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SOCIO-ECOLOGICAL RESILIENCE IN SOUTH AFRICA'S BLUE ECONOMY: THE ROLE OF MARINE PROTECTED AREAS

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EXECUTIVE SUMMARY

Globally there is a move to embrace 'Blue Economies' that promote the services the ocean provides to humankind. Ocean services include not only delivery of industries such as fisheries, mining, transport and tourism but also regulation of air quality and moderation of climate change impacts. However, ocean health is at risk owing to escalating anthropogenic threats, and ocean space is becoming crowded, creating conflict between activities. Marine Spatial Planning (MSP) aims to mediate between economy drivers to prevent activities overstepping environmentally supportable thresholds and undermining the ability of the ocean to keep the planet habitable. Within MSP frameworks, marine protected areas[2] (MPAs) are essential tools to manage

RECOMMENDATIONS

1. To develop economic, social, and ecological resilience, South Africa should secure at least 10% of its continental EEZ within proclaimed MPAs by 2020 and support a '30% by 2030' CBD target at the UN COP15 in 2020.
2. Priority should be given to understanding short- versus long-term and local versus national and international benefits, costs and risks of alternative uses of ocean space, within a sustainability framework that considers ecological, social and economic resilience.
3. Attention needs to be given to resolving customary rights and restitution claims made by communities living alongside or displaced from MPAs, in line with the processes and principles applied to terrestrial protected areas, ensuring tangible benefit flows to successful claimants without compromising protection.
4. Management effectiveness of MPAs in South Africa needs to be strengthened by inclusive identification of MPA objectives, additional resources for monitoring and enforcement, citizen and community participation in MPA processes, and tracking of management effectiveness in terms of both outputs and outcomes.

uncertainty, promote ocean health and support resilient economies. They are important means of reducing ocean risk from anthropogenic impacts, providing long-term insurance against short-term threats. They provide refuges for threatened species, allow damaged ecosystems to recover and help rebuild collapsed fish stocks. They offer direct economic and social benefits to people, as well as climate mitigation services. The importance of MPAs is recognised in UN global area targets (10% by 2020). This policy briefing explores the importance of expanding South Africa's MPA network to promote socio-ecological resilience and highlights benefits that MPAs can provide to a developing country striving to unlock economic opportunities in a sustainable manner.

INTRODUCTION

Ocean protection in the African region is falling behind global trends in terms of both MPA area coverage and management effectiveness. Africa also faces escalating extractive marine mining pressure, which comes on the heels of other external (eg, international tuna fishing) and internal (eg, small-scale over-fishing) challenges. These stressors present a risk to ocean health and threaten food security and livelihoods. Further, pursuit of non-renewable energy sources flies in the face of the 2015 Paris Climate Agreement.

As a signatory to the Convention on Biological Diversity (CBD), in terms of the 2010 COP10 Biodiversity Target 11 agreed to in Aichi, South Africa has committed to at least 10% ecologically representative spatial protection by 2020, reinforced by the 2015 UN Development Programme Sustainable Development Goal 14.5. Such global targets are politically constrained, seeking to bring about unity and action on a global stage. Scientific evidence suggests that 30–50% of the ocean will need to be protected to ensure the persistence and viability of marine ecosystems.[3] At the International Union for Conservation of Nature's 2016 World Conservation Congress in Hawaii, members approved a new global target of '30% of each marine habitat' to be set aside in 'highly protected MPAs and other effective area-based conservation measures' by 2030.

South Africa currently has a network of 23 MPAs covering only 0.4% of its mainland exclusive economic zone (EEZ), plus one sub-Antarctic MPA in its remote EEZ (Prince Edward Islands). The creation of a representative MPA network is a specific goal of the Operation Phakisa Ocean Economy Lab,[4] launched in 2014 to develop South Africa's ocean economy. This MPA expansion initiative identified 21 new/expanded MPAs in 2014, drawing from at least 10 mature and available best-practice conservation planning products. The goal, ratified by the president, was to achieve an interim target of at least 5% by 2016. A second Phakisa initiative, to identify priority areas for an extended MPA network to meet the 10% by 2020 target, was also endorsed. Scientific research to inform this process, led by the South African National Biodiversity Institute, is underway with support from the South African Department of Science and Technology.

OCEAN HEALTH AND HUMAN WELL-BEING

The essential services provided by the ocean go far beyond food and jobs, and ocean health is important not only to coastal communities but also to people wherever they live.[5] The ocean plays a significant role in buffering climate change impacts (eg, seagrass beds act as carbon sinks, fringing coral reefs protect coastal infrastructure from storms), regulating the earth's air quality and influencing rainfall (and droughts). Ocean health indicators are, however, signalling alarm.[6] Marine species have recently been listed for the first time as endangered at UN Convention for International Trade in Endangered Species meetings. Destruction of habitats (eg, clearing mangroves), degradation of ecosystems (eg, bleaching of corals owing to warming), acidification and pollution (notably plastics, chemicals and industry noise), depletion of resources and collapses of ecosystem food chains are now all too common. These stressors impact on natural marine systems' capacity to deliver essential services required by humankind. This is serious for developing countries where broadscale threats (eg, offshore mining and illegal fishing) compound local challenges, particularly where vulnerable communities depend directly on the sea. Human prosperity for both current and future generations depends on halting negative trends in ocean health.

BENEFITS OF MARINE PROTECTED AREAS

MPAs are important tools to promote ocean health, and to build social, ecological and economic resilience. Through the spatial exclusion of certain activities, MPAs are one of the strongest means to ensure that activities identified as Blue Economy drivers do not overstep environmental sustainability. Excluding certain economically valuable activities (such as mining exploration and extraction) from some places is important, owing to inherently high

risks. Such risks include alien species invasions, pollution and mortalities or altered behaviours of threatened species (such as penguins, whales and turtles). MPAs are an important solution to protect sensitive habitats from activities that disturb the seafloor (eg, bottom-trawling) and suspend sediments, affecting fisheries (eg, seabed mineral mining). Not only do these activities present risks to ocean health but they can also jeopardise other economy drivers, such as tourism and fishing.

Apart from MPAs' protecting ecosystems from fishing effects, they can also support fisheries and enhance catches. This has been debated, particularly for pelagic and migratory target species where it is argued that fishery controls such as bag limits are sufficient. However, clear data exists to support MPAs as a useful fishery management tool. The 'spillover effect' is well documented and one of the best examples comes from South Africa, where establishing no-take areas in Goukamma MPA delivered improved yields for fishers.[7] MPAs also protect fish spawning and breeding aggregation areas, protecting sensitive life-history stages and aiding recovery of depleted stocks. Furthermore, fishing controls applied in mixed species fisheries can fail to protect slower-growing fish if catch efforts are sustainable only for the faster-growing fish. In addition, where fishing gear is unselective (such as trawling) it is difficult to avoid catching non-target species (by-catch). MPAs are useful even where fishing controls (eg, bag limits and by-catch excluders) can be applied effectively. Scientists are fallible and can make mistakes about sustainable fishing levels, and economic imperatives tend to push regulators to set catch efforts close to maximum limits. By protecting a portion of the stock, MPAs are fishery 'insurance' policies.

The 2015 Paris Agreement seeks to slow the trajectory of climate change by reducing greenhouse gas emissions. While this may result in a reduction, inertia and a lack of unanimous participation by nations make it unlikely that this step alone will arrest the negative impacts. Research is increasingly showing the important role that MPAs can play in promoting resilience in the face of climate change impacts. For example, MPAs protecting habitats such as seagrasses act as climate reserves by sequestering carbon.[8] MPAs protecting coral reefs and mangroves buffer the coast in extreme storms. Research on certain threatened fish has shown they have greater thermal tolerance within MPAs. MPA networks are low-tech, cost-effective climate adaptation strategies offering benefits at local and global scales and should be included in national climate change responses.

Many threats to the ocean are from land-based sources, such as plastic pollution and siltation. Although MPAs cannot prevent these threats, research shows that healthy ecosystems are more resilient to and recover more quickly from damage. MPAs also provide areas where genetic diversity can be maintained and benchmarks of undisturbed sites, allowing impacts from external influences to be measured and understood.

CHALLENGES TO MPA EXPANSION AND EFFECTIVENESS

Zoning the ocean for different 'users' is increasingly contested. Industries compete with one another as well as with protection efforts. In South Africa, more than 90% of the continental EEZ is leased for oil and gas exploration, bringing the 10% MPA target into conflict with this sector. While several legal instruments exist for South Africa's oceans, there is weak coordination and alignment of legislation, management and decision-making processes among sectors. This has resulted in regulatory lacunas and power imbalances (notably between the environmental, fishing and mining sectors) that generally favour short-term economic interests and have the potential to compromise long-term socio-economic needs and environmental sustainability. To deal with this multi-sectoral complexity, drafting an integrative Ocean Act for South Africa has begun, but is pending. The Department of Environmental Affairs (DEA) recently steered a Marine Spatial Planning Bill through Parliament, providing an opportunity to position MPAs as an essential part of an integrated ocean management toolbox.

At the centre of the competition for ocean space is the drive for growth economies. Large extractive industries such as fishing and mining argue that their economic benefits far outweigh environmental risk and the economic benefits MPAs can offer. These arguments fail to consider externalities (eg, environmental or social costs) and thus do not approach circular economies (which consider externalities and long-term impacts). Globally there are examples of the often-irreversible consequences of short-term extraction on long-term sustainability. Despite this, the burden of proof commonly shifts to proponents of MPAs to demonstrate their value. Comprehensive economic assessments, across temporal and spatial scales and taking social and ecological resilience into account, should be required for all users.

The DEA is responsible for regulating MPAs in South Africa, managed by the Oceans and Coasts Division, in

terms of the Protected Areas Act of 2003. Previously MPAs were regulated in terms of the Marine Living Resources Act of 1998 by the Marine and Coastal Management Division, which dealt with both biodiversity and fisheries management. The change separated fisheries management from MPAs, and brought transitional governance and institutional challenges, raising concerns about the management effectiveness of existing MPAs and the capacity to manage additional MPAs. Managing MPAs effectively to achieve intended outcomes is a challenge worldwide, but research points to five key ingredients for success: level of protection (no-take); enforcement effort; age (>10 years); size (larger); and isolation.[9] It is important to note that success is linked not only to management effort but also to MPA design and placement.

In developing countries, communities' dependence on fisheries and lack of alternate livelihoods are challenges for achieving protection targets. This is exacerbated by poverty, poor infrastructure and the absence of sustainable MPA financing mechanisms. In South Africa many MPAs have troubled histories, involving apartheid-era removals or restrictions, and poor relationships with adjacent communities. Unlike terrestrial protected areas, coastal communities have not been granted formal land claim processes to seek restitution for customary ocean rights. For terrestrial protected areas, an inter-ministerial 2007 memorandum of agreement on protected area land claims has been applied, giving effect to a cabinet decision enabling restitution without physical occupation or compromising protected area objectives. In contrast, marine claims have been handled on an ad hoc basis, and have resulted in changes in the level of protection for threatened species (eg, Tsitsikamma MPA). Such rolling back of protection, instead of involving claimant communities in co-management and positioning them as direct prioritised recipients of MPA benefits, seems short-sighted and poses a real risk of lose–lose outcomes for both the people and their environment in the long term.

CONCLUSION

MPAs are key tools in an integrated ocean management toolbox required to address the multi-faceted and complex challenges facing our oceans, and to build long-term social, ecological and economic resilience. The current 0.4% protection of the oceans around South Africa is far too little to realise the benefits of MPAs and to mitigate risks. Actions to improve protection to the global target of 10%, and beyond, are important and urgent.

ENDNOTES

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2 IUCN (International Union for Conservation of Nature), 'Marine Protected Areas: Global standards for success', 20 February 2018, https://www.iucn.org/news/protected-areas/201802/marine-protected-areas-global-standards-success, accessed 2 July 2018: An MPA is a 'clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values'.

3 O'Leary BC *et al.*, 'Effective coverage targets for ocean protection', *Conservation Letters*, 9, 2016, pp. 398–404.

4 South Africa, DEA (Department of Environmental Affairs), 'Operation Phakisa: Fast-tracking Ocean Protection in South Africa. Initiative 8: Establishment of an effective and representative MPA network', Technical Report. Pretoria: DEA, August 2014.

5 Folke C *et al.*, 'Social-ecological resilience and biosphere-based sustainability science', *Ecology and Society*, 21, 3, 2016, p. 41.

6 McCauley DJ *et al.*, 'Marine defaunation: Animal loss in the global ocean', *Science*, 347, 6219, pp. 247–255.

7 Kerwath SE *et al.*, 'Marine protected area improves yield without disadvantaging fishers', *Nature Communications*, 4, 2013, p. 2347.

8 Roberts CM *et al.*, 'Marine reserves can mitigate and promote adaptation to climate change', *Proceedings of the National Academy of Sciences*, 114, 2017, pp. 6167–6175.

9 Edgar GJ *et al.*, 'Global conservation outcomes depend on marine protected areas with five key features', *Nature*, 506, 2014, pp. 216–220.

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