

Danielle Smith¹, Danielle Smith¹, Marcus Haward¹, Jeffrey McGee¹, Graham Wood², Geoff Syme³, Rowan Trebilco¹, Larelle Bossi¹, and Joanna Vince¹

¹Affiliation not available

²School of Humanities, College of Arts, Law and Education, University of Tasmania

³CSIRO Oceans and Atmosphere

November 3, 2020

Danielle Smith^{abc}, Marcus Haward^{bc}, Jeffrey McGee^{abc}, Graham Wood^d, Geoff Syme^e, Rowan Trebilco^{bce}, Larelle Bossi^{bcd}, Piers Dunstan^{ce}, Joanna Vince^{cf}

^a Faculty of Law, College of Arts, Law and Education, University of Tasmania, Private Bag 89, Hobart 7001, Tasmania, Australia.

^b Institute for Marine and Antarctic Studies, University of Tasmania, Private Bag 129, Hobart 7001, Tasmania, Australia.

^c Centre for Marine Socioecology, University of Tasmania, Private Bag 129, Hobart 7001, Tasmania, Australia.

^d School of Humanities, College of Arts, Law and Education, University of Tasmania, Private Bag 41, Hobart, 7001, Tasmania, Australia.

^e CSIRO Oceans and Atmosphere, Castray Esplanade, Battery Point, Hobart 7004, Tasmania, Australia.

^f School of Social Sciences, College of Arts, Law and Education, University of Tasmania, Locked Bag 1340, Launceston, 7250, Tasmania, Australia.

Keywords: Fairness, Equity, Marine Protected Areas, Sustainable Development Goals

This paper is part of the Future Seas project (www.futureseas2030.org), and has been submitted to the Future Seas special issue in Reviews in Fish Biology & Fisheries to be published in 2021.

Abstract

The main challenge to governing ocean resources fairly is understanding international relations around ocean issues, the incentives to cooperate, and approaches to improve cooperation and achieve consensus. We aim to discuss the current and future international relations around ocean issues and also to include the concept of fairness in how we are sharing the oceans' resources. This challenge uses marine protected areas (MPAs) as a case study to highlight key issues in moving from a *Business-as-usual* to *More Sustainable* future scenario by 2030. This paper will discuss/outline the strategies employed in governing the ocean resources and whether this is a fair system and explore the implementation or non-implementation of a global network of MPAs as a way to conserve and sustainably manage the future oceans' resources at state, regional and global levels. The pathway to achieving a *More Sustainable* future – builds on and extends the *Business-as-usual* practices. Current policy and regulatory settings provide the base for a *More Sustainable* future; for example, the new international legally binding instrument under the UN Convention on the Law of the Sea (UNCLOS) on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (BBNJ) is likely to further support such obligations.

Introduction

On December 24, 1968, Apollo VIII astronaut William Anders captured one of the twentieth centuries most influential images in history - the 'Earth Rise' (Sample 2018). The image emphasised the Earth's physical vulnerability against the backdrop of the infinite blackness of space and for the first time depicted the Earth as the 'blue planet', with oceans clearly dominating the image. This image was even more poignant given that concern over exploitation of marine resources was being raised in a number of forums. In parallel, significant environmental incidents such as the grounding and wrecking of the oil tanker the *SS Torrey Canyon* off Cornwall in March 1967, raised awareness of how vulnerable our oceans are to the anthropogenic impacts of mankind.

In the 1960s, offshore and deep-sea resource exploitation increased attention to issues relating to access and sharing of oceans resources and new emerging technological advances are enabling access to previously inaccessible deep sea resources.. In November 1967, in response to broadening concerns over perceptions of uncontrolled and inequitable utilisation of the ocean, Arvid Pardo, the Ambassador for Malta to the United Nations, urged the United Nations General Assembly (UNGA) to address the management of the world's seas and oceans (Pardo 1967). Pardo's declaration that the seabed should be treated as 'the common heritage of mankind', with the benefits of its use to be shared amongst all states, provided the intellectual catalyst for a key fairness concept which remains important to oceans governance today.

Fair access to the global ocean commons was central to Pardo's concerns. His pivotal intervention led to a UNGA resolution in 1970 that established the United Nation's Third Conference on the Law of the Sea, an eight-year long series of meetings between 1974 and 1982 that in turn led to the development of the 1982 United Nations Convention on the Law of the Sea (UNCLOS). UNCLOS has provided what has been described as a 'constitution for the oceans' (Koh 1983). State sovereignty and jurisdiction (i.e. legal control) were key concepts underpinning the core question of which countries would control access to and use of the world's oceans. These concepts are not new; the freedom of seas and open access were raised by the famous Dutch jurist Hugo Grotius in 1608, who first published his international legal and philosophical arguments in his famous book *Mare Liberum* (i.e. the free sea) and, in response (in 1635) by the English lawyer John Selden, who argued for a state's right to claim areas of the ocean as sovereign territory (Feenstra 2009).

Since coming into force in 1994, UNCLOS has provided the overarching international governance framework for human use of the oceans. UNCLOS formalises a regime of macro-level marine spatial planning of the world's oceans based on coastal state sovereign rights over territorial seas (i.e. 12 nautical miles) and resource extraction rights over exclusive economic zones (EEZs- 200 nautical miles) and continental shelves. Beyond these areas of the ocean under coastal state jurisdiction, lie the 'high seas' areas, which cover approximately 45% of the Earth's surface. Following the Grotian 'free seas' tradition, UNCLOS provides 'high seas freedoms' in these areas for navigation, fishing, laying of cables and pipelines and overflight (Art 87). While there are some more specific rules on deep seabed mining governed by the International Seabed Authority (i.e. UNCLOS Part XI) and separate International Maritime Organisation (IMO) rules applying to shipping, these high seas freedoms are important source of economic activity for many states, with fishing a prime example. The 1995 United Nations Fish Stocks Agreement (UNFSA) was therefore formed a decade later to implement management regime for high-seas fisheries. The UNFSA has spawned a network of regional fisheries management organisations (RFMOs) that manage fisheries resources on a regional scale across the globe.

There are several states which today have a dominant role in oceans use and governance and are impacting on future conservation of the oceans. The dominant ocean states largely mirror those with wider significant political influence in the international system (i.e. United States, China, Russia, European states, Japan, South Korea) and all have well established industrial distant water fishing fleets. Not only is governance of the World's resources unbalanced and tipping towards a small number of economically powerful states, there is also an unfair distribution of ocean resources between developing and developed states. In 2016, almost all (97%) of industrial fishing activity on the high seas was undertaken by vessels flagged to higher income countries and 78% of this fishing effort was within the national waters of lower-income countries (McCauley

et al. 2018). Lower income countries and small island developing states (SIDS) lack the resources to compete with industrial fishing countries. Given these disparities, states have different national interests in oceans governance and advocate different conceptions of fairness in accessing and managing marine based resources. A key challenge for governing ocean resources is to better understand international relations relating to use of the oceans. This includes the interests of states, incentives used to maintain relationships, and an institutional and legal framework to reach consensus and cooperation in order to achieve a *fair* distribution and management of the World's Oceans in a sustainable manner for enjoyment of current and future generations.

The need to fairly manage multiple competing uses of the oceans (particularly in nearshore environments and in enclosed seas where space is limited) led to the emergence of the concept of Marine Spatial Planning (MSP). MSP is a public process of analysing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic, and social objectives that are usually specified through a political process (Ehler and Douvère 2009). MSP is designed to integrate sector-based decision making and supports the conservation and sustainable use of marine biodiversity (Vince and Day 2020). There are a wide variety of other area based management tools in operation such as fisheries closures, catch limits, Particularly Sensitive Sea Areas, Vulnerable Marine Ecosystems, Areas of Particular Environmental Interest, and World Heritage Sites, all with various objectives that are used to manage human activities in the marine environment.¹¹ Particularly Sensitive Sea Areas have been identified and are used by the IMO; Vulnerable Marine Ecosystems are implemented by RFMOs; 9 Areas of Particular Environmental Interest intended to protect biodiversity of the Clarion-Clipperton Zone by the ISA; and World Heritage Sites established under the 1972 World Heritage Convention. Marine Protect Areas (MPAs) are another management tool that are used to conserve and sustainably manage marine resources. This paper focuses on MPAs as a tool to govern marine resources and provides a lens to showcase how international relations influences the conservation and sustainable use of global marine resources.

A global ambition to establish a global network work of MPAs was initiated at the World Summit on Sustainable Development in 2002.²² This goal was highlighted in paragraph 32(c) in the World Summit on Sustainable Development (WSSD) Plan of Implementation. Continued global concern over the state of the oceans has prompted continued focus on this goal. The tenth meeting of the Conference of the Parties to the UN Convention on Biological Diversity (CBD, 1992)³³ The Convention on Biological Diversity (CBD) was opened for signature at the Earth Summit in Rio de Janeiro on 5 June 1992 and entered into force on 29 December 1993. The Jakarta Mandate negotiated and agreed in 1995 at the CBD COP 2 (Jakarta 6-17 November 1995) clarified that the convention applied to marine and coastal environments. calls upon nations to implement a 2011-2020 Strategic Plan for Biodiversity. This plan set out five strategic goals with 20 Aichi Targets. Target 11 stipulates that by 2020, 10% of coastal and marine areas are to be conserved through systems of protected areas and other effective area-based conservation measures. The Aichi Targets have been further strengthened by the United Nations 2030 Agenda for Sustainable Development. This Agenda is a plan of action consisting of 17 Sustainable Development Goals (SDG) and 169 targets to be achieved by 2030 and was adopted by the UNGA in 2015 (Resolution 70/1). SDG 14.5 aims to 'conserve at least 10% of coastal and marine areas' by 2020.

Further work is progressing to better conserve the marine biological diversity of areas beyond national jurisdiction (BBNJ) through a new international legally binding instrument. In 2011, the BBNJ Working Group gained agreement on progress that included discussions at the UNGA and opportunities for an agreement to be developed under the UNCLOS. An intergovernmental conference was established and discussion centred on 'four thematic focus areas' (Tiller et al. 2018: 1; IISD 2018): 'marine genetic resources (including benefit sharing), area-based management tools (including MPAs), environmental impact assessments, and capacity building and technology transfer' (Tiller et al. 2018: 1). A draft convention to conclude the process was completed in late 2019 and a final session of the intergovernmental conference was due to be held in March-April 2020, however this conference has been temporarily postponed due to the COVID-19 outbreak (**Box 2**).

Over the last two decades, efforts to establish a global network of MPAs in a bid to protect and sustainably

manage the diminishing resources of the world’s oceans have been an ongoing issue in international oceans governance. This struggle has been fraught with differing interests and agendas and dominated by a small number of powerful states. Under the overarching concept of fairness, we use a case study to illustrate how international relations in oceans governance influences the conservation and sustainable use of global marine resources. The case study examines efforts in oceans governance to develop a global network of MPAs (see **Section 4**).

Aims and Methodology

This paper applies the methodology developed under the Future Seas project (Pecl et al. 2020 this issue; Nash et al. 2020 this issue), by identifying and contrasting *Business-as-usual* and *More Sustainable* future scenarios. Having introduced our topic in **Section 1** we discuss the concept of fairness (in **Section 3**), which frames our discussion of international relations around ocean issues throughout the paper. MPAs provide a good illustration of the international interests and agendas regarding management of marine resources. For this reason, in **Section 4** we use the global goal to establish a global network of MPAs as a case study to provide a lens for discussing international relations around ocean issues. Using the methodology outlined in Nash et al. (2020, this issue), we first identified a number of drivers influencing the establishment of a global network of MPAs illustrated in **Table A** in **Appendix A** . We then focused on six key drivers of change (see **Figure 2**) that influence the establishment of a global network of MPAs. We then explore two alternative futures through the lens of fairness in international ocean governance and apply the timeline of the UN Ocean Decade (2021-2030). We use a *Business-as-usual* future scenario (**Section 5**), based on current trends and trajectories in society, economy and the biosphere and contrast with a *More Sustainable* (**Section 6**) future scenario using a normative approach. Both futures are based on existing scientific knowledge, but the *More Sustainable* future explored a more desirable (normative judgement in line with the UN Sustainable Development Goals) but still feasibly possible future for 2030. We then apply a backcasting approach (Nash et al. 2020 this issue; Robinson 1990) to identify how society might choose to move towards the *More Sustainable* future rather than the *Business-as-usual* future and discuss the pathways to achieving a *More Sustainable* future in **Section 7** and the implications for the future in **Section 8** .

In addition to the methods described above, we engaged with the Future Seas Indigenous and Traditional Working Group to ensure that key messages relevant to First Nations Peoples regarding the fair use of marine resource, particularly relating to establishing a global network of MPAs were adequately captured and represented.

Fairness: What is it?

What is fairness? And among what entities (for example, regional bodies, states, non-state actors, communities) might fairness be pursued? Aristotle offers a principle of fairness in his *Nicomachean Ethics* that is paraphrased as “*treat equals equally and unequals unequally*” (Baggini and Fosl 2007: 170). More recently Hooker (2005: 288) has characterised fairness as “*the consistent, unbiased application of all and only morally relevant distinctions*”. But what entities are equals and what entities are not equals? And what are the morally relevant distinctions? These are significant philosophical questions and they cannot be settled definitively here. However, some examples will help us understand the scope of these questions. Consider the following anthropocentric entities: federations of nation states, multinational corporations, individual nation states, national corporations, social and/or cultural groups of humans, individual humans, future humans. Also consider the following non-anthropocentric entities: the biosphere, bioregions, ecosystems, species, individual organisms. Some people assert that all species are equal and that there is no morally relevant distinction to be drawn between the human and the non-human world (Leopold 1949; Naess 1973; and for recent reviews, see Callicott 2001; Matthews 2001). Such extended ethical position would have profound implications for what is the fair use of the ocean. For instance, the ocean might be viewed as an entity in itself, with its own identity, interests and rights.

Even so, there are significant philosophical questions remaining, relating to what entities are equals and what entities are not equals, and what are the morally relevant distinctions? Are all states (including land

locked nations) equals when it comes to use of the ocean? Are all individual humans (including residents of land-locked nations) equals when it comes to use of the ocean? Is it morally relevant (and perhaps therefore a justification for unequal opportunity) that a nation is land-locked? Or is it morally relevant (and perhaps therefore a justification for unequal outcomes) that a nation has historically invested in developing the ocean as a resource? Although these questions cannot be answered conclusively here, this paper can draw on examples from other contexts to help chart a path forward.

The emerging field of Environmental Justice recognises the fact that “environmental practices and policies affect different groups of people differently and environmental benefits and burdens are often distributed in ways that seem unjust. Environmental justice refers to the conceptual connections and causal relationships between environmental issues and social justice.” (Figueroa and Mills 2001: 426-7). Figueroa and Mills (2001: 427) refer to two key dimensions of environmental justice: The first dimension, *distributive justice*, concerns *outcomes*, that is, what is the pattern of distribution of environmental benefits and burdens amongst relevant actors and is this pattern defensible? This is particularly stark in a situation in which the burdens of using the ocean are distributed to one human population, while the benefits are distributed to another human population. For example, consider a (hypothetical) no-catch MPA that entirely circles and encompasses the territorial sea and EEZ of a SIDS. The MPA provides a biologically conducive habitat that is the nursery for fish that are then caught off-shore in high seas areas by large fishing companies from developed nations. Local fishers from the SIDS can no-longer carry on the artisanal fishery of their traditional culture. The financial and cultural burden of the existence of the MPA is borne by the SIDS but the benefits are received by the higher and more efficient catch of distant water fishing fleets. Of course, the burden (in formation and implementation of the MPA, that provides nursery habitat) must be located somewhere. But what are the reasons or principles behind the decisions that lead to these burdens being distributed where they are in fact distributed? The decision may have been made on sound environmental grounds and to serve certain financial interests, but may have distributive *outcomes* whereby those actors that bear the burdens are different from those which receive the benefits.

In contrast, *participatory justice* concerns the *process* by which decisions are made in the international system. There are many factors that influence the fairness of decision-making processes in the international system. Through representation, voice and influence; the components of procedural justice maybe affected (Syme 2012). For example, are all relevant states and stakeholders involved in the decision-making process? Do states and stakeholders have an equal voice in the process of decision-making? Is power of actors in the decision-making process unequal? What decision-making rule is in place (e.g. majority vote, consensus, unanimity)? Do all relevant states and stakeholders have sufficient resources and capacity to participate in the decision-making process? With particular reference to human individuals and human communities that bear the burdens of fair ocean use “crucial here is a principle of self-determination which grounds the right of those most immediately affected to decide if such burdens are acceptable to them” (Figueroa and Mills 2001: 428). A fair decision-making process in the international system has the further benefit that it may build legitimacy of the rules and improve the prospects that states will comply (Frank 1990).

In the following section, this paper explores, particularly in the Sustainable 2030 scenario (**Section 6**), the hypothesis that fair use of the oceans (for all of humanity, both now and into the future) will involve the creation of fair governance systems (if they do not yet exist), fair decision-making within those fair governance systems, fair outcomes, and fair and regular review of all of the above issues.

A useful theory to employ when considering this fairness hypothesis is to apply Rawls’s ‘veil of ignorance’ (Rawls 1971: 136-141). Rawls’s suggested that one method to assess the fairness, particularly the outcomes, of a series of potential states of affairs, is to examine them from a position of impartiality, by applying the ‘veil of ignorance.’ To explain, imagine a series of possible worlds that all have different ocean governance systems, decision-making processes within those governance systems, outcomes of those governance systems and review of all of these. For example, in the first possible world (W1) ocean governance systems strongly advantage State X, strongly disadvantage State Y, and leave State Z relatively unaffected. In the second possible world (W2), ocean governance systems entail equal levels of advantage and disadvantage for all states,

X, Y, and Z. Finally in the third possible world (W3) ocean governance systems strongly disadvantage State X, and State Y and strongly advantage State Z (see **Table 1**)

Table 1 Hypothetical Alternative Futures

Country	World 1	World 2	World 3
X	+++	+/-	—
Y	—	+/-	—
Z	+	+/-	+++

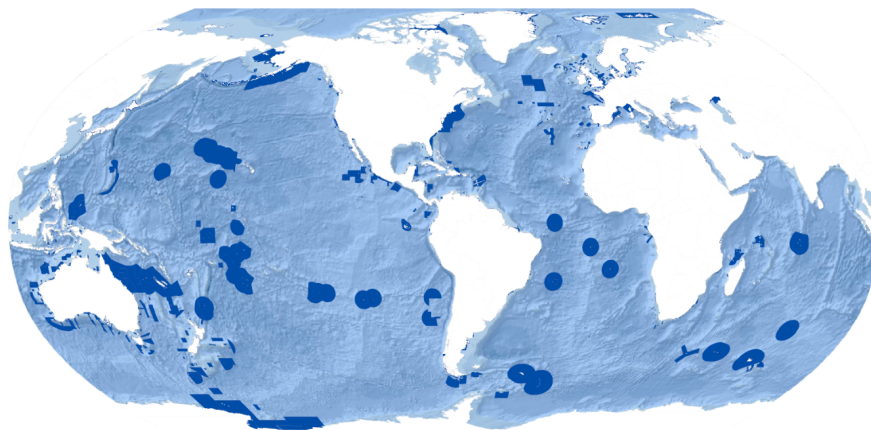
Now consider the possibility of bringing into existence one of these possible worlds. Importantly from behind the ‘veil of ignorance’ the choice of which possible world to bring into existence is made without the person (or persons) making the decision knowing which state they exist within. Which possible world should they rationally choose? The logic driving the method of the veil of ignorance is that the person making a decision about which possible world to bring into existence should rationally choose W2, because they do not know which state they will exist within. The detail of each possible world can be increased indefinitely and can change across a number of dimensions, for example the method can be applied in terms of the person or persons choosing between some set of possible worlds may not know which generation of humans they will exist within in any of the possible worlds. But the simple example described here is sufficient for present purposes.

The relevance of this Rawlsian method being applied in this paper is as follows. When different actual and/or possible ocean governance systems are considered, the following question will be asked: Would a person or state behind the veil of ignorance choose the particular governance system under consideration (or some other system)? If some other system would be chosen from behind the veil of ignorance this is evidence that the system under consideration is lacking in distributive justice. This is important, in that it is acknowledged that differing interests at different levels of decision-making will have more power and ability to make a difference to policy and its successful implementation. Thus, a procedural justice framework will be needed for fairness evaluation that covers all roles and all contexts of power.

A global network of MPAs

The Aichi Target 11 and the SDG 14.5 have not been met on a global scale. In 2020, 7.9% of the world’s ocean was covered by protected areas, just shy of the 10% goal of Aichi Target 11. However, this coverage is unequally dispersed around the globe, with areas of ocean under national jurisdiction (i.e. within EEZs) having significantly more protection (18.4%) than high seas areas (>200nm from the coast), which cover only 1.2% of the ocean (UNEP-WCMC and IUCN 2020).

Figure 1 Global MPA coverage in 2020



UNEP-WCMC and IUCN (2020).

The percentage of global MPA coverage targets is set to increase. In 2016 the World Conservation Congress (WCC) called upon the International Union for Conservation of Nature (IUCN) to promote and support a number of recommendations, one of which is to ‘designate and implement at least 30 percent of each marine habitat in a network of highly protected MPAs’ by 2030 (WCC 2016). In **Sections 5 and 6** we use this governance ambition as a guide to constructing both the ‘Business-as-usual’ scenario and the ‘More Sustainable’ future scenarios. Whilst hypothetical, we predict the likelihood of both scenarios in meeting the goal of designating 30% of the World’s oceans as MPAs.

Defining exactly what constitutes a MPA is extremely important in order to measure and track MPA coverage against the Aichi Target 11 and SDG 14.5. Views over what constitutes a MPA have varied and there has also been confusion over the difference between the two terms ‘protected areas and other effective area-based conservation measures’ (Smith 2020). A MPA is defined as:

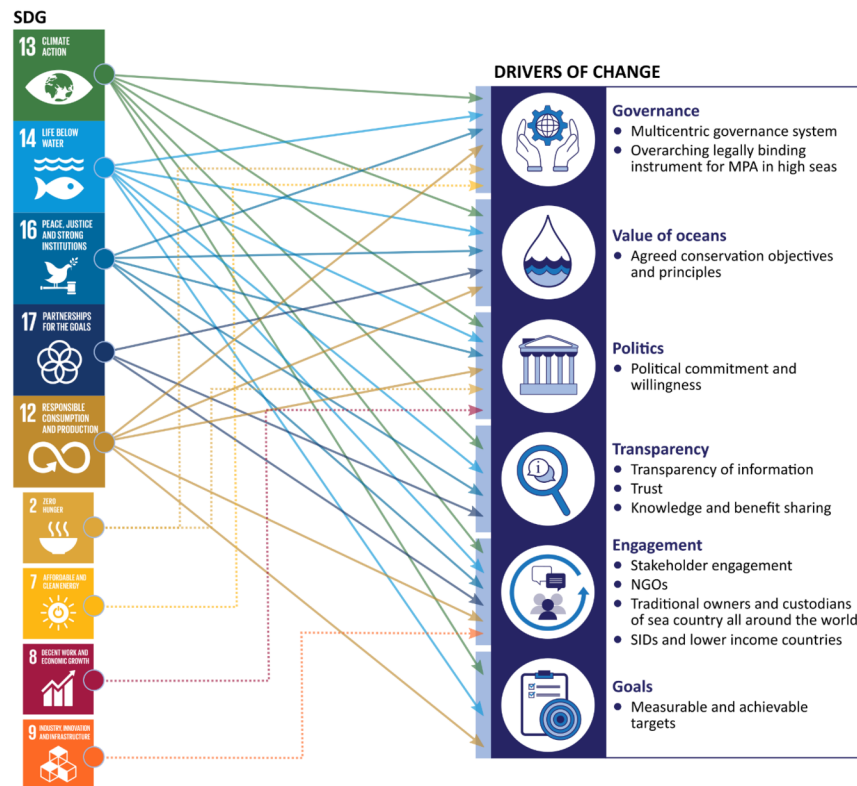
‘a clearly defined geographical space, recognised, dedicated, and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values’ (Day et al. 2019).

The key principle of a MPA is that only those sites with the main goal of *conservation* should be considered protected areas, and fall within the above definition of a MPA (IUCN WCPA 2018). The term MPA is so all-encompassing that it describes a large array of levels of protection. The IUCN categories of Protected Areas effectively delineate types of Protected Areas by management objectives and governance (Dudley 2008). To further simplify this, a recently published MPA guide has categorised four levels of MPA protection: fully protected, highly protected, lightly protected and minimally protected (Oregon State University, IUCN, MCI, National Geographic Society, and UNEP WCMC, 2019).

While marine environmental protection has become an important focus for governments at all scales, the development and implementation of MPAs is often highly contested. Such initiatives are opposed because they are seen as limiting or constraining existing extractive uses of the ocean, or resource users from exploiting these areas under the MPA. In the **Section 4** we identify the key drivers based on the importance to MPA formation/performance and also their connection to fairness concerns.

We identified a number of drivers of change (see **Appendix A**) and from this list we identified six key drivers of change that are integral to successfully establishing of a global network of MPAs. **Figure 2** illustrates our six key drivers and shows the linkages between relevant SDGs.

Figure 2 Key drivers of change that influence the establishment of a global network of MPAs (and the linkages with the relevant SDGs).



The establishment of MPAs both in national waters and in the high seas faces a complex polycentric ocean governance system, including multi-level and multi-jurisdictional governance. Ocean issues are a transnational and transboundary problem. Current and emerging issues such as fisheries, aquaculture, biodiversity conservation on the high seas, MPAs, deep-sea mining, ocean acidification, blue carbon, and plastics pollution extend across national boundaries and into areas beyond national jurisdiction. When managing transboundary issues and formulating public policy, decision makers must not only increasingly take into account the interests of NGOs and multi-national corporations, but also consider other important authoritative participants, such as various levels of government at an international level, the interests of a growing number of influential states around the world, and obligations arising from the signing of international agreements and memberships in intergovernmental organizations. Decision-makers in ocean governance are working in an environment marked by a proliferation of power centres affecting policymaking and governance (Cairney 2019). To establish a global network of MPAs decision makers must not only take into account the various levels of governance (e.g. national, regional and global) but also the interests and agendas of intergovernmental organisations (IGO), non-governmental organisations (NGOs), scientists, and multinational corporations.

According to Wolfish and Smith (2000) the multiple ‘power centres’ theory can be understood in three ways as shown in **Table 2**. The first approach suggests the existence of three or more dominant states interacting in the international system. Here ‘power’ is understood as the means for a state to pursue its interests internationally, typically through economic influence or military force. For example, China is one of the World’s most economically powerful states and has one of the largest fishing fleets in the world. China’s role in oceans governance is increasing adopts a more assertive stance on national interests in key areas such as the South China Sea (McGee, Gogarty and Smith, 2017), the Southern Ocean (Brady 2017) and the Arctic (Geng 2012).

The second approach of Wolfish and Smith (2000) focuses on involvement of other actors as power centres, such as global and regional agreements, intergovernmental organisations (IGOs), NGOs and private organi-

sations which influence ocean governance. Here the ‘power’ refers to the capabilities of the actors to pursue their agenda and interests. The sources of power will vary according to the type of actors and their particular aims and may arise from the ability to generate and use knowledge and media, funding, and from moral influence. IGOs and global and regional agreements have international membership, scope and presence and bring member states together to cooperate on particular issues that have global impacts. Membership often requires state governments to harmonize their own national policies to conform to internationally agreed upon norms and standards. However, in this respect, they are limited by the commitment of member states to comply with their rules, and by the effectiveness of their enforcement mechanisms (Wolfish and Smith 2000). Some power centres can stem from communities of shared knowledge. Success of many international environmental agreements can be attributed to the involvement of an environmental epistemic community of scientific and/or policy experts which set the international agenda and convince their own states to support international efforts toward the introduction of internationally agreed management measures/targets (Haas 1989).

The third approach of Wolfish and Smith (2000) focuses on the interaction of the actors. Within a given issue area, relevant actors (e.g. governments, NGOs, corporations, scientists) interact to produce a convergence of expectations and a set of common understandings that give rise to a set of legitimate norms, values, rules, and procedures. The power centre does not refer to a political actor, but rather to a sphere of authority,11A sphere of authority can be defined as ‘an issue-area in which relevant actors, be they states, non-state actors, quasi -state institutions, transnational communities, or any combination thereof, interact and in which one can discern a convergence of expectations on the rules, norms, principles, and procedures through which decisions are made and implemented’ (Rosenau 1999: 290). and in this view, ‘power is not synonymous with capability, but with legitimacy and authority’. The emphasis is on actor interaction and on the institutions that arise from their interaction, and thereby focusing on the values underpinning actor behaviour. Compliance with the decisions tends therefore to be voluntary. Legitimacy, in turn, is derived from the agreement of participant expectations on the values, rules, and procedures within a given issue-area.

Table 2 Approaches to understanding polycentric governance

Approaches	Type of Power	Type of Centre	Example
Approach 1	Economic and military capability	States	US, China, Russia, Japan
Approach 2	Technological capability Research capacity Ability to disseminate knowledge and influence media Moral suasion Financial capability Legal authority International obligations	NGOs IGOs Environmental epistemic community Regional agreements/ treaties Global agreements/treaties	WWF United Nations Scientists, academics, volunteers OSPAR Convention BBNJ treaty
Approach 3	Authority and common understanding	Spheres of authority Interaction between actors	UN Global Pact The global market The Internet

Adapted from Wolfish and Smith (2000)

There is currently no overarching legal regime that affords for the designation of MPAs in the high seas, but there is for regionally managed high seas multiple use protected areas (with no-take zones) established in the North-East Atlantic under the OSPAR Commission11OSPAR Commission for the 1992 Convention for the protection of the marine environment of the North-East Atlantic. and in the Southern Ocean under CCAMLR22Commission for the 1982 Convention on the Conservation of Antarctic Marine Living Resources.. Discussions on the proposed BBNJ instrument are underway and expected to be concluded in 2020 that if successfully negotiated and implemented could prove to be a major driver of change. Successful negotiation

and implementation must involve the principles of fairness (such as the application of ‘the veil of ignorance’) described in this paper.

Agreed conservation objectives, principles and values is another key driver of change. In order to effectively establish and implement a network of MPAs there must be international agreement on the concept of MPAs as a tool to conserve and sustainably manage marine resources, in addition to agreement on what a MPA is. Misunderstanding of terminology (e.g. MPA definition) or misinterpretation of legal terms (e.g. different interpretation of ‘rational use’ in the CCAMLR Convention (Smith, McGee and Jabour 2016) can lead to ineffective MPAs, conflict and exploitation.

Political commitment and willingness are essential components to success in establishing a global network of MPAs. Without such commitment, legal conflicts such as unregulated boundary issues may be intractable and legal complexities may be used as reasons to stall or deter engagement. High-level political commitments and willingness to sustainable oceans need to balance the ability to manage resources through conservation of fisheries habitat, protection of the complexity of trophic levels and food webs, and maintenance of livelihoods. This is key to addressing fairness.

A question remains, too, over the extent to which MPAs embody principles of fairness, or whether they can inadvertently extend the “conservation burden” (Hanich and Ota 2013) on developing states that depend on ocean resources for food security and economic development. Fairness also incorporates trust, meaning that knowledge sharing and open communication is an important driver of change. Information needs to be transparent, supporting the building of trust, enhancing the legitimacy of decision makers. Transparency also enhances engagement with citizens and communities in enhancing our understanding of sustainable ocean use. The inclusion and cooperation of different stakeholders (such as traditional owners and custodians of sea country all around the world, Fischer et al 2020 this issue; Mustonen et al. 2020 this issue), is important in the governance process and will increase our understanding of sustainable ocean use and also considerably influence the effectiveness MPAs.

Whilst the current global MPA coverage targets (Aichi Target 11 and SDG 14.5) have not been met, these milestones were certainly formidable drivers resulting in significant work undertaken to date towards achieving these goals. Building on and incorporating global targets with measurable outcomes will be a major driver of change in the establishment of a global network of MPAs. However, it is important to point out that these goals need to be feasibly achievable and measurable. The next section develops the two future scenarios (*Business-as-usual* and *More Sustainable*) that seek to illustrate and contrast the pathways forward in oceans governance on MPAs by 2030.

Business-as-usual future by 2030: Treading water

In this scenario, commitments to developing a global network of MPAs that reaches the target of 30% coverage of the World’s oceans by 2030 are maintained in a formal sense, but powerful interests focused on marine resource harvesting remain to weaken their implementation and effectiveness. The Rawlsian ‘veil of ignorance’ plays little or no role in decision making of key states and decision makers within those states. The notions of equitable sharing of marine resources, based on sustainable and ecosystem-based extraction limits, a position supportable for all states from Rawls ‘original position’, is not accepted. Instead, key states seek to maximise their own short-term economic interests in marine resources extraction within the restraints of longstanding, but failed, management principles such as locating MPAs away from areas of use (Stevenson et al. 2020). The interests of other less able states, based on fairness concerns derived from Rawls original position, are disputed as utopia thinking, inconsistent with the hard-headed pragmatism of pursuing national interests through international relations.

The BBNJ treaty’s commitment to capacity building and technology transfer have had some notional impact but are limited in efficacy. Agreed conservation objectives and principles are more visible through the BBNJ instrument although there is less practical commitment to binding targets. Engagement with non-state actors (including first nations peoples and the populations of SIDS remain at a formal level. As a result of formal commitments to benefit sharing (in a wide range of forms) embedded in the BBNJ instrument

provides a road map to improve fairness, but inequity remains. Major fishing states retain their control over much of the world's high seas fisheries. Attempts to institute MPAs and a means to enhance sustainable use of these and other resources is constrained.

Ocean governance therefore continues to be dominated by a small number of economically powerful distant water fishing states from Europe, North America and North Asia. National interests lead to concern over competition for resources rather than trust building and equitable sharing of resources. At times this competition leads to some formal collaboration in international relations, as the US and China broker bilateral agreements with other countries that suits their immediate shared interests, but fails to engage with the interests of other states or the international community. Russia retains a key influence in oceans forums and furthers its key interests in harvesting and marine resource extraction. This leads to the World's fisheries coming under further pressure from overfishing and risk of stock collapse (Farmery et al. 2020 this issue).

The BBNJ legal instrument enters into force, but unresolved issues and differing views during the negotiation process have limited its original ambition and its influence is constrained. Key states note the commitment not to undermine existing agreements and institutions, with the result that the BBNJ Convention operates in parallel to, but with little influence on regional fisheries management organisations and regional treaties/agreements. The current high seas MPAs that were established under the OSPAR Convention area continue to be recognised within the regional agreements but not within the global community. To complicate matters the OSPAR Convention does not cover all human uses of the oceans that may interfere with MPAs because its mandate does not include fisheries management (Article 4(1)) or maritime transport (Article 4(2)). This raises questions as to the effectiveness of the OSPAR high seas MPAs (Smith and Jabour 2017; Matz-Lück and Fuchs 2014). However, the OSPAR Commission develops and implements operational objectives for biodiversity for the North East Atlantic Environment Strategy 2030 (OSPAR 2020). OSPAR continues to engage with the North East Atlantic Fisheries Commission through the Collective Arrangement (OSPAR 2018a) and efforts to bring on board other key regimes, such as ISA and IMO, are continuing to result in largely positive but to date non-committal responses.

The current stalemate on conflicting scientific and political interests within the CCAMLR Convention member meetings continues. No further CCAMLR MPA proposals are accepted and this causes further tension and distrust which has a knock on affect into the international political arena (the Antarctic Treaty system and UNCLOS share significant cross-membership). Despite proposals put forward, negotiations result in little more than discussions with no concrete actions made to establish further MPAs in the high seas. There is continued effort in the negotiations between CCAMLR members to adopt the Ross Sea region MPA Research and Monitoring Plan (RMP) prove unsuccessful (CCAMLR 2019; para 6.35 and 6.38) and a political deadlock continues (Sykora-Bodie 2019). Without an approved and agreed RMP the Ross Sea region MPA cannot be effectively implemented. This sticking point also raises uncertainty over the South Orkney Island Southern Shelf (SOISS) MPA RMP. Monitoring activities have been undertaken since it was designated in 2009 however, some CCAMLR members continue to argue that the Commission did not approve the RMP (CCAMLR 2019; para 6.26 and 6.27). Negotiations continue over the scientific criteria of the SOISS RMP. Thus, making it difficult to ascertain whether or not SOISS MPA is achieving the MPA objectives. For this reason, both the Ross Sea region MPA and the SOISS MPA are represented on **Figure 3 a) Business-as-usual scenarios** as hatched lines to illustrate the uncertainty over their future.

On a state level, increased education and awareness for conserving national interests result in more MPAs in national waters being established and measures implemented to improve the management of existing territorial MPAs. Although the national MPAs go some way to reaching the global target of 30% coverage more work is needed to incorporate climate change refugia and interconnectedness towards building a global network of MPAs.

By 2030 the global community reach the previous 10% MPA coverage (Aichi target 11 and SDG 14) mainly due to increasing national MPAs but the new target of 30% global coverage by 2030 is far from reach.

More Sustainable future by 2030: Shared oceans

In this scenario, the BBNJ Convention is agreed upon after lengthy discussions and additional intergovernmental conference meetings being held however, once it was agreed upon the instrument was more robust. The concluding session of the BBNJ conference see strategies put forward and negotiation measures prove to be successful between opposing states, reflecting states' recognition of their potential losses under any alternative outcome. Adopting Rawls 'original position', each stakeholder hypothetically considers the total situation of all stakeholders from behind the 'veil of ignorance' and designs a system assuming they could occupy any position in the situation. By doing so key states recognise that their endowments of fishing capacities, or geography of coastal state oceans access, should not be the key determinant in deciding the distribution of the benefits of marine resources. Consideration is given to including the interests a wider set of states who have not traditionally had the technical or economic capacities to be significantly involved in marine resource extraction. The interests include the importance of conserving and protecting the World's marine resources and ecosystem services for all states and both current and future generations. Key states are therefore reluctant to use their individual power to make bilateral agreements with weaker countries that give short term sacrifice ecosystem services and economic gain and the expense of the interests of the international community and future generations.

Under the new global BBNJ treaty a Conference of Parties (COP) is established to facilitate coordination between states, regional and international organisations and implement actions within areas of the four packages, e.g. area-based management tools, including MPAs. Eight ecologically or biologically significant marine areas (EBSAs) on the high seas were previously identified for protection through a scientific and technical process launched under the Convention for Biological Diversity (The Pew Charitable Trust 2016; CBD Secretariat 2009). These areas are agreed upon and adopted through the new treaty (these areas are represented **Figure 3 b) Sustainable futures scenario**).

UNESCO previously identified five areas in the high seas of potential 'Outstanding Universal Value' (UNESCO 2016). These areas were considered so significant as to justify recognition and inscription on the World Heritage List for protection under the 1972 World Heritage Convention (these areas are represented **Figure 3 b) Sustainable futures scenario**). Further agreements and Memorandum of Understandings are put into place between RFMOs and other industries such as IMO and ISA. These arrangements enhance state action to increase conservation activities by regional fisheries arrangements, and strong controls over resource extraction activities in vulnerable deep-sea areas and enhance the work of the ISA in these matters.

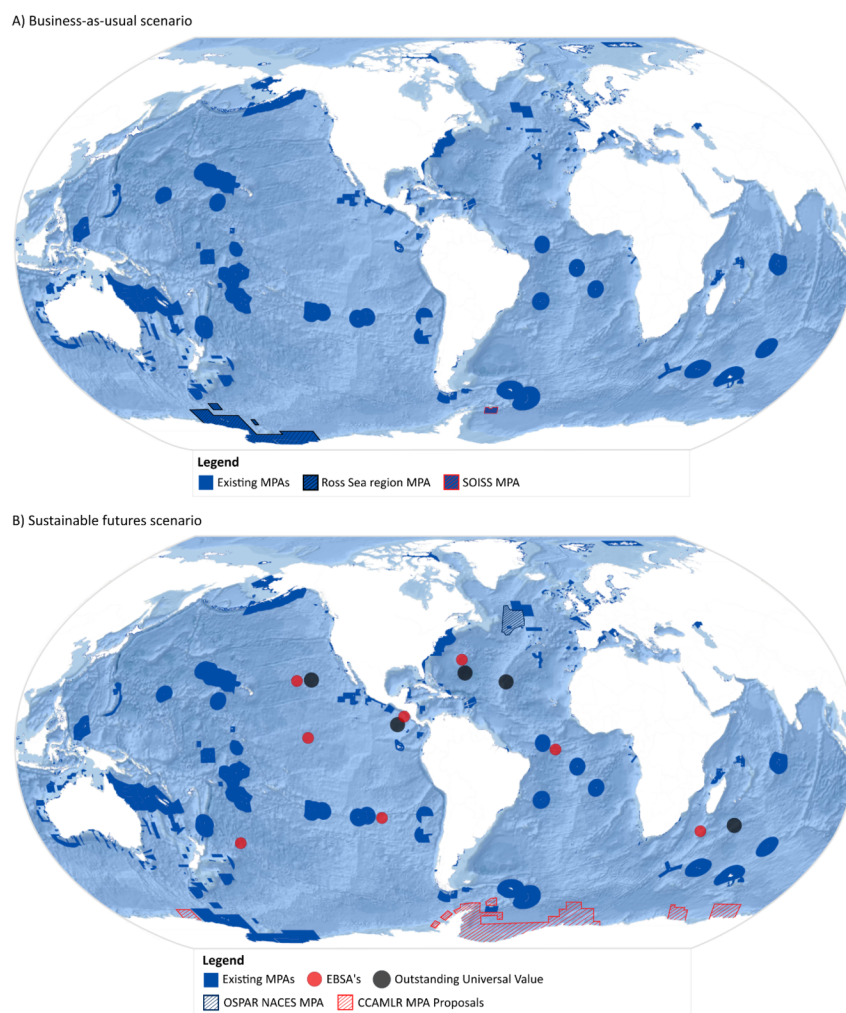
Under the new BBNJ treaty, existing MPAs in the high seas recognised by the regional treaty agreements, are put forward to the BBNJ COP to be considered as proposals for global recognition. During this process, an extensive consultation phase is undertaken to include the global communities' interests. Whilst this is a lengthy process and some changes to the MPA proposals are made, this approach enabled global acceptance and implementation of these high seas MPAs. Other new high seas MPA proposals are put through the same system, which facilitated more productive negotiations. This process enabled the current CCAMLR MPA proposals (the Weddell Sea MPA proposal; East Antarctic MPA proposal, and the Antarctic Peninsula MPA proposal) to be approved (shown on **Figure 3 b) Sustainable futures scenario**). In addition the OSPAR North Atlantic Current and Evlanov Seamount MPA proposal (OSPAR 2018b) is approved by the BBNJ COP (shown on **Figure 3 b) Sustainable futures scenario**). On a state level, designation of MPAs in national waters continues but more focus is on the effective management, monitoring and enforcement of these MPAs and incorporating the future impacts of climate change into the sustainable management of marine resources, with increasing adoption of Dynamic Ocean Management approaches in response to climate-driven redistribution of biodiversity values (Melbourne-Thomas et al. 2020 this issue; Ward et al. 2020 this issue). Further work continues to identify ecological hot spots in the high seas and within state waters in need of protection and management (Greenpeace 2019; The Pews Charitable Trust 2020; Sylvia Earle Alliance/Mission Blue 2020).

Under the BBNJ treaty, commitments to capacity building and technology transfer has provided direct benefits to training and management capacity in SIDS. The level of trust amongst different nation states

has improved but collaboration is still key to decision making. The norms, values and relationships give the regimes strength and there is acceptance of these norms and values by members. As a result of formal commitments to benefit sharing (in a wide range of forms) embedded in the BBNJ instrument fairness in international ocean governance is enhanced. Benefit sharing in a range of ways is a key to the emerging regime, technology transfer and capacity building enhances the ability of developing states to provide stewardship of their ocean areas and contribute to shared aspirations in similar commitment in the high seas.

As with the ‘Business-as-usual’ scenario outcomes in international system are still significantly influenced by the national interests and actions of states but sustainability is accepted as a key principle. This principle is operationalised through a number of objectives, with clear targets and commitments to reports on these targets. The Aichi Target 11 of 10% of the oceans being protected by 2020 leads to strong commitment to increase the target to 30% by 2030, which is met largely due to the designation of areas of the high seas. An emerging global network of MPAs is in place and although further work is required to improve the implementation and management stages, the ecological coherence and addressing the impacts of climate change, it is providing the base for continued discourse on fair use of the ocean.

Figure 3: A theoretical map illustrating how a global network of MPAs would look in the a) business-as-usual and b) Sustainable future scenarios



*This map was adapted from Figure 2 (UNEP-WCMC and IUCN 2020). The additional MPA plots shown are not to be taken as accurate plots but a theoretical illustration of the two possible scenarios.

Pathways to achieving a global network of MPAs

High-level political commitments

High-level political commitments in favour of sustainable oceans are needed to balance the use of ocean resources and maintenance of livelihoods with the conservation of fisheries habitat, protection of the complexity of trophic levels and food webs. This balance is key to addressing fairness in international relations amongst nation states. Such political commitments start with states prioritizing oceans governance within their own jurisdictions first and require engagement with citizens and communities to enhance their understanding of sustainable use of oceans. This can complement and extend current policies and programs on a global scale but implementation by nations is likely to be varied as norm-shifts are notoriously difficult to achieve. Action to support a "sustainable 2030" scenario will also require support of other governance measures beyond governments, such as market driven third party organisations, to respond to broader community and societal concerns. Community trust in these hybrid forms of governance and new approaches to government policy will need to increase if a sustainable 2030 is to be achieved (Klijn, Edelenbos and Steijn 2010; Siddiki, Kim and Leach 2017).

Pathways to ensure socio-economic benefits while conserving the marine environment are supported by a number of international initiatives (e.g. the UN Sustainable Development Goals, particularly SDG 14) but hinge on action by national governments. Such pathways need to link high level principles such as fairness and sustainability to guide decision-making ensuring structural characteristics guide institutional arrangements (Turner et al. 2014: 106). Focusing on the principle of fairness is likely to lead to enhanced societal capacity, and enhanced effectiveness of these institutions – all seen as core principles contributing to 'good governance' (Trouillet et al. 2011). It will also increase trust between institutions and society. In contrast, failure to build inclusive, principled, pathways are likely to lead to knowledge gaps, compartmentalised approaches to decision-making, limited stakeholder participation and challenges in integrating decisions at different scales (Trouillet et al. 2011). The governance failures that inevitably could arise if the path to fairness is not followed could result in reduced community and individual social well-being and reinforce governments' constrained capacity to address change.

Governance structure

The proposed BBNJ instrument, in its final stages of negotiation in 2020 can provide the high-level commitments needed to drive change. Area-based management, including MPAs, and benefit sharing – that links directly to the concept of fairness – have been core issues in the BBNJ negotiations. As such, the BBNJ agreement may be a critical element providing the commitments to the ongoing processes for establishment of a global network of MPAs. Notwithstanding the focus on area-based management and benefit sharing, a BBNJ treaty, will however, be linked to UNCLOS and its focus on 'common heritage of mankind' and 'freedom of the seas' buttressing a developmental approach to ocean use. A further potential constraint is that the BBNJ agreement 'shall not undermine' existing agreements (Tiller et al. 2018).

A 'joined-up government' approach is an essential requirement in the planning and establishment of a global network of MPAs. The capacity of agencies involved in the coordination of the policy process is also key to the successful implementation and contributes to effective integrated ocean governance (Vince and Day 2020). The BBNJ treaty can provide the top-down governance structure aligned to existing United Nations principles and norms. A bottom-up governance approach that incorporates MSP principles also needs to be considered in the planning of MPAs. This can build on national governments' commitments to the BBNJ instrument and their own principles and approaches to MSP, including MPAs. The benefit sharing can then be applied in waters *within* national jurisdictions. Within national jurisdictions we will see area-based management applied in a variety of contexts; from single-species fisheries management to issues surrounding deep-seabed resources; from centralized fishery management systems to community and stakeholder led co-management approaches; and from small scale to large scale MSP ocean resource management. A range of

instruments (i.e. state-based, market-oriented or a community-driven) can be used to support pathways to a fair ocean’s future. Engagement between key institutions and community/civil society through collaborative or co-management approaches is likely to lead to enhanced societal capacity, enhanced effectiveness of, and improved fairness in outcomes.

Participatory justice

The *process* by which decisions are made in the international system is integral to the outcome of a fair governance system. As with all other allocative decisions unless allowing adequate voice for smaller nations, larger and more influential nations will dominate sometimes by tacit agreement in any forum where weaker key stakeholders are able to participate but not have voice or influence. Moreover, the discussions will centre around economic or resource availability issues and potential losses of access to fisheries and other resources will predominate. To achieve better procedural justice would require that a holistic view of benefits (including social and cultural factors) that provide the basis of argument. Dispassionate nations who are not immediately affected by outcomes provide the vehicle for the conduct of the decision-making process of particular MPAs. They will have equal influence as affected nations in decision making. An independent secretariat would be charged to provide scenario-based options based on consultation with affected players at the sub-national level. Scenarios will include resource access, food security and cultural considerations. While such a mechanism is unlikely to preclude the larger nations forming “cartels” this process would provide accountability in international discussions in a Rawlsian sense. Indeed, the role of dispassionate nations in the decision-making process mentioned above is an echo of the ‘veil of ignorance’ itself. Such dispassionate nations (even if not literally in the ‘original position’) can put themselves in the place of all the nations directly affected by any particular MPA and make a judgement of the fairness of the decision-making process.

Clear transparent communication and stakeholder engagement

More work is needed to find a common ground and agreement on what MPAs will constitute beyond national jurisdictions. Misunderstanding of terminology (e.g. MPA definition) or misinterpretation of legal terms can lead to ineffective MPAs, conflict and exploitation. Further discussions need to also focus on whether a broader MSP approach is needed to provide the framework for these MPAs on a global scale. Clear communication builds stronger relationships and shared understanding of common key principles such as the precautionary principle. Transparent sharing of knowledge and data fosters a more trusting environment, which can aid in negotiations. The *Business-as-usual* scenario illustrates that there is clearly more work needed to aid the process of negotiating in the international political arena.

There needs to be improved engagement with traditional owners and custodians of sea country all around the world as currently this is undertaken at a formal level and the knowledge and practices are not fully taken into consideration (Fischer et al. 2020 this issue; Mustonen et al 2020; this issue). It is also important to address the injustice indigenous and traditional people are facing from colonization’s such as loss of political domination, loss of territory and cultural imposition (Fischer et al. 2020 this issue; Mustonen et al. 2020; this issue; Moore 2016). The planning and implementation of MPAs and other area-based management measures need to be based on fair, transparent, and inclusive decision-making frameworks that ensure biodiversity and equity goals are considered (Alexander et al. 2020 this issue). It is essential that the communities relying on and benefitting from MPAs are engaged and included in the management and decision-making process.

Climate change

For global oceans governance to be improved, the concept of climate change and the potential impacts on the environment needs to be accepted as a critical focus for nation states. Sustainable approaches to ocean and marine resources management cannot work without some effort being placed into combatting the sources of climate change. Fisheries have been highly impacted by climate change through biodiversity redistribution (Pech et al. 2017). Further evidence suggests that fisheries productivity will decline in response to climate change throughout most of the world’s oceans (Cheung et al. 2010). Establishing a global networks of MPAs that span biogeographic regions and include a series of MPAs with multiple ecosystems (inshore, nearshore,

deep sea) and be linked to adjacent MPAs by larval dispersal and protect accessible habitats to which adults move (across depth gradients and latitudes) are essential to promote ecological spatial connectivity, by protecting the feeding, breeding and migration areas for transient species. A global network of MPAs with their full component of trophic levels and greater genetic and species diversity, are likely to be more resilient to climate change and could be essential tools in climate adaptation (Smith 2020).

Managing uncertain an economic climate

Throughout all of the planning, management and monitoring stages of a MPA, funding is necessary. Consideration of the MPA timeframe is important in that long-term funding for ongoing operational support, monitoring, reporting and surveillance technology will be required. An international financial body under the BBNJ Convention would help to facilitate funding at an international level for high seas MPAs however, this would other options need to be considered that would benefit local scale MPAs. Unforeseen events and the current COVID-19 pandemic will have a detrimental impact on MPAs. Many MPAs that previously relied on tourism to support the financial operation of the MPA are now suffering e.g. daily visitation rate in Hanauma Bay Nature Preserve in Hawaii has shrunk from 3000 to nearly zero due to the COVID-19 pandemic (Lyte 2020). Similarly, the fishing sector is also facing financial risk from the pandemic and the contraction of markets. There may be opportunities for MPA-oriented institutions to help fishermen protect their jobs while strengthening their environmental sustainability via improved practices.

Conclusion

Changing pressures on the world's oceans arise from a number of (often-interrelated) driving issues; from population increase; associated demands for broader access to aquatic resources and increased demand for seafood; increased environmental disruption from human impacts on habitats and especially climate change induced changes to marine ecosystems; broader changes in global biophysical and economic environments such as the COVID-19 pandemic. These changing and expanding pressures have substantial repercussions for developing pathways for a sustainable ocean future. The world's oceans continue to face a range of biophysical, social and economic challenges. MPAs are one tool that can be used to manage these pressures but are not the only management tool. There are a wide variety of spatial management tools (e.g. Vulnerable Marine Ecosystems) and non-spatial tools (e.g. catch controls, effort controls, market based tools) that can be implemented in addition to MPAs to ensure that development pathways are sustainable. In addition to static approaches, dynamic approaches to spatial management will be increasingly important as climate change continues to cause re-distribution of biodiversity values (i.e. Dynamic Ocean Management; see Melbourne-Thomas et al 2020 this issue for additional detail in the context of the Future Seas project).

Rules under UNCLOS, established in the mid twentieth century that had a commitment to treating the oceans as the 'common heritage of mankind' have come under stress as governance failures with respect to protecting the environment and maintaining likelihoods have become increasingly apparent. The broadening and deepening (and increased complexity) of oceans governance regimes have addressed some of these issues but not others. Access and equity to the oceans remain key issues, particular for developed and emerging economies. The development of effective marine environmental protection regimes provides opportunities but also challenges. While such initiatives address ecosystem damage and decline, the question of fairness in their development and implementation remains a core concern. Ensuring that the social and economic bases to livelihoods are supported by healthy oceans underpins United Nations SDG 14, and developing marine environmental protection arrangements need to support such high-level principles.

Acknowledgements

This paper is part of the 'Future Seas' initiative (www.FutureSeas2030.org), hosted by the Centre for Marine Socioecology at the University of Tasmania. This initiative delivers a series of journal articles addressing key challenges for the UN International Decade of Ocean Science for Sustainable Development 2021-2030. The general concepts and methods applied in many of these papers were developed in large collaborative workshops involving more participants that listed here as co-authors here, and we are grateful for their collective input. Funding for Future Seas was provided by the Centre for Marine Socioecology, IMAS,

MENZIES and the College of Arts, Law and Education, and the College of Science and Engineering at UTAS, and Snowchange from Finland. We acknowledge support from a Research Enhancement Program grant from the DVCR Office at UTAS. We would like to thank Sutej Hugu, Elder of a Taiwanese fishing village and member of the Future Seas Traditional and Indigenous Working Group [see: <https://futureseas2030.org/our-team/>] for providing comments to this paper. We would also like to thank Dr Dugald Tinch and Angela Abolhassani for providing comments on earlier drafts. Thank you to Associate Professor Melissa Nursey-Bray for providing an internal project review of an earlier draft and eight anonymous reviews for improving the manuscript. We would also like to thank UNEP-WCMC and IUCN for use of their data map for Figure 1 and Stacey McCormack for the production of Figures 2, 3A) and B). We acknowledge and pay respect to the traditional owners and custodians of sea country all around the world and recognise their collective wisdom and knowledge of our oceans and coasts.

References

- Alexander KA, Fleming A, Dambacher JM, et al (2020) Equity of our future oceans: reflections on outcomes and practice. *Reviews in Fish Biology and Fisheries*.
- Baggini J and Fosl PS (2007) *The ethics toolkit: A compendium of ethical concepts and methods*. Oxford Blackwell Publishing.
- Brady AM (2017) *China as a polar great power*. Cambridge University Press, Cambridge
- Callicott, JB (2001) The land ethic. In Jamieson D (ed) *A companion to environmental philosophy*. Blackwell, Oxford, pp 218-232.
- Cairney P (2014) What is ‘Complex Government’ and what can we do about it? (2014), <https://paulcairney.wordpress.com/2014/04/12/what-is-complex-government-and-what-can-we-do-about-it/>, accessed February 2020.
- Cairney P, Heikkila T, Wood M (2019) in *Making Policy in a Complex World (Elements in Public Policy)*. Cambridge: Cambridge University Press. doi:10.1017/9781108679053.
- CBD Secretariat (2009) *Azores Scientific Criteria and Guidance for Identifying Ecologically or Biologically Significant Marine Areas and Designing Representative Networks of Marine Protected Areas in Open Ocean Waters and Deep Sea Habitats*, 12.
- CCAMLR (2019) *Report of the Thirty-eighth Meeting of the Commission, 21 October – 1 November, Hobart, Australia, Commission for the Conservation of Antarctic Marine Living Resources*. 196.
- Cheung WWL, Lam VWY, Sarmiento JL, Kearney K, Watson R, Zeller, D, Pauly D (2010) Large-scale redistribution of maximum fisheries catch potential in the global ocean under climate change, *Global Change Biology* 16, 1: 24-35
- Day J, Dudley N, Hockings M, Holmes G, Laffoley D, Stolton S, Wells S, Wenzel L (2019) *Guidelines for applying the IUCN protected area management categories to marine protected areas*. 2ndedn. IUCN, Gland, Switzerland.
- Dudley N, Stolton S, Shadie P (2013) *Guidelines for Applying Protected Area Management Categories including IUCN WCPA Best Practice Guidance on Recognising Protected Areas and Assigning Management Categories and Governance Types*. IUCN, Gland, Switzerland. 86.
- Ehler C and Douvère F (2009) *Marine Spatial Planning: a step-by-step approach toward ecosystem-based management*. Intergovernmental Oceanographic Commission and Man and the Biosphere Programme. IOC Manual and Guides No. 53, ICAM Dossier No. 6. Paris: UNESCO.
- Farmery A, Alexander KA, Anderson K, et al (2020) Food for all: designing sustainable and secure future seafood systems. *Reviews in Fish Biology and Fisheries*.
- Feenstra R (2009) *Hugo Grotius: Mare Liberum 1609-2009*. Brill.

- Figueroa R, Mills C (2001) Environmental justice In Jamieson D (ed) *A Companion to Environmental Philosophy*. Blackwell, Oxford, pp 426-438.
- Fischer M, Maxwell K, Frederiksen N, et al (2020) A fair ocean future for earth's first peoples. *Reviews in Fish Biology and Fisheries*.
- Geng G (2012) China's emerging Arctic strategy, *The Polar Journal* 2, 2: 358-371.
- Greenpeace (2019) 30x30 A Blueprint for Ocean Protection; How we can protect 30% of our oceans by 2030, <https://storage.googleapis.com/planet4-new-zealand-stateless/2019/04/f136cbfb-5db0f88b-greenpeace-30x30-blueprint-report1.pdf>.
- Haas PM (1989), Do regimes matter? Epistemic communities and Mediterranean pollution control. *International Organization* 43 (3): 377.
- Hanich QA, Ota Y (2013) Moving beyond rights-based management: a transparent approach to distributing the conservation burden and benefit in tuna fisheries, *International Journal of Marine and Coastal Law* 28, 1: 135-70.
- Hills J, Bala S, Solofa A, Dunstan P, Fischer M, Hayes D (2019) The disjuncture between regional ocean priorities and development assistance in the South Pacific. *Marine Policy* 107: 103420.
- Hooker B (2005) Fairness. In Honderich, T (ed) *The Oxford Companion to Philosophy*. Oxford, OUP.
- IUCN WCPA (2018) Applying IUCN's Global Conservation Standards to Marine Protected Areas (MPA): Delivering Effective Conservation Action through MPAs, to Secure Ocean Health and Sustainable Development. Version 1.0. IUCN, Gland, Switzerland.
- Klijn E, Edelenbos J, Steijn B (2010) Trust in Governance Networks: Its Impacts on Outcomes. *Administration & Society* 42: 193-221.
- Koh TB (1983) Statement at final session of Third UN Conference on the Law of the Sea, Montego Bay December 1982, reprinted in United Nations *The Law of the Sea: Official Text of the United Nations Convention on the Law of the Sea*, United Nations. New York.
- Leopold A (1949) *A Sand County Almanac with Sketches Here and There*. New York: OUP.
- Lyte B (2020) The Coronavirus has been good for Hanauma Bay, Civil Beat, <https://www.civilbeat.org/2020/04/the-coronavirus-has-been-good-for-hanauma-bay/>, Accessed 20 April 2020.
- Mathews F (2001) Deep Ecology. In Jamieson D (ed) *A companion to environmental philosophy*. Blackwell, Oxford, pp 218-232.
- Matz-Lück N, Fuchs J (2014) The impact of OSPAR on protected area management beyond national jurisdiction: Effective regional cooperation or a network of paper parks? *Marine Policy*, 49: 155-166.
- McCauley DJ, Jablonicky C, Allison EH, Golden CD, Joyce FH, Mayorga J, Kroodsma D, (2018), Wealthy countries dominate industrial fishing, *Science Advances*, 2018: Vol. 4, no. 8, DOI: 10.1126/sciadv.aau2161.
- McGee J, Gogarty B, Smith D (2017) Associational balance of power and the possibilities for international law in the South China Sea, *Asia-Pacific Journal of Ocean Law and Policy*, 2, 1: 88-116.
- Melbourne-Thomas J, Audzijonyte A, Brasier M, et al (2020) Poleward bound: adapting to climate driven species redistribution. *Reviews in Fish Biology and Fisheries*.
- Moore M (2016) Justice and Colonialism. *Philos Compass* 11:447-461. doi:10.1111/phc3.12337.
- Munro GR (2000) The United Nations Fish Stocks Agreement of 1995: History and problems of implementation. *Marine Resource Economics*, 15, 4:265-280.

Mustonen T, Maxwell K, Mustonen K, et al (2020) Who is the ocean? Preface to the Future Seas 2030. Reviews in Fish Biology and Fisheries.

Naess A (1973) The shallow and the deep, long-range ecology movement. A summary, *Inquiry*, 16: 95-100.

Nash K, Alexander K, Melbourne-Thomas J, Novioaglio C, Sbrocchi C, Villanueva C, Pecl GT (2020) Developing Achievable Alternate Futures for Key Challenges during the UN Decade of Ocean Science for Sustainable Development. Chapter in this volume.

Oregon State University, IUCN World Commission on Protected Areas, Marine Conservation Institute, National Geographic Society, and UNEP World Conservation Monitoring Centre (2019) An Introduction to The MPA Guide. <https://www.protectedplanet.net/c/mpa-guide>.

OSPAR (2018a) Collective arrangement between competent international organisations on cooperation and coordination regarding selected areas in areas beyond national jurisdiction in the North East Atlantic (OSPAR Agreement 2014-09 (Update 2018)).

OSPAR (2018b) Draft Nomination Proforma for a 'North Atlantic Current and Evlanoc Seamount' MPA in the OSPAR Maritime Areas (Region V, Wider Atlantic). OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic.172.

OSPAR (2020) Meeting of the BDC Heads of Delegation to discuss the operational biodiversity objectives of the OSPAR North East Atlantic Environment Strategy. OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic. London, 20-21 January 2020.

Pardo A (1967) Speech before the General Assembly. UN General Assembly, First Committee. United Nations, New York.

Pecl GT, Nash K, Alexander K, et al (2020) Transforming our oceans for the future we want. Reviews in Fish Biology and Fisheries.

Pecl GT, Araujo MB, Bell JD, Blanchard J, Bonebrake TC, Chen IC, Clark TD, Colwell RK, Danielsen F, Evengard B (2017) Biodiversity Redistribution under Climate Change: Impacts on Ecosystems and Human Well-Being. *Science* 355: eaai9214.

Rawls J (1971) A Theory of Justice. Belknap Press of Harvard University Press.

Robinson JB (1990) Futures under glass: a recipe for people who hate to predict. *Futures* 22:820-842 doi:10.1016/0016-3287(90)90018-D.

Rosenau J (1999) Toward an Ontology for Global Governance, in Martin Hewson and Timothy Sinclair (eds) *Approaches to Global Governance Theory*, Albany, New York: State University of New York Press: 287-301.

Sample I (2018) Earthrise: how the iconic image changed the world. *The Guardian*. <https://www.theguardian.com/science/2018/dec/24/earthrise-how-the-iconic-image-changed-the-world>. Accessed February 2020.

Siddiki, Saba, Jangmin Kim, and William D Leach. 2017. "Diversity, Trust, and Social Learning in Collaborative Governance." *Public Administration Review* 77: 863-74.

Smith D, McGee J, Jabour J (2016) Marine protected areas: a spark for contestation over 'rational use' of Antarctic marine living resources in the Southern Ocean? *Australian Journal of Maritime & Ocean Affairs*, 8, 3: 180-198.

Smith D (2020) A global network of MPAs: an important tool in addressing climate change. In J McGee, J McDonald and RA Barnes (eds), *Research Handbook on Climate Change, Oceans and Coasts* Edward Elgar, Cheltenham UK. In press.

Sykora-Bodie S (2019) Inside the political deadlock of establishing Marine Protected Areas in the Southern Ocean; politics and culture collide as signatories argue over preserving fisheries and meeting conservation

objectives. Massive Science. <https://massivesci.com/articles/mpa-ccamlr-conservation-antarctica-fisheries-climate-ecosystem-politics/>.

Stevenson SL, Woolley SNC, Barnett J and Dunstan P (2020) Testing the presence of marine protected areas against their ability to reduce pressures on biodiversity. *Conservation Biology*. doi:10.1111/cobi.13429

Sylvia Earle Alliance/Mission Blue (2020) Hope Spots. <https://mission-blue.org/hope-spots/>.

Syme GJ (2012) Justice and Environmental Decision Making In E Kals and D Maes. (eds) *Justice and Conflicts: Theoretical and Empirical Contributions*. Springer, Heidelberg. pp 283-295.

The Pew Charitable Trusts (2016) Underwater Treasures of the High Seas: Unique Habitats and Biodiversity could be Protected with a New UN Agreement. 24.

The Pew Charitable Trusts (2020) A Path to Creating the First Generation of High Seas Protected Areas; Science-based method highlights 10 sites that would help safeguard biodiversity beyond national waters. <https://www.pewtrusts.org/en/research-and-analysis/reports/2020/03/a-path-to-creating-the-first-generation-of-high-seas-protected-areas>.

Tiller R, De Santo E, Mendenhall E, Nyman E (2018) The once and future treaty: towards a new regime for biodiversity in areas beyond national jurisdiction. *Marine Policy*, doi.org/10.1016/j.marpol.2018.10.046.

Trouillet B, Guineberteau T, Bernardon M, Le Roux S (2011) Key challenges for maritime governance in West Africa: fishery-based lesson for Guinea and Mauritania. *Marine Policy*, 35: 155-162.

Turner RA, Fitzsimmons C, Forster J, Mahon R, Peterson R, Stead SM (2014). Measuring good governance for complex ecosystems: Perceptions of coral reef-dependent communities in the Caribbean. *Global Environmental Change*. 29: 105-117.

United Nations (2020) Goal 14 Conserve and sustainably use the oceans, seas and marine resources UN Sustainable Development Goals, <https://www.un.org/sustainabledevelopment/oceans/> (Accessed 1 March 2020).

UNEP-WCMC and IUCN (2020) Protected Planet: The World Database on Protected Areas (WDPA), February 2020 version, Cambridge, UK: UNEP-WCMC. Available at www.protectedplanet.net.

UNESCO (2016) World Heritage in the High Seas: An Idea whose Time has Come, UNESCO, Paris, 79.

Vince J, Day JC (2020) Effective integration and integrative capacity in marine spatial planning. *Maritime Studies*. <https://doi.org/10.1007/s40152-020-00167-1>.

Ward D, Layton C, Bax N, et al (2020) Safeguarding marine life: conservation of biodiversity and ecosystems. *Reviews in Fish Biology and Fisheries*.

WCC (2016) WCC-2016-Res-050-EN: Increasing Marine Protected Area Coverage for Effective Marine Biodiversity Conservation, pg 1.

Wolfish D, Smith G (2000). Governance and Policy in a Multi-centric World. *Canadian Public Policy / Analyse de Politiques*, 26, Supplement: The Trends Project: 551-572.

APPENDIX A

Table A – Driver influencing the establishment of a global network of MPAs

Drivers	Key Issues
Legal	Global oceans governance structure: multi-centric governance, global and regional agreements and treaties (e.g. regional fisheries management organisation, Internal Seabed Authority, International Maritime Organisation, BBNJ treaty). (-/+) Misunderstanding of terminology (e.g. MPA definition) or misinterpretation of legal terms (e.g. different interpretation of ‘rational use’ in the CCAMLR Convention). (-) Restricted ability of states to enforce global and regional conventions/treaties at a national level. (-)
Political	International agreement on the concept of MPAs as a tool to conserve and sustainably manage marine resources (+) Clearly articulated global targets with measurable outcomes (e.g. Aichi Target 11) (+) Willingness of states to cooperate for a common goal (-/+) Rising level of great power geopolitical contestation (-) Rising domestic populist politics and distrust of international institutions (-) A small number of dominant states highly influence ocean governance (i.e. US, Russia, China, Japan) e.g. China’s dominance in the South China Sea (-) Dominant states acting as blockers, laggards, slip streamers in the international environmental arena (e.g. Russia and China continue to delay the Ross Sea Monitoring research and monitoring plan and block other Southern Ocean MPA proposals) (-) Changing global political arena towards deglobalisation (e.g. the impact on EU fisheries with Brexit) and political agendas influencing decision-making (e.g. US change in power from Obama to Trump has affected political agendas regarding ocean issues) (-)
Technological Advances	Satellite surveillance for fisheries compliance (+) Offshore aquaculture (-) Monitoring of ocean conditions (+) Offshore infrastructure (-) Deep seabed mining (-) Materials technology allowing increasing utilisation of offshore global marine estate (-)
Environmental Issues	Climate change impacts (-) Overfishing (-) Other anthropogenic derived impacts such as pollution, mining, etc (-)

Drivers	Key Issues
Social	<p>Demands on the oceans to provide an improved standard of living (-) Concerns for Food security (+) Global population increase (-) Growth and influence of social media platforms and increased access to information via social media (+). The younger generations may be more proactive in influencing a change in attitudes towards climate change in the future compared to current climate change policies (+) Demands for fairness/justice (+) Changes in dietary preferences: meat to fish to vegan (+) Increasing wealth leads to increase in consumption (-) and standards (+0 e.g. pole caught tuna. Commercial use of Krill in krill oil as nutritional supplements (+/-) Loss of traditional rights and uses (-)</p>
Economic	<p>The cost of unpriced resources, how to put a value on unpriced resources, the cost of MPAs to the global community etc (-) A few key dominant states highly influence the World's economy e.g. US and China (+) Unfair distribution of oceans resources between developing and developed states e.g. 97% of industrial fishing activity on the high seas was undertaken by vessels flagged to higher income countries. (-) Expansion of blue economy activity (+/-) Non-market valuation (-) Environmental accounting (-). Availability of culturally appropriate economic analysis (-).</p>