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Primer

Area-based conservation: Taking stock and looking ahead

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SUMMARY

Area-based conservation, particularly of protected areas, is the primary approach used globally to address biodiversity decline and currently covers 8% of the world's oceans and 17% of its lands. In the wake of the adoption of the Kunming-Montreal Global Biodiversity Framework under the Convention on Biological Diversity, area-based conservation (including protected areas and other effective area-based conservation measures [OECMs]) is set to diversify and rapidly expand as mandated by the 30x30 target to protect 30% of the planet by 2030. At this pivotal point, we take stock of the approach, including its history in global conservation policy and performance to date. We outline the following priority directions to ensure area-based conservation contributes to securing a sustainable and just future: (1) embracing a diverse area-based conservation toolbox to stem biodiversity loss, (2) centering social equity in area-based conservation, and (3) adopting robust monitoring and review processes to ensure effective and equitable outcomes.

INTRODUCTION

Often described as the cornerstone of biodiversity conservation, protected areas have expanded rapidly in the last few decades to cover approximately 8% of the world's oceans and 16% of its lands. Growth in the coverage of area-based conservation (including protected areas and other effective area-based conservation measures [OECMs]—a new area-based conservation policy tool) is set to massively accelerate, with almost 200 countries recently committing to protect 30% of the planet by 2030 under the United Nations (UN) Convention on Biological Diversity's (CBD) Kunming-Montreal Global Biodiversity Framework. The so-called 30x30 target is intended as a primary pathway to address the world's unprecedented rate of biodiversity loss, which threatens ecosystem function and nature's contributions to people that underpin human life. Yet, concerns have been raised that the sheer ambition of the 30x30 target—a ~50% increase in coverage of terrestrial areas and a more than tripling in marine areas in 8 years (Figure 1)—may compromise the effectiveness and equity of its implementation.

We take stock of area-based conservation, including its history in global policy and performance to date, and identify three priority directions to ensure it contributes to the transformative change needed to achieve the CBD's vision of “living in harmony with nature” by 2050.

BRIEF HISTORY OF GLOBAL AREA-BASED CONSERVATION POLICY

People have been managing access to and use of natural resources in defined areas of land and water for thousands of years. From sacred forest groves in Estonia to *sasi* systems of customary resource management in Indonesia, these managed areas are diverse, with a range of access, temporal, and other restrictions developed to meet a variety of cultural, political, and social objectives. These areas were not managed for conservation objectives, but were often highly effective in maintaining biodiversity. While some forms of traditional managed areas have been eroded through processes such as colonization, industrialization, and/or globalization, many of these areas continue to be actively governed.

The global area-based conservation movement has its roots in the 19th century emergence of the western concept of protected areas (Figure 1) as the impacts of the industrial revolution were increasingly recognized. Following the proclamation of the world's first national park in 1872—Yellowstone National Park in the USA—protected areas were established in North America, Europe, Australia, and South Africa, primarily to preserve places with iconic landscapes or wildlife. In countries colonized by European nations, the establishment of protected areas formed part of the process of colonization, in many cases resulting in injustices against Indigenous Peoples, including dispossession and displacement from their territories.



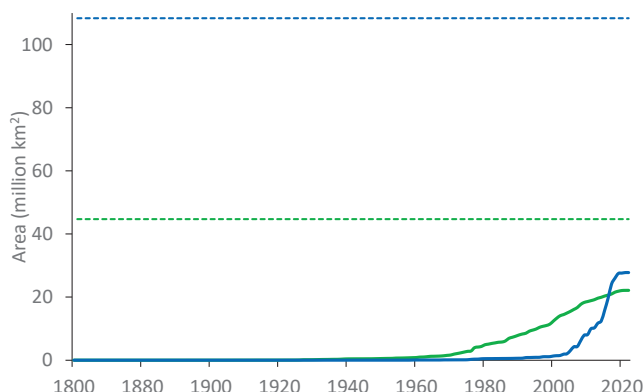


Figure 1. Global growth of protected areas and other effective area-based conservation measures (OECMs)

The graph shows the cumulative area in square kilometers (millions) for terrestrial (green) and marine (blue) areas, as defined by the coastline of the terrestrial ecoregions of the world (TNC 2019) and based on the reported legal date the conservation area was created. The dashed lines represent the 30x30 target to ensure 30% global coverage for terrestrial (green) and marine (blue) areas by 2030, which is called for by Target 3 of the Convention on Biological Diversity's Kunming-Montreal Global Biodiversity Framework. Source: The World Database on Protected Areas and the World Database on OECMs (UNEP-WCMC and IUCN 2022).

While the first attempts to coordinate protected area policy across nations were made in 1933 at the International Conference for the Protection of Fauna and Flora, it was not until 1958 that an international institution dedicated to protected areas was established. Now known as the World Commission on Protected Areas, this institution was created by the International Union for Conservation of Nature (IUCN), which was established in 1948 as the first global conservation organization. Global protected area targets were declared in the 1980s, with the action plan emerging from the third World Parks Congress calling for nations to protect 10% of their area, including hitherto neglected marine and freshwater areas.

The CBD, the world's first intergovernmental biodiversity conservation treaty, entered into force in 1993. With overexploitation, and habitat fragmentation and loss being the primary proximate drivers of biodiversity decline, the CBD treaty identified protected areas as a key conservation tool. At the beginning of each decade during a conference of the parties (COP), the 196 parties to the CBD define a new strategic plan to guide national biodiversity strategies. To support global monitoring of progress, parties are encouraged to share information on their area-based conservation estate with the World Conservation Monitoring Center, a joint venture of the UN and the IUCN, for population of the World Database on Protected Areas. The central role of protected areas was formalized in the 2002–2010 strategic plan, with targets calling for 10% coverage, including of highly biodiverse areas (Box 1). Importantly, the need for biodiversity conservation to contribute to human wellbeing was underscored by the strategic plan's overarching aim to reduce "the current rate of biodiversity loss [...] as a contribution to poverty alleviation [...]."

In 2010 at COP10 in Aichi Prefecture, Japan, the CBD parties adopted a comprehensive global area-based conservation target under the 2011–2020 strategic plan. Aichi Target 11 called

on parties to conserve at least 17% of terrestrial and 10% of marine areas by 2020 (Box 1). Notably, this target was a lot more detailed than previous iterations, emphasizing the need to move beyond coverage to where and how protected areas are designed and managed. Additionally, recognizing that some managed areas other than protected areas can deliver biodiversity conservation, CBD parties introduced OECMs. However, this new policy tool received little attention until 2018, when a definition was adopted (see next section). Target 11 was reflected in the UN Sustainable Development Goals, with the "life below water" Goal (SDG14) calling for conservation of 10% of global marine area and indicators of the "life on land" Goal (SDG15) including protected area coverage.

In December 2022, CBD parties adopted the Kunming-Montreal Global Biodiversity Framework (GBF), which outlines the most ambitious global area-based conservation target to date, with Target 3 urging the protection of 30% of the planet by 2030 (Box 1). There was intense debate in the leadup to COP15 about the implications of the target for Indigenous Peoples and local communities (IPLCs) given some protected areas have perpetuated colonial ideologies and resulted in injustices to these groups. Consequently, Target 3 emphasizes the importance of respecting the rights of IPLCs and recognizing their territories, a significant variation to previous iterations of the target. Another notable addition was the inclusion of the "ocean," indicating increased attention to conservation in the high seas. A UN intergovernmental treaty to conserve and sustainably use biodiversity in areas beyond national jurisdiction (BBNJ), in which marine protected areas are a key tool, is set to be finalized in February 2023.

GLOBAL AREA-BASED CONSERVATION POLICY: THE TOOLBOX

GBF Target 3 names protected areas and OECMs as the two main area-based conservation tools while recognizing the contribution of "Indigenous and traditional territories" (Box 1). The CBD defines a protected area as an "area, which is designated or regulated and managed to achieve specific conservation objectives," and OECMs as an "area other than a Protected Area, which is governed and managed in ways that achieve positive and sustained long-term outcomes for the *in situ* conservation of biodiversity, with associated ecosystem functions and services and where applicable, cultural, spiritual, socio-economic, and other locally relevant values." The key distinction between protected areas and OECMs is that the former have biodiversity conservation as a primary objective, while the latter are defined by effectiveness in conserving biodiversity, irrespective of their objectives. Managed areas that could be recognized as OECMs are diverse and include sacred sites, historic wreck reserves, Indigenous territories, and areas managed for production (e.g., fisheries, pastoral). OECM designation depends on the consent of the relevant governing body and whether the managed area meets the CBD's definition, including demonstrated long-term *in situ* biodiversity outcomes.

The IUCN protected area management categories, which specify six categories based on management objectives, were endorsed by the CBD in 2004. This classification has been widely used in policy, planning, and reporting. Category VI protected

Box 1. Global area-based conservation targets under the United Nations Convention on Biological Diversity

2002–2010: The 2010 Biodiversity Target

Target 1.1: At least 10% of each of the world's ecological regions effectively conserved.

Target 1.2: Areas of particular importance to biodiversity protected.

2011–2020: The Aichi Biodiversity Targets

Target 11: By 2020, at least 17% of terrestrial and inland water and 10% of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative, and well-connected systems of protected areas and other effective area-based conservation measures and are integrated into the wider landscapes and seascapes.

2023–2030: The Kunming-Montreal Global Biodiversity Framework

Target 3: Ensure and enable that by 2030 at least 30% of terrestrial, inland water, and coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem functions and services, are effectively conserved and managed through ecologically representative, well-connected, and equitably governed systems of protected areas and other effective area-based conservation measures, recognizing Indigenous and traditional territories where applicable, and integrated into wider landscapes, seascapes, and the ocean while ensuring that any sustainable use, where appropriate in such areas, is fully consistent with conservation outcomes, recognizing and respecting the rights of Indigenous peoples and local communities, including over their traditional territories.

areas that allow sustainable use account for the biggest proportion of the protected area estate, while category III protected areas account for least (Figure 2). CBD parties are further encouraged to classify their reported protected areas according to the IUCN governance types. Diversity of governing actors is low, with most protected areas governed by government (Figure 2).

STOCKTAKE: PROGRESS IN MEETING AICHI TARGET 11

Given the dominant role that Aichi Target 11 has had in driving area-based conservation across the planet, we briefly review progress in meeting its key subcomponents at a global level. Doing so is also important for gauging progress that is required in this decade given that these subcomponents persist in the GBF's Target 3.

Coverage and representation

The coverage of area-based conservation has grown rapidly since 2000 (Figure 1), with Target 11 met for terrestrial areas (15.8% protected areas; 1.18% OECMs) and close to being met for marine areas (8.16% protected areas; 0.1% OECMs). Alongside coverage, Target 11 requires ecological representativeness across climatic and biogeographic ranges. However, representativeness remains low, with large variability in protection across countries and ecoregions (Figure 3). At an ecoregion scale, only 44.5% of terrestrial and 47.4% of marine ecoregions have met their protection targets of 17% and 10%, respectively.

Connectivity

Target 11's call for well-connected area-based conservation recognizes that flows between areas (e.g., species migration) underpin biodiversity persistence. In 2020, 7.84% of the world's terrestrial surface was assessed to be protected and geographically connected. Globally recognized marine connectivity metrics have not yet been introduced, but regional-scale studies show limited connectivity, particularly for species with dispersive larvae.

Effectiveness

Effectiveness is generally understood as whether area-based conservation makes a positive difference to biodiversity. However, the agreed-upon approach for measuring this subcomponent is protected area management effectiveness (PAME) evaluations, which examine inputs, processes, outputs, outcomes, etc. Given that evaluations are not applied consistently, effectiveness is tracked globally as the proportion of protected areas with a completed PAME evaluation. According to the global database on PAME, in 2020 only 18.29% of the area covered by protected areas has been evaluated. This is concerning given that a completed evaluation is a very basic indicator of effective management.

Research shows that if protected areas are well resourced and complied with, they are effective in conserving *in situ* biodiversity. For example, a recent study of 359 protected areas showed species richness to be 10.6% higher and abundance 14.5% higher inside protected areas than outside. Further, effective protected areas can also benefit ecosystems beyond their boundaries. For example, marine protected areas can enhance fish stocks through larval export and spillover of individuals. However, studies show that the ecological outcomes of protected areas vary considerably, with important predictors including the level of permitted extraction, sufficient funding, and good governance, including the degree to which stakeholders are meaningfully engaged.

Equity

Equitable management has received comparatively little attention, with no established global reporting system. Equity, generally defined as what is fair and right, is increasingly conceptualized in conservation as distribution of costs and benefits, decision-making procedures, and recognition of socio-cultural diversity (e.g., identities, values, rights). In the only large-scale study employing this conceptualization, a survey covering 225 protected areas showed that more than 60% of managers and community representatives believed protected areas had a weak or no contribution to the three dimensions.

Studies of the relationship between protected areas and human wellbeing paint a mixed picture, with heterogeneity of

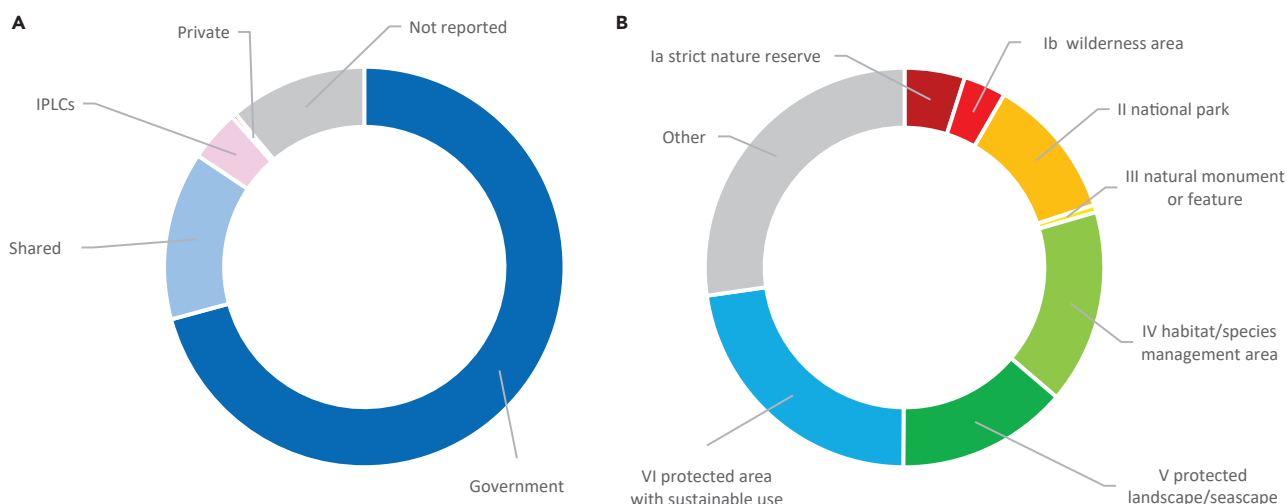


Figure 2. Area-based conservation governance and management

Proportion of area of protected areas and other effective conservation measures (OECMs) reported to the World Database on Protected Areas (WDPA) within different (A) IUCN Governance Types. Proportion of area of protected areas reported to the WDPA within different (B) IUCN Protected Area Management Categories. Governance type provided by the WDPA were reclassified according to the IUCN Governance Types as follows: government (federal or national ministry or agency, sub-national ministry or agency, government-delegated management, transboundary governance); shared (joint governance, collaborative governance); private (for-profit organisations, non-profit organisations, individual landowners); and IPLCs (Indigenous Peoples or local communities). “Other” refers to protected areas without a nominated IUCN Protected Area Management Category. Source: The World Database on Protected Areas (UNEP-WCMC and IUCN 2022).

impacts across wellbeing domains, social subgroups, and governance and management approaches. The latter are particularly influential. Evidence consistently shows that benefits are more likely when local people play a central role in governance. For example, a review of 121 marine protected areas found that benefits were more likely under community-led governance. The influence of management type is not so clear cut, e.g., the latter study showed that benefits were associated with no-take areas, while a review of 165 protected areas found that they were associated with multiuse protected areas (IUCN categories V and VI). “Fortress conservation” that involves eviction of local people results in the most severe social harms.

PRIORITY DIRECTIONS

The lackluster performance against Aichi Target 11 for all sub-components except coverage suggests that a “business-as-usual” approach to scaling up area-based conservation will not be enough. Rather, fundamental shifts in how the area-based conservation is implemented are needed. We identify three priority directions to help ensure the success of the next chapter of area-based conservation; for each, we discuss key opportunities, associated challenges, and actions.

A diverse toolbox to stem biodiversity loss

Embracing a greater diversity of area-based conservation tools governed by a more diverse set of actors is an important direction for the effective conservation of biodiversity. Indeed, the allowance for recognition of “Indigenous and traditional territories” in Target 3, together with increasing uptake of OECMs, indicates that countries are making this step.

Broadening the scope of the toolbox can contribute to advancing conservation effectiveness in several ways. First, it

helps move beyond the characterization of people only as threats to nature, which underpins the concept of protected areas, to that of stewards. Environmental stewardship is a people-nature relationship whereby people’s interactions with nature simultaneously conserve biodiversity and maintain it as a part of human wellbeing. It is most evident among IPLCs, with many areas stewarded by the groups shown to be highly effective in sustaining biodiversity. Empowering environmental stewards, particularly Indigenous Peoples who manage or have rights over 25% of the world’s lands, represents a critical avenue for long-term conservation. Second, it allows for management “fit” to the local social-ecological context. This fosters local leadership, support, and compliance and a central role for traditional knowledge, enhancing innovation in how environmental challenges are conceptualized and addressed. Third, facilitation of management fit provides new opportunities to support, incentivize, and foster the mainstreaming of practices that sustain biodiversity in working landscapes and seascapes. With 56% of the world’s lands subject to low-intensity uses (e.g., pastoralism), conservation approaches that accommodate human use are crucial, especially given these landscapes have a higher density of key biodiversity areas than remaining natural lands. Fourth, it means an increase in coverage of managed areas sustaining biodiversity, boosting desirable conservation network-level properties (e.g., connectivity and representativeness).

However, an expanded area-based conservation toolbox is not without concerns about effectiveness, in particular the potential misuse by countries to achieve the 30% target without delivering biodiversity benefits. For OECMs, concerns center on bluewashing or greenwashing, whereby required demonstrations of effectiveness are not provided and designation becomes a relabeling exercise with no biodiversity gain. A further concern is the recognition of management focused on a single ecosystem

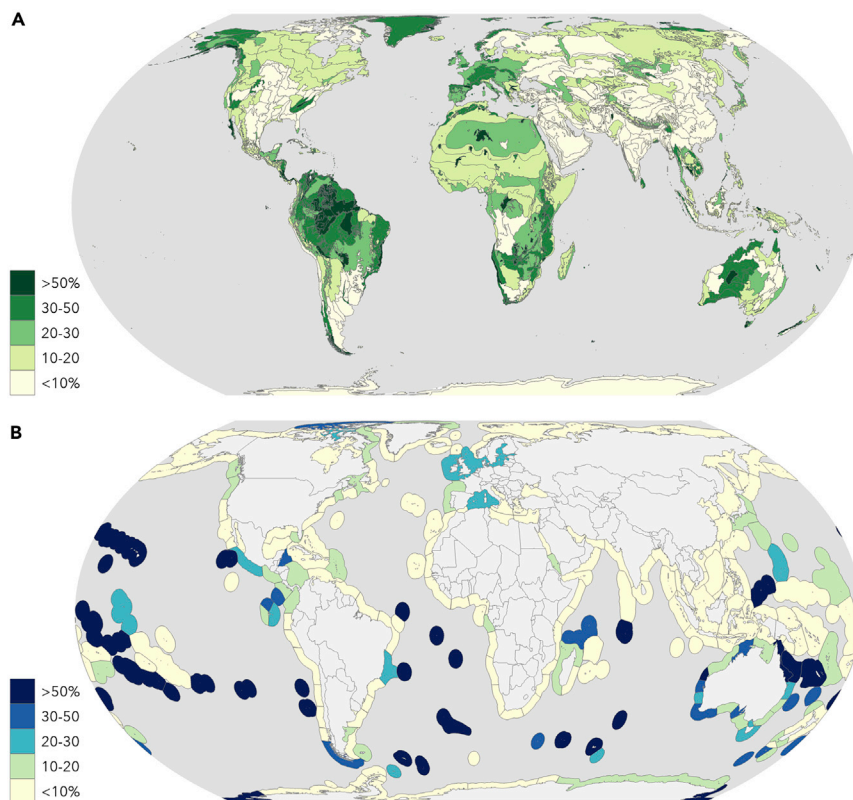


Figure 3. Coverage of area-based conservation across ecoregions

Percentage cover of protected areas and OECMs for (A) terrestrial and (B) marine ecoregions of the world. Darker colors represent ecoregions with relatively higher percentage of cover; the top two darkest colors denote regions that have achieved $\geq 30\%$ cover agreed under the Convention on Biological Diversity's Kunming-Montreal Global Biodiversity Framework. Source: The World Database on Protected Areas and the World Database on OECMs (UNEP-WCMC and IUCN 2022); Terrestrial Ecoregions of the World (TNC 2019); and Marine Ecoregions of the World (TNC 2019).

component (e.g., target species), neglecting broader biodiversity impacts. For protected areas, given that demonstrated effectiveness is not required, a focus on coverage could lead to protected areas that are underprotected, in remote areas that are not under threat ("residual") or exist in name only ("paper parks").

Addressing these concerns requires a focus on biodiversity outcomes in designing, designating, and reporting of all tools (see "Monitor and review for effective and equitable outcomes"). For OECMs, it also requires developing guidance on prioritization of recognition, helping countries select sites that would most benefit from the designation, for example, local fit-to-context management where recognition could help secure and strengthen existing governance, or areas where rules aimed at increasing sustainability have been recently implemented. Additionally, ensuring that a diverse toolbox contributes to conserving biodiversity requires consideration of effectiveness at the conservation network level. Key research directions include how the tools complement each other and can be optimized in a network, including with respect to different levels of resource extraction.

Centering social equity in area-based conservation

A greater focus on equity in area-based conservation is critical to its future success. While equitable conservation is first and foremost a moral imperative, it is also instrumental to achieving social and biodiversity outcomes.

The GBF provides several pathways to enhance equity in area-based conservation. First, the three equity dimensions are evident throughout, including "Section C. Considerations for

the implementation of the framework", which points to the need to recognize diverse value systems; foster gender and inter-generational equity, and respect the rights, knowledges, and practices of IPLCs and ensure their effective participation. Importantly, IPLCs are not portrayed just as impacted parties but also as important contributors to the GBF's aims, as demonstrated, for example, by the recognition of "Indigenous and traditional territories" in achieving Target 3. Second, given a primary conservation objective is not required for OECMs, they enable recognition of the contribu-

tions of a myriad of actors whose managed areas are underpinned by diverse values and knowledges. By enabling recognition of managed areas governed to meet local priorities and according to local norms, OECMs help ensure that benefit sharing and decision-making are fit to context and perceived as fair. They also help alleviate distributional inequities related to the costs of conservation being experienced locally but the benefits shared globally. Third, increases in conservation funding from developed to developing economies under the GBF supports conservation equity. By 2030, financial support for developing economies is set to increase to \$30 billion USD per year. This helps acknowledge the uneven conservation burden, with most land at risk of habitat conversion being in developing economies. It also helps assuage inequities associated with unequal responsibilities for global biodiversity loss, including that many environmental impacts in developing economies are driven by overconsumption in developed economies.

Despite the intentions for equitable conservation set out in the GBF, concerns remain that these aspirations will take a backseat in practice, especially in the rush to achieve the 30% target. Regarding OECMs, concerns have been raised that recognition processes may turn into a land or sea grab and undermine existing governing actors' rights and self-determination. Indeed, these issues were behind the (unsuccessful) lobbying by Indigenous representatives to include their territories as a distinct category separate from protected areas and OECMs in Target 3. A further concern is that costs related to OECM recognition will be passed to existing governing actors and that available funds will be difficult to access and their use constrained. These

sentiments were echoed more broadly by developing economies during COP15, with delegates from 70 countries walking out in protest over the ambition of the targets not being met with equally ambitious financial resources.

Overcoming these challenges requires more attention to how social and governance standards, in particular the human-rights-based approach mandated by the GBF, are implemented by countries, including through monitoring and review process (see next section). It also requires greater acknowledgment of how conservation is influenced by socio-political histories. Indeed, during COP15, the Namibian delegate called on parties to “acknowledge the global economic and financial architecture that came out of the violence of colonization” in order to have “any hope at all of living in harmony with nature.” Such processes may involve restorative justice approaches that foster reconciliation and address power asymmetries. Lastly, streamlining processes for accessing financial resources and facilitating co-designed funding strategies will help ensure that local priorities are supported and lessen bureaucracy, which can be a significant barrier for some countries. Further, closing the biodiversity finance gap of \$700 billion USD per year requires more contributions from the private sector, especially industries responsible for biodiversity losses.

Monitor and review for effective and equitable outcomes

A more robust monitoring and review process for the implementation of countries’ commitments under global area-based conservation policy is essential to the delivery of equitable and effective outcomes. Such processes assess progress, guide implementation, facilitate learning, and foster the transparency and accountability crucial to procedural equity. This is particularly critical in the case of the CBD given that voluntary national action is the main vehicle for its implementation.

The new monitoring framework adopted under the multidimensional review approach of the GBF is an important means for strengthening evaluation processes for area-based conservation. Indeed, the lack of standardized indicators hindered tracking of progress toward the Aichi Targets, particularly Target 11’s qualitative elements. The monitoring framework prescribes headline, component, and complementary indicators. While coverage is the headline indicator for Target 3, the accompanying lower-tier indicators address some previous shortcomings. For conservation effectiveness, there is more of a focus on outcomes. For example, at a site level, the management effectiveness of protected and conserved areas (MEPCA) is a new metric that uses a weighted average of subcomponents of PAME to provide a better measure of conservation outcomes than the completion of a PAME evaluation. At the network level, the species protection index introduces a measure of representativeness and adequacy of protection for species, expanding considerations of representation to species conservation outcomes. For conservation equity, indicators have been specified for the first time and include (1) whether a site-level assessment of governance and equity (SAGE) has been applied, (2) the extent of IPLCs’ lands that have some form of recognition, and (3) and the number of countries implementing conservation-related policies regarding free, prior, and informed consent. Importantly, they are supported by indicators linked to other targets that

focus on the legal recognition of the rights, cultures, and practices of IPLCs.

Although the monitoring framework represents an important step forward, several shortcomings and implementation challenges remain. First, there are concerns about uptake of the optional component and complementary indicators. For Target 3 in particular, this would be a severe limitation. Second, Target 3 indicators fall short on quantitative measures of outcomes. The main indicators for effectiveness and equity are whether a PAME or a SAGE has been completed, with the more substantive indicators relegated to the third tier. Third, the increased diversity of the area-based conservation toolbox poses new challenges to monitoring and evaluation. This includes whether different types of areas should count the same. For example, in French Polynesia, two forms of area-based management being considered as counting toward the 30x30 target are a shark fishing ban of the whole exclusive economic zone and small community-governed no-take areas. A further challenge is how to account for pluralism in what constitutes conservation, effectiveness, and equity given that western notions might not align with the knowledge systems of those governing OECMs or Indigenous and traditional territories.

Key steps to help address these challenges include drawing on remote sensing and other technologies to develop globally consistent outcome-focused indicators of effectiveness. This proposal, which would focus on change in biodiversity status and threats, is gaining momentum as advances in ecosystem classification for all biomes are made. A globally consistent and remote approach could more readily facilitate technical support to countries with limited monitoring capacity. These global data could be paired with site-level data (where possible), which can capture finer-scale processes. Importantly, site-level monitoring approaches should be led or co-developed by existing governing authorities to ensure the inclusion of diverse knowledge systems and visions of success. An additional step is for countries to embrace voluntary peer review, a component of the adopted multidimensional review approach that has received little attention since its inception in 2008. Still under development, this process assesses national progress toward CBD commitments to produce country-specific recommendations, aiming to build implementation capacity, facilitate learning, and foster accountability. Crucially, the process should be extended to focus more thoroughly on the equity standards outlined in the GBF.

Conclusion

In taking stock of area-based conservation, it is clear that the massive scaling up of the approach to meet the 30x30 target must be accompanied by fundamental shifts in how it is implemented. We suggest that a diverse toolbox, a central role for social equity, and a robust monitoring and review process are critical new directions for this next chapter of area-based conservation. While debate over the GBF has centered largely on the 30x30 target, its success will depend on action being taken on all 23 targets, particularly those related to climate change and the \$1.8 trillion USD environmentally harmful government subsidies. More broadly, securing a just and sustainable future rests on addressing the root causes of biodiversity decline through systemic changes to global economic and political systems and transformations in human-nature relationships.

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