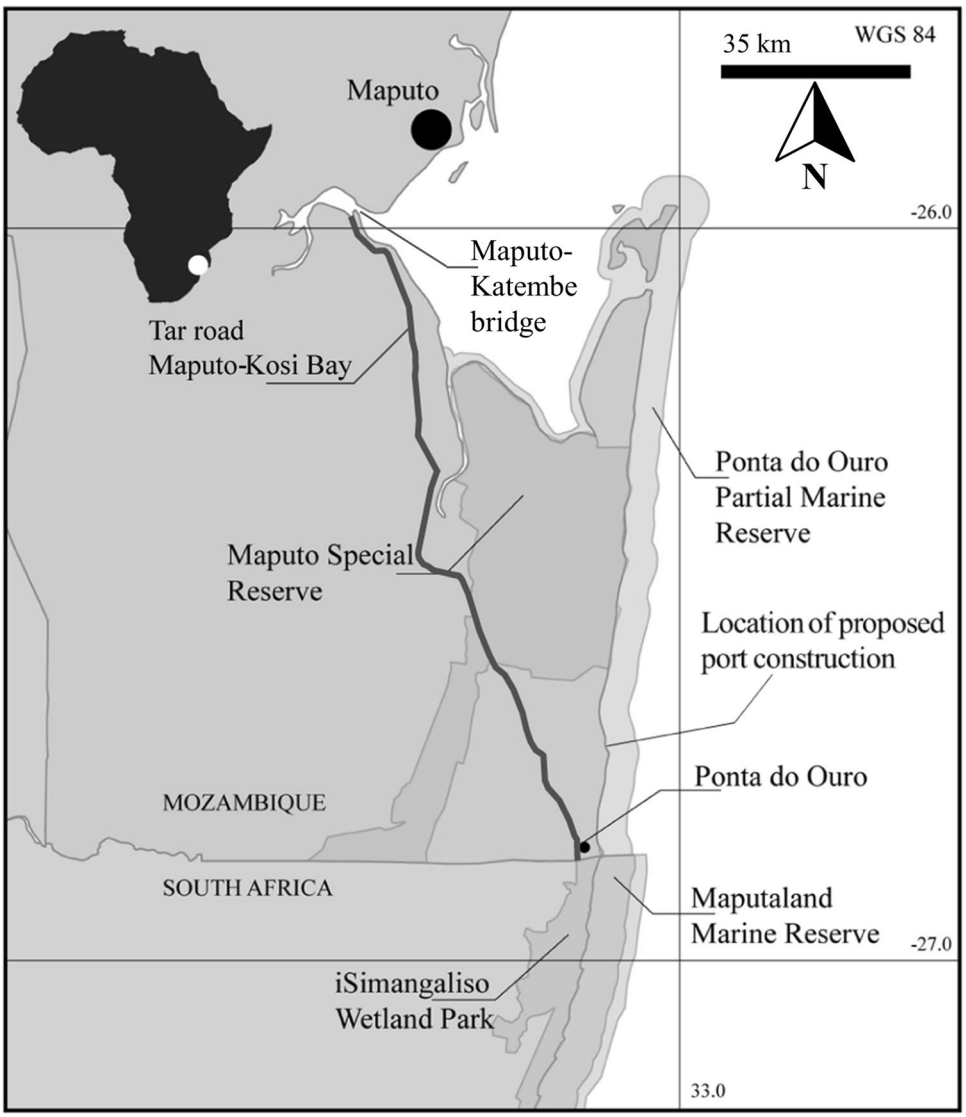

Fig. 1 Map of the PPMR indicating the village of Ponta do Ouro, the Maputo-Katembe bridge, the road connecting Maputo to Ponta do Ouro and the South African border, and the location of a proposed port near the sanctuary zone of the reserve. The map shows the original offshore boundary of the reserve, up to three nautical miles

The authority responsible for the PPMR is the Mozambique Ministry of Land, Environmental and Rural Development, in collaboration with other ministries, the navy and the National Maritime Institute. The PPMR is managed by a single warden who reports to the head of the National Administration of Conservation Areas (ANAC). While falling under the jurisdiction of Mozambique, the PPMR is part of the Lubombo Transfrontier Conservation Area (LTFCA), together with the Maputo Special Reserve (MSR) managed by the same warden, and the Maputaland MPA and iSimangaliso Wetland Park (IWP) in South Africa (Fig. 1). The LTFCA was proposed and is managed by the Peace Parks Foundation (PPF) which facilitates TFCAs across southern Africa (Symons 2018). The reserve is also neighboured by the Machangulo Private Nature Reserve south of Inhaca Island. The PPMR is being considered by UNESCO to become a World Heritage Site and is classified as one of the eight key biodiversity sites in the East African Marine Ecoregion (Guerreiro et al. 2011).

During the Mozambique civil war between 1975 and 1990, development in the region surrounding what today constitutes the PPMR was halted, with residents emigrating and towns becoming deserted (Jury et al. 2011). Following the war, people returned to the coast, which became a popular destination for marine tourism and recreation (Jury et al. 2011; Come 2014). When fishing, harvesting, poaching, tourism and beachfront development started threatening local ecosystems, the reserve was proclaimed and interrupted or controlled these activities (Gaspar 2008). The reserve has a sanctuary zone, a restricted-use zone and two multiple-use zones; construction is not allowed in the natural areas 100 m inland of the low water mark (DNAC 2011). The coastal communities in the reserve are multi-ethnic groups of people from southern Mozambique, and South

African migrants who manage many of the local tourism enterprises (Jury et al. 2011).

Despite some initial concerns over the effects of the PPMR on livelihoods, ecotourism development and conservation activities were ultimately prioritised as the goal to finance the reserve and support local communities (Gaspar 2008; Book 2012; Daly 2013). This goal was endorsed with investments (USD 16 million) to transform southern Mozambique into a prime ecotourism destination (PPF 2018). Marine tourism is a significant attraction to the reserve, with tourists willing to pay as much as USD 335 860 annually to protect ecosystems and species sought for diving, fishing and ocean safaris (Daly 2013). Recent work by Makumbirofa and Saayman (2017) indicates that scuba divers spent an average of USD 910 per person on a trip to the PPMR, and they were willing to pay an additional USD 14 per trip to maintain dive site quality and support conservation. Resident communities of the PPMR are mainly employed in tourism and hospitality jobs and involved in conservation and education initiatives. For example, a recently created eco-resort along the reserve's coast is owned by the local community and operated by a trust established for the community's benefit (PPF 2018). Also, the beaches of the PPMR are major turtle nesting sites of the LTFCA, and the local community has been engaged in paid participatory turtle nest monitoring as an alternative to poaching (Harvey 2018; PPF 2020).

In December 2019, the president of Mozambique proclaimed a vast area including the PPMR and MSR an Environmental Protected Area (EPA), to ensure that development and other activities take place with conservation in mind (PPF 2020). Before this time, however, small- and large-scale construction and development had been proposed or carried out in the region. Ponta do Ouro, the southernmost village of the PPMR (Fig. 1), has seen the number of houses and buildings for accommodation and retail grow, some even on the frontal dune (Hoogendoorn and Back 2019) (Fig. 2). Between 2014 and 2018, the Maputo-Katembe bridge, the longest suspension bridge in Africa, was built as part of a project to extend Maputo's area to the south (Burhenne 2018). The project contracted to the China Roads and Bridge Corporation, included a 120 km tarred road (later simply referred to as the road) linking Katembe and the South African border with Ponta do Ouro and traversing the MSR (Figs. 1, 3). The road reduces the travelling time from Maputo to Ponta do Ouro and makes this holiday resort easily accessible (Hoogendoorn and Back 2019). Previously it could only be reached by off-road vehicles on established dune tracks.

A deep-water port at Ponta Techobanine, close to the sanctuary zone in the PPMR (Fig. 1), has been proposed at least since the 1960s, as part of a megaproject to facilitate coal exports from Botswana (Daly 2013; Symons 2018). While the port has not yet been constructed, rumours of its status have been increasing over the last few years (Symons 2018), with the latest news released in early 2020 (The Sunday Mail 2020). The port and its putative effects (e.g. pollution, shipping traffic, dredging and blasting) contradict the conservation mandate of the PPMR and threaten it and South African MPAs including the World Heritage Listed IWP, potentially defying international conservation treaties and the duties of signatory countries (Carnie 2012; Daly 2013; Symons 2018). The port would also negate the positive investments made towards ecotourism development in southern Mozambique.

Data collected between 2004 and 2014 partly described the potential effect of development on the PPMR and stakeholders' opinions of it (Gaspar 2008; Jury et al. 2011; Carnie 2012; Come 2014; Jury 2015; Symons 2018). Stakeholders included researchers, park management members, donors,

Fig. 2 Examples of urban development projects undertaken in Ponta do Ouro

Fig. 3 The original road entering Ponta do Ouro (top left panel), which was replaced by a tar road (bottom right panel) constructed between 2014 and 2018 (top right and bottom left panels)

organisations, business owners, tour operators and community members. The data highlighted doubts about development and its effects on the reserve. Urban development and the road were expected to relieve pressures such as the lack of water accessibility and poor condition of some infrastructure. However, they were also perceived as an improperly planned environmental threat potentially degrading tourism destinations, jeopardising quality nature-based tourism, creating tension within local communities and disrupting tranquillity. The port was regarded as destructive to ecosystems and detrimental to the conservation-based tourism plans of the PPMR. Strategies to mitigate the effects of uncontrolled development and the prospective road included proposals for proper urban planning made by community and tourism members. Strategies against the port included lobbying, interactions with the government to garner support for a tourism-based green economy, and economic investments by PPF.

This study followed up on crucial events after 2014, especially urban development, the advent of the road and new rumours of port construction, taking advantage of them to capture stakeholders' perceptions of development and its implications for the reserve. While there are many stakeholders in the PPMR, the focus was on individuals inhabiting and using the coast, such as reserve management and community members and tourism operators. Ideally, stakeholders would be aware of the importance of integrating the reserve with ICM, identifying development threats but also proposing feasible mitigation strategies.

Materials and methods

This study followed a phenomenology approach to qualitative research, allowing members of the study communities to "voice" their opinions and experiences about a phenomenon (Van Manen 2007; Yin 2011). It was carried out in 2015–2019, during which the author spent several months in Ponta do Ouro, developing a respectful and trusting relationship with villagers and reserve management members. This relationship was essential to make the stakeholders feel relaxed and unrestrained during data collection. Data were collected on four occasions (2015, 2016, 2018, 2019) via unstructured face-to-face interviews and focus groups (Table 2) conducted by the author with the assistance of colleagues. This mixed method ensured that stakeholders spoke freely and that the range of responses was widened through group interaction to obtain detail-rich data.

Sandelowski (1995) stated that acceptable sample size in qualitative research will depend on various factors, including the researcher's judgement and experience, the method and sampling strategy used, and the envisioned research product. In the case of this study, the final sample size was determined based on sample sizes (10–30) recommended by various authors and summarised by Boddy (2016). The stakeholders were selected by heterogeneous random sampling and approached in their working environments, their homes, or the headquarters of the reserve, in Ponta do Ouro. They were engaged in discussions about the local environment (the marine reserve and surrounding coastal and inland environments), conservation, people, activities (mainly tourism), livelihoods, perceived threats and development (Table 2). In cases when the stakeholders did not speak English but Portuguese, discussions were led by a trained Portuguese-speaking fieldworker. All discussions were recorded with the prior consent of the participants, and notes were also taken during data collection.

By 2019, the final sample had reached 31 participants including four from reserve management, 13 from the tourism sector, six from the accommodation and retail sector, two from public services, and six from the local community. Most

Table 2 Structure of the conversations held with the stakeholders during data collection

Data collection method	Questions
Unstructured face-to-face interviews and focus groups	(1) What is your opinion of and your relationship with: The marine reserve and its goals; The local environment* and its conservation; Stakeholders in the local environment*, such as tourists, community and businesses; Activities in the local environment*, from tourism to development; Any potential threats to the abovementioned? (2) What is the relationship between conservation and community in the local environment*? (3) Has development in the local environment* affected you personally? (4) What are the positive and negative effects, if any, of development on the marine reserve**? (5) Is there any form of development that is necessary in the local environment*? (6) Is there any form of development that is threatening the wellbeing of the marine reserve**? (7) How can you imagine and how would you shape the future of the marine reserve**?

*The local environment meant to include the PPMR and surrounding coastal and inland environments

**When mentioning the marine reserve, the interviewer also referred to environments, conservation, communities, and economy affecting and affected by it

stakeholders had been living in the reserve for 10–15 years, while the rest had been living there longer. This sample was deemed adequate (Boddy 2016) and data analysis later confirmed that both theoretical and data saturation had been achieved (Sandelowski 2010).

The recordings were first transcribed and translated by the author and a professional native Portuguese-speaking person from Mozambique (Choi et al. 2012). The transcripts were divided according to the period and method of data collection and analysed separately by the author through thematic analysis (Braun and Clarke 2006). Inductive open coding was performed by reading carefully through the transcribed data and identifying meaningful analytical units of text. A master list of codes was kept so that codes could be reapplied to similar segments of data (in vivo coding) (Nieuwenhuis 2017). Codes were then grouped into themes. A theme was identified as such when capturing something relevant concerning the aim of the study. Specifically, the author looked for patterns reflecting the nine principles for managing MPAs within ICM according to Belfiore et al. (2004) (Table 1), and patterns identifying development threats and possible mitigation strategies. Notes taken during data collection were used to crosscheck the results of the thematic analysis. Key quotes for each theme were extracted to be presented with the final results.

Results

Connecting MPA management and ICM

Stakeholders' discussions highlighted the importance of considering the marine reserve within a broader context including the coastal zone, addressing the nine principles for managing MPAs within ICM (Tables 1, 3). Concerning strengthening the linkages between MPAs and the wider coastal area (Principles 1–3), the stakeholders focused on the importance of coastal dunes as a critical buffer zone connecting ocean and land and an ecosystem in need of protection. Turtles, the emblem of the reserve, signified the connection of ocean and land through the beach and dune ecosystems. The stakeholders argued that more knowledge and information were required to better manage the reserve in relation to the coast; they particularly referred to assessing human impacts on the dunes and intertidal ecosystems. They felt a responsibility to acquire such knowledge and information and share it with other user groups (e.g. community and tourists). They believed that the reserve provided important benefits to people through conservation, including the coastal zone as part of this conservation framework. Directly, conservation ensured the continuing delivery of services like water, food and living spaces for communities. Indirectly, it guaranteed the attractiveness of natural environments to tourism, the main source of livelihoods and income locally.

With regard to developing governance plans to embed MPAs into ICM (Principles 4–6), discussions focused on the importance of stakeholder participation and the central role of the reserve management. The stakeholders argued that every group has a responsibility towards the reserve and the coastal areas. They believed in the potential of capacity building to engage communities in conservation while creating employment (e.g. turtle monitors, litter removal). Some of the participants described their active involvement in planning, monitoring and

Table 3 Connections between MPA management and ICM identified by the participants in this study

Codes	Themes Key quotes
• Coastal dune protection	Principle 1: connectivity between MPAs and surrounding coastal areas should be maintained
• Land-sea connectivity	The coastal dunes are not fully part of the reserve; it is challenging to incorporate them into the management plan. Some dunes have lost vegetation and require restoration (RS). The dunes should be fully protected, they are connected with the ocean, they are important for the turtles (PS). Development on the primary dune is still happening; people do not understand that there is a connectivity between the shore and the ocean (TO). This place is a marine reserve, a conservation area. Its surroundings should stay natural, without villages turning into cities (AR)
• Capacity building	Principle 2: MPA management should be based on the best available knowledge and information also relevant to and drawing from the basis of coastal area management
• Assessing impacts on the coastal zone • Educating others	We need a solid knowledge base and skills to ensure that we can properly teach the community how to preserve the resources of the reserve (PS). We need to learn how to be conscious of the effects of our activities on environments like the beach, the dunes and the rocky reefs, so that we can share this understanding with visitors (TO). We support research that can assist the management and conservation of the reserve (RS)
• The reserve is a source of livelihood • Conservation benefits livelihoods • Sustainable livelihoods are positive for the community • Conservation supports tourism development	Principle 3: integration of MPAs and ICM depends on sustained management processes and programmes producing benefits contributing to improved quality of life I have lived here for many years and have seen things change for the better since the reserve was established (CO). We depend on marine ecosystems, and they depend on us; we must protect them. Well-preserved areas attract tourism, and some people make a living by practising conservation (RS). Marine ecosystems sustain communities in every way, through water, food, land, tourism. The foundation of sustainable living is the knowledge and the acceptance of this fact (AR). Conservation is related to the sustainable use of resources, which guarantees people's livelihoods. It is about preserving the healthy and functioning state of what we need to survive, that is, the environment, food, water, other sources of energy, and indirectly, our livelihoods which are based on tourism (PS). The money invested in the reserve should always translate into tangible interventions also for the benefit of the community (TO)
• Capacity building	Principle 4: strengthened and effective relationships are needed to allow appropriate stakeholder participation in MPA implementation and to achieve linkages between MPAs and ICM
• Stakeholder participation • Trust in the reserve manager	We involve communities in conservation activities, like beach clean-ups and turtle monitoring; this way they sustain themselves and show others that they can do the same. We each need to do our part, whether we are an NGO or a resort, to promote conservation and sustainable tourism in this reserve (RS). The reserve is here to teach and educate people on the threats affecting the ocean and the coast, and protect the ecosystems as much as possible (AR). We are in a good relationship with the manager, it is easier to interact with him than with the government. Thanks to the reserve there are many restrictions, making all activities more sustainable. As a tourism company in a marine reserve we educate our clients, we make them follow the codes of conduct, and we tell them that their money goes towards the conservation of the reserve. We collaborate with the reserve to make sure our activities have an as little negative impact as possible (TO)
• Management decentralisation	Principle 5: MPA management should be an integral part of ICM governance
• Rules and regulations • Ecotourism promotion	There is still confusion between what the government says and what the reserve says regarding the regulation of marine tourism activities and taxation; it will be great when the reserve management is in full control (CO). The reserve needs to preserve marine and coastal environments from the human attitude, through conservation rules, control, signs and information boards at the beach on what cannot be done, and even fines (PS). The reserve needs to ensure that ecosystems are protected from excessive human pressures; certain activities cannot be allowed here (AR). The reserve could promote ecotourism more, and support the companies in becoming eco-friendly (TO)

Table 3 (continued)

Codes	Themes Key quotes
• Participatory monitoring • Participatory planning • Participatory enforcement	Principle 6: planning of MPAs should be participatory and integrated within broader spatial management and economic and social development frameworks to ensure their sustainability Before the reserve was established, we used to patrol the beach and even monitored fish catches. When the reserve was established, some of us contributed to the management plan, especially for wildlife identification and codes of conduct in diving tourism. We try to maintain a sustainable tourism operation, we have a code of conduct and we are constantly working with the marine reserve to improve it (TO). I am very happy with how the implementation of the reserve has brought codes of conduct, rules, the beach ban, and turtle protection (CO)
• Diving tax	Principle 7: mobilising adequate resources and capacity is essential for implementation, sustainability, and integration of MPAs in ICM programmes
• Willingness to pay	The majority of local jobs are generated by scuba diving companies. Being diving the main attraction to the reserve, it generates income not only for the community but also for the upkeep of the reserve, through the taxes that are paid by the companies. The diving tourists are happy to pay the reef tax when they know the money is used for the benefit of the marine reserve. Funding to secure protection is probably the biggest issue, but so far the reserve has worked even with limited means (TO). Tourism is popular in natural areas that are well protected; that brings money for the communities but also the reserve (RS)
• Rigorous conservation	Principle 8: the effectiveness of MPAs and their incorporation in ICM frameworks have to be assessed through appropriate tools, guidelines and trained personnel
• Limited monitoring resources • Participatory monitoring	The environments stay healthy as long as conservation is rigorous and the people responsible for the entity keep monitoring so the rules are complied with (PS). The management team has limited resources for monitoring purposes, the reserve is very vast. We need more people to be out there and monitoring what is going on in the ocean and along the coast (TO). Communities have to continue to take part in conservation, turtle monitoring and beach cleaning (RS). We always try to clean the beach weekly or sometimes monthly. Recently we had a team of 25 people collecting the trash from the beach. We should continue like this (CO)
• TFCA	Principle 9: ecologically coherent networks of MPAs provide a spatial management tool to prioritise conservation and ensure maintenance and enhancement of environmental goods and services
Unique ecosystems	The marine reserve is essential because it creates a corridor for the movement of important species like dolphins, turtles and sharks between Mozambique and South Africa (RS). This place is unique and that is one of the reasons it is protected. We have the ocean, marine mammals, sharks. Our marine life is abundant, various, colourful, and the coral life is amazing. The Techobanine reef sanctuary has one of a kind reefs (TO)

The themes identified refer to the nine principles for managing MPAs within ICM (Belfiore et al. 2004)

Stakeholder categories: *RS* Reserve, *TO* Tourism, *AR* Accommodation and retail, *PS* Public services, *CO* Community

enforcement activities in the ocean (e.g. diving codes of conduct) and on the coast (e.g. fish catch monitoring, beach patrols) before, during and after the establishment of the reserve. The stakeholders trusted the reserve manager and ascribed to him crucial responsibilities including authority, mediation with the government, enforcement of rules and regulations, and mitigation of detrimental sea and land activities.

Principles 7–9 refer to fostering the implementation of MPAs through enhanced management tools and policy. In this regard, the stakeholders argued that marine-based tourism, especially diving, was key to fund the reserve's implementation, through visitor taxation. The involvement of communities and other groups (e.g. the tourism sector) in capacity building and monitoring was considered another implementation support mechanism, possibly compensating for limited resources. The reserve being part of a broader network of PAs added responsibility, as it implied the protection of unique ecosystems, their connection and the provision of a corridor for the movement of important species, such as turtles and sharks.

Identifying development threats

The stakeholders identified five threats in relation to development (Table 4), varying in scale and involving the reserve and the coast outside its boundaries. The stakeholders

treated exogenous threats as being wholly connected with and affecting the reserve and its goals.

They described poor urban planning and management as a threat to the coastal villages, focusing on Ponta do Ouro. They considered poor waste management, poor community awareness concerning litter, and the lack of basic facilities and services (litter bins, public toilets, water) as chronic issues requiring urgent attention. These elements threatened the quality of life of resident communities and the health of coastal and marine ecosystems, a prime concern being that waste would make its way to the beach and the ocean. Urban development was perceived to be threatening when it encroached on the dunes, was not supported by the provision of basic infrastructure and services (municipal water and waste management), was uncontrolled, and was not according to the law. Inappropriate development would exacerbate the effects of poor urban management causing the loss of the natural qualities of the village and significant environmental degradation of the coastal area.

The road to Ponta do Ouro represented a crucial threat. Before its construction began, the stakeholders envisaged an increased, uncontrolled and continuous influx of visitors from Maputo, and were concerned about the lack of basic facilities and services (e.g. ablutions) required to

Table 4 Development threats identified by the participants in this study

Codes	Themes Key quotes
• Poor waste management • Limited community awareness concerning litter • Lack of basic facilities and services	Poor urban planning and management: The first thing tourists see when they come to the town is the dumping ground and the market surrounded by litter. This town needs to be clean, the local people need to be educated about how to dispose of litter, and the government needs to invest in litter bins. Especially with the road, Ponta do Ouro must prepare concerning waste management (CO). In the market there are no toilets, the situation is unsustainable. There needs to be public infrastructure, but people are only worried about selling land. We harm good tourism if positive conditions are not created. Today we fill every space with garbage, we destroy; tomorrow the real tourists who do ecotourism will move away because there is nothing beautiful here (RS). When we locals cannot figure out how we should treat our waste, it will be difficult to educate others (PS)
• Lack of infrastructure to support planned development • Environmental degradation • Abusive construction works	Improper urban development: There have been many changes lately, as the new road, hotels and beach houses. Various hotels are supposed to be on the cards but the village does not have the infrastructure to warrant or justify this development (TO). We build a big restaurant, we think we need to have more tourists, we get more tourists but we are squandering things. Development is not going to stop, too many people who have invested in it (RS). When they build houses, people tear down trees and vegetation that support local wildlife, when it could be done differently. That weekend tourism that has houses here…before the houses had low walls, now they are high with barbed wire, they do some things that are not fitting for tourism, the village itself gets ugly. People use electric cables forbidden by law, which hang low and anyone can touch and get electrocuted; they also block public roads and build on the dunes, it is just not right (CO)
• Limited stakeholder participation in decision-making • Mass tourism • Lack of basic facilities and services • Increased crime levels • Reckless driving	The road: The road will bring people who do not care about the ocean nor diving. They will come to party, drink and will leave rubbish behind. The diving charters will be impacted negatively (RS). We have been told that we will get a road. The local people may think it is good, but they have not been explained the consequences; only some businesses were invited to discuss the road and many community members were excluded. The road may bring more visitors, but there is no sewerage system, no water pipes, no public facilities to support development. The road is already bringing more development, and the village will lose its identity because of environmental degradation and crime (TO). Right now we need basic infrastructure and public services, a healthcare centre, schools and a municipality. These things should have been addressed first (CO). Before the road, I could sleep with the doors open but now I must lock the door and put in burglar bars. Theft is going up, especially opportunistic theft. The road drives straight through the elephant park; that can't be good for wildlife. There are no speed limits, signs, speed bumps for the road that runs straight past the primary school. The road should be used for good reasons like bringing in supplies and materials, not for racing (AR)

Table 4 (continued)

Codes	Themes Key quotes
• Exceeding carrying capacity	Unsustainable tourism:
• Party tourism	
• Pollution	
• Lack of basic facilities and services	
• Depleting resources	
• Loss of revenue	During the peak season, the place is already overcrowded; this village can only accommodate so many people and thus it becomes a nightmare. We often tell good clients who want to experience Ponta do Ouro not to come in high season. Now new visitors are coming from Maputo because of the road, but they do not have environmental knowledge nor interest, they do not come here for ecotourism, they come to get drunk and party, and we are left to clean up after them. Dive centres are unhappy, they are not making money (TO). They fill the beach on weekends, they create traffic congestions, they litter constantly and are not interested in diving tourism (RS). The weekend trade has increased but it is not an element we encourage; people come for the day, spend it on the beach and then want to check-in at the last minute, or they book and do not show up, the clientele is not loyal. The road has created unhappiness, Ponta do Ouro cannot cope with the influx of people who come here on weekends; we do not have public toilets, water, facilities. The new visitors do not buy anything locally, and more people come here to do business, so there is more business competition (AR). Too many visitors mean that our water tables and other local resources will be depleted. We do not need this kind of party tourism here, because it drives away the tourism that has real value. Last Christmas there was a concert at the beach, at the campsite! (CO)
• Irreversible environmental damage	The port:
• Impacts expanding to the TFCA • Loss of livelihoods • Uncertainty and doubt	The port would be near the Techobanine reef sanctuary, which hosts unique reefs (RS). The harbour project is a deep-water port for the export of coal; if it goes ahead it will create so much damage from the dredging, blasting and pollution, that we will lose the coral reefs, wetlands and all wildlife populations in the reserve (AR). The harbour would destroy the reefs, and ship traffic would pollute the ocean. The diving industry would disappear and we would lose our income. Just like with the road, the same will happen with the port. They will say yes, no, it will happen, it will not happen, and then one day it will be there (CO). If they build the port we will not have any coral reefs, all tourism will end, and the impacts will be felt all the way to iSimangaliso in South Africa. The reserve is going to die (TO)

accommodate such an influx. They claimed that some community members had been excluded from assemblies discussing the road and therefore had limited awareness of the effects it would have. Once construction of the road had begun, the stakeholders emphasised the need to address poor urban planning and management to alleviate its effects. By the time the road was completed, the stakeholders confirmed that, while the accessibility of some goods and services had been improved, several problems had emerged. There was a greater influx of visitors from Maputo, associated with more development (construction of houses and resorts), party tourism, littering and noise pollution, reduced safety (e.g. reckless driving putting people and wildlife at risk), and the depletion of resources like water. Without mitigation measures, the road would result in severe degradation of the coastal zone (dune, beach and rocky shore), chronic pollution, road kills and resource exhaustion.

Unsustainable tourism was a threat connected with the road and was expected to have severe negative impacts on the coast, the reserve and the community. The mass tourism already affecting Ponta do Ouro was negative, as the new visitors were inclined to litter, party and drink and had no interest in the ecological value of the area, nor activities like diving which support the marine reserve. Mass tourism would exceed local carrying capacities, be environmentally degrading, deter "good" tourism including diving and ecotourism, and not contribute financially to the local community nor the reserve.

The Techobanine port was considered a major threat. The stakeholders were aware of the proposed location of the port

and mentioned several impacts that would result from its construction (e.g. dredging, blasting, habitat removal, pollution, ship traffic), encompassing both the coastal zone and marine ecosystems. The port would be a contradiction to the very existence of the reserve, causing the destruction of unique and vulnerable ecosystems and species protected by the reserve (e.g. reefs, wetlands, turtles), and the loss of livelihoods (tourism, fishing) for most communities. Some stakeholders mentioned the obligations of the reserve towards the TFCA, and that the consequences of the port would not be limited to Mozambique but affect several PAs in South Africa. The uncertainty about the megaproject aggravated concerns. At the time of the last conversations with the stakeholders, the possibility that the port could be built was receiving new media attention, which created animosity.

Mitigation strategies to development threats

The stakeholders proposed mitigation strategies to the development threats identified, claiming to be among those responsible for implementing them at least in part (Table 5). Education and capacity building were rated as powerful tools to enhance the protection of coastal and marine ecosystems connected with the reserve, and to guarantee their wellbeing for generations to come. For instance, the stakeholders felt that with the help of the reserve manager they should raise awareness in the community to reduce waste and to emphasise the connection between conservation and sustainable livelihoods. Incoming visitors and tourists would need to be educated and informed about the reserve, rules and regulations.

Urban development and management along the coast could still take place according to standards befitting a marine reserve. However, government support and stakeholder cooperation were deemed necessary to achieve this goal. It was important to first guarantee basic infrastructure and services to local communities, and then promote eco-friendly development that would also attract ecotourism. Some stakeholders mentioned successful instances of eco-friendly development, such as eco-camps and establishments making use of renewable energy. The road necessitated proper use and management. Better access to services and goods could be facilitated, while other uses could undergo stricter control. The road was in urgent need of signs, speed-reducing mechanisms and patrolling, especially in areas where safety risks to wildlife and people were highest. Some stakeholders had already funded strategies to reduce these risks locally.

The stakeholders discussed the importance of promoting forms of tourism that would reflect the conservation goals of the reserve. They argued that if unmanaged, the mass tourism consequential to the road would be unsustainable and detrimental to ecotourism, and thus urgent control actions were required. Carrying capacities could be established to limit pressures and impacts on natural resources in the coastal zone. Entry fees could be implemented and the money used to provide basic infrastructure and services necessary to accommodate visitors (e.g. ablutions, litter bins). More signage and patrol would also be required to prevent littering and irresponsible behaviour. Ultimately, the stakeholders advocated in favour of promoting ecotourism as the best way to preserve the natural environment and generate income for the communities and the reserve.

Port construction within the marine reserve would be unacceptable. Offsetting was excluded as a mitigation strategy, as nothing could compensate the communities and ecosystems for the losses resulting from the port. Some stakeholders mentioned that lobbying had been used as a mechanism to oppose the port. However, they argued that the best mitigation strategies would be to engage in healthy discussions with the government and, importantly, to enhance conservation and strengthen the legal protection of the area, for instance through World Heritage listing.

Discussion

The stakeholders acknowledged the connection between the PPMR and the broader context in which it lies, including coastal and inland areas, and recognised the importance of integrating the reserve with ICM. These findings support research assessing stakeholders' ability to discuss MPAs within an ICM context (Huang et al. 2008; Shivlani 2009; Le 2016; Avelino et al. 2019; Gonzalez-Bernat et al. 2019; Failler et al. 2020). Such quality enables stakeholders to meaningfully contribute to MPA management, identify challenges and opportunities linked to the relationship between MPAs and the coastal zone, and evaluate and assist the integration of MPAs with ICM (Belfiore et al. 2004; Vanclay 2012; Abecasis et al. 2013; Mani-Peres et al. 2016; Corrigan et al. 2018; Lotze et al. 2018; Navarro 2019). Several factors may have contributed to the stakeholders' treating the marine reserve and the coastal zone as a single governance space; these are fleshed out below.

The stakeholders discussed elements for integrating MPAs with ICM (Belfiore et al. 2004) that are relevant to the study location. For example, better protection of the coastal dunes and establishing baselines to monitor intertidal ecosystems are priority actions in the reserve's management plan (DNAC 2011). The dunes are a prominent feature of the marine reserve. Together with the turtles, they are often used in conservation and tourism marketing messaging and are at the centre of conservation actions

Table 5 Mitigation strategies to development threats proposed by the participants in this study

Codes	Themes Key quotes
• Improving community awareness • Conservation-based sustainable living • Future generations and bequest values	Education and capacity building: I should transmit the importance of continuing to preserve the environment because I have seen what it looks like if you don't (CO). It is necessary to ensure that the community is aware of what they have and make the best use of it sustainably, staying away from development that will only bring short-term benefits (TO). Conservation is directly linked to the continuity of humankind, but we need to teach youth what kinds of activities are sustainable. The village has already changed so much over the last 2 years. When the weather is good, people come here in masses. We need a plan to educate them to ensure that they follow the rules (RS). Stakeholders need to know that if in any way they take advantage of the reserve, they must ensure that this benefit is extended to future generations (PS)
• Stakeholder cooperation towards green development • Basic infrastructure and services • Development befitting a marine reserve	Sustainable urban development and management: We need more responsible people and the government becoming involved in green development that works hand in hand with PPF and all other role players. We need to start by building litter bins throughout the entire village (AR). Development needs to be in harmony with the reserve. Keeping our spaces clean is important to attract positive tourism (PS). We need basic infrastructure in the village, toilets and other improvements are urgently required (RS). Many of the diving companies own accommodation establishments, which are well maintained. Some are tent camps, eco-camps run on solar power. We try to use eco-friendly approaches in our establishments where possible, like solar power, water-saving and composting (TO). I think we could start thinking about investing in renewable energy. We have the sun, the wind, seawater. New development needs to consider local people, nature and needs to be attractive to ecotourism (CO)
• Transportation of goods and services • Risk mitigation strategies	Better road use and management: The road needs to be used for the right reasons. Sure it allows service providers, food and materials to come more easily. For the residents now it is easy to go to Maputo (CO). Something needs to be done about speed and reckless driving. For now, we businesses and residents have collected funds for a fence to separate the school from the road (AR)
• Prioritising environmental protection • Better control of tourism flows • Environmental awareness	Sustainable tourism development and ecotourism: This society lives on tourism, which depends on the protection of the natural environment. Protecting the natural beauty of the area is in the communities' interest. This place is a marine reserve, a conservation area. So people should pay to come here and abide by rules (CO). We need a boom gate because we are a partial marine reserve, the beach cannot cope with the influx of weekend visitors. So pay a fee, if your car does not pass through the boom make use of a shuttle service. And give a list of rules that involve no littering or going up dunes for which there will be fines; remove those who do not abide (AR). We would prefer tourists who are environmentally aware and responsible. Ecotourism could prevent mass tourism and ensure that our business is contained, more organized and more profitable. It is proper for a marine reserve to host ecotourism companies and to promote eco-friendly tourism (TO). Ecotourism is sustainable, it allows us to make a living while respecting the marine environment; divers come here and do not litter, they are more responsible, they contribute to the local economy. Ecotourism balances the interest of nature or the marine environment, local community and tourists (RS)
• Engaging the government • World Heritage listing	Enhancing conservation to prevent port construction: All diving centres spoke to the government, explaining that conservation in the reserve will be affected 100%, and the communities in the reserve are going to lose their source of income from tourism (CO). Charging the transport of coal to support the park is not going to make up for anything. It may keep people happy for a while, but it is not sustainable. Plus we will have lost the unique reefs, there will be nothing to protect anymore. The reserve is up for World Heritage listing, so if that happens at least it should put pressure on the Mozambican government to abandon the port project (TO)

involving the community (Harvey 2018; PPF 2020). The intertidal zone has also recently become the focus of education and citizen science campaigns in Ponta do Ouro. These actions could have been beneficial in shaping stakeholders' views on the link between land and sea.

The stakeholders described direct and indirect benefits of conservation to people and emphasised livelihood-related benefits. Stakeholders can be antagonistic towards MPAs when their implementation results in livelihood loss or the inability to access resources (Bennett and Dearden 2014; Voyer et al. 2015a; Staniscia et al. 2019). However, they can support MPAs when these are planned with the needs of communities and users in mind, and their implementation guarantees access

to resources and generates tangible benefits to people, supporting livelihoods (McNeill et al. 2018; Bennett et al. 2019). Importantly for this study, the stakeholders perceived that conservation benefits to people were not exclusively associated with the marine reserve, but largely with the coastal zone outside the reserve's boundary. This perception highlights an understanding of the interdependence of marine and coastal environments for the delivery of healthy ecosystem services, emphasising the importance of linking MPA management with ICM (Jameson et al. 2002; Cho 2005; Cicin-Sain and Belfiore 2005; Cater and Cater 2007; Gladstone 2009). The integration of the PPMR (marine) with the MSR (coast and land), managed by the same warden, may have played a role in determining this understanding. Many stakeholders were aware of the importance of quality terrestrial landscapes, secured through conservation, to attract marine tourism, a primary source of income. They also had witnessed damage to coastal habitats before the establishment of the reserve, and probably came to appreciate the importance and benefits of coastal conservation.

Stakeholder participation in reserve and coastal management was stressed as an important action by the participants themselves. Previous experiences in decision-making, planning, conservation and management, some of which were mentioned by the stakeholders, may have shaped positive perceptions, appreciation and a sense of responsibility towards stakeholder participation. As many such experiences encompassed the coast and the ocean, they would have promoted the easier identification of the coast as an integral part of the marine reserve. Such experiences also probably contributed to building trust in the reserve manager. The responsibilities ascribed to this person extended beyond the boundaries of the reserve, with one of the main duties being the mitigation of exogenous threats. These opinions confirm the crucial role that MPA management is expected to play in facilitating the integration of MPAs with ICM (Graham et al. 2003; Cicin-Sain and Belfiore 2005; Gladstone 2009; Gonzalez-Bernat et al. 2019; Navarro 2019; Failler et al. 2020).

The stakeholders recognised the difficulties of managing a vast MPA such as the PPMR, including limited resources for marine and coastal monitoring and assessment and limited funding. They knew that the reserve was not managed separately but integrated with the MSR and connected with other MPAs in South Africa, possibly adding pressures to already restricted management means (Cicin-Sain and Belfiore 2005). In response, the stakeholders argued for proper marine tourism development to support management and fund the reserve, and identified capacity building and stakeholder participation as strategies to compensate for limited resources. These elements represent the ultimate goal set by the PPMR to finance the reserve and support community incomes (Gaspar 2008; Book 2012; Daly 2013). It appears that in the years following the reserve's establishment, stakeholders ultimately came to espouse its vision, probably also thanks to some being actively involved in its planning and implementation. The connection of the reserve with other marine and terrestrial PAs was viewed with pride and perceived as another reason for properly addressing reserve management in a broader context.

The stakeholders identified several development threats to the coastal zone within and outside the reserve's boundaries. These threats had been discussed in previous literature regarding the reserve and years after its establishment were still of concern to the stakeholders, especially since some of them had actualised in visible negative consequences. The stakeholders did not form separate groups holding different opinions but were equally concerned about development, possibly as a result of sharing similar interests and values towards the reserve. Other factors playing a role in their concern may have included culture (e.g. diving, fishing), historical events (e.g. the state of the environment before and after the reserve was established, the civil war), pride (in the reserve as protecting unique ecosystems) and previous positive experiences in the reserve (participatory planning, management and conservation). At any rate, shared apprehension facilitated the clear identification of serious threats and issues (Tompkins et al. 2002; Gachechiladze and Staddon 2007; Bonilla-Moheno and García-Frapolli 2012; Seagle 2012; Afreen and Kumar 2016; Stoa 2016; McNeill et al. 2018) which were relevant for the study location. For example, the stakeholders were all worried about the effects of development on conservation and livelihoods.

These results are in line with research carried out in other African countries and around the world. Before the Lamu port was constructed in Kenya, Le (2016) captured the perceptions of stakeholders, including local and business people, concerning this project and its effects on a marine reserve and World Heritage Site. The stakeholders identified three threats from the port, namely loss of livelihood due to loss of natural resources; unjust treatment of local people by the government and Chinese investors; and lack of coordination and responsibility for the mitigation of environmental and social risks. Nongovernmental organisations (NGOs) were seen as the only role player that could mitigate these threats. Research by Shivlani (2009) across MPAs in Puerto Rico showed that different stakeholders (e.g. visitors, fishers, the tourism and hospitality sector, conservation group members) identified coastal development including housing, resorts and highways as a prime threat to MPAs, potentially affecting natural resource quality and sustainability. The stakeholders indicated that pollution, increased sedimentation and runoff were evident effects of development, and lamented the lack of infrastructure to accommodate these

effects. Some reacted to the threat of development in their region through a grassroots campaign and demanded that development be addressed in the context of ICM to prevent damage to natural resources and livelihoods based on ecotourism and fishing.

In this study, all of the identified threats were deemed unacceptable to the good governance principles of MPAs and ICM, and the stakeholders seemingly adopted a "not in my back yard" attitude towards development (Dear 1992). For example, urban planning, management and development were believed to be inconsistent with reserve management and inconsiderate of the coastal zone in conservation goals (Cicin-Sain and Belfiore 2005; Huang et al. 2008; Navarro 2019). The consequences of the road—specifically the greater influx of visitors, a change in the tourism market structure and the unregulated growth of construction projects—were deemed environmentally, socially and economically unsustainable (Shivlani 2009; Navarro 2019). The port was considered potentially destructive to conservation and livelihoods, the stakeholders foreseeing no social or economic benefits nor any acceptable mitigation or compensation strategy for the resulting environmental losses (Gachechiladze and Staddon 2007; Seagle 2012; Afreen and Kumar 2016; Le 2016). While particular entities may have been held responsible for the discussed threats, everyone was perceived to be culpable, whether due to poor knowledge (e.g. regarding waste management, ecological impact), lack of cooperation for the solution of simple problems (e.g. installing litter bins), not mobilising to raise awareness about important issues (e.g. road, port), or lack of communication and stakeholder engagement in important discussions (road, port).

Other research around the world has highlighted similar concerns. For example, Huang et al. (2008) found how stakeholders in China identified inconsistencies between environmental protection goals of MPAs and development in surrounding urban areas, incoherent MPA management not considering the coastal zone, and lack of public participation in management. The stakeholders called for ecosystem-based management, integration of MPAs in ICM, a commitment by the government to sustainable marine resource management during urban development, and prevention of negative effects of exogenous activities to the coast and seascape. Gonzalez-Bernat et al. (2019) showed in Guatemala that different stakeholders (e.g. NGOs, local communities, academics, government officials, the private sector) identified development (land clearing for agriculture, construction of villas, hotels and private beach houses, runoff and solid waste) as the major threat to coastal ecosystems and MPAs. Development caused the removal of mangroves and severe environmental degradation. The state, which owned the affected areas, did not consider coastal conservation initiatives, resulting in conservation authorities being unable to control development activities and implement ICM. The stakeholders requested horizontal and vertical integration, stronger governance and their legitimate inclusion and participation in MPA management and ICM.

While arguing that the development threats identified would lead to unacceptable changes affecting the reserve and its communities, the participants in this study also showed resilience. However, this was wholly dependent on the implementation of strategies that would render development coherent with good governance principles for MPAs and ICM. Such strategies would reduce the negative socioeconomic and environmental impacts of development while promoting the opportunities offered by the connection between the reserve and the coast. This finding supports the work of various authors on the potential of stakeholder participation in MPAs and ICM (Tompkins et al. 2002; Belfiore et al. 2004; Vanclay 2012; Abecasis et al. 2013; Mani-Peres et al. 2016; Lotze et al. 2018). Failler et al. (2020) described how stakeholders involved in management across MPAs in West Africa rated development (deforestation, agriculture, industrialisation, large infrastructure, tourism) among the top threats to their MPAs. They believed that mitigation strategies ought to include better ecosystem monitoring, greater surveillance over illegal activities, communication and awareness campaigns, improvement of knowledge and capacity building, biological measures including restrictions, reforestation of degraded areas, and ecotourism development to sustainably exploit ecological wealth. Avelino et al. (2019) found that stakeholders in a Philippines MPA perceived development, including dredging and tourism-related construction, to be the top threat to the natural ecosystems of the MPA, and consistently increasing. They argued for a good management body, more funding for conservation, more enforcement, and better education, information and communication in the community as the best mitigation strategies.

In the present study, education and information, capacity building, participation and cooperation were recognised as essential elements underpinning sound mitigation strategies to development threats. These perceptions emphasise the position of stakeholders as causing but also potentially solving problems affecting MPAs, the call for horizontal and vertical integration, and the need for role players to align working agendas towards sustainable resource management in and around MPAs (Huang et al. 2008; Gladstone 2009; Shivlani 2009; Avelino et al. 2019; Gkargkavouzi et al. 2019; Gonzalez-Bernat et al. 2019; Failler et al. 2020).

The mitigation scenarios provided had varying degrees of complexity, from the supply of basic infrastructure and services to limit the effects of growing development and tourism, to the cooperation of role players to implement eco-friendly development. The stakeholders were aware of the challenges posed by more complex forms of mitigation, as these would require more time, money, coordination and organisation. Implementing simple strategies (e.g.

litter bins, boom gates, signage) and addressing basic yet relevant issues (e.g. poor waste management and lack of basic services) would rapidly alleviate critical impacts such as pollution and local environmental degradation.

The stakeholders promoted sustainable development, perceived as befitting the goals of the reserve, as opposed to activities that would be environmentally degrading or generate short-term benefits largely excluding the local community. Ecotourism embodied the stakeholders' vision of sustainable development (Bonilla-Moheno and García-Frapolli 2012; Abecasis et al. 2013; Failler et al. 2020) as opposed to unsustainable tourism resulting from the road and the port. The campaigns of the PPMR and PPF on ecotourism as a way to support green economic growth probably contributed to the stakeholders' views. Promoting ecotourism as supporting sustainable development can be a powerful tool to curb significant threats to MPAs and has been used successfully by the PPMR and PPF to oppose the port thus far, also thanks to healthy dialogues with the government (Symons 2018). However, the stakeholders argued that the tourism influx resulting from the road was in contradiction with ecotourism development agendas and was affecting the one area currently generating much income for conservation in the reserve, namely Ponta do Ouro. These perceptions may be used as a call to ensure that ecotourism development is consistently supported in the reserve and that it incorporates the coastal and inland areas. Demonstrating that potential ecotourism benefits apply throughout the reserve can be an additional argument in discussions about ecotourism development as an instrument to mitigate significant threats.

Conclusion

Stakeholders in MPAs live at the interface between sea and land, making them susceptible to coastal pressures that can affect MPAs and their effectiveness. Ascribing both use and non-use values to marine and coastal resources, stakeholders can offer important perspectives on activities constituting a menace to these resources. Consequently, they can play a key role in assessing threats to the good governance of MPAs in a broader ICM context. This study focused on stakeholders' perceptions of coastal development in relation to MPAs. It evaluated whether stakeholders identify development threats and assess them in light of principles for integrating MPAs with ICM. The results confirm the importance of prioritising stakeholder participation in the management of MPAs and ICM. Stakeholders correctly placed the PPMR within a broader governance space including the coastal zone, identified critical development threats to the reserve, and discussed feasible strategies to mitigate them. Importantly, they prioritised non-aggressive mitigation strategies encompassing capacity building, tourism management, ecotourism development, eco-friendly development and healthy dialogues with decision makers. These perspectives may have been the result of positive experiences with the reserve. They may also have contributed to recent actions by the Mozambican government to incorporate the PPMR and its larger context under a new EPA to promote future sustainable development consistent with conservation.

Some limitations potentially affected the outcomes of the research. The participation of a more diversified pool of stakeholders could have been beneficial. The formulation of some questions may have prevented the stakeholders from developing potentially important narratives for this study. Despite the relaxed atmosphere in which the data were collected, and the friendly relationship that the author established with the stakeholders, they may still have avoided discussing topics potentially causing conflict and tensions. Notwithstanding these challenges, the findings of this study constitute an important encouragement towards stakeholder participation to enhance MPA management within an ICM context, supporting social inclusion and guiding the proper alignment of MPA management with ICM through stakeholder cooperation.

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