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SUSTAINABLE OCEAN INITIATIVE WORKSHOP
ON OCEAN-RELATED CAPACITY-BUILDING
NEEDS FOR THE KUNMING-MONTREAL
GLOBAL BIODIVERSITY FRAMEWORK

Online, 5–9 June 2023

Items 3–6 of the provisional agenda*

OVERVIEW OF CAPACITY NEEDS FOR IMPLEMENTING THE KUNMING-MONTREAL GLOBAL BIODIVERSITY FRAMEWORK IN MARINE AND COASTAL AREAS

Note by the Secretariat

1. The Secretariat is circulating herewith an overview of capacity needs for implementing the Kunming-Montreal Global Biodiversity Framework in marine and coastal areas as a background document for the sustainable ocean initiative workshop on ocean-related capacity building needs for the Framework (see annex).¹ The overview is intended to inform the workshop deliberations under agenda items 3 to 6.
2. The overview was commissioned by the Secretariat of the Convention on Biological Diversity. The views expressed therein are those of the authors and do not necessarily reflect those of the Secretariat or the Parties to the Convention.

* CBD/SOI/WS/2023/1/1.

¹ Issued without formal editing.

**BACKGROUND ANALYSIS TO SUPPORT THE SUSTAINABLE OCEAN INITIATIVE WORKSHOP ON
OCEAN-RELATED CAPACITY BUILDING NEEDS FOR THE KUNMING-MONTREAL GLOBAL
BIODIVERSITY FRAMEWORK**

**An overview of capacity needs for implementing the Kunming-Montreal Global
Biodiversity Framework in marine and coastal areas**

Report by Simon Harding for the CBD Secretariat¹

¹ Views reported in this publication do not necessarily represent those of the Convention on Biological Diversity.

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Executive Summary

This report provides background information for the Sustainable Ocean Initiative (SOI) virtual workshop (June 2023) to discuss the key ocean-related capacity-building needs for the implementation of the Kunming-Montreal Global Biodiversity Framework (K-M GBF) with regard to marine and coastal biodiversity. A brief overview of the main threats and stressors for marine and coastal biodiversity is provided as well as an assessment of the relevance of the Action Targets of the K-M GBF for marine and coastal biodiversity and their capacity building needs, with a focus on Small Island Developing States (SIDS) and Least Developed Countries (LDCs). Eighteen of the twenty-three targets are considered highly relevant, in particular those that address the main drivers of change, as defined by IPBES, as well as some key cross-cutting targets.

An analysis of capacity-building needs (Section 2) reports on a number of needs assessments conducted by both global and regional processes including the Regular Process, IPBES, UNESCO-IOC, UNESCAP and the CBD Secretariat. Drawing on the needs assessment conducted by UNEP-WCMC for the CBD, capacity needs were divided into those for functional and technical capacity. Functional capacity needs were organised into five categories: (i) capacities for engagement, (ii) information and knowledge, (iii) management and implementation, (iv) policy and legislation development and (v) monitoring and evaluation (of capacity-building efforts). A survey of the most pressing technical capacity needs revealed that the theme of marine and coastal biodiversity was ranked second highest, after climate change and biodiversity, by CBD Parties. The WCMC study recommended ten priorities for capacity-building which are highly applicable to marine and coastal biodiversity.

An assessment of challenges and constraints for capacity building in SIDS and LDCs highlights the need for human capacity for both technical and non-technical roles, especially in the public sector but also for national or local non-governmental organisations. Retention of capacity (brain drain) is also often an issue, one factor that undermines institutional capacity along with inadequate finance and a lack of training or educational options. Other key areas requiring capacity building include enforcement, governance, engagement and awareness and for data access and management. Capacity-building needs for particular aspects of marine and coastal ecosystems according to workshop themes and Action Targets are also summarised, covering topics such as marine spatial planning and management, fisheries and aquaculture, invasive aquatic species and ocean observation including for areas within and beyond national jurisdiction. For many SIDS and LDCs, there is insufficient information available about their current levels of capacity, indicating that needs assessments are still required at the national level.

A brief assessment of capacity needs for marine issues across the K-M GBF suggests that needs are extensive and cover all of the Action Targets identified by this report as relevant to marine and coastal biodiversity in SIDS and LDCs. Building human and institutional capacity both within government and for NGOs / communities working at the sub-national or local level is regarded as a priority.

An exploration of potential synergies indicates that the two UN Decades for Ocean Science and Ecosystem Restoration should be regarded as important drivers of capacity-building for the marine and coastal environment. Building synergies with these UN decades will be critical for capacity building in SIDS and LDCs. A range of other potential synergies going forward are also suggested, including the other biodiversity-related conventions, regional frameworks (LME and RSPs), FAO (regarding small-scale Fisheries and area-based conservation), IUCN (MPAs), regional networks (e.g., PEMSEA, LMMA Network), the Common Oceans Program (GEF-FAO) and the Commonwealth Blue Charter.

Potential broad-scale approaches for the delivery of the K-M GBF linked to capacity-building for the marine and coastal environment in SIDS and LDCs are provided including an Earth system justice approach to deliver a nature-positive and people-positive GBF (Section 4).

1. Background and Introduction

The purpose of this report is to provide background information to the Sustainable Ocean Initiative (SOI) virtual workshop being convened in June 2023 to discuss the key ocean-related capacity-building needs for the achievement of the Kunming-Montreal Global Biodiversity Framework (K-M GBF) with regard to marine and coastal biodiversity and sustainable development.

Firstly, this section briefly provides background information on the Kunming-Montreal Global Biodiversity Framework (K-M GBF) and the Action Targets in relation to the conservation and sustainable use of marine and coastal biodiversity and to capacity needs in Small Island Developing States (SIDS) and Least Developed Countries (LDCs). Secondly, a summary of the main stressors for marine and coastal biodiversity and the direct drivers of these is provided. The characteristics of SIDS and LDCs are described next as well as the relationship between ecosystem service provision and the sustainable use of marine and coastal biodiversity.

1.1 The Kunming-Montreal Global Biodiversity Framework, its Action Targets and their relevance to marine and coastal biodiversity and capacity development.

The Kunming-Montreal Global Biodiversity Framework builds on the Strategic Plan for Biodiversity 2011-2020 and sets out an ambitious plan to implement broad-based action to bring about a transformation in society's relationship with biodiversity and to ensure that, by 2050, the shared vision of living in harmony with nature is fulfilled. The fifteenth meeting of the Conference of the Parties to the Convention on Biological Diversity, adopted the Kunming-Montreal Global Biodiversity Framework (referred prior to COP 15 as the post-2020 global biodiversity framework). This framework addresses priorities and objectives for marine and coastal biodiversity, as well as lessons learned from the Convention on Biological Diversity, other multilateral agreements and international processes.

The framework has 23 action-oriented targets for 2030 (see Annex 1) which, if achieved, will contribute to 2030 Milestones and the outcome-oriented goals for 2050². Actions to reach these targets are to be implemented consistently and in harmony with the Convention on Biological Diversity and its Protocols and other relevant international obligations, taking into account national socioeconomic conditions

The Kunming-Montreal Global Biodiversity Framework (K-M GBF) will require enhanced capacity for full appropriation and implementation, in particular in Small Island Developing States (SIDS) and Least Developed Countries (LDCs). A clear understanding and assessment of capacity needs associated with the post-2020 framework is required with respect to marine and coastal biodiversity.

Effective implementation of the framework will require a substantial level of capacity development and includes³:

- i. Enabling evidence-based implementation through nationally determined and/or country-driven actions, in accordance with national priorities;

² Conference of the Parties to the Convention on Biological Diversity. 2022. Kunming-Montreal Global Biodiversity Framework. Draft decision submitted by the President. CBD/COP/15/L.25. 18 December 2022.

³ Ibid

- ii. Support to government and non-government actors at all levels, particularly in developing countries and countries with economies in transition, to develop, utilize and retain requisite capacities and to learn, adapt and manage change;
- iii. Building capacities at the individual, organizational and enabling environment levels to facilitate effective policy formulation, the mainstreaming of biodiversity into all sectors, implementation of the framework and the establishment of national systems and measures for transparency and reporting.

A preliminary assessment of the relevance of each of the Action Targets within the K-M GBF to the marine and coastal environment is provided in Annex 1. Targets which are thought to have the highest relevance are those that tackle the key drivers of change for marine and coastal ecosystems as defined by IPBES⁴ (Table 1). These are primarily Targets 1 - 9 and 15. If addressing the two greatest drivers of change (direct extraction and sea-use change) then Targets 1 – 5, 9 and 15 are the most relevant. However, of equal relevance are cross-cutting targets (Targets 14 and 19 – 22), which are applicable to all drivers of change and essential to the success of the K-M GBF (Table 1). These targets cover themes that will support the delivery of the framework through the availability of information and financial resources as well as capacity-building and equitable participation in decision-making. All these cross-cutting targets are particularly relevant to SIDS and LDCs.

Secondary action targets are also listed (Targets 4, 10, 16 and 18), which will contribute to the delivery of the primary targets in addressing each driver of change. For example, the elimination of harmful subsidies for fishing at all levels (Target 18) will support sustainable fisheries management for marine and coastal species (Target 9). There are a number of action targets not listed in Table 1, which can be regarded as having a lower relevance to marine and coastal biodiversity (Targets 11, 13 and 17).

Table 1. A Preliminary Assessment of the Relevance of the GBF Action Targets for marine and coastal biodiversity in relation to the key drivers of change and cross-cutting themes.

Drivers of Change	Primary Action Targets	Secondary Action Targets / Notes
Direct Extraction	T4: Conservation and recovery of species T5: Harvest and trade of wild species T9: Sustainable use of wild species (e.g. fisheries) T15: Business and biodiversity (sustainable production practices and supply chains)	T18: Subsidies and incentives (elimination or reform of harmful subsidies)
Sea use change	T1: Spatial planning and retention of wilderness/intact areas (Marine Spatial Planning) T2: Restoration T3: Protected areas and other effective area-based conservation measures (effective marine and coastal ecosystem protection)	T4: Conservation and recovery of species T10: Sustainable agriculture, forestry, and aquaculture

⁴ Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. 2019. Global Assessment Report on Biodiversity and Ecosystem Services. 2019. Draft Chapter 2.2. IPBES Secretariat, Bonn, Germany

Climate change	T8: Biodiversity and climate change (climate change mitigation and adaptation through nature-based solutions/ecosystem-based approaches)	Linkages to all other drivers for maximising ecosystem health and resilience to climate change
Pollution	T7: Pollution (reduction including nutrients, biocides and plastic) T15: Business and biodiversity (sustainable production practices and supply chains)	T10: Sustainable agriculture, forestry, and aquaculture
Invasive Species	T6: Invasive alien species (management and control)	
Cross-cutting:	T14: Mainstreaming biodiversity across sectors T19: Increasing resources for biodiversity T20: Information and knowledge T21 & T22: Participation of IPLCs, women, girls, and youth	T16: Sustainable consumption

Capacity building approaches within SIDS and LDCs as part of the K-M GBF implementation should also align with the CBD's Long-Term Strategic Framework for Capacity Development. This framework guides the capacity development efforts of government and non-government actors in support of nationally determined priorities for the implementation of the K-M GBF⁵. The capacity development framework is underpinned by a theory of change (Annex 2), which outlines the intended pathways of change in capacity, the important contextual factors, underlying assumptions and the anticipated high-level outcomes⁶. The framework contains a set of guiding principles for effective capacity development, key strategies to improve capacity development and mechanisms of implementation. These aspects of the framework should be taken into consideration when national and regional capacity-building approaches are implemented to support the implementation of the K-M GBF.

1.2. A Summary of the Main Threats and Stressors for Marine and Coastal Biodiversity

The marine and coastal environment is changing both biologically and chemically as it affected by both direct and indirect anthropogenic pressures. Assessments leading up to 2010 showed that global biodiversity was generally in decline with no substantial reduction in the rate of decline while pressures on biodiversity were generally increasing⁷. These trends were also shown for marine and coastal ecosystems with no part of the ocean thought to be unaffected by human influence⁸. Areas of the ocean that are still devoid of intense human impacts (marine wilderness areas) can provide

⁵ CBD 2022. Recommendation adopted by the Subsidiary Body on Implementation: Annex I. Long-term Strategic Framework for Capacity-building and Development. CBD/SBI/REC/3/8/. <https://www.cbd.int/doc/recommendations/sbi-03/sbi-03-rec-08-en.pdf>

⁶ Ibid

⁷ Butchart, S.H.M., Walpole, M. Collen, B. et al. 2010. Global biodiversity: indicators of recent declines. Science 328: 1164-1168.

⁸ Halpern, B.S., Walbridge, S., Selkoe, K.S. et al. 2008. A global Map of Human Impact on Marine Ecosystems. Science 319: 948-952

important refugia for marine biodiversity⁹. An analysis of nineteen global stressors on the ocean and the cumulative impact of these stressors revealed that only 13% of the ocean can be defined as marine wilderness, with most located in areas beyond national jurisdiction in the southern hemisphere and at extreme latitudes¹⁰.

The ocean is becoming warmer, more acidic and less oxygenated¹¹, with knock-on effects on the global climate. These changes to ocean chemistry are having impacts on marine biodiversity from the organismal to the ecosystem level. Moreover, severe impacts on key marine ecosystems and ecosystem services are predicted in response to the future increase in global mean temperature and concurrent ocean acidification, deoxygenation, and sea-level rise^{12 13 14}.

Human actions have radically changed, and are continuing to change, ecosystem structure (extent and physical condition), especially in sensitive ecosystems, across much of the world¹⁵. The IPBES Global Assessment on Biodiversity and Ecosystem Services found that all five ecosystem structure indicators¹⁶ used for marine and coastal systems showed a decreasing trend in terms of the average per-decade rate of change of between 1.7 and 10.9 %, all greater than the global average of 1.1% decrease¹⁷. All these five indicators are for coastal ecosystems. Coastal protection and coastal carbon-rich habitats, such as mangroves and seagrass meadows, are declining by 3.6 and 5.6% per decade respectively, which will have direct societal implications. The current status of ecosystems relative to a pristine or largely pre-industrial baseline (equivalent to 100%) also included indicators for the whole ocean such as the extent of marine wilderness (13%) and fraction of the ocean not fished per year (45%). Indicators for coastal ecosystems status are already at low levels and are continuing to decline particularly rapidly¹⁸, especially for warm water coral reefs (53%), mangroves (24%) and seagrass meadows (53%).

The relative impact of six direct drivers (climate change, direct exploitation, land/sea use change, pollution, invasive alien species and ‘other’) on the state of nature at the global level has been

⁹ Jones et al. 2018. The Location and Protection Status of Earth’s Diminishing Marine Wilderness, *Current Biology*. <https://doi.org/10.1016/j.cub.2018.06.010>

¹⁰ Ibid

¹¹ Laffoley, D., Baxter, J.M., Amon, D.J. et al. 2019. Eight urgent, fundamental and simultaneous steps needed to restore ocean health, and the consequences for humanity and the planet of inaction or delay. *Aquatic Conserv.: Mar. Freshw. Ecosyst.* 2019: 1-15. doi: 10.1002/aqc.3182 (and references therein)

¹² Hoegh-Guldberg, O., Cai, R., Brewer, P. et al. 2014. “The ocean,” in *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Eds. C.B. Field, V.R. Barros, D.J. Dokken et al. New York, NY: Cambridge University Press) pp. 1655–1731.

¹³ Pörtner, H.-O., Karl, D., Boyd, P., et al. 2014. “Ocean systems,” in *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, eds. C. B. Field, V. R. Barros, D. J. Dokken, et al. New York, NY: Cambridge University Press. pp. 411–484.

¹⁴ Gattuso, J.-P., Magnan, A., Billé, R. et al. 2015. Contrasting futures for ocean and society from different anthropogenic CO₂ emissions scenarios. *Science* 349:aac4722. doi: 10.1126/science. aac4722.

¹⁵ Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. 2019. *Global Assessment Report on Biodiversity and Ecosystem Services*. 2019. Draft Chapter 2.2. IPBES Secretariat, Bonn, Germany

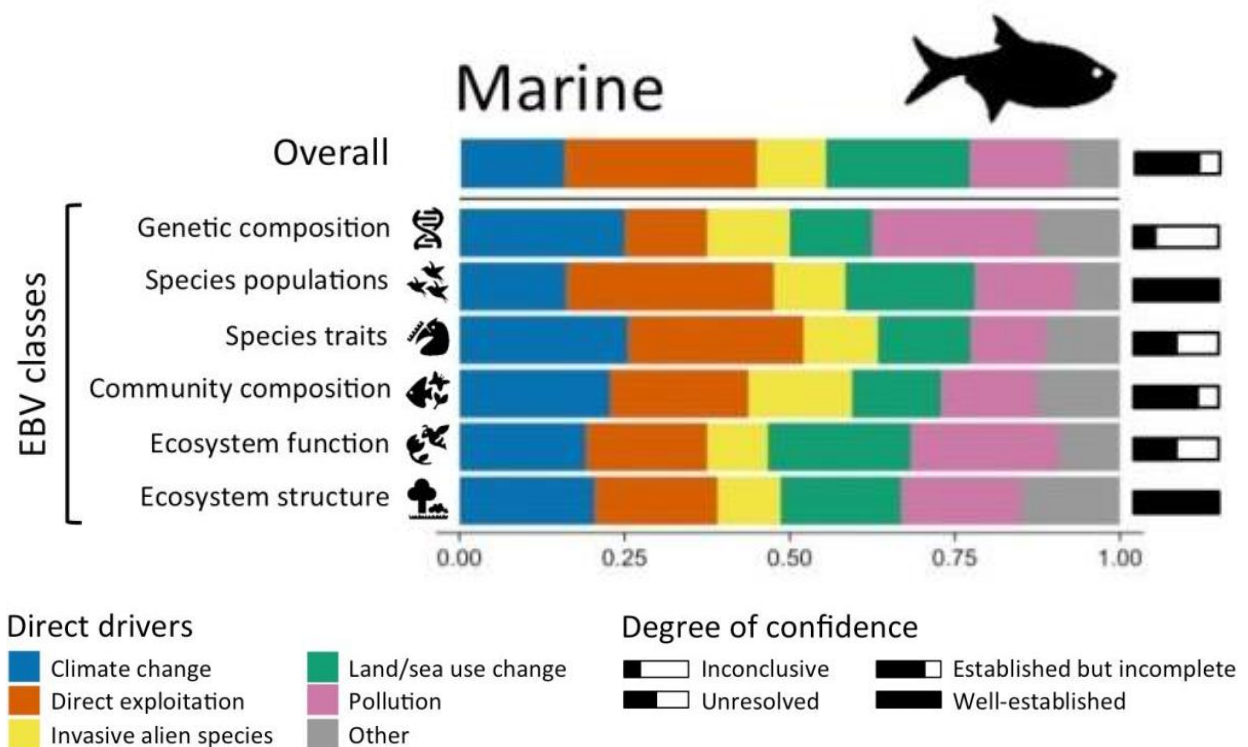
¹⁶ Five indicators: Mangrove forest area, coastal protection habitats, percentage of live coral cover, coastal carbon-rich habitat, seagrass meadow area

¹⁷ Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. 2019. *Global Assessment Report on Biodiversity and Ecosystem Services*. 2019. Draft Chapter 2.2 (Figure 2.8). IPBES Secretariat, Bonn, Germany.

¹⁸ Ibid

estimated for the oceans both as an overall marine value and in terms of six essential biodiversity variables¹⁹ (EBVs). For marine ecosystems, direct exploitation is the strongest driver of change (29%), followed by land/sea use change (22%), with pollution and climate change at 15% and 16% respectively (Figure 1). For marine ecosystems, the highest impact of direct exploitation is on species populations (31.5%). Interactions between drivers can also be complex and lead to additive, synergistic, or antagonistic effects²⁰.

Figure 1. The relative impact of six direct drivers on the state of marine and coastal biodiversity at the global level (Adapted from IPBES 2019)



Direct extraction of living marine resources has had a substantial effect on the ocean. Predatory fish biomass has been falling by 14% per decade²¹, and the proportion of fish stocks within biologically sustainable levels by 6% per decade²². The proportion of global fish biomass that is made up of predatory fish has declined by a factor of around 10 since 1880²³ while the Marine Trophic Index, a measure of the average trophic level of fish caught within multiple regions, has fallen from around 4.0

¹⁹ The six EBVs are: Genetic Composition, Species Populations, Species Traits, Community Composition, Ecosystem Function and Ecosystem Structure. <http://geobon.org/essential-biodiversity-variables/classes/>

²⁰ Crain, C. M., Kroeker, K., and Halpern, B. S. 2008. Interactive and cumulative effects of multiple human stressors in marine systems. *Ecol. Lett.* 11, 1304–1315. doi:10.1111/j.1461-0248.2008.01253.x

²¹ Christensen, V., Coll, M., Piroddi, C. et al. 2014. A century of fish biomass decline in the ocean. *Marine Ecology Progress Series*, 512: 155–166. <https://doi.org/10.3354/meps10946>

²² FAO. 2016. The State of World Fisheries and Aquaculture 2016. Food and Agriculture Organisation of the United Nations. Rome.

²³ Ibid

to around 3.6 in the last 60 years²⁴. A meta-analysis reported that populations of fish species that have been overfished in the last 50 years had significantly lower genetic diversity than populations of closely related species²⁵. The declines in range size, numbers of populations, and population sizes of many species will all tend to reduce their genetic diversity²⁶. Reduced genetic diversity reduces a species' resilience to changes in environmental conditions and increases its risk of extinction²⁷.

There are indications that marine habitat modification is accelerating and may be posing a growing threat to marine fauna²⁸. Initially restricted to coastal and inshore areas, marine habitat modification is increasing in all ocean biomes as technology improves and marine industries extend into offshore and deeper waters^{29 30}. A global assessment of bottom trawling of continental shelves to a depth of 1000 m found that on average 14% of the areas studied were trawled with a large range (1-80%) between regions³¹.

The marine and coastal environment can be divided into three main categories as per the ocean biomes used by the IPBES Global Assessment: shelf systems, the surface open ocean and the deep sea³². The status of and threats to these biomes is provided briefly below, with an emphasis on SIDS and LDCs.

The multiple use of shelf systems³³, especially for marine and coastal natural resources, tourism and coastal development, has resulted in cumulative impacts³⁴ and the loss or degradation of ecosystems and habitats. Drivers of shelf ecosystem decline include unsustainable fishing, eutrophication, solid and liquid waste, habitat fragmentation, underwater noise and invasive species³⁵. Indirect effects of land-use change are mediated through freshwater runoff from land and in rivers. Climate change is increasingly pervasive in shelf systems³⁶, through increasing temperature, acidification, deoxygenation and intensifying storms.

²⁴ Ibid

²⁵ Pinsky, M. L., and Palumbi, S. R. 2014. Meta-analysis reveals lower genetic diversity in overfished populations. *Molecular Ecology*, 23(1): 29–39. <https://doi.org/10.1111/mec.12509>

²⁶ Frankham, R. 1996. Relationship of Genetic Variation to Population Size in Wildlife. *Conservation Biology*, 10(6): 1500–1508. <https://doi.org/10.1046/j.1523-1739.1996.10061500.x>

²⁷ Markert, J. A., Champlin, D. M., Gutjahr-Gobell, R. et al. 2010. Population genetic diversity and fitness in multiple environments. *BMC Evolutionary Biology*, 10:205. <https://doi.org/10.1186/1471-2148-10-205>

²⁸ McCauley, et al. 2015. Marine defaunation: Animal loss in the global ocean. *Science* 347: 1255641. doi: 10.1126/science.1255641

²⁹ Gill, A.B. Offshore renewable energy: Ecological implications of generating electricity in the coastal zone. *J. Appl. Ecol.* 42: 605–615 (2005). doi: 10.1111/j.1365-2664.2005.01060.x

³⁰ Mengerink, K.J. et al. 2014. A call for deep-ocean stewardship. *Science* 344: 696–698. doi: 10.1126/science.1251458

³¹ Amoroso, R.O., Pitcher, R.C., Rijnsdorp, A.D. et al. 2018. Bottom trawl fishing footprints on the world's continental shelves. *Proc. Nat. Acad. Sci. (PNAS)* 115 (43): e10275–e10282.

³² Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. 2019. Global Assessment Report on Biodiversity and Ecosystem Services. 2019. Draft Chapter 2.2. IPBES Secretariat, Bonn, Germany.

³³ Shelf systems extend from the shoreline to 200 m depth, comprising 8% of the earth's surface

³⁴ Selig E.R., Turner W.R., Troëng S. et al. 2014. Global priorities for marine biodiversity conservation. *PLoS ONE*, 9, e82898

³⁵ Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. 2019. Global Assessment Report on Biodiversity and Ecosystem Services. 2019. Draft Chapter 2.2. IPBES Secretariat, Bonn, Germany.

³⁶ Hoegh-Guldberg, O., Cai, R., Brewer, P. et al. 2014. "The ocean," in *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Eds. C.B. Field, V.R. Barros, D.J. Dokken et al. New York, NY: Cambridge University Press) pp. 1655–1731

These pressures have substantially altered the marine and coastal biodiversity of shelf systems. Global spatial coverage of mangroves declined by 37.8% up to 2010³⁷ while seagrass meadows have declined by 10.9% per decade³⁸. Warm water coral reefs have also shown long-term decline³⁹ and are losing live coral cover at a rate of 4% per decade⁴⁰. Severe coral bleaching events are increasing in frequency and intensity because of rising sea temperatures⁴¹. Unsuitable environmental conditions for the persistence of shallow coral reefs are predicted to occur within the next 10-50 years at almost all reef locations globally^{42, 43}.

Coastal areas are a particularly important part of shelf systems that are under considerable pressure. At present a third of the world's population lives in the coastal zone and almost 40% of the world lives within 100 km of the coast⁴⁴. Coastal areas are experiencing an intensification of multiple uses, mainly caused by human population growth, migration from inland regions, tourism and economic growth. Furthermore, coastal areas are the “sink” for the continents in that they receive and concentrate pollutants from watersheds. Tourism can be a very important driver in many regions and is responsible for a large increase in pressures in some coastal areas and for many SIDS.

The Surface Open Ocean⁴⁵ is still poorly characterized due to its size, but vulnerable to multiple threats, including from fisheries, pollution such as marine debris, and from shipping and noise⁴⁶. The ocean surface is sensitive to climate change, experiencing a globally averaged 0.44°C warming between 1971 and 2010⁴⁷. Environmental changes have been documented in ocean circulation and chemistry, thermal stratification, composition and growth of phytoplankton^{48,49}, biogeochemical

³⁷ Thomas, N., Lucas, R., Bunting, P. et al. 2017. Distribution and drivers of global mangrove forest change, 1996–2010. *PLOS ONE*, 12(6), e0179302

³⁸ Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. 2019. Global Assessment Report on Biodiversity and Ecosystem Services. 2019. Draft Chapter 2.2 (Figure 2.8). IPBES Secretariat, Bonn, Germany.

³⁹ Pandolfi, J. M., Bradbury, R. H., Sala, E. et al. 2003. Global Trajectories of the Long-Term Decline of Coral Reef Ecosystems. *Science*, 301(5635), 955 LP-958.

⁴⁰ Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. 2019. Global Assessment Report on Biodiversity and Ecosystem Services. 2019. Draft Chapter 2.2 (Figure 2.8). IPBES Secretariat, Bonn, Germany.

⁴¹ Hughes T.P., Anderson K.D., Connolly S.R., Heron S.F. et al. 2018. Spatial and temporal patterns of mass bleaching of corals in the Anthropocene. *Science*, 359: 80– 83.

⁴² van Hooidonk, R., Maynard, J., Tاملander, J. et al. 2016. Local-scale projections of coral reef futures and implications of the Paris Agreement. *Scientific Reports*, 6, 39666.

⁴³ Beyer, H. L., Kennedy, E. V., Beger, M. et al. 2018. Risk-sensitive planning for conserving coral reefs under rapid climate change. *Conservation Letters*, 11(6), e12587.

⁴⁴ Kumm, M. de Moel, H. Salvucci, G. et al. 2016. Over the hills and further away from coast: global geospatial patterns of human and environment over the 20th-21st centuries. *Environ. Res. Lett.* 11: 034010

⁴⁵ The surface water offshore of the 200-m depth contour and to a depth of 200 m, covering 65% of the earth's surface

⁴⁶ Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. 2019. Global Assessment Report on Biodiversity and Ecosystem Services. 2019. Draft Chapter 2.2. IPBES Secretariat, Bonn, Germany.

⁴⁷ IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.

⁴⁸ Sarmiento, J.L., R. Slater, R. Barber. 2004. Response of ocean ecosystems to climate warming. *Global Biogeochemical Cycle*, 18, GB3003, doi:10.1029/2003GB002134, 2004

⁴⁹ Boyce, D.G., and B. Worm. 2015. Patterns and ecological implications of historical marine phytoplankton change. *Marine Ecology Progress Series*, 534: 251-272

cycling^{50 51}, and the distribution of ecologically key species with effects on food webs^{52,53}. Fishing has altered trophic relationships⁵⁴ and the number of overexploited fish stocks. Marine debris accumulation is increasingly being documented though the effects on biodiversity are often poorly known⁵⁵.

The deep-sea⁵⁶ is the largest and most three-dimensional biome on Earth. Biological processes here remineralise nutrients and sequester carbon, including of anthropogenic origin⁵⁷. Almost all life in the deep-sea depends on climate-sensitive biological processes in the surface layer⁵⁸ and in sea-ice. Species numbers in the deep-sea are hard to assess, but thought to rival other global biodiversity hotspots⁵⁹. Anthropogenic damage in the deep-sea is less than in shallower waters but is increasing rapidly⁶⁰. Some damage to deep-sea ecosystems, occurs via the globally connected current system especially through pollutants. Bottom trawling can cause severe impacts and result in rapid declines in populations of slow growing fish species and extensive damage to unique benthic habitats⁶¹, especially on seamounts. Deep-sea mining is expected to be a major threat in the near future and will need to be carefully managed⁶². Long-term effects of dumped waste, especially radioactive material and plastics from marine debris are still largely unknown⁶³. Most deep-sea organisms are adapted to living in a stable environment and therefore likely to be sensitive to environmental changes, especially to climate-induced shifts in energy supply, alteration of biogeochemical cycles including ocean acidification and prey-predator interactions⁶⁴.

⁵⁰ Hoegh-Guldberg, O., & Bruno, J. F. 2010. The Impact of Climate Change on the World's Marine Ecosystems. *Science*, 328: 1523–1528. <http://doi.org/10.1126/science.1189930>

⁵¹ O'Brien, T.D., L. Lorenzoni, K. Isensee, L. Valdés (eds.). 2017. What are marine ecological time series telling us about the ocean? A status report. IOC-UNESCO, IOC Technical Series, 129, 297 pp.

⁵² Smith, C.R., F.C. De Leo, A.F. Bernardino et al. 2008: Abyssal food limitation, ecosystem structure and climate change. *Trends in Ecology and Evolution*, 23(9): 518-528.

⁵³ Knapp, S., O. Schweiger, A. Kraberg et al. 2017. Do drivers of biodiversity change differ in importance across marine and terrestrial systems - Or is it just different research communities' perspectives? *Science of the Total Environment*, 574: 191–203. <http://doi.org/10.1016/j.scitotenv.2016.09.002>

⁵⁴ Pauly, D. 1998: Fishing down marine food webs. *Science*, 279: 860–863.

⁵⁵ Bergmann, M., L. Gutow, and M. Klages. 2015: *Marine anthropogenic litter*. Springer International Publishing, ISBN: 978-3-319-16510-3

⁵⁶ The waters and seabed below the euphotic zone (200 m)

⁵⁷ Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. 2019. *Global Assessment Report on Biodiversity and Ecosystem Services*. 2019. Draft Chapter 2.2. IPBES Secretariat, Bonn, Germany.

⁵⁸ Smith, C.R., F.C. De Leo, A.F. Bernardino et al. 2008: Abyssal food limitation, ecosystem structure and climate change. *Trends in Ecology and Evolution*, 23(9): 518-528

⁵⁹ Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. 2019. *Global Assessment Report on Biodiversity and Ecosystem Services*. 2019. Draft Chapter 2.2. IPBES Secretariat, Bonn, Germany.

⁶⁰ Ibid

⁶¹ Clark, M.R., F. Althaus, T.A. Schlacher et al. 2016. The impacts of deep-sea fisheries on benthic communities: a review. *ICES Journal on Marine Science*, 73: 51-69

⁶² Jones, D.O.B., S. Kaiser, A.K. Sweetman et al. 2017. Biological responses to disturbance from simulated deep-sea polymetallic nodule mining. *PLoS ONE*, 12(2), e0171750

⁶³ Bergmann, M., L. Gutow, and M. Klages. 2015: *Marine anthropogenic litter*. Springer International Publishing, ISBN: 978-3-319-16510-3

⁶⁴ Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. 2019. *Global Assessment Report on Biodiversity and Ecosystem Services*. 2019. Draft Chapter 2.2. IPBES Secretariat, Bonn, Germany.

1.3. Key Features of SIDS and LDCs

SIDS are a distinct group of 58 States that face unique social, economic and environmental vulnerabilities⁶⁵ that were formally recognised by the United Nations in 1992. At the Third International Conference on SIDS in 2014, the SAMOA Pathway was agreed, affirming that “the Small Island Developing States remain a special case for sustainable development in view of their unique and particular vulnerabilities and that they remain constrained in meeting their goals in all three dimensions of sustainable development”⁶⁶. LDCs currently consist of 47 low income countries, recognised by the UN since 1971, which are defined by the World Bank low income countries (LIC) classification based on per capita incomes. LDC designation is also linked to the level of human assets and economic vulnerability⁶⁷. Twenty-one of these LDCs are coastal States with Exclusive Economic Zones (EEZ’s) while nine countries are both SIDS and LDCs. The SIDS themselves often state that they are better described as “Large Ocean States” to acknowledge the size of their EEZ’s and the importance of oceans for their lives and livelihoods⁶⁸.

SIDS have been characterised as having fragile natural environments, threatened biodiversity, falling fish stocks, invasive alien species, land management challenges and limited water availability⁶⁹. SIDS were also regarded as isolated, lacking economies of scale, having high transportation and communication costs, and limited means and capacity to implement comprehensive sustainable development goals⁷⁰. Many SIDS and coastal LDCs have economies that are heavily reliant on coastal and marine ecosystems, and often have large EEZs with considerable fisheries resources⁷¹. External economic resources through international tourism and sales of fisheries access rights can be very important economically. Communities and households in SIDS and coastal LDCs are often heavily reliant on fisheries for food and livelihoods⁷².

SIDS and coastal LDCs are particularly sensitive to climate change with high levels of vulnerability and relatively low adaptive capacity⁷³. This combined with a low economic diversity and reliance on external resources can make them vulnerable to both changing environmental conditions and socioeconomic stressors such as global financial crises, pandemics and geopolitics. Economic damages from climate change are also predicted to be high in SIDS and coastal LDCs with countries with low

⁶⁵ <https://www.un.org/ohrrls/content/about-small-island-developing-states>

⁶⁶ <https://sustainabledevelopment.un.org/samoapathway.html>

⁶⁷ UNCTAD 2017. LDC – What is a least developed country? <https://unctad.org/press-material/lcd-what-least-developed-country>

⁶⁸ World Bank and UN Department of Economic and Social Affairs. 2017. The Potential of the Blue Economy: Increasing Long-term Benefits of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries. World Bank. Washington DC. 50 p.

⁶⁹ OECD. 2015. Small Island Developing States (SIDS) and the Post-2015 Development Finance Agenda. <https://www.oecd.org/dac/financing-sustainable-development/Addis%20Flyer%20SIDS%20FINAL.pdf>

⁷⁰ GEF 2005. GEF and Small Island Developing States. <https://openknowledge.worldbank.org/server/api/core/bitstreams/2f62681b-8217-5354-832f-99f64fcfa16e/content>

⁷¹ Tokunaga, K., Blandon, A., Blasiak, R., Jouffray, J-B., Wabnitz, C.C.C., Norstrom, A.V. 2021. Ocean risks in SIDS and LDCs. Ocean Risk and Resilience Action Alliance (ORRAA) Report.

⁷² United Nations 2019. The Least Developed Countries report. United Nations publications. doi: 10.1163/ej.9789004180048.i-962.602.

⁷³ Blasiak, R., et al. 2017. Climate change and marine fisheries: Least developed countries top global index of vulnerability. PLoS ONE 12(6): e0179632. <https://doi.org/10.1371/journal.pone.0179632>

per capita income seeing larger GDP losses over the long run⁷⁴. However, SIDS and LDCs should not be treated as homogenous groups but represent a diverse set of countries and territories that differ across many dimensions⁷⁵. For example, among SIDS there is a large variation in land mass, territorial sea, natural resource availabilities and governance systems⁷⁶.

1.4. Marine and Coastal Ecosystem Services and Sustainable Resource Use

The biotic and abiotic assets of the marine environment constitute natural marine capital generating a bundle of ecosystem services vital for human well-being⁷⁷. They include food provision, coastal protection, nutrients cycling, carbon sequestration and recreational opportunities. The generation of these services depends on the physical, chemical and biological processes in marine ecosystems that underpin ecosystem functioning and maintain ecosystem structures⁷⁸. Ecosystem functioning is based on the relationship between abiotic and biotic factors. For the latter, the importance of biodiversity is widely recognised as being fundamental⁷⁹.

The ecosystem services provided by the oceans can be broken down into three main categories⁸⁰. Firstly, there are the economic activities in providing goods and services which are often marketed (e.g. fisheries, shipping, tourism and recreation). Secondly, there are the other tangible ecosystem services which are not part of a market, but which are vital to human life. For example, the production of roughly half of atmospheric oxygen by marine plants or the role of mangroves, salt marshes and seagrass beds as important natural carbon sinks. Thirdly, there are the intangible ecosystem services. The ocean means far more to us than just merely the functional or practical services that it provides. Humans value the ocean in many other ways: for aesthetic, cultural or religious reasons, and for just being there in all its diversity – giving us a ‘sense of place’⁸¹. Of the three main categories the vast majority of goods and services that the coasts and oceans provide for people are as a result of marine and coastal biodiversity. These include the provision of food and biotechnological products, regulating global process such as the climate and nutrient cycling, the contribution to health and well-being and as a source of income^{82 83}.

⁷⁴ Piontek, F. et al. 2021. Integrated perspective on translating biophysical to economic impacts of climate change. *Nat. Clim. Change* 11: 563-572.

⁷⁵ See Table 1 in the ORRAA report (Tokunaga et al. 2021): <https://oceanrisk.earth/wp-content/uploads/2022/12/ORRAA-Ocean-Risks.pdf>

⁷⁶ Thomas, A., Baptiste, A., et al. 2020. Climate change and small island developing states. *Annu. Rev. Environ. Resourc.* 45: 1-27.

⁷⁷ Buonocore, E. et al. 2021. Trends and evolution in the concept of marine ecosystem services: An overview. *Water* 13: 2060

⁷⁸ Ibid

⁷⁹ Daam, M.A. et al 2019. Establishing causal links between aquatic biodiversity and ecosystem functioning: Status and research needs. *Sci. Total. Environ.* 656: 1145-1156.

⁸⁰ Inniss, L., Simcock, A., Ajawin, A. Y., Alcalá, A. C., Bernal, P., Calumpong, H. P., et al. 2016. The First Global Integrated Marine Assessment: World Ocean Assessment I. Cambridge: Cambridge University Press. Available at: https://www.un.org/Depts/los/global_reporting/WOA_RegProcess.htm

⁸¹ Halpern, B.S., Longo, C., Hardy, D. et al., 2012. An index to assess the health and benefits of the global ocean. *Nature* 488: 615-622.

⁸² Ibid

⁸³ Cavanagh, R.D., Broszeit, S., Pilling, G.M. et al. 2016. Valuing biodiversity and ecosystem services: a useful way to manage and conserve marine resources? *Proc. R. Soc. B.* 283: 20161635.

The biophysical and economic assessment of marine ecosystem services is needed to convey the importance of natural resources to managers and policy makers and to support the implementation of policies and strategies oriented toward the sustainable use of marine natural capital stocks⁸⁴. Assessment of marine ecosystem services often lags behind the assessment of terrestrial ecosystem services, hindered by inadequate knowledge and lack of data⁸⁵. The concept of marine ecosystem services is becoming integrated into some regional or international regulations and policies (e.g. the European Commission EU Biodiversity Strategy to 2020) and is central to the UN Decade of Ocean Science for Sustainable Development which recognises that research on marine ecosystem services plays a crucial role in generating scientific knowledge to fully contribute to global ocean sustainability and human well-being⁸⁶. Although national governments, international organisations, businesses and NGOs have started to incorporate ecosystem services into policy and management, considerable additional effort is required to make the concept operational and strongly linked to decision-making, especially for marine and coastal ecosystems⁸⁷.

The sustainable use of marine and coastal resources as a component of ecosystem service provision is a key part of the successful delivery of Goal B and the 2050 vision of the K-M GBF⁸⁸. Ensuring that marine and coastal biodiversity is in a healthier state through sustainable harvesting and habitat use will improve the ability of these ecosystems to provide the essential services that people rely on. This, along with other actions such as ecosystem restoration, will help to put society on the path to a 'nature positive and people positive' outcome that supports the achievement of sustainable development for the benefit of present and future generations.

The Scope of this Report

This report focuses on the capacity building needs, gaps and challenges of SIDS and LDCs to implement the K-M GBF and achieve the framework's action targets and goals for the marine and coastal environment. It mainly covers the primary action targets listed in Table 1 according to the main direct drivers of marine and coastal biodiversity loss. In terms of marine and coastal systems, there is more emphasis on shallow inshore and offshore waters within EEZ's rather than for marine areas beyond national jurisdiction (ABNJ) or the deep sea. Capacity building needs according to global ocean processes are highlighted as well as those particular to SIDS and coastal LDCs. The needs for individual K-M GBF action targets arranged by workshop themes are also provided in Section 2.

⁸⁴ Buonocore, E. et al 2021. Exploring the convergence of natural flows for the generation of natural capital stocks in marine ecosystems. *Ecol. Complex.* 46: 100928.

⁸⁵ Townsend, M., et al., 2014. Overcoming the challenges of data scarcity in mapping marine ecosystem service potential. *Ecosyst. Serv.* 8, 44–55.

⁸⁶ Buonocore, E. et al. 2021. Trends and evolution in the concept of marine ecosystem services: An overview. *Water* 13: 2060

⁸⁷ Ruckelhaus, M. et al. 2015. Notes from the field: Lessons learned from using ecosystem service approaches to inform real-world decisions. *Ecol. Econ.* 115: 11-21.

⁸⁸ Conference of the Parties to the Convention on Biological Diversity. 2022. Kunming-Montreal Global Biodiversity Framework. Draft decision submitted by the President. CBD/COP/15/L.25. 18 December 2022.

2. A Review of Capacity Building Needs Related to the Marine and Coastal Biodiversity Elements of the K-M Global Biodiversity Framework

2.1 The Meaning of Capacity-Building and Capacity Development

Although there is no single agreed definition of the terms capacity-building or capacity development, this study will use the definitions of the United Nations Development Programme⁸⁹. Capacity is defined as the ability of people, organisations and society as a whole to manage their affairs successfully. Capacity development is considered to be “the process whereby people, organisations and society as a whole unleash, strengthen, create, adapt, and maintain capacity over time, in order to achieve development results”. Many publications and reports use the terms “capacity-building” and “capacity development” interchangeably, although there are thought to be some differences between them⁹⁰. As the term “capacity-building” is used in CBD documentation, this term will be used throughout this report.

Capacity-building objectives are widely recognised to fall under three main levels:

- (i) individual, focusing on the skills, knowledge and experience for individuals to perform their roles;
- (ii) organisational, which relates to internal policies and structures of the institutions or organisations where those individuals perform their roles, and
- (iii) systemic, which refers to the enabling environment and broader context in which those individuals and organisations exist, including legal and policy frameworks, power relations and social norms^{91 92}.

The three levels are strongly interlinked in that building the capacity of individuals depends on the quality of the organisations in which they work, which in turn, are influenced by the enabling environment in which they are embedded⁹³. For capacity-building to be effective, all three levels must be addressed⁹⁴.

2.2 Capacity Building Needs and Gaps for Marine and Coastal Biodiversity identified by Major Global Ocean Processes

This section provides a brief overview of the main capacity needs and gaps for the marine and coastal environment and focuses on those defined by ongoing global ocean processes often linked to existing multilateral environmental agreements (MEAs).

⁸⁹ UNDP. 2017. UNDAF Companion guidance: Capacity development. Available from: <https://unsdg.un.org/sites/default/files/UNDG-UNDAF-Companion-Pieces-8-Capacity-Development.pdf>

⁹⁰ European Parliament. 2017. Briefing note: Understanding capacity-building/ capacity development: A core concept of development policy:

[http://www.europarl.europa.eu/RegData/etudes/BRIE/2017/599411/EPRS_BRI\(2017\)599411_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/BRIE/2017/599411/EPRS_BRI(2017)599411_EN.pdf)

⁹¹ [CBD/POST2020/WS/2020/2/INF/1](https://www.cbd.int/post2020/ws/2020/2/inf/1)

⁹² Bester, A. 2015. Capacity development: a report prepared for the United Nations Department of Economic and Social Affairs for the 2016 Quadrennial Comprehensive Policy Review.

<https://www.un.org/en/ecosoc/qcpr/pdf/sgr2016-deskreview-capdev.pdf>

⁹³ OECD. 2008. The Challenge of Capacity Development: Working Towards Good Practice. OECD Journal on Development. vol. 8/3. https://doi.org/10.1787/journal_dev-v8-art40-en

⁹⁴ Bester, A. 2015. Capacity development: a report prepared for the United Nations Department of Economic and Social Affairs for the 2016 Quadrennial Comprehensive Policy Review.

The importance of marine capacity development and technology transfer has been clearly expressed at many intergovernmental processes and fora⁹⁵. National inventories of ocean science capacity exist only in a few countries⁹⁶. The first World Ocean Assessment (WOA I) of the Regular Process⁹⁷ noted a gap in capacity for the integrated assessment of the marine environment and contained two chapters specifically on capacity-building⁹⁸. Chapter 32 focuses on capacity-building in relation to human activities affecting the marine environment⁹⁹ while Chapter 53 provides information on capacity-building needs in relation to the status of species and habitats¹⁰⁰. Both chapters draw on information gathered at a series of eight workshops, which were held in different ocean regions between 2011 and 2014. For most regions, the main cross-cutting capacity needs were summarised as follows:

- Data accessibility and data sharing;
- The provisions for mentoring and training opportunities for less experienced scientists and practitioners;
- Data collection and marine habitat mapping to inform management of ecosystems, biodiversity and fisheries;
- Need to improve professional capacities to assess socioeconomic issues; and
- Capacity to conduct integrated and ecosystem-services assessments.

Capacity needs for individual regions were gathered at the regional workshops and are also summarised in Chapter 32¹⁰¹. A subsequent series of regional workshops was held in 2018 to inform the second World Ocean Assessment (WOA II), which was launched in 2021¹⁰². This second WOA focuses on evaluating trends and identifying gaps, building on the baseline set by WOA I. Chapters in the two volumes include brief discussions on key capacity-building gaps with respect to specific topics such as particular marine or coastal ecosystems, human interactions with them including pressures on the marine environment¹⁰³.

A review of the Large Marine Ecosystem (LME) program identified a critical need to intensify efforts to build capacity for developing countries in relation to ocean and coastal management and ecosystem-based management, particularly for SIDS, LDCs and coastal African States¹⁰⁴.

⁹⁵ Bax, N. et al. 2018. Linking Capacity Development to GOOS Monitoring Networks to Achieve Sustained Ocean Observation. *Front. Mar. Sci.* 5:346. doi: 10.3389/fmars.2018.00346.

⁹⁶ IOC/UNESCO. 2017. Global Ocean Science Report: The Current Status of Ocean Science Around the World. Paris: UNESCO

⁹⁷ The Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socioeconomic Aspects (Regular Process) is a global mechanism established after the [2002 World Summit on Sustainable Development](https://www.un.org/sustainabledevelopment/) to regularly review the environmental, economic and social aspects of the world's oceans, both current and foreseeable: <https://www.un.org/regularprocess/>

⁹⁸ Inniss, L., Simcock, A., Ajawin, A. Y., Alcala, A. C., Bernal, P., Calumpong, H. P., et al. 2016. The First Global Integrated Marine Assessment: World Ocean Assessment I. Cambridge: Cambridge University Press. Available at: https://www.un.org/Depts/los/global_reporting/WOA_RegProcess.htm

⁹⁹ https://www.un.org/Depts/los/global_reporting/WOA_RPROC/Chapter_32.pdf

¹⁰⁰ Ruwa R, et al. 2016. Capacity-building needs in relation to the status of species and habitats. Chapter 53. United Nations Division for Ocean Affairs and the Law of the Sea. https://www.un.org/Depts/los/global_reporting/WOA_RPROC/Chapter_53.pdf

¹⁰¹ https://www.un.org/Depts/los/global_reporting/WOA_RPROC/Chapter_32.pdf

¹⁰² <https://www.un.org/regularprocess/woa2launch>

¹⁰³ *ibid*

¹⁰⁴ Vousden, D. H., and, L. 2017. Large marine ecosystems and sustainable development: a review of strategic management processes and goals. New York, NY: United Nations Development Program.

Providing an overview of the capacity-building landscape relating to biodiversity and ecosystem services was part of the process to develop the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). The IPBES reviews mainly focussed on international bodies at the regional and global level that were involved in capacity-building but did acknowledge that national organisations are also effective both within their countries and externally¹⁰⁵. Priority capacity-building needs were part of the first IPBES work programme (2014-2018), which were the responsibility of the task force on capacity-building of the platform¹⁰⁶.

Capacity development was a key element in negotiations under UNCLOS to develop a legally binding implementing agreement to conserve and sustainably use marine biodiversity in areas beyond national jurisdiction¹⁰⁷. The GEF/FAO Global sustainable fisheries management and biodiversity conservation in the Areas Beyond National Jurisdiction Program (Common Oceans ABNJ Program)¹⁰⁸ consists of four projects, one of which is to strengthen global capacity to effectively manage ABNJ. Prior to implementing capacity-building activities, a capacity needs assessment was conducted by the Global Oceans Forum (GOF) in 2016 in collaboration with other project partners. The assessment highlighted that capacity was a constraint for ABNJ management at both the national and regional level and that scientific and technical capacity was needed the most to reduce constraints at both of these levels, followed by policy and legal capacity. Respondents mentioned the need for data collection, scientific research or assessment and better understanding of legal frameworks and international agreements¹⁰⁹.

Capacity Development (CD) is also considered to be an essential tenet of the mission of the Intergovernmental Oceanographic Commission (IOC), a body with functional autonomy within UNESCO. The IOC works with its 148 Member States to achieve healthy ecosystems, effective early warning systems, resilience to climate change and variability, and enhanced knowledge of emerging issues. As part of the process to revise the IOC's capacity development strategy, the Commission conducted a second online CD needs assessment¹¹⁰ with a particular emphasis on the UN Decade of Ocean Science for Sustainable Development and the Ocean Decade Challenges. However, due to a low response rate (11%) the IOC Group of Experts on Capacity Development (IOC GE-CD) Task Team decided to re-contact the country focal points regarding the survey and request participation with a more user-friendly format of the survey form¹¹¹.

The International Seabed Authority (ISA), for example, undertook a capacity needs assessment as part of its High Level Action Plan to identify the needs of developing States, particularly geographically disadvantaged States, LDCs, LLDCs and SIDS. This was achieved by commissioning a report¹¹² in 2019 to review all capacity-building programmes and initiatives implemented by ISA between 1994 and

¹⁰⁵ [CBD/POST2020/WS/2020/2/INF/1](https://www.cbd.int/post2020/ws/2020/2/inf/1)

¹⁰⁶ See https://ipbes.net/sites/default/files/downloads/Decision_IPBES_3_1_EN_0.pdf

¹⁰⁷ Bax, N. et al. 2018. Linking Capacity Development to GOOS Monitoring Networks to Achieve Sustained Ocean Observation. *Front. Mar. Sci.* 5:346. doi: 10.3389/fmars.2018.00346.

¹⁰⁸ <http://www.fao.org/in-action/commonoceans/en/>

¹⁰⁹ http://www.fao.org/fileadmin/user_upload/common_oceans/docs/FinalEmailVersionCapacitySurvey_em_071617b.pdf

¹¹⁰ https://www.ioc-cd.org/index.php?option=com_content&view=article&id=159&Itemid=284

¹¹¹ https://www.ioc-cd.org/index.php?option=com_oa&task=viewDocumentRecord&docID=27723

2019, through the organization of an international workshop on “Capacity development, needs and resources assessment”¹¹³ organized in February 2020 and a survey circulated to all ISA members between April and June 2020 in which they were invited to identify their priority capacity development needs relating to the role and mandate given to ISA under UNCLOS.

A capacity needs assessment for all ecosystems was undertaken by the FAO to inform the United Nations Decade on Ecosystem Restoration. A global online survey to identify “system-wide capacities” for enabling and empowering people, strengthening organisations, networks and partnerships, and fostering and enabling environment in order to achieve the Goals of the Decade and sustain its efforts beyond 2030¹¹⁴. The survey collected and analysed over 1300 responses from all regions with the majority being from Africa, the Asia-Pacific and Latin America. However, only 2% of respondents were conducting restoration work on marine and coastal ecosystems, with most being for forests (39%), farmlands (23%) and mountain ecosystems (13%). The responses were split according to five stakeholder groups to assess capacity needs and gaps. These were: i. Governments, NGOs and others at the national and international level; ii. Government, NGOs and CBOs at the subnational and local levels; iii. Research and education; iv. Investors, donors, private sector and others, and; v. Land or ecosystem users, communities and interest groups. The main needs and gaps for each of these stakeholder groups are summarized¹¹⁵ for a range of subjects including engagement for planning and implementation, assessing ecosystem degradation, restoration planning and monitoring, sustainable financing, resource mobilization, partnerships and organizational capacity¹¹⁶. Strengths were also identified for all stakeholder groups except for group v. (local communities / ecosystem users).

Looking at a more regional level, a capacity needs assessment was conducted by the UN Economic and Social Commission for Asia and the Pacific (ESCAP) for the implementation of SDG 14¹¹⁷. One of the key findings of the study was that skilled human resources were regarded as the most critical capacity need to achieve SDG 14, with ‘access to data and data management’ and ‘regulation and enforcement’ also very important for national respondents. The main governance challenges were identified as the lack of local or regional governments’ capacity to design and implement ocean policies, horizontal coordination across ministries, vertical coordination between levels of government and the enforcement of environmental/sector norms. Looking more closely at coordination between different institutions for effective SDG 14 implementation, the greatest obstacle for effective coordination was perceived as the ‘overlapping, unclear or non-existing allocation of responsibilities’.

Recognising the barriers and constraints to previous capacity-building initiatives is also important to learn from past experience when designing and implementing future activities. With regard to the stewardship of oceans and coasts, a number of constraints and barriers were identified by reviewing

¹¹⁴ FAO/UNEP. (2021) Global Capacity Needs Assessment: Key gaps and capacity priorities for restoration to support the United Nations Decade on Ecosystem Restoration 2021-2030.
<https://www.fao.org/3/cb8019en/cb8019en.pdf>

¹¹⁵ See also Section 2.4.1 of this report for restoration

¹¹⁶ FAO/UNEP. (2021) Global Capacity Needs Assessment: Key gaps and capacity priorities for restoration to support the United Nations Decade on Ecosystem Restoration 2021-2030: Tables 1 to 5

¹¹⁷ https://www.unescap.org/sites/default/d8files/ESCAP%20Ocean%20Assessment_1.pdf

capacity-building efforts¹¹⁸, especially for developing countries. Fragmentation, a lack of coordination among efforts to improve the science, management and governance of ocean and coastal resources, was regarded as a key constraint. Investments in capacity building prior to 2007 were often fragmented, without standardized criteria for evaluating progress, and too short to achieve and sustain greater capacity for ocean and coastal management¹¹⁹. Sectoral fragmentation occurred where efforts addressed a particular issue or sector, or were for a certain country or region. Fragmentation also inhibits the sharing of information and experience and makes it more difficult to design and implement management approaches at appropriate scales¹²⁰. Other barrier or constraints listed included:

- A lack of political will;
- Challenges of dynamic natural and social systems;
- Ineffective ecosystem governance structures;
- Lack of horizontal and vertical linkages for ecosystem governance structures;
- Lack of an adequate needs assessment prior to program;
- Exclusion of targeted populations in decision-making efforts;
- Poor management structures that lead to mismanagement, corruption, or both;
- Incomplete or inappropriate evaluation procedures;
- A paucity of long-term, programmatic monetary support; and,
- A lack of a coordinated and strategic approach among donors

A recent study by the World Conservation Monitoring Centre (UNEP-WCMC) to inform the preparation of the Convention's long-term strategic framework for capacity-building beyond 2020¹²¹ included an assessment of biodiversity-related capacity-building needs and gaps, which are very relevant to the marine and coastal environment. The main sources of information for this assessment were national biodiversity strategies and action plans (NBSAPs), needs assessment reports commissioned by the CBD Secretariat, reports available from organisations such as the United Nations Development Programme (UNDP), the International Union for the Conservation of Nature (IUCN) and the Global Environment Facility Independent Evaluation Office (GEF IEO) and results of surveys of the needs of Parties and indigenous peoples and local communities (IPLCs)¹²².

Capacity needs and gaps for the implementation of the Convention were divided into two groups: functional and technical capacities¹²³. Functional capacities are broad skills such as the management needed to formulate, implement and review policies, strategies and programmes or projects. Technical capacities are associated with particular areas of expertise and practice in specific sectors such as marine biodiversity, taxonomy, spatial analysis or climate change.

¹¹⁸ National Research Council 2008. Increasing Capacity for Stewardship of Oceans and Coasts: A Priority for the 21st Century. Washington, DC: The National Academies Press. <https://doi.org/10.17226/12043>

¹¹⁹ Ibid

¹²⁰ Ibid

¹²¹ [CBD/POST2020/WS/2020/2/INF/1](#)

¹²² Please refer to the study by UNEP-WCMC (page 19) for references of the information used for the needs and gaps assessment ([CBD/POST2020/WS/2020/2/INF/1](#))

¹²³ [CBD/POST2020/WS/2020/2/INF/1](#)

The main types of functional capacity needs were further divided into five categories¹²⁴:

- Capacities for engagement – capacities to engage proactively and constructively with a wide range of stakeholders to tackle biodiversity loss.
- Capacities to generate, access and use information and knowledge – capacities to understand, acquire, use and communicate pertinent information and knowledge.
- Capacities for policy and legislation development – capacities to plan and develop effective policy, legislation, related strategies and plans based on informed decision-making processes.
- Capacities for management and implementation – capacities to enact and enforce policies and/or regulations, and plan and execute relevant actions and solutions.
- Capacities to monitor and evaluate – capacities to effectively monitor and evaluate achievements against expected results, and to provide feedback for learning and adaptive management, suggesting adjustments to the course of action as needed

Specific capacity-building needs related to the five categories above, and two additional categories (gender mainstreaming and resource mobilisation), were identified by the UNEP-WCMC study¹²⁵ and are summarised below (Table 2):

Table 2. Summary of Functional Capacity Needs identified by the UNEP-WCMC study

Functional Capacity Category	Main needs and Gaps
Capacities for engagement	• Capacity to engage and consult with multiple stakeholders, including the private sector, IPLCs and youth, to establish science-policy platforms • Networking with stakeholders to negotiate and influence policymaking processes, to increase public awareness, communication and dissemination of information, and to develop specific programs targeted at increasing private sector awareness and securing corporate investments in biodiversity • The need to enhance the capacities of IPLCs for addressing the needs of IPLC as a cross-cutting issue relevant to activities of the Convention at national and subnational levels
Capacities to generate, access and use information and knowledge	• The need to generate and enhance the knowledge base and technologies relating to better understanding of biodiversity, its values, functioning, status and trends, and the consequences of its loss • For example, capacities to carry out biodiversity and ecosystem assessments, natural capital assessments, building taxonomic knowledge, more effective use of mapping and spatial analysis in biodiversity planning, and the ability to more effectively use remote sensing • The need to promote, increase the accessibility and mainstream traditional and indigenous knowledge amongst sectors, institutions and professionals • The skills necessary to develop and implement effective policies relating to the sharing and use of data, information and knowledge, including indigenous and local knowledge

¹²⁴ Global Environment Facility Independent Evaluation Office (GEF IEO). 2011. Monitoring Capacity Development in GEF operations: A Framework to Monitor Capacity Development Initiatives. Washington, DC: The Independent Evaluation Office (IEO) of the Global Environment Facility (GEF). Available from: https://www.thegef.org/sites/default/files/documents/Capacity_Development_Indicators.pdf

¹²⁵ [CBD/POST2020/WS/2020/2/INF/1](https://www.unep.org/cbd/post2020/ws/2020/2/INF/1)

Capacities for policy and legislation development	• The capacity to formulate and revise legislation, policies, strategies and programmes, and to find ways to more effectively mainstream biodiversity into other sectors
Capacities for management and implementation	• The capacity to coordinate with others, strengthen partnerships, improve institutional inter-sectoral cooperation and coordination at the operational level including for cross-boundary management of biodiversity assets, and strengthen the capacity to enforce laws, regulation and policies
Capacities to monitor and evaluate	• The capacity to develop and use indicators, to assess effectiveness of policies and regulations, to measure their impact, and to improve reporting • Capacity-building for monitoring and evaluation was one of the most common areas in which countries identified needs and gaps • For example, the need for adequate infrastructure and trained staff to produce baseline data needed for assessing policies, as well as monitoring and evaluation capacities relating to a range of specific thematic areas
Gender mainstreaming	• Practical mainstreaming of gender in planning, decision-making and management of and access to natural resources • Mainstreaming educational curricula and research • Undertaking awareness campaigns on women and biodiversity • There is a need to address the differentiated concerns of men and women relating to biodiversity and strengthen their capacities (women are not currently fairly represented in planning and decision making processes, and benefit little from biodiversity support programmes)
Resource mobilisation	• Capacity to mobilise resources was one of the most common needs • Specific needs included the increased capacity for locating the necessary resources for facilities and equipment to support biodiversity actions, funding for implementation, and long-term sustainability of biodiversity-related projects

According to the survey completed by Parties compiled by the CBD Secretariat, the most critical functional capacity needs were:

1. Resource Mobilisation (42% of respondents)
2. Project Design and Management (30%)
3. Stakeholder engagement, networking, partnership development (24%)
4. Monitoring and evaluation (24%)
5. Institutional Building (21%)
6. Strategic Planning (21%)
7. Communication and Awareness Raising (18%)
8. Information and Knowledge Management (15%)
9. Leadership and Management (12%)
10. Gender Mainstreaming (12%)
11. Policy design and enforcement (6%)

In terms of technical capacity needs, Parties identified the following themes as the most pressing:

1. Climate Change and Biodiversity (49% of respondents)
2. **Marine and Coastal Biodiversity** (46%)

3. Biodiversity for Development (42%)
4. Traditional knowledge, Innovation and Practices (39%)
5. Agricultural Biodiversity (36%)
6. Forest Biodiversity (33%)
7. Communication, Education and Public Awareness (33%)
8. Resource Mobilisation and Financial Mechanism (30%)
9. Ecosystem Services (30%)
10. Ecosystem Restoration (30%)
11. Sustainable Use of Biodiversity (27%)
12. Habitat loss, Fragmentation and Degradation (27%)
13. Integration of Biodiversity Values (24%)
14. Gender and Biodiversity (21%)
15. Access to Genetic Resources, and Benefit-sharing and Nagoya Protocol (18%)
16. Sustainable Agriculture, Forestry and Aquaculture (18%)
17. Invasive Alien Species (18%)
18. Economics, Trade and Biodiversity (18%)
19. Tourism and Biodiversity (18%)
20. In-situ Conservation and Protected Areas (15%)
21. Dry and Sub-humid Land Biodiversity (15%)
22. Identification and monitoring of Biodiversity (15%)
23. National Biodiversity Strategies and Action Plans (15%)

The survey identified the theme of **marine and coastal biodiversity as one of the most critical needs for technical capacity building globally**, with the second highest number of responses after climate change. In addition, of the twenty-three themes listed all but three of them (agricultural and forest biodiversity and dry and sub-humid land biodiversity) are directly linked to the marine and coastal environment. However, the importance of particular themes for technical capacity-building can vary considerably at the national level. For example, a number of countries highlighted invasive alien species as a key issue¹²⁶. Most countries did state that capacity-building was required for biodiversity valuation and ecosystem accounting, with limited awareness of the value of biodiversity, particularly in terms of its economic and socio-economic importance. This is especially the case for marine and coastal systems of many Small Island Developing States (SIDS) and less Developed Countries (LDCs).

Overall, when combining functional and technical capacity needs and considering all information sources used for the UNEP-WCMC study, ten priorities for capacity-building were highlighted:

1. Resource mobilisation and fundraising skills
2. Cooperation and collaboration with other actors and sectors
3. Institutional Capacity (e.g. human resources, provision of adequate financial resources)
4. Networking and communication skills
5. Coordination with similar organisations and institutions

¹²⁶ [CBD/POST2020/WS/2020/2/INF/1](https://www.unep.org/press/2020/02/inf1)

6. Knowledge and information sharing
7. Data capture, management and use (including indicators)
8. Technical skills related to assessment of biodiversity and ecosystem services, including understanding values
9. Integration of the value of biodiversity and ecosystem services in sectors
10. Legislation, compliance and enforcement of environmental policies and legislation

2.3. A review of Capacity Building needs and enabling conditions identified for Small Island Developing States and Least Developed Countries

This section highlights capacity needs that have been identified specifically for Small Island Developing States (SIDS) and Least Developed Countries (LDCs). The Global Environment Facility (GEF) has stated previously that Small Island Developing States (SIDS) lack the systems and technical support they need to fully implement biodiversity conservation through the CBD and considers this a priority¹²⁷.

An assessment of capacity needs of Governmental Institutions to implement the 2030 Agenda for Sustainable Development was conducted in 2017-2018 to identify priority areas for capacity development in the Asia and Pacific and Eastern African regions¹²⁸. The assessment of national institutions covered 47 Member States and focussed on three country groups: Small Island Developing States (SIDS), Least Developed Countries (LDCs) / Landlocked Developing Countries (LLDCs) and Low- and Middle-Income Countries (MICs). The main capacity challenges identified were similar for the three groups with the most important being capacity needs for **monitoring, review and follow-up, lack of sufficient financial resources and human capacity limitations**. Lack of capacity for effective coordination at the sub-national level with both government and non-government stakeholders was also highlighted. Specific challenges for SIDS were difficulties in longer-term and strategically orientated development programming, partly linked to political instability in some countries. Further constraints for SIDS were their specific geographical context and the limited population sizes spread over a wide area. Priority areas identified for capacity support were the needs mentioned previously as well as **South-South knowledge sharing and exchange of good practices. Capacity development of the public sector** was a particular priority for LDCs¹²⁹.

Capacity building needs and constraints for SIDS have been reviewed more recently through an assessment by UNDESA¹³⁰ that collated information from NBSAPS, NCSAs, Biodiversity reports or from workshops and interviews. The study identified four key areas where capacity is lacking: i. **Enforcement**; ii. **Governance**; iii. **Public Awareness, Education and Engagement**; and iv. **Science, Technology and Data**. The key constraints / needs and gaps for these subjects are briefly summarised in Table 3. For further information and context for these key findings please refer to the UNDESA

¹²⁷ [GEF and SIDS October 2018 r2.pdf \(thegef.org\)](https://thegef.org/gef-and-sids-october-2018-r2.pdf)

¹²⁸ United Nations Department of Economics and Social Affairs (UNDESA) 2020? Capacity Needs Assessment of Government Institutions to implement the 2030 Agenda for Sustainable Development and Identification of Priority Areas for Capacity Development in the Asia and Pacific Region and Eastern Africa. Outcome Report. UNDESA – UN Project Office on Governance (UNPOG). 178 pp.

¹²⁹ Ibid

¹³⁰ United Nations Department of Economics and Social Affairs (UNDESA) 2022. Gaps, Challenges and Constraints in Means of Implementing Biodiversity Objectives in Small Island Developing States. 85 pp.

report¹³¹. The constraints highlighted are generally all relevant to biodiversity conservation in marine and coastal environments. For example, enforcement of existing regulations for managed areas (MPAs and OECMs) and fisheries are often lacking in SIDS as part of local governance approaches, with some exceptions. Data collection and monitoring for marine and coastal areas is also challenging for SIDS, especially for countries with multiple islands spread over a large spatial area (e.g. atoll nations or those with remote islands / island groups).

Table 3. Key Needs and Gaps for capacity development in SIDS in relation to Biodiversity Conservation (adapted from UNDESA, 2022).

Enforcement	
Constraints limiting effective enforcement	Resource challenges – logistical and technical Lack of staff Lack of awareness, understanding and value of biodiversity-relevant rules and regulations Political / social considerations and interests conflict with biodiversity interests Lack of training / skills Lack of equipment Lack of knowledge / information for monitoring and data collection – what needs to be monitored, how and why?
Governance	
Constraints limiting effective environmental governance	Lack of a science-policy interface Lack of political awareness / interest in biodiversity issues compared to other key sectors (e.g. tourism, fishing, mining) Out-migration of skilled staff Lack of paid staff to enforce / monitor Insufficient governance infrastructure, equipment and patrolling capabilities Lack of community awareness and education on existing regulations Reporting overload – too many global regimes to report on
Public Awareness, Education and Engagement	
Constraints limiting the effectiveness of activities	Lack of a centralised vision for activities Poor measurement of the effect / results of activities Lack of coordination of activities – disparate activities carried out by different actors Lack of central data collection and analysis of the activities carried out in terms of capacity delivered Lack of capacity of stakeholder organisations (financial, technical, administrative) to engage Digital divide – disparities in accessing information
Science, Technology and Data	

¹³¹ <https://sdgs.un.org/publications/gap-assessment-report-challenges-and-constraints-means-implementing-biodiversity>

Data Gathering: Data gaps common to SIDS	Lack of information and valuation of biodiversity and ecosystem services / no national environmental accounting Lack of data on technology tools and practices to build resilience Lack of information on how to monitor for changes in biodiversity values Difficulty in aligning data, particularly as technology changes Lack of information / data on how biodiversity can benefit socioeconomic conditions Poor usability / accessibility of existing data banks e.g. data may not be downscaled enough to be usable
Scientific Cooperation, Technology Transfer and Knowledge Management	Low technical and institutional capacity to integrate, apply technology and knowledge, and identify what is needed for improved biodiversity conservation Lack of expenditure on research and development Weak science-policy interface Lack of / need for more specialised data banks Lack of knowledge on what technologies are most needed (suited) to combat specific biodiversity issues / problems Lack of long-term data collection – support needed for ongoing collection instead of time-bound efforts Lack of technical capacity to use / engage with data portals and information platforms Low capacity to conduct research in natural sciences in SIDS Need to supplement skills gaps and retain knowledge within SIDS e.g. tertiary education institutions to play a bigger role in this Lack of investment in education and skills development leading to a culture of employing international consultants to fulfil (national) biodiversity-related tasks – further hindering the retention of skills, institutionalising knowledge and limiting opportunities for local researchers and technical staff Duplicative / overlapping knowledge management hubs and data portals – potential to create new silos of knowledge Need for data sets that are responsive to specific biodiversity needs e.g. IAS, the Nagoya Protocol

Ridge-to-Reef (R2R) approaches are common to SIDS. R2R approaches are integrated across terrestrial, coastal and marine ecosystems and emphasise the interconnections between natural and social systems across the landscape and seascape. A human capacity needs assessment undertaken for the Pacific region as part of a GEF International Waters Ridge to Reef Regional Project¹³² identified a number of key areas that were lacking capacity which were similar to some of those identified by the UNDESA assessment for SIDS. The study in the Pacific identified both direct and indirect needs for human capacity under the headings of Governance (framework structures or issues that shape the project environment), Project Management (technical and non-technical project capacity gaps) and Monitoring Control Surveillance and Enforcement (MCSE) (sustained stakeholder engagement and

¹³² The Pacific Community (SPC) 2021. GEF Pacific Ridge-to-Reef Human Capacity Needs Assessment in the Pacific Region Technical Report. Pacific Community (SPC), Suva, Fiji. 49 pp.

community acceptance of project initiatives). All of these needs and gaps directly or indirectly affected the overall efficacy of human capacity to complete project objectives.

Overall the main human capacity needs for R2R project managers in the Pacific were concerned with **technical personnel support** for a wide range of scientific or technical initiatives. These included technical personnel for policy development, technical writing, stakeholder engagement, monitoring and evaluation, GIS mapping and for a range of surveys or studies in the project locations such as biophysical or socioeconomic surveys, cultural or feasibility studies. In addition, **non-technical personnel support** was needed for administrative and field-based activities. The study identified a range of training needs for staff to strengthen human capacity for both technical and non-technical tasks to meet project objectives and goals.

A recent study of GEF projects in SIDS identified a number of factors that either contribute to or hinder the sustainability of project outcomes¹³³, which are summarised in Table 4. These factors are all highly likely to contribute to the success (or not) of achieving the K-M GBF targets in SIDS and LDCs, especially for project-focussed activities and initiatives. The key factors linked to capacity are highlighted in bold. **Human capacity** in institutions and NGOs is a particular area that influences project sustainability as well as **developing partnerships, scaling-up based on lessons learned and knowledge sharing**. Low institutional capacity causes problems especially in the poorest SIDS, with ‘human capital flight’ an issue in the Pacific islands and the Caribbean¹³⁴. High staff turnover at the national level is an issue in many SIDS, especially those with a dynamic private sector. Low technical capacity of national and local NGOs was also an issue in some SIDS.

Table 4. Contributing and hindering factors influencing the sustainability of GEF project outcomes in SIDS (after Batra and Norheim, 2022¹³⁵).

Sustainability	Contributing Factors	Hindering Factors
Context related	- Legal and institutional framework for environment and protected areas - Government policies supporting environmental conservation, climate change mitigation, and adaption - National ownership of projects, reflected in government support and budget allocation Strategic institutional partnerships - Public-private partnerships in key sectors - Sustainable national financing mechanisms e.g. environmental funds to co-finance projects General institutional capacity, especially in the public sector	Low institutional capacity, especially in the relatively smaller countries, with low ownership, little institutional memory, high turnover and brain drain - Unfavourable political conditions and events in some countries (coup d'état, corruption, civil protests) - Often weak national and local environmental NGOs with low technical capacity and limited influence on decision making and low capacity on local level to implement planned activities - Low level of environmental awareness, reflected in the public's attitude to waste and to renewable energy resources

¹³³ Batra, G. and Norheim, T. 2022. Staying Small and Beautiful: Enhancing Sustainability in the Small Island Developing States. p. 73-91. In: Uitto, J.I. and Batra, G. (eds.). Transformational Change for People and the Planet. Evaluating Environment and Development. Sustainable Development Goals Series, https://doi.org/10.1007/978-3-030-78853-7_6

¹³⁴ Ibid

¹³⁵ Ibid

		• Pressure from agricultural and tourism sectors to exploit sensitive areas, from a land, coastal and marine environmental perspective • Natural disasters and unfavourable environmental conditions (hurricane, drought, earthquake, tsunami) • Infrastructure constraints that make transport and communication across islands difficult, impacting learning and knowledge sharing
Project related	• Training and institutional capacity building, including introduction of new technology and techniques • Buy-in and sense of ownership among key project stakeholders • Adaptive project management • Strength of project teams and engagement of steering committees • Strategic institutional partnerships • Replication and scaling-up based on lessons learned, including small-scale local investments financed by GEF-SGP, NGO/CSO, and the private sector	• Project design that does not consider previous projects in the sector and lessons learned • Little consideration of impact and sustainability in the project design • Insufficient involvement of main stakeholders during design and implementation • Weak project monitoring and risk management • Insufficient national and local capacity building to assure continuation of activities • Lack of exit strategy and future financing to sustain projects momentum

2.4. A review of Capacity Building Needs according to the SOI virtual workshop themes and K-M GBF Action Targets

This section highlights identified capacity building needs for the marine and coastal environment according to the main themes to be discussed at the SOI virtual workshop (e.g. spatial management, pollution, climate change, marine resource/species use). Although there will be similar needs across the themes it is also likely that specific needs will be required to build capacity for particular Action Targets to contribute to overall GBF implementation and success. The following sections are organised by the main themes to be discussed at the virtual workshop with sub-sections for particular topics within each theme. The GBF action targets that are most relevant to the workshop themes and individual topics are also listed for each section and sub-section respectively.

2.4.1. Spatial Planning, Restoration, Protection and Conservation of Ecosystems and Species

K-M GBF Action Targets: T1, T2, T3, T4

Marine Spatial Planning (T1)

Institutional capacity building is one aspect of capacity development required for marine spatial planning (MSP), along with individual and societal capacity development¹³⁶. The use of MSP has grown

¹³⁶ UNESCO-IOC 2021. MSPglobal Policy Brief: Capacity Development in Marine Spatial Planning. Paris, UNESCO. (IOC Policy Brief No. 4)

markedly over the last decade and is widely accepted as a practical approach for sustainable ocean management. Institutional capacity was identified as a key enabling (or disabling) condition for effective MSP¹³⁷. For MSP, institutional capacity describes the ability of an entity to develop a plan, their previous experience with plan recipients and the institution's capacity for continued implementation, monitoring and enforcement, evaluation, and adaptation of the plan¹³⁸. The need for integrative capacity is also regarded as a key component of successful MSP and ecosystem-based management¹³⁹, which should also apply to catchments for coastal waters. Effective integration can reduce duplication in the policy process, promote innovation and increase horizontal and vertical consistency¹⁴⁰. However, integration can be difficult and slow to accomplish, particularly if there is pre-existing inter-agency conflict that reduces collaboration with other agencies¹⁴¹. For coastal and inshore waters these agencies should include those concerned with land management / agriculture, pollution, fisheries, energy, protected areas and climate change. Similarly, for offshore waters the agencies should be those concerned with the previously mentioned sectors, with the exception of land management, but also commercial shipping and deep sea mining. Ensuring adequate capacity within agencies is also a key component for building integrative capacity. For SIDS and LDCs, capacity at the local level within government and IPLCs / communities is also critical.

As well as institutional capacity, there is a need to build the technical capacity of groups and communities at the local level including indigenous peoples and local communities (IPLCs), particularly in SIDS and LDCs, but not exclusively. For example, a technical assessment for MSP in Canada identified a range of technical capacity needs for indigenous governments, groups and communities¹⁴². These included the capacity to:

- Manage, analyse and communicate data, especially to assess impacts on traditional territories;
- Train and employ local guardians / stewards on a full-time basis to enforce MSP rules
- Use MSP tools such as GIS, databases and data storage,
- Manage MSP programs and information including logistical support / equipment for monitoring and enforcement e.g. AIS¹⁴³ for vessels and AIS shore-based infrastructure
- Develop protocols / policies for indigenous knowledge and data sharing
- Analyse risk and develop technical proposals
- Conduct education and outreach activities, especially for youth internship opportunities and mentorships

Critical for the above is funding stability to offer employment security at the local level. These needs listed are also highly relevant to IPLCs and local organisations in many SIDS and LDCs.

¹³⁷ Zuercher R. et al. 2022. Enabling Conditions for Effective Marine Spatial Planning. *Mar. Pol.* 143: 105141.

¹³⁸ Ibid

¹³⁹ Vince, J. and Day, J.C. 2019. Effective Integration and Integrative Capacity in Marine Spatial Planning. MARE Conference, Amsterdam, 24-28 June 2019.

¹⁴⁰ Stead, D and Meijers, E. 2009. Spatial planning and policy integration: Concepts, facilitators and inhibitors. *Planning Theory and Practice* 10: 317-332.

¹⁴¹ Vince, J. and Day, J.C. 2019. Effective Integration and Integrative Capacity in Marine Spatial Planning. MARE Conference, Amsterdam, 24-28 June 2019.

¹⁴² National Indigenous Fisheries Institute. 2019. Marine Spatial Planning Technical Assessment Report. National Indigenous Fisheries Institute, Nova Scotia, Canada. 22 pp.

¹⁴³ Automated identification systems

Marine and Coastal Ecosystem Restoration (T2)

The capacity needs assessment to inform the United Nations Decade on Ecosystem Restoration¹⁴⁴ can be used to highlight the main needs required to support the restoration of marine and coastal ecosystems in SIDS and coastal LDCs. Although the assessment mainly obtained responses from practitioners concerned with terrestrial ecosystems, many of the gaps identified are relevant to the marine and coastal environment, which are summarized below (Table 5). The capacity gaps for the five stakeholder groups¹⁴⁵ assessed in the survey have been combined to highlight the main capacity needs across multiple scales (local to regional) and sectors. The summary indicates that capacity needs and gaps to ensure Target 2 is met for marine and coastal ecosystems by 2030 are extensive and include finance, stakeholder engagement, ecosystem assessment, restoration planning and implementation, decision support tools, investment and organizational capacity.

Table 5. Capacity Gaps identified for stakeholder groups involved in ecosystems restoration that are relevant to marine and coastal ecosystems (adapted from FAO / UNEP 2021)

Restoration Phase	Capacity Gaps
Mobilising Finance for Restoration from:	• Non-traditional or innovative funding • Climate financing instruments • Development banks and international agencies • Environmental funds • Private Sector • National budgets and resources • Non-governmental funding e.g. community-based institutions, income from restoration products or services, non-profit organisations • Local or regional banks • Research grants
Engaging sectors / actors in restoration planning and implementation	• Finance • Marine / Fisheries • Cooperatives, SMEs¹⁴⁶ and the private sector • Primary and Secondary education • International development partners, regional organisations, networks and initiatives • Indigenous groups, women's and youth organisations • Local and subnational NGOs and CBOs • Small-scale producers (fisheries and aquaculture)
Assess and map ecosystem degradation	• The extent and scale of ecosystem degradation
Establish a restoration plan	• Develop a financing plan • Assess the costs and benefits of interventions • Establish / align with national / subnational restoration targets • Identify and formulate alternatives for generating livelihoods for local communities • Align community-based plans with subnational / national ones

¹⁴⁴ FAO/UNEP. 2021. Global Capacity Needs Assessment: Key gaps and capacity priorities for restoration to support the United Nations Decade on Ecosystem Restoration 2021-2030.

<https://www.fao.org/3/cb8019en/cb8019en.pdf>

¹⁴⁵ See Section 2.2, page 18

¹⁴⁶ Small and medium enterprises

Support restoration implementation	• Procure quality resources (e.g. corals, mangrove or seagrass seedlings, tools) in appropriate quantities • Develop capacities, transfer technologies and share knowledge and good practices for all stages • Engage in and facilitate multi-stakeholder platforms and networks • Develop supply chains, markets and value chains for restoration (where applicable) • Mediate conflicts among stakeholder groups • Financial management for local- / community-based restoration activities
Monitor restoration	• Map geographic boundaries of interventions • Establish a baseline for monitoring restoration • Develop monitoring and evaluation systems to track restoration progress including appropriate indicators for specific contexts and ecosystems • Involve local communities / stakeholders in the M&E of restoration activities
Developing national-scale policies and legal frameworks that:	• Provide equitable access to markets for local communities • Strengthen traditional and formal rules and regulations governing ownership, resource tenure and use rights • Empower communities to set-up by-laws governing access to, and use of, coastal land / inshore waters and natural resources at the community level • Support SMEs engaged in ecosystem restoration • Provide effective incentives for local communities and stakeholders engaged in restoration activities • Are based on science or evidence, including traditional knowledge • Respect cultural, religious, spiritual, aesthetic and recreational values associated with ecosystems • Are gender responsive • Include youth, indigenous peoples, ethnic minorities, and poor and marginalized groups • Respect the rights of indigenous peoples and local communities with regard to their traditional knowledge, lands, water, resources and territories
Implementing (subnational and local) restoration actions that:	• Provide equitable access to markets for local communities • Strengthen traditional and formal rules and regulations governing ownership, resource tenure and use rights • Empower communities to set-up by-laws governing access to, and use of, coastal land / inshore waters and natural resources at the community level • Provide effective incentives for local communities and stakeholders engaged in restoration activities • Ensure women have an equal voice in decision making • Can adapt to rapid political and economic change
The costs and benefits of ecosystem degradation and restoration	• Develop economic models that quantify expected long-term benefits of ecosystem restoration, including the supply of both public and private goods • Quantify both biophysical and social costs and benefits
Decision support tools, models and guidelines for restoration	• Bankable business plans and models based on sustainable production from restored ecosystems • Equitable cost- and benefit-sharing models of ecosystem restoration • Predictive spatial models based on social and / or environmental data for optimization • Platforms and applications for catalyzing large-scale ecosystem restoration • Information technology tools to support evidence-based decision making
Innovative financing tools	• Innovative financing solutions to catalyse ecosystem restoration • Access to funding support for communities, marginalized groups and local groups engaged in restoration

	• Risk-sharing mechanisms
Managing investment risks	• Risk mitigation measures to secure investments • Understanding of differences in economic and financial requirements for different types of funding instruments and market players • Investment readiness of restoration projects • Whether restoration projects meet investors' needs • Bankable business plans and models for ecosystem restoration projects • Environmental and social impact criteria for investment selection
Sustainable financing for restoration	• Capacity to make long-term funding commitments • Capacity to structure long-term funding mechanisms • Inclusive sustainable commodity value chains based on restoration activities • Links between restoration investments and commercially viable and environmentally sustainable income-generating activities
Partnerships	• Matchmaking platforms to learn about subnational / national restoration initiatives in need of financial support • Partnerships among key stakeholders / investors to boost financing community-based restoration • Negotiations with decision makers to provide economic incentives for ecosystem restoration
Organisational capacity	• Local producer organisations and cooperatives involved in ecosystem restoration • Community events to support, celebrate and recognize participation in restoration activities • Cultivating local leaders and champions • Restoration training programmes for different community groups • Inclusive and sustainable value chains to sustain restoration initiatives • Documenting indigenous / traditional restoration practices and supporting their use

For SIDS and coastal LDCs the main marine and coastal ecosystems where restoration is required are mangrove forests, estuaries, coral reefs and seagrass beds. In the case of coral reef ecosystems, there has been clear recognition in the scientific literature of a need for resilience and climate-focused restoration techniques¹⁴⁷. However, there is a critical gap in implementation for this type of approach, partly because coral reef restoration is a relatively recent phenomenon, with best practices emerging in the last few years¹⁴⁸. For many practitioners it is likely not clear how restoration should be conducted to promote coral reef resilience although guidance is currently being developed to incorporate resilience principles and climate considerations into coral reef restoration practice¹⁴⁹. One of the recommendations in this guidance is to consider the broader socio-ecological context in terms of the ecological connections between ecosystems and social connections to human populations. For example, restoring mangroves adjacent to coral reefs may benefit coral reef restoration efforts by

¹⁴⁷ Shaver, E., McLeod, E., Hein, M.Y., et al. 2022. A roadmap to integrating resilience into the practice of coral reef restoration. *Global Change Biology* 28: 4751-4764.

¹⁴⁸ Quigley, K.M., Hein, M. and Suggett, D.J. 2022. Translating the 10 golden rules of reforestation for coral reef restoration. *Conservation Biology* 36: e13890. <https://doi.org/10.1111/cobi.13890>

¹⁴⁹ Shaver, E., McLeod, E., Hein, M.Y., et al. 2022. A roadmap to integrating resilience into the practice of coral reef restoration. *Global Change Biology* 28: 4751-476

improving water quality¹⁵⁰ while restoring terrestrial forests and riparian vegetation may reduce downstream sediment flow onto coral reefs, and subsequently support better survival of out-planted corals¹⁵¹. Consideration of the socio-ecological context can help to strengthen social adaptive capacity and resilience leading to better compliance with management and restoration actions¹⁵².

Marine Protected Areas and Other Effective Area-based Conservation Measures (T3)

Although there is considerable information both in terms of scientific data and capacity building efforts for monitoring and management of marine and coastal biodiversity in inshore waters, extensive gaps in knowledge and capacity still exist at multiple levels. The use of marine protected areas (MPAs) is a key tool for the conservation and sustainable management of marine biodiversity and biological resources. It is becoming clear that effective biodiversity conservation is not simply a function of environmental or MPA features but is also heavily dependent on available capacity. A comprehensive study of MPA management found that many MPAs failed to meet thresholds for effective and equitable management processes, with widespread shortfalls in staff and financial resources¹⁵³. Staff and budget capacity were the strongest predictors of conservation impact. MPAs that have adequate staff capacity had ecological effects that were 2.9 times greater than MPAs with inadequate capacity. A widespread shortfall in staff capacity for MPAs was also documented at the global level¹⁵⁴.

Management or co-management of marine areas by local communities plays an important role for marine biodiversity conservation and sustainable resource use. An assessment of the status, needs and opportunities of local compliance and community-supported enforcement (LCCE) in four countries of the Coral Triangle region in relation to the management of coral reef fisheries and MPAs was conducted as part of the Coral Triangle Initiative (CTI)¹⁵⁵. The main capacity needs and gaps for LCCE were perceived to be concerned with engaging and supporting community-supported enforcement efforts including a lack of training programs for enforcement and communication/engagement with audiences regarding resource regulations and a lack of skills in fisheries investigatory and evidentiary procedures. Development and maintenance of partnerships between community organisations and local government was a key issue. Capacity needs differed at the national level and were also specific to different actors such as local communities or local government units. Other perceived gaps were a lack of policy to support LCCE, community-based resource management or co-management, low organisational or institutional capacity within

¹⁵⁰ Guannel, G., Arkema, K., Ruggiero, P and Verutes, G. 2016. The power of three: Coral reefs, seagrasses and mangroves protect coastal regions and increase their resilience. PLoS ONE 11(7): e0158094.

¹⁵¹ Carlson, R.R., Foo, S.A. and Asner, G.P. 2019. Land use impacts on coral reef health: A ridge-to-reef perspective. Frontiers in Marine Science 6: 562.

¹⁵² McLeod, E. et al. 2012. Integrating climate and ocean change vulnerability into conservation planning. Coastal Management 40(6): 651-672.

¹⁵³ Gill, D. et al. 2017. Capacity shortfalls hinder the performance of marine protected areas globally. Nature 543: 665-671. doi:10.1038/nature21708.

¹⁵⁴ Ibid

¹⁵⁵ Pomeroy, R. et al. 2015. Status and Priority Capacity Needs for Local Compliance and Community-Supported Enforcement of Marine Resource Rules and Regulations in the Coral Triangle Region, Coastal Management, 43:3, 301-328, DOI: [10.1080/08920753.2015.1030330](https://doi.org/10.1080/08920753.2015.1030330)

government or CBM practitioners and a limited resources for staff, equipment, and supplies linked to budget constraints¹⁵⁶.

It was clear that as well as addressing gaps in knowledge, skills and abilities, there were a number of other barriers and capacity gaps that were thought to hinder compliance. These included sociocultural constraints on the enforcement system, a lack of effective partnerships, national and local policy issues that confuse or impair operations, insufficient resources to support enforcement activities, and corruption within the enforcement chain. Such barriers and constraints must also be addressed when planning and implementing capacity-building programs.

Local capacity to conduct conservation projects for species or ecosystems was identified as a key constraint by conservation practitioners in South Africa and Kenya¹⁵⁷. There is a major challenge to find and retain skilled and experienced staff with many young people drawn to higher incomes and more attractive benefits offered by the private sector. This leaves a small pool of suitably skilled and committed people available to fill positions requiring a high level of skills but offering a relatively low income¹⁵⁸. This situation is common in many developing countries. Limited training opportunities were available to small organisations, which had little time or funds to invest in training and development.

Barriers to island conservation in the Western Indian Ocean were also identified by interviewing ecosystem management and conservation practitioners in the region¹⁵⁹. The study recorded 33 barriers to effective management, with the most frequently associated cause was limited staff capacity (23.5%). Limited capacity was also the cause of several barriers described by practitioners. The study identified particular staff skills that were lacking for the conservation and management of island ecosystems at the national, organisation and project level. At the national level there was a lack of skills to: i. coordinate national efforts and develop a national research strategy; ii. critically review projects and their scientific rigor; and iii. implement scientifically sound conservation and management of island ecosystems. At the organisation and project levels, skills lacking were: iv. leadership and management; v. data management and analysis; and vi. the ability to define research and monitoring activities that effectively inform management. The lack of these skills was attributed to in-country tertiary education standards, a lack of internal training opportunities and skill development through skill exchange and/or mentorships¹⁶⁰. The study also identified a number of solutions to address the capacity-driven barriers including establishing new roles or bridging positions within organisations, changes to the education system to include modules on conservation and management and developing a stronger research culture within government. Although the study was focussed on the WIO region and mainly on two SIDS, the authors suggested that the barriers identified are likely to be applicable to SIDS globally.

2.4.2. Sustainable use, management, trade of wild species, fisheries and aquaculture

K-M GBF Action Targets: T5, T9 and T10

¹⁵⁶ Ibid

¹⁵⁷ Sanders, M.J. et al. 2019. Conservation conversations: a typology of barriers to conservation success. *Oryx* (2021) 55 (2): 245-254.

¹⁵⁸ Ibid

¹⁵⁹ Burt, A.J., Nuno, A. and Bunbury, N. 2022. Defining and bridging the barriers to more effective conservation of island ecosystems: a practitioners' perspective. *Conservation Science and Practice* 4(1), e587.

¹⁶⁰ Ibid

To meet targets 5 and 10 of the K-M GBF capacity development for fisheries and aquaculture needs to respect an overarching principle of sustainable use which through its activities does not have a negative effect on the marine and coastal environment. With this in mind the harvesting or production of marine resources through fishing (or gleaning) or aquaculture should follow an ecosystem-based approach such as the Ecosystem Approach to Fisheries (EAF)¹⁶¹ and the Ecosystem Approach to Aquaculture (EAA)¹⁶². This applies to both large-scale and small-scale fisheries operating in inshore or offshore waters within EEZs. In addition, it is important, particularly for SIDS and coastal LDCs, to follow the 'Voluntary Guidelines for Securing Sustainable Small-scale Fisheries in the context of Food Security and Poverty Eradication' (SSF Guidelines)¹⁶³. A large part of capacity building for fisheries and aquaculture will be concerned with ensuring that the aforementioned approaches and guidelines can be effectively followed to ensure the relevant 2030 targets and the overall 2050 vision of the K-M GBF can be achieved, working in close partnerships with fisheries authorities, the private sector and coastal communities.

Marine and Coastal Fisheries and Aquaculture (T5, T9, T10)

A number of challenges for countries have been identified for marine and coastal fisheries to be sustainable and to ensure that they provide social and economic benefits¹⁶⁴ while also not impacting the environment. These challenges are divided into five categories: i. social and economic context; ii. ecological and environmental context; iii. capacity for managing fisheries; iv. illegal, unreported and unregulated (IUU) fishing; and, v. management systems (Table 6). The key challenges applicable to developing countries including SIDS and LDCs are highlighted in **bold**. As mentioned in section 2.3, the main capacity building needs consist of better governance, enforcement (Monitoring, Control and Surveillance - MCS) and monitoring of fisheries, particularly for small-scale fisheries.

The level of monitoring and management of marine and coastal areas outside of protected or locally-managed areas (i.e. generally more heavily fished areas) in SIDS and LDCs is currently less than required to effectively conserve marine biodiversity and ensure sustainable resource use. Many countries do not have the capacity to adequately monitor and manage small-scale fisheries. In some countries, there is no comprehensive reporting of inshore catches at the national level and few staff dedicated to enforcement of existing, often outdated, regulations. Building capacity at the institutional (e.g. fisheries authorities) and local level is strongly needed for assessment and management of marine resources. The analysis of information collected and reporting of results to decision-makers can also be an issue. A review of internal data management and reporting systems to ensure there is timely reporting of data and no loss of useful information should be included as part of institutional capacity-building.

¹⁶¹ FAO. 2003. Fisheries management. 2. The ecosystem approach to fisheries. FAO Fisheries Department; Fishery and Aquaculture Economics and Policy Division. FAO Technical Guidelines for Responsible Fisheries. Rome. 112 p.

¹⁶² FAO. 2010. Aquaculture development. 4. Ecosystem approach to aquaculture. FAO Technical Guidelines for Responsible Fisheries. No. 5, Suppl. 4. Rome. 53 p.

¹⁶³ FAO. 2015. Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication. Rome. 35 p.

¹⁶⁴ Cochrane, K.L. 2021. Reconciling sustainability, economic efficiency and equity in marine fisheries: Has there been progress in the last 20 years? *Fish. Fish.* 2021; 22:298-323.

Table 6. Summary of the major challenges facing countries in efforts to ensure sustainable marine and coastal fisheries and the social and economic benefits from them (adapted from Cochrane 2021).

Category	Types of Challenge	Region and / or types of fisheries where there is a particular problem
Social and economic context	High levels of poverty, unemployment and / or food security	Mainly small-scale fisheries but not exclusively in developing regions
	Population growth	Particularly Africa and Asia
	Globalisation of Trade	All
	Marginalisation of fishers	Small-scale fishers, particularly but not exclusively in developing regions
	Growing competition with other sectors under blue economy initiatives	All
	Threats to maritime security	SE Asia, especially the South China Sea, off the east coast of Africa and West Africa ^{165 166}
	Political Will	Dependent on factors such as prevalence of poverty, availability of alternatives, political stability, levels of corruption in individual countries and overall governance effectiveness
Ecological and environmental context	Over-exploited resources	Affects all but progress to reverse this trend has been made in some countries, particularly developed ones and also in large-scale commercial fisheries
	Climate change	All
	Degradation of habitat and water quality from anthropogenic impacts	All, but particularly poorer developing countries lacking capacity to manage coastal development and pollution effectively
Capacity for managing fisheries	Weak governance structures	Particularly developing countries and for smaller and less economically valuable fisheries
	Lack of sufficient capacity for: i. Monitoring catch, fishing effort, by-catch etc., and research ii. Analysing available data iii. Enforcement (MCS¹⁶⁷)	Particularly developing countries

¹⁶⁵ Pomeroy et al. 2016. Improving marine fisheries management in Southeast Asia: Results of a regional fisheries stakeholder analysis. Marine Policy 65: 20-29

¹⁶⁶ Simcock, A. and Kamara, O.K. 2016. Chapter 17, Shipping. In: The First Global Integrated Marine Assessment. World Ocean Assessment.

<https://www.unenvironment.org/resources/report/first-global-integrated-marine-assessment-world-ocean-assessment-i>

¹⁶⁷ Monitoring, Control and Surveillance

Illegal, Unreported and Unregulated (IUU) fishing	Extent varies but generally a serious concern, including both illegal and unregulated aspects	All but particularly developing countries with limited governance capacity (and in ABNJ)
	Outdated legal frameworks	South East Asia highlighted but likely to apply to some countries in other regions
	Corruption	South East Asia highlighted but likely to apply to some countries in other regions
	Attitude of tolerance to IUU fishing	Likely most prevalent in countries and fisheries with limited enforcement capacity, weak governance effectiveness and experiencing high levels of poverty and food (in)security
	Insufficient human and financial capacity for MCS	Developing countries in general and most marked in those with lower HDI¹⁶⁸
	Inadequate port infrastructure and handling facilities for landed catch	Developing countries in general and most marked in those with lower HDIs
Management systems	Open access and inappropriate rights-based fisheries	Likely most prevalent in countries and fisheries with limited management capacity and experiencing high levels of poverty and food (in)security
	Overcapacity (vessels and /or fishers)	Particularly some developing countries
	Favouring short-term social and economic objectives at the expense of long-term sustainability	Most prevalent in countries and fisheries with limited management capacity and experiencing high levels of poverty and food (in)security but not limited to them e.g. still considered an issue in Europe
	Weak MCS systems	Developing countries in general and most marked in those with lower HDIs
	Lack of stakeholder involvement and co-management	Varies – linked to general management capacity and effectiveness in a country
	Marginalisation of small-scale fishers	Particularly but not exclusively in developing regions

¹⁶⁸ Human Development Indices

A training manual published by the United Nations Conference on Trade and Development (UNCTAD) to assist LDCs and other vulnerable economies maximise the socioeconomic and environmental benefits of their fisheries and aquaculture sector¹⁶⁹ as part of the 2030 Agenda for Sustainable Development. This document identifies a range of constraints and challenges for the sector that should be addressed through capacity building to enable these benefits to be realised. The main challenges for LDCs regarding the fisheries and aquaculture sector include:

- Fisheries and aquaculture institutions are often weak and underfunded, with inadequate capacity and poor policy coordination, particularly in relation to shared stocks and water bodies;
- Inadequate infrastructure for landing, cold storage, value addition, transportation and distribution and air connectivity challenges;
- Poor and fragmented domestic and regional marketing systems, with informal and illegal trade, long customs clearance and delays at border-crossings.

Focusing on marine and coastal fisheries in LDCs the main challenges were concerned with stock assessment, data, and management¹⁷⁰. There are limitations in the availability of data and capacity for the assessment and monitoring of fishery resources. Data limitations tend to be more prominent in areas of high species diversity and small stocks as is the case for many small-scale fisheries. Data limitations were attributed to:

- Difficulty in monitoring and assessing fisheries in tropical areas of high biological diversity, dominated by multi-species and multi-fleet small-scale activities;
- Tendency of countries to allocate scientific, human and financial resources preferentially to large and economically important fisheries;
- Lack of financial support for the development and maintenance of national fisheries statistical systems;
- Weak fisheries management systems that lack mechanisms for monitoring, enforcement, and the reporting of management performance to stakeholders and the public at large.

Looking more closely at fisheries management the challenges included:

- Poor governance – conflicting objectives, lack of attention, will and authority;
- Lack of coordination between the many users of the marine space e.g. limited integration among the different approaches used by government agencies and in their partnership with development and environmental agencies and organisations.
- These approaches included different and sometimes conflicting priorities for:
 - Sector focused management
 - Safeguarding of human well-being
 - Biodiversity and ecosystem health
 - Postharvest and value chain
 - Wealth creation and investment

¹⁶⁹ UNCTAD 2020. Building Capacity in the Least Developed Countries to fully harness the potential of Fisheries and Aquaculture. Training Manual. United Nations Conference on Trade and Development. UNCTAD/ALDC/MISC/2020/4. 138 pp. Geneva. Switzerland.

¹⁷⁰ Ibid

With regards to fisheries and aquaculture value chains it has been shown that small-scale fishers and fish farmers receive the least economic benefits for their produce compared to middle agents, market sellers or processors further up the value chain¹⁷¹. There are often weaknesses in institutions, and of regulations and facilitation mechanisms in developing countries as well as access to a well-functioning market. Small-scale fishers and fish farmers require support to help them obtain more and equitable value for their products. This could be in the form of training, technical assistance, research and infrastructure upgrade to improve market penetration, value addition and more equitable distribution of benefits. Training areas include value chain dynamics for the small-scale sector, international market requirements and certification, good hygiene practice and reduced post-harvest losses^{172 173}.

A major issue in many SIDS and LDCs is Illegal, Unreported and Unregulated (IUU) fishing. IUU fishing has significant economic, social and environmental impacts¹⁷⁴ and represents severe threats to global fisheries, particularly for fisheries of developing countries lacking the capacity and resources for effective MCS of their EEZ¹⁷⁵. IUU fishing can also take advantage of corrupt administrations and exploit weak management regimes in developing countries. Small-scale fisheries in developing countries are particularly vulnerable where IUU fishing can threaten livelihoods, exacerbate poverty, and augment food insecurity. IUU fishing is undermining the ability of coastal countries to achieve the U.N. Sustainable Development Goals¹⁷⁶ and will also undermine the achievement of the K-M GBF if not adequately addressed. There is a clear need to understand the nature and level of direct and indirect impacts of IUU fishing, especially for the downstream effects on the environment and other parts of the direct and indirect economies of impacted States¹⁷⁷. It has been estimated that between 7.7 and 14 million metric tonnes of unreported catches is diverted to illicit trade systems globally with substantial socio-economic impacts (loss of jobs and income for local fishers), food and nutritional insecurity¹⁷⁸. In addition, unreported and illegal catches are not accounted for in fisheries management actions leading to poor advice, overfishing and potential impacts ecosystems and the services they provide.

To combat IUU fishing and illicit trade there has been a call for substantially improved transparency and accountability in the fisheries sector that needs to run from 'net to plate' with much better accounting of fisheries catches and landings and a whole-of-industry supply chain accountability¹⁷⁹. It

¹⁷¹ Bjørndal, T., Child, A. and Lem, A. 2014. Value chain dynamics and the small-scale sector: Policy recommendations for small-scale fisheries and aquaculture trade. FAO Fisheries and Aquaculture Technical Paper 581. 123 pp.

¹⁷² *ibid*

¹⁷³ UNCTAD 2020. Building Capacity in the Least Developed Countries to fully harness the potential of Fisheries and Aquaculture. Training Manual. United Nations Conference on Trade and Development. UNCTAD/ALDC/MISC/2020/4. 138 pp. Geneva. Switzerland.

¹⁷⁴ Temple, A.J. et al. 2022. Illegal, unregulated and unreported fishing impacts: A systematic review of evidence and proposed future agenda. *Marine Policy* 139: 105033.

¹⁷⁵ UNCTAD 2020. Building Capacity in the Least Developed Countries to fully harness the potential of Fisheries and Aquaculture. Training Manual. United Nations Conference on Trade and Development. UNCTAD/ALDC/MISC/2020/4. 138 pp. Geneva. Switzerland.

¹⁷⁶ Transnational Alliance to Combat Illicit Trade. 2019. Mapping the Impact of Illicit Trade on the Sustainable Development Goals.

¹⁷⁷ Temple, A.J. et al. 2022. Illegal, unregulated and unreported fishing impacts: A systematic review of evidence and proposed future agenda. *Marine Policy* 139: 105033

¹⁷⁸ Sumaila, U.R. et al. 2020. Illicit trade in marine fish catch and its effects on ecosystems and people worldwide. *Science Advances* 6: eaaz3801.

¹⁷⁹ *Ibid*.

will require considerable capacity building in SIDS and LDCs to achieve this, particularly addressing challenges such as MCS, catch reporting, governance and corruption (Table 6).

Aquaculture in SIDS and LDCs also has particular challenges in addition to those mentioned previously. Firstly, there is often insufficient capacity to develop / expand sustainable aquaculture in the public and private sector. In particular, the business environment is not attractive for private investment as it is considered a high-risk sector that requires proper investment promotion and facilitation policies as well as adequate support services such as insurance, credit, technical expertise etc.¹⁸⁰. There is also a lack of capacity to manage the export trade for seafood, for example, to comply with market entry measures set by importing countries or companies. Similarly, there is a lack of capacity to comply with (public and) private standards for seafood certification meaning that exporting countries cannot engage in higher value-added processing activities that yield greater prices¹⁸¹. Overall there is a need for investment in capacity building and infrastructure maintenance to address market entry, certification and standards issues for both marine fisheries and aquaculture in SIDS and LDCs. Capacity building is required to implement fisheries improvement projects based on internationally recognised best practices for fisheries and aquaculture management.

Trade of Wild Species (T5)

Globally, over 100 million plants and animals are traded every year¹⁸² with fish and fish products amongst the most highly traded food items¹⁸³. The demand for wildlife for food, products and pets drives a major global industry, with illegal wildlife trade alone worth US \$7-23 billion annually¹⁸⁴. The primary framework for regulating international wildlife trade is CITES¹⁸⁵, a multilateral agreement governing trade in species for which unrestricted trade may endanger or threaten the survival of the species in the wild. The exploitation of species to support wildlife trade is a known driver of extinction risk¹⁸⁶.

A report¹⁸⁷ reviewing the trade in commercially exploited CITES-listed marine taxa¹⁸⁸ identified a number of challenges in the assessment of CITES trade data. These were split into process and content challenges and are summarised below.

¹⁸⁰ UNCTAD 2020. Building Capacity in the Least Developed Countries to fully harness the potential of Fisheries and Aquaculture. Training Manual. United Nations Conference on Trade and Development. UNCTAD/ALDC/MISC/2020/4. 138 pp. Geneva. Switzerland.

¹⁸¹ UNCTAD 2018. Building the capacities of least developed countries to upgrade and diversify fish exports. A training manual. UNCTAD/ALDC/2018/2. 85 pp. Geneva. Switzerland.

¹⁸² Harfoot, M., Glaser, S.A.M., Tittensor, D.P. et al. 2018. Unveiling the patterns and trends in 40 years of global trade in CITES-listed wildlife. *Biological Conservation* 223: 47-57.

¹⁸³ Pavitt, A., Malsch, K., King, E. et al. 2021. CITES and the sea: Trade in commercially exploited CITES-listed marine species. *FAO Fisheries and Aquaculture Technical Paper No. 666*. Rome, FAO.

<https://doi.org/10.4060/cb2971en>

¹⁸⁴ Nelleman, C., Henrickson, R., Raxter, P. et al. 2014. The Environmental Crime Crisis – Threats to Sustainable Development from Illegal Exploitation and Trade in Wildlife and Forest Resources. A UNEP Rapid Response Assessment. UNEP and GRID-Arendal, Nairobi and Arendal.

¹⁸⁵ Convention on International Trade in Endangered Species of Wild Fauna and Flora: <https://cites.org/eng>

¹⁸⁶ Sheffers, B.R., Oliveira, B.F., Lamb, I. and Edwards, D.P. 2019. Global wildlife trade across the tree of life. *Science* 366: 71-76.

¹⁸⁷ Pavitt, A., Malsch, K., King, E. et al. 2021. CITES and the sea: Trade in commercially exploited CITES-listed marine species. *FAO Fisheries and Aquaculture Technical Paper No. 666*. Rome, FAO.

¹⁸⁸ Seven marine taxa: Corals, Queen conch, Giant Clam, Elasmobranchs, European Eel, Humphead wrasse and Seahorses.

Process challenges

- **Delays in CITES trade reporting:** meaning that analyses of the CITES Trade Database can be based on incomplete information or that countries cannot respond effectively or in a timely manner to changes in trade patterns
- **Lack of coordination across data holders:** There can be a disconnect between fisheries authorities and the government authorities responsible for CITES which can slow or hinder data flows for reporting on 'fish' species and trade. Increased information exchange between the main parties involved in the trade of CITES Appendix-II listed species would help to improve data collection, data accuracy and subsequent management, including enforcement for CITES-listed marine species.
- **Lack of understanding of reasons for reporting gaps or shortfalls:** an assessment across Parties is needed to better understand the technical and social nature of successes and additional challenges in reporting on CITES-listed marine species in trade.

Content Challenges

- **Errors in species identification:** occurs as trade is monitored along the fisheries value and supply chain which often involves people who are not always well trained in taxonomy, or do not have the suitable resources to complete species identification. This is even more of a challenge for processed fish commodities (e.g. dried, frozen, tinned or mixed with other ingredients) which can also be transported in multiple ways.
- **Missing records (spatial and temporal) for exports of CITES-listed species and commodities:** often linked to missing annual reports but also to gaps in fishery and customs records or the amalgamation of records at generic levels so that species data or trends cannot be monitored.
- **Missing records (spatial and temporal) for imports of CITES-listed species and commodities:** CITES Parties are not obligated to report their imports of Appendix II taxa while non-Parties to CITES are not required to submit annual reports to CITES. This means that there is a risk of trade being entirely unrecorded.
- **Incorrect, or alternative entry of measurement units:** Inconsistencies in reporting (e.g. not using CITES preferred units) can make interpreting trade trends challenging.

The FAO-CITES report makes a number of recommendations for the improvement of CITES trade data. One of the key recommendations is to enhance the capacity of CITES Parties for reporting through support and training relating to CITES implementation, species identification and reporting of trade in marine species. Support is also needed to improve coordination between agencies, and across institutions and organisations. Awareness of CITES has been shown to increase up the value and supply chain but was still limited across fisheries stakeholder groups¹⁸⁹. Providing further guidance to CITES parties to clarify reporting requirements and promote the reporting of imports was also suggested. Other recommendations covered how to fill data gaps for trade, improving the timeliness of trade reporting and actions to enable more accurate tracking of listed commodities across value and supply chains¹⁹⁰.

¹⁸⁹ Herath, H.L.N.S., et al. 2019. Understanding food security, incomes and livelihoods in a changing shark and ray fisheries sector in Sri Lanka. Fisheries and Aquaculture Circular No. 1185. Rome, FAO. <http://www.fao.org/3/ca5641en/CA5641EN.pdf>

¹⁹⁰ See FAO-CITES report (2021) for further detail on recommendations to improve CITES trade data for marine taxa

Marine Resources and the Blue Economy

It is important to recognise the socioeconomic value of living marine resources that are cultured, harvested and traded to society and their contribution to food security, livelihoods and the Sustainable Blue Economy. The latter has been defined as one which “restores, protects and maintains diverse, productive and resilient marine ecosystems; is based on clean technologies, renewable energy, and circular material flows, and provides social and economic benefits for current and future generations”¹⁹¹. Fisheries and aquaculture are important components of such a blue economy, especially in SIDS and coastal LDCs. There is growing interest in the potential of the blue economy to alleviate poverty in SIDS and LDCs^{192 193} and support a blue recovery from the COVID-19 pandemic¹⁹⁴. The blue or oceans economy is thought to represent a unique opportunity for coastal LDCs and SIDS with EEZs representing a much larger spatial area (over 10,000 fold) than their inland territory¹⁹⁵. A recent thematic review of the blue economy literature indicates that a business-as-usual approach for development (blue growth) for sectors such as industrial fisheries, large-scale aquaculture, land reclamation, mining and oil raises red flags for local communities and ecosystems. However, if managed sustainably, small-scale fisheries, coastal aquaculture, seaweed farming and eco-tourism are the most likely to deliver benefits to communities¹⁹⁶. The study argues that putting coastal communities at the centre of a clear vision for an inclusive Sustainable Blue Economy and co-developing a shared and accessible language for communities, practitioners and policy-makers is essential for a more equitable ocean economy¹⁹⁷. Working in partnership with fisheries authorities, the private sector, local NGO’s and coastal communities to improve the capacity of these stakeholders to sustainably manage marine resources is a crucial part of delivering the K-M GBF for marine and coastal ecosystems. In particular, fishing and the fisheries community are important partners in biodiversity-positive actions to achieve the framework. The private sector can also play an important role in the development and improvement of small-scale fisheries and aquaculture in SIDS and LDCs. One example where such fisheries- or aquaculture-based interventions are being implemented is the blended finance approach of the Global Fund for Coral Reefs¹⁹⁸.

2.4.3. Invasive Alien (Aquatic) Species, Pollution, and Climate Change

K-M GBF Action Targets: T6, T7 and T8

¹⁹¹ WWF. 2018. Sustainable Blue Economy Finance Principles. Geneva: WWF International, Gland, Switzerland.

¹⁹² World Bank and UN Department of Economic and Social Affairs. 2017. The Potential of the Blue Economy: Increasing Long-term Benefits of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries. World Bank. Washington DC. 50 p.

¹⁹³ Evans, L.S., Buchan, P.M., Fortnam, M., Honig, M., and Heaps, L. 2023. Putting coastal communities at the center of a sustainable blue economy: A review of risks, opportunities, and strategies. Front. Polit. Sci. 4:1032204

¹⁹⁴ OECD. 2021. COVID-19 Pandemic: Towards a Blue Recovery in Small Island Developing States. Paris: OECD Publishing.

¹⁹⁵ UNCTAD 2020. Building Capacity in the Least Developed Countries to fully harness the potential of Fisheries and Aquaculture. Training Manual. United Nations Conference on Trade and Development. UNCTAD/ALDC/MISC/2020/4. 138 pp. Geneva. Switzerland.

¹⁹⁶ Evans, L.S., Buchan, P.M., Fortnam, M., Honig, M., and Heaps, L. 2023. Putting coastal communities at the center of a sustainable blue economy: A review of risks, opportunities, and strategies. Front. Polit. Sci. 4:1032204

¹⁹⁷ Ibid

¹⁹⁸ <https://globalfundcoralreefs.org/>

Invasive Alien / Aquatic Species (T6)

The introduction and establishment of invasive aquatic species (IAS) is considered to be one of the greatest threats to the world's freshwater, coastal and marine environments¹⁹⁹. IAS can cause negative impacts on ecosystems by competing with native organisms for limited resources and altering habitats, causing extinctions of native plants and animals and reducing biodiversity^{200 201 202}.

Global shipping is a key pathway for the transfer of IAS through two vectors: ballast water and hull biofouling, with the latter now thought to be the most common mechanism. With more than 50% of IAS likely transported by biofouling, the global impacts of biofouling species are thought to be significant but have been poorly documented making them difficult to quantify. Local small motorised vessels²⁰³ and the installation of offshore oil and gas structures may also be significant domestic vectors and sources for IAS transfer through biofouling.

The transfer of IAS via biofouling into SIDS is a particularly important issue due to the presence of high biodiversity hotspots within their coastal waters²⁰⁴. SIDS are vulnerable to IAS due to the high levels of shipping and fishing traffic and the importance of tourism and small-scale fisheries. IAS have the potential to significantly disrupt tourism markets by affecting the amenity of beaches or by incurring costs on the maintenance of marine tourism infrastructure. Many SIDS also have a strong cultural link to the local ecosystem and place a high intrinsic value on maintaining a pest-free status.

There is a need to identify baseline cases and current practices related to the use of hull coating maintenance and hull and propeller cleaning to better understand the risk of IAS. Development and promotion of national policies and best practice regarding IAS is required, particularly for SIDS and LDCs. The technical, financial and institutional capacities required for developing countries to establish robust programmes for the control and management of marine biofouling are challenging. Activities have been fragmented and under-funded at both the national and regional level. Demonstrating practical ways of overcoming barriers to implementation through improvement of legal, policy and institutional structures is also needed as well as creating and enabling an environment for technology development and transfer.

A major barrier to effectively addressing biofouling on the global scale has been a lack of institutional structure and process to bring together the diverse range of sectors and actors affected by biofouling. There has been an absence of support and lack of coordination and standardised approaches at the regional and global level. The root causes associated with these issues are summarised below:

- International and transboundary character of shipping, fishing and other relevant maritime industries;
- Lack of institutional structure and process to develop information exchange and coordinated action among the diverse sectors affecting and affected by biofouling;

¹⁹⁹ GEF-UNDP-IMO. 2018. GloFouling Partnerships. Project document. United Nations Development Programme and the International Maritime Organisation. London. 151 pp.

²⁰⁰ Rahel, F.J. 2002. Homogenization of freshwater faunas. *Annual Review of Ecological Systems* 33: 291-315

²⁰¹ Clavero, M. and Garcia-Berthou, E. 2005. Invasive species are a leading cause of animal extinctions. *Trends in Ecology and Evolution* 20: 110.

²⁰² Olden, J.D. et al. 2004. Ecological and evolutionary consequences of biotic homogenization. *Trends in Ecology and Evolution* 19: 18-24

²⁰³ Vessels less than 12 metres in length

²⁰⁴ GEF-UNDP-IMO. 2018. GloFouling Partnerships. Project document. United Nations Development Programme and the International Maritime Organisation. London. 151 pp.

- Broad lack of awareness regarding marine biofouling and IAS in general;
- Limitations in the efficacy of existing anti-fouling systems to prevent biofouling on vessels, including fishing and leisure craft;
- Insufficient or inadequate institutional, policy and legal arrangements at the national and / or regional level;
- Conflict between regulations e.g. requirement for in-water cleaning of a vessel versus prohibition of cleaning through water quality regulations (release of toxic residues from anti-fouling coatings);
- Poor and inconsistent regional cooperation;
- Insufficient financial resources allocated for biofouling;
- Lack of capacity and cost-effective tools to address biofouling issues for smaller boats and among local communities, particularly in SIDS and developing countries
- Lack of incentives for the private sector to develop innovative biofouling and remediation technologies.

The GloFouling Partnerships project²⁰⁵ launched by IMO / UNDP / GEF in 2018 is currently addressing the above issues for biofouling in 12 developing countries and seven maritime regions.

Once an IAS has invaded a new marine area or region there are a suite of capacity needs required to tackle the invasion. An example of this is the lionfish (*Pterois spp.*) invasion of the Caribbean region over the last few decades. Lionfish can have significant negative impacts on Caribbean coral reef communities including human health²⁰⁶. To respond to the risk from lionfish and other IAS to local biodiversity and economies of Caribbean countries multiple projects were implemented in the region, which were mainly designed to build capacity. One example, Mitigating the Threats of Invasive Alien Species in the insular Caribbean (MTIASIC) Project, consisted of five main initiatives:

- i. Increasing the national capacity to address potential risks posed to biodiversity of global significance from IAS;
- ii. Increasing regional cooperation to reduce potential IAS risks;
- iii. Strengthening access to data, establishment of best practice and public awareness;
- iv. Increasing capacity for the prevention of new IAS introductions, and;
- v. Increasing the capacity to respond, control and manage IAS impacting globally significant biodiversity.

Pilot projects to control and manage the spread of lionfish were implemented under the fifth initiative²⁰⁷.

In terms of funding IAS management approaches for marine invasions it is important to develop comprehensive strategies for securing resources including through partnerships²⁰⁸. There is also an issue of human resources. There was a major shift in staff allocation to marine resource management

²⁰⁵ [GloFouling Partnerships Project \(imo.org\)](https://www.imo.org/en/ourwork/anti-fouling/Pages/GloFouling-Partnerships-Project.aspx)

²⁰⁶ Morris, J.A. Jr. 2009. The Biology and Ecology of the Invasive Indo-Pacific Lionfish. Ph.D. Dissertation, North Carolina State University

²⁰⁷ Chin, D. and Buddo, D. 20XX. Mitigating the Threats of Invasive Alien Species in the Insular Caribbean Project: Lionfish Pilot Project. End of Project Technical Report. MTIASIC Project, UWI-NEPA. 75 pp.

²⁰⁸ Lozano, R.G. 2012. Resources, Partnerships and Sustainable Funding (Chapter 7). p. 78-83. In: Morris, J.A. Jr. (ed.) Invasive Lionfish: A Guide to Control and Management. Gulf and Caribbean Fisheries Institute Special Publication. Series Number 1, Marathon, Florida, USA. 113 pp.

during the lionfish invasion as individual staff devoted between 10 and 85% of their time to the issue across the Caribbean. There is a need for resource managers to address the demand for human resources by evaluating organisational needs and identifying new or existing skill sets²⁰⁹. Potential new roles are needed for a specific IAS problem including a general coordinator, outreach and education coordinator, and a research and monitoring coordinator. Training of personnel is also critical to maintain capacity such as through using a train-the-trainers approach.

Marine Pollution (T7)

Coastal and shelf waters adjacent to highly populated rural or urban areas are often subject to high levels of pollution, mainly originating from land-based sources including municipal, industrial and agricultural waste, wastewater and nutrient run-off, and from power generation, industry, vehicles, and others. The pollutants released from these sources largely affect the most productive areas of the marine environment, including estuaries and wetlands. This contributes not only to the decline of coastal ecosystems but has major repercussions on the economic goods and services that these provide to communities' dependent on coastal and marine resources. Pollution is also a great and growing threat to human health, and the largest environmental cause of disease globally²¹⁰. It undermines national trajectories of economic development and impedes the attainment of the SDGs²¹¹. Three major pollution streams that affect the marine and coastal environment are marine litter, nutrient and wastewater pollution. The effects of pollution are disproportionally concentrated in low-income countries in the Global South, small island nations, and indigenous populations in the far north²¹².

Better capacity to tackle marine pollution is required in developing countries, particularly for many SIDS and LDCs, where there are the combined challenges of rapid urbanisation, population growth, weak regulatory environments and the high cost of infrastructure needed to adequately treat or recycle waste²¹³. In particular, modern sewage treatment infrastructure is regarded as a priority. Monitoring of marine pollutants is often lacking or haphazard with a lack of in-country capacity and funds to analyse samples which can be costly. It is important to build professional (institutional) and scientific capacity at the national level to further develop monitoring programmes for marine pollutants and strengthen analytical capabilities in-country. The development of new and cost-effective in situ techniques to detect different types of pollutants (e.g. toxic chemicals, microplastics, pathogenic bacteria) should also be prioritised. Support for the research and application of robust technologies to control marine pollutants in SIDS and coastal LDCs can help to reduce pollution levels.

²⁰⁹ *ibid*

²¹⁰ Landrigan, P., Stegeman, J., Fleming, L., Allemand, D., Anderson, D. et al. 2020. Human Health and Ocean Pollution. *Annals of Global Health*, Ubiquity Press 86(1), pp.151. 10.5334/aogh.2831. hal-03054268.

²¹¹ United Nations. 2018. The Sustainable Development Goals report 2018.

²¹² Fleming, L.E., Maycock, B., White, M.P. et al. 2019. Fostering human health through ocean sustainability in the 21st century. *People and Nature*. <https://doi.org/10.1002/pan3.10038>

²¹³ Islam, M. and Tanaka, M. 2004. Impacts of pollution on coastal and marine ecosystems including coastal and marine fisheries and approach for management: A review and synthesis. *Marine Pollution Bulletin* 48(7-8): 624-649.

The ongoing development of a legally-binding global agreement on plastic pollution is extremely relevant for SIDS and LDCs, which face many challenges in dealing with this issue of plastic waste. The core needs of SIDS to address plastic pollution have been identified²¹⁴ as:

- Reduction of plastic waste washed ashore on coastlines and floating in territorial seas
- The collection and treatment of plastic waste needs to be upgraded, broadened and expanded
- Supply and deployment of economically viable solutions for waste collection and treatment
- Prioritisation of waste prevention
- Suitable and affordable waste management technologies need to be made available, including related capacities
- Implementation and enforcement of existing legislation, strategies, policies and regulations need to be strengthened, including related capacities
- Funding of, and investments into prevention and management of plastic waste
- Better monitoring and assessment of plastic pollution

Over the long-term, prevention and control of ocean pollution can be achieved by transition to a circular, more efficient, less wasteful economy and embracing the precepts of green chemistry²¹⁵. This is regarded as an essential requirement for the prevention of marine pollution and also the mitigation of global climate change²¹⁶. The development of the global agreement on plastic pollution will address the full lifecycle of plastic²¹⁷ but this circular approach should also be considered for other types of marine pollution, where feasible. As pollution is connected to multiple aspects of K-M GBF the control of marine pollution is a key aspect of delivering the framework for marine and coastal biodiversity and people in SIDS and LDCs.

Climate Change (T8)

Coastal adaptation to climate change is an urgent development priority, especially in developing countries where coastal regions are highly vulnerable to climate impacts²¹⁸. The high dependence of SIDS and coastal LDCs on biodiversity for sustenance, livelihoods and economies means that the loss or degradation of flora and fauna is more profoundly felt²¹⁹. In addition, the capacity and resources to address climate-related challenges are often limited. The international community has committed to support the urgent coastal adaptation needs of developing countries, especially LDCs and SIDS, through the UNFCCC. SIDS are globally recognised as having special status and eligibility for multilateral adaptation finance. However, total available funding is still below identified needs²²⁰. Developing countries also often lack the technical capacity, tools and robust institutional frameworks

²¹⁴ GIZ 2022. Small Island Developing States and plastic pollution. Challenges and opportunities of a global agreement on plastic pollution for SIDS. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. Eschborn, Germany. 39 pp.

²¹⁵ Vince, J. and Hardesty, B.D. 2017. Plastic pollution challenges in marine and coastal environments: from local to global governance. *Restoration Ecology* 25(1): 123-128

²¹⁶ Landrigan, P., Stegeman, J., Fleming, L., Allemand, D., Anderson, D. et al. 2020. Human Health and Ocean Pollution. *Annals of Global Health*, Ubiquity Press 86(1), pp.151. 10.5334/aogh.2831. hal-03054268.

²¹⁷ UNEP (United Nations Environment Programme) 2022. End plastic pollution: Towards an internationally legally binding instrument. UNEP/EA.5/Res.14

²¹⁸ Kuhl, L. et al. 2020. An analysis of UNFCCC-financed coastal adaptation projects: assessing patterns of project design and contributions to adaptive capacity. *World Development* 127: 104748.

²¹⁹ Cherian, A. 2007. Linkages between biodiversity conservation and global climate change in small island developing states (SIDS). *Nat. Resour. Forum* 31: 128-131.

²²⁰ UNEP. 2018. The Adaptation Gap Report 2018. Nairobi, Kenya: United Nations Environment Program.

to enable regular reporting for the implementation of the Paris Agreement of the UNFCCC. The Enhanced Transparency Framework (ETF) of the Paris Agreement was established to build mutual trust and confidence, allow comparability and ensure accountability among Parties to the UNFCCC. The Nordic Council of Ministers funded a project titled ‘Nordic Capacity-building to Support LDCs and SIDS for the Implementation of the Transparency Framework of the Paris Agreement’ between October 2019 and March 2020²²¹. The project firstly provided an overview of ongoing capacity-building efforts to support developing countries to set up monitoring, reporting and verification (MRV) and national transparency systems to implement the ETF of the PA. Secondly, gaps in this support were identified as well as capacity-building needs of developing countries. The main needs covered institutional arrangements, methodologies and data collection, management and procedures. Recommendations on how Nordic Countries could provide further support to build capacity for transparency were provided²²².

Technical assistance and capacity building are also regarded as crucial for SIDS to attract appropriate levels of green financing, to tackle the main bottlenecks that impede the absorption, or delay the implementation, of projects²²³. Assistance is required throughout the project cycle, from creation to implementation and disbursement. There is a need for greater transparency and better governance to ensure the effective and timely preparation and execution of projects.

Nature-based solutions (NbS)²²⁴ are highlighted under the Paris Agreement as one approach needed to combat climate change, both in terms of mitigation and adaptation. NbS is thought to provide cheaper solutions than standard (non-natural) solutions over the long-term, owing to the potential for responding to damages and the ensuing avoided costs²²⁵. This is particularly attractive to SIDS and LDCs which have limited financial resources and often rely on external finance to supplement domestic government revenues. It is thought that external finance will likely remain essential for implementing NbS in SIDS and LDCs²²⁶. However, there appears to be a low level of finance for NbS-like activities in SIDS and LDCs which is concerning²²⁷. This may be due to a lack of prioritisation for NbS approaches and limited technical capacity to integrate NbS into ongoing adaptation plans^{228 229}. Building technical, legal and financial capacity for SIDS in the Western Indian Ocean region has also been suggested

²²¹ Holm Olsen et al. 2020. Nordic Capacity-Building Support to LDCs and SIDS for the Implementation of the Transparency Framework of the Paris Agreement. Nordic Council of Ministers 2020. Copenhagen, Denmark.

²²² Ibid

²²³ OECD 2022. SIDS’ Access to Green Funds. Development Co-operation Directorate. DCD(2022)34.

²²⁴ Actions designed to “protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits” (IUCN, 2016)

²²⁵ Mulder, I., Blin, A., Adams, J., Hartmann, T., Carreira, D., Schauer, M., et al. 2021. State of finance for nature—Tripling investments in nature-based solutions by 2030. United Nations Environment Program, World Economic Forum, ELD, Vivid Economics. <https://www.unep.org/resources/statefinance-nature>

²²⁶ Atteridge, A., Bhatpuria, D., Macura, B., Barquet, K. and Green, J. 2022. Assessing finance for nature-based solutions to climate change. Stockholm Environment Institute. SEI Working Paper, November 2022. 17 pp.

²²⁷ Ibid

²²⁸ Swann, S., Blandford, L., Cheng, S., Cook, J., Miller, A., & Barr, R. 2021. Public international funding of nature-based solutions for adaptation: A landscape assessment [Working Paper]. World Resources Institute. https://files.wri.org/d8/s3fs-public/publicinternational-funding-nature-based-solutions-adaptation_0.pdf

²²⁹ Barquet, K., Leander, E., Green, J., Tukhanen, H., Omondi Odongo, V., Boyland, M. 2021. Spotlight on social equity, finance and scale: Promises and pitfalls of nature-based solutions [SEI Brief]. Stockholm Environment Institute. <https://www.sei.org/publications/spotlight-social-equity-financescale-promises-pitfalls-nature-based-solutions/>

recently to incorporate NbS into national planning and support Nationally Determined Contributions to the Paris Agreement²³⁰.

2.4.4. Financial Resources and Mobilisation, IPLC, Gender, and Ocean Observation

K-M GBF Action Targets: T19, T21, T22 and T23

Financial Resources and their Mobilisation (T19)

Achieving the goals and vision of the K-M GBF will require substantial levels of financial resources, with a considerable part of this needed for capacity building. As well as the capacity needs to meet Action Targets for areas such as marine spatial management and resource use, there is a need for countries such as SIDS and LDCs to have the capacity to manage and mobilise the finances required for the successful implementation of the framework. A recent study by UNDESA²³¹ has identified a number of challenges and key constraints for SIDS linked to the means of implementation (MOI) of the K-M GBF under designated MOI headings, summarised below (Table 7). Common needs and gaps that are mentioned here are the lack of human capacity for both technical and administrative roles to apply for grants and manage funds including understanding complex application processes. A lack of coordination within government or between government and multi-lateral partners was also highlighted. There is a need for regular training programmes for staff to understand fund-raising and management processes.

Table 7. Key Constraints identified by the UNDESA assessment in relation to the Means of Implementation of the K-M GBF for SIDS.

Financial Mechanisms and Resource Mobilisation	
Concessional Financing / Project – based Financing	Difficulty in meeting eligibility criteria for grants due to middle- or high-income country status Challenges in mobilizing the high levels of co-financing required by granting mechanisms The GEF System of Transparent Allocation of Resources (STAR) may not take into account that SIDS have difficulty accessing other funds i.e. LDCs may be able to attract other sources of funding which SIDS cannot. The GEF Biodiversity Focal Area Approach may not fund activities that are pertinent to SIDS biodiversity goals e.g. managing plastic waste pollution Lack of capacity for developing funding proposals making grant applications challenging for countries with low human resources and data capacities Growing complexities with funds’ approval systems which are not well understood Project management cost limitations in GEF projects do not take into account high costs in SIDS e.g. for transport, rent, consultants Low levels of private sector investment

²³⁰ Techera, E. JE. 2023. The intersection of marine and coastal conservation and nature-based solutions to climate change: Governance insights from Indian Ocean small island States. *Ocean and Coastal Management* 239: 106579

²³¹ United Nations Department of Economics and Social Affairs (UNDESA) 2022. Gaps, Challenges and Constraints in Means of Implementing Biodiversity Objectives in Small Island Developing States. 85 pp.

	Limited staff available to apply for concessional financing and manage project funds Project-based approaches are not creating the structural changes and capacities needed for biodiversity protection Regional projects may strengthen regional institutions but do not necessarily serve local level needs Growing restrictions in donor funding can make it difficult for SIDS to use funds where they are most needed for biodiversity Biodiversity research / field studies do not sufficiently share co-benefits with countries themselves Lack of coordination within government and among multi-lateral partners can restrict SIDS from optimising concessional funding
Resource Mobilisation Factors that affect SIDS' abilities to mobilize resources for biodiversity protection	High debt-to GDP ratio Shrinking GDP Effects of disasters / major shocks. Multiple disasters restrict recovery and mobilising post-crisis financing can be challenging Lack of biodiversity data available to justify financing protection / conservation activities Incoherence with other fiscal policy instruments e.g. incentives for agriculture, tourism development, fisheries subsidies Remoteness of SIDS Tax systems that do not collect for environmental purposes Inter-sectoral competition for funds - more lucrative sectors (e.g. tourism) benefit at the cost of biodiversity Small / limited private sector Lack of staff capacity to mobilise resources

IPLC and Gender as part of a Whole-of-Society Approach (T22, T23)

The UNDESA assessment²³² mentioned previously also highlighted a number of constraints that SIDS face in terms of the enabling conditions required to fully support the achievement of desired outcomes for biodiversity conservation. Although enabling conditions are context-specific the study identified types of constraints that were common to multiple SIDS. These are concerned with implementing Whole-of-Government, Whole-of-Society and Gender Equality Approaches (Table 8). For IPLC's a key requirement will be to have a high level of engagement to incorporate communities into marine and coastal management or support / maintain existing traditional management or co-management approaches. The retention and use of traditional knowledge for conservation and sustainable resource use is particularly important, which needs to be fully recognised by government and should be part of science-policy development processes.

With regard to gender, within many indigenous communities there are few opportunities for women to be properly engaged in local decision making processes and also existing conservation activities. Household and family responsibilities can limit the time available for women to engage in other

²³² United Nations Department of Economics and Social Affairs (UNDESA) 2022. Gaps, Challenges and Constraints in Means of Implementing Biodiversity Objectives in Small Island Developing States. 85 pp.

activities. There are also few employment opportunities available for women (and men) that involve biodiversity conservation at the local level. The opportunities available (e.g. jobs in fisheries or tourism) may not promote or support the sustainable use of marine and coastal resources and habitats. Traditional knowledge pertinent to women may also not be recorded and realised in meaningful ways (Table 8).

Table 8. Enabling Conditions – main constraints for implementing Whole-of-Government, Whole-of-Society and Gender Equality Approaches (adapted from UNDESA 2022).

Implementing a Whole-of-Government Approach	
	- Policy instruments that undercut biodiversity objectives - Lack of information and data that could be mainstreamed into other sectors - Piecemeal / uncoordinated approach when implementing biodiversity conservation activities - Political agenda and vested interests may not be conducive to conservation activities
Implementing a Whole-of-Society Approach (including Gender Equality)	
Civil Society	- Civil Society Organisations (CSOs) are small in size, lack resources / staff for complex activities / tasks - Smaller localised civil society actors unable to access donor or national level funding - Political differences and incoherence with national short-term priorities - Project-dependent engagement – often short-term, lack of ownership by CSOs as usually not lead partner - Managing workload and costs for CSOs engaging in biodiversity projects - Private sector interests have more influence than civil society interests
Indigenous Communities (Traditional Knowledge)	- Dilution of traditional systems – often regarded as irrelevant by broader society – lack of understanding / awareness - Loss of traditional skills and techniques - Lack of collection and dissemination of information on the use of traditional knowledge - Lack of integration of traditional knowledge into science-policy development processes - Lack of information on the nexus / potential between traditional knowledge and modern technology - The value of traditional knowledge for conservation / sustainable use is under estimated biodiversity valuations
Private Sector	- Size – often small in SIDS - Can be dominated by international companies (e.g. tourism, extractives, agriculture) that may not have similar commitment to long-term conservation - Lack of knowledge of national laws and regulations - Ability to influence national agenda with promise of growth and economic development - Pushback on regulations which increase costs or cause delays
Women / Gender	Lack of decision-making roles in community processes

	Household / family responsibilities limit time and capacity to engage in biodiversity conservation Lack of mediums through which to mobilise Low meaningful engagement in existing interventions Women's knowledge is not collated in meaningful ways Biodiversity conservation is not integrated into livelihood activities (e.g. working in the tourism of fisheries sector)
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Ocean Observation (T21)

The need for a functional ocean observing system at the national, regional and global level has been discussed in some detail in recent years. It has been argued that countries that support an ocean observing system will be able to better address societal needs, contribute to improved management of marine (and terrestrial) resources, and fulfil reporting obligations to international commitments²³³. However, few nations have the human capacity and access to technology to monitor their own Exclusive Economic Zones (EEZ)²³⁴. Capacity in ocean sciences, both human and technical, depend greatly on increased financial support²³⁵, but resources will only become available if there is the political will and the institutional engagement to recognise capacity development as a priority²³⁶. There is a common need to develop capacity for data analysis, mapping, modelling and interpretation that can be translated into useful and appropriate management practices²³⁷. Furthermore, it is thought crucial to develop capacity on all stages of the ocean observing process, from identifying requirements and designing systems through to the transformation of data into products and information. This includes not only the technical aspects of conducting ocean observations (from instrument deployment, servicing, maintenance to data collection using standard operating procedures), but also data management through quality assurance (QA), quality control (QC), analysis, reporting and modelling²³⁸. There is also therefore a need to identify the amount of training required and the mechanisms for delivery such as online courses, face-to-face sessions and the level of mentorship needed²³⁹. This applies to both national EEZs and ABNJs.

For the latter, there are substantial gaps in scientific knowledge of international waters which represents nearly two-thirds (64%) of the global ocean. These gaps impede informed decision-making, especially when addressing threats from human activities, and mean that the international community

²³³ Miloslavich et al. 2019. Challenges for global ocean observation: the need for increased human capacity, *Journal of Operational Oceanography*, 12: sup 2, S137-S156, DOI: 10.1080/1755876X.2018.1526463.

²³⁴ Isensee K., et al. 2017. Research capacity and infrastructure. In: L. Valdés et al., editor. *Global ocean science report - The current status of ocean science around the world*. Paris: UNESCO; p. 54–79.

²³⁵ Ibid

²³⁶ Miloslavich et al. 2019. Challenges for global ocean observation: the need for increased human capacity, *Journal of Operational Oceanography*, 12: sup 2, S137-S156, DOI: 10.1080/1755876X.2018.1526463

²³⁷ Ruwa R, et al. 2016. Capacity-building needs in relation to the status of species and habitats. Chapter 53. United Nations Division for Ocean Affairs and the Law of the Sea. http://www.un.org/depts/los/global_reporting/WOA_RPROC/Chapter_53.pdf

²³⁸ Miloslavich et al. 2019. Challenges for global ocean observation: the need for increased human capacity, *Journal of Operational Oceanography*, 12: sup 2, S137-S156, DOI: 10.1080/1755876X.2018.1526463.

²³⁹ Ibid

critically depends on science and technology in this regard²⁴⁰. However, inequity in scientific and technological capacity²⁴¹ prevents many nations from participating in, and benefitting from, scientific research and potential associated benefits within ABNJ^{242 243}. A lack of information also presents a critical challenge to designing, implementing and evaluating capacity building and technology transfer programs²⁴⁴. In fact, there is a dearth of information available for existing science capacity and capacity-building needs²⁴⁵. Although the most recent Global Ocean Science Report²⁴⁶ goes some way to address this issue, it still only represents the responses of 45 IOC Member States out of a total of 150. These countries were however responsible for 82% of ocean science publications between 2010-2018. International cooperation is required to improve the capacity of nations to satisfy local management requirements while still enabling the reporting to international agreements²⁴⁷. This is especially relevant for SIDS and LDCs with regard to marine and coastal biodiversity and reporting to the K-M GBF.

2.5. A review of Capacity Needs for marine issues across the K-M GBF including the capacity to implement and monitor the targets.

This section discusses capacity needs for marine issues across the K-M GBF particularly in relation to implementing and reporting on the GBF targets for the marine and coastal environment, the need to address both direct and indirect drivers of change for marine and coastal ecosystems, and the need for a rapid and integrated approach across the framework over the next decade to meet the 2050 goals.

Implementing and reporting on the K-M GBF Action Targets for the marine and coastal environment

In section 1.2, the K-M GBF Action Targets that can be considered most relevant to marine and coastal biodiversity were identified. The ability of Parties to implement and report on the targets will be crucial for the success of the new framework. However, it has been shown that there are extensive capacity needs for many countries, particularly SIDS and LDCs. In addition, the capacity needs of many of these countries have not been clearly identified for the marine and coastal environment, but are likely to be extensive. It is therefore difficult to identify which targets will require the greatest capacity-building efforts to ensure that they are achieved. Given the extensive capacity needs, both known or inferred, it would be prudent to assume that substantial capacity needs are required for all marine-related GBF targets. With that in mind, it is highly likely that the ten priority capacity needs recently

²⁴⁰ Rogers, A., Sumaila, U., Hussain, S., and Baulcomb, C. 2014. *The High Seas and Us: Understanding the Value of High Seas Ecosystems*. Oxford: Global Ocean Commission.

²⁴¹ IOC 2017. *Global Ocean Science Report: The Current Status of Ocean Science Around The World*. Paris: UNESCO.

²⁴² Salpin, C., Onwuasoanya, V., Bourrel, M., and Swaddling, A. 2016. Marine scientific research in Pacific Small Island Developing States. *Mar. Policy* 95, 363–371. doi: 10.1016/j.marpol.2016.07.019

²⁴³ Harden-Davies H and Snelgrove P. 2020. Science Collaboration for Capacity Building: Advancing Technology Transfer Through a Treaty for Biodiversity Beyond National Jurisdiction. *Front. Mar. Sci.* 7:40. doi: 10.3389/fmars.2020.00040

²⁴⁴ Ibid

²⁴⁵ Ibid

²⁴⁶ IOC-UNESCO. 2020. *Global Ocean Science Report 2020—Charting Capacity for Ocean Sustainability*. K. Isensee (ed.), Paris, UNESCO Publishing.

²⁴⁷ Canonico, G., et al. 2019. Global Observational Needs and Resources for Marine Biodiversity. *Front. Mar. Sci.* 6: 367. doi: 10.3389/fmars.2019.00367

identified by the UNEP-WCMC report will be required across the whole framework for marine and coastal matters with particular reference to the relevant Action Targets identified previously (Table 1). An assessment of human resources and institutional capacities in SIDS UN Member States revealed that there is only limited, if any, up-to-date information publicly available on human resources and research capacities for these countries²⁴⁸. This is also likely to be the case for the management and governance of marine areas or resources.

Implementing the Action Targets in many SIDS and LDCs will require capacity building within government institutions for a range of approaches to assess and manage marine and coastal ecosystems including marine spatial planning, MPA management, coastal and ocean governance, climate change mitigation and adaptation, land- and sea-based pollution affecting the marine and coastal environment and invasive species. Collaborative approaches to monitoring and management will also require expansion and support such as global or regional monitoring networks and co-management arrangements between combinations of partners such as government, NGOs, local communities, academia and the private sector.

Offshore waters²⁴⁹ both within nations' EEZ's and ABNJ are particularly in need of attention especially for SIDS and LDCs where information is scarce. Extensive capacity gaps occur for both EEZ's and ABNJ in regards to marine scientific research, equipment and infrastructure as well as ecosystem-based assessment and management²⁵⁰. Building long-lasting capacity will require investment in both human and institutional capacity including infrastructure, long-term funding as well as an enabling environment that prioritises work towards ocean protection, science and sustainable development²⁵¹. Increased capacity is required for offshore (and inshore) marine management and governance, not only in understanding management approaches but also in having the tools to implement them²⁵². Key capacity building and technology transfer requirements for this are²⁵³:

- Training and expertise in marine management and governance linked to the relevant science, including training in policy drivers as well as policy-relevant science and policy repercussions of science i.e. adapting or revising policy as new scientific information becomes available;
- Learning within and between nations and regions – knowledge and technology transfer – including increased capacity for transboundary cooperation;
- Learning across the range of different policies, including how policy was derived, especially for new practitioners, but also as continuing professional development for more experienced personnel

Information for inshore waters can also be very patchy both spatially and over time. Particular regions at the sub-national level may have adequate information to indicate progress for one or more Action

²⁴⁸ Zitoun, R. et al. 2020. Review of the Scientific and Institutional Capacity of Small Island Development States in support of a Bottom-up Approach to Achieve Sustainable Development Goal 14 Targets. *Oceans* 1: 109-132. doi:10.3390/oceans1030009

²⁴⁹ Waters beyond 12 nautical miles of the coast

²⁵⁰ United Nations. 2016. The First Global Integrated Marine Assessment. World Ocean Assessment I.

²⁵¹ Vierros, M.K. and Harden-Davies, H. 2020. Capacity building and technology transfer for improving governance of marine areas both beyond and within national jurisdiction. *Marine Policy* 122: 104158. <https://doi.org/10.1016/j.marpol.2020.104158>

²⁵² United Nations. 2021. The Second World Ocean Assessment. World Ocean Assessment II. Volume II. Chapter 27. Developments in management approaches.

²⁵³ Ibid

Target while other, often remote areas, can be very data-poor. Scaling up activities to achieve transformational change and meet the Action Targets will require a huge effort by all those involved and a corresponding level of financial support.

Assuming that systems are adequately in place to monitor and manage the marine and coastal environment so that indicators for the K-M GBF are recorded it is also vital that information is processed and reported in a timely manner. Dedicated and adequately trained staff to do this are often lacking both within national institutions and local NGOs. Focussed oversight by decision-makers to ensure the process is followed through from start to finish is also often needed. Reporting based on previous data or estimates can also occur when capacity is lacking to collect new information.

One approach that could facilitate a fit-for-purpose implementation and reporting system is to have a focal point within national government for coordination to tie the various reporting threads together from the different Ministries, offices or departments. This could be linked closely to the national economy so that the value of marine and coastal biodiversity and the services it provides are fully accounted for, with a view for incorporation into existing frameworks such as UN SEEA²⁵⁴.

With regard to indicators, an assessment of existing monitoring frameworks and information to support the monitoring of the K-M GBF goals and Action Targets with respect to marine and coastal biodiversity²⁵⁵ highlighted a number of clear gaps that cross all environmental domains:

- Extend measurements of extent of selected marine and coastal natural ecosystems to all regions;
- Update Red list assessments for marine and coastal species groups not currently included in Red list indices, especially under-represented invertebrate groups;
- Develop a species habitat index for marine and coastal areas based primarily on existing data and indicators;
- Improve monitoring of the effectiveness of MPAs from implementation of management measures to outcomes;
- Improve information on the management and control of invasive species;
- Improve in situ measurement of marine and coastal pollution;
- Include marine and coastal values in UN SEEA monitoring;
- Continue development of agreed systems to monitor reduction in harmful fishing subsidies.

One of the conclusions of the above assessment is that, globally, the extent of marine and coastal research, data and indicators is biased towards more developed countries and increased efforts will be required to support developing countries, including SIDS and LDCs, to provide such information to the K-M GBF monitoring and assessment process. A substantial part of these efforts will need to focus on capacity building based on the key needs identified in this report.

²⁵⁴ United Nations System of Environmental Economic Accounting: <https://seea.un.org/>

²⁵⁵ CBD/SBSTTA/24/INF/23: <https://www.cbd.int/doc/c/7c5f/f5df/309522f82c8b702b80733acf/sbstta-24-inf-23-en.pdf>

The need to address both direct and indirect drivers of change for marine and coastal ecosystems and for a rapid, integrated approach for framework implementation

One of the fundamental requirements to achieve the GBF for marine and coastal ecosystems is to address the direct and indirect drivers of marine biodiversity loss. Growing direct drivers include climate change, unsustainable food systems, increasing water and resource over-extraction, coastal land and sea conversion, pollution and human settlements. Indirect drivers include increasing per capita consumption of resources in many countries, inequality, unsustainable technologies, investment and trade patterns, and values and governance that do not promote care for nature²⁵⁶. No amount of conservation or restoration action may be effective in stopping biodiversity loss if the accelerating drivers of decline continue and intensify²⁵⁷ as has they have to date²⁵⁸.

The drivers of biodiversity loss are mainly tackled by GBF action targets 1-10, 14-16 and 18. An analysis of the contribution of targets 1-10 to act on direct drivers revealed that no single target contributes more than 10% - 15% to the achievement of any one 2030 biodiversity outcome for Goal A of the K-M GBF. This strongly supports the argument that the GBF needs to be addressed in an integrated way²⁵⁹ and that the goals and targets are treated as an indivisible whole²⁶⁰. Evidence from case studies suggests that multiple concerted actions are needed on both direct and indirect drivers to slow or reverse biodiversity loss²⁶¹.

There is also need for a rapid approach to implementation across the framework over the next decade to meet the 2030 / 2050 goals. There are substantial time lags between the impacts of drivers and the realization of their full impacts on biodiversity. For example, past and ongoing habitat loss and fragmentation contribute to the future erosion of population genetic diversity and species' extinctions²⁶². The lags can frequently span decades so it is important to implement action now to address drivers and shorten the duration of and lower the amount of loss of biodiversity and ecosystem processes over the coming decades²⁶³. Recovery from large-scale loss also involves time lags which can be years, decades and in some cases even longer. Active restoration of degraded ecosystems can speed up recovery and shorten time lags. Implementation of the K-M GBF needs to take into account these time lags through substantial and strategic investment of financial resources to address capacity needs across the framework.

²⁵⁶ Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. 2019. Global Assessment Report on Biodiversity and Ecosystem Services. 2019. Draft Chapter 2.2. IPBES Secretariat, Bonn, Germany

²⁵⁷ Obura, D.O., DeClerck, F., Verburg, P.H. Gupta, J., Abrams, J.F. Bai, X. et al. 2022. Achieving a nature- and people-positive future. One Earth. <https://doi.org/10.1016/j.oneear.2022.11.013>

²⁵⁸ Steffen, W., Broadgate, W., Deutsch, L., Gaffney, O., and Ludwig, C. 2015. The trajectory of the Anthropocene: the great acceleration. The Anthropocene Review 2: 81-98.

²⁵⁹ Diaz, S., Zafra-Calvo, N., Purvis, A. Verburg, P.H., Obura, D., Leadley, P. et al. 2020. Set ambitious goals for biodiversity and sustainability. Science 370: 411-413.

²⁶⁰ Leadley, P., Gonzalez, A., Obura, D., Krug, C.B., Londono-Murcia, M.C., Millette, K.L. et al. 2022. Achieving global biodiversity goals by 2050 requires urgent and integrated actions. One Earth. <https://doi.org/10.1016/j.oneear.2022.05.009>.

²⁶¹ Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. 2019. Global Assessment Report on Biodiversity and Ecosystem Services. 2019. Draft Chapter 2.2. IPBES Secretariat, Bonn, Germany

²⁶² Leadley, P., Gonzalez, A., Obura, D., Krug, C.B., Londono-Murcia, M.C., Millette, K.L. et al. 2022. Achieving global biodiversity goals by 2050 requires urgent and integrated actions. One Earth. <https://doi.org/10.1016/j.oneear.2022.05.009>.

²⁶³ Ibid

Investment in capacity to monitor the implementation of the GBF and the targets is a priority. Current capacity for biodiversity monitoring is unequally distributed globally, causing biases in the understanding of biodiversity change across taxa, ecosystems and biomes²⁶⁴. This is particularly applicable for SIDS and LDCs where there can be a lack of biodiversity monitoring both spatially and temporally. Investment in monitoring would develop local and national capacities to collect data, make it openly accessible and implement processes that can rapidly deliver information needed to track trends in GBF indicators, contributing to targets 20 and 21. It would also help to improve the equity in monitoring capacities and support action on drivers across all regions²⁶⁵. This capacity is regarded as essential to ensure responsibility and transparency during the implementation of the GBF²⁶⁶

2.6 A summary of Capacity Building needs and other relevant information provided in responses to the CBD notification as preparation for the SOI workshop

With regards to the call for information to support discussions of the Sustainable Ocean Initiative Workshop on Ocean-related Capacity-building Needs for the Kunming-Montreal Global Biodiversity Framework (Notification 2023-016), a total nine responses were received by the CBD Secretariat from both Parties and NGO's. A summary of the information provided can be found in Annex 3. Capacity needs for a range of topics were highlighted including for MPA management, deep sea research, monitoring and identification of marine and coastal biodiversity, data management and fisheries. A large number of information resources were also suggested that can contribute to discussions at the SOI workshop in June 2023 (listed in Annex 3).

3. Brief analysis of the main gaps in the implementation of capacity building programmes as well as areas for improved synergy to address the capacity building needs associated with the K-M GBF for marine and coastal biodiversity

This section provides a brief assessment of some key gaps in capacity building initiatives for the marine and coastal environment with a focus on SIDS and LDCs as well as highlighting areas of improved synergy to fill these gaps. In terms of developing synergies, this may be more effective if an organisation representing SIDS (and LDCs) is designated to lead on these initiatives for capacity building, such as the Association of Small Island States (AOSIS)²⁶⁷, the recently launched SIDS Coalition for Nature²⁶⁸ or the Global Islands Partnership (GLISPA)²⁶⁹.

The previous section has highlighted selected examples of capacity-building needs for marine and coastal ecosystems with a focus on SIDS and LDCs. These have covered a broad range of areas such as

²⁶⁴ Executive Secretary of the Convention on Biological Diversity. 2022. Expert input to the Post-2020 Global Biodiversity Framework: Transformative actions on all drivers of biodiversity loss are urgently required to achieve the global goals by 2050. CBD/WG2020/3/INF/11. CBD/SBSTTA/24/INF/31.

²⁶⁵ Leadley, P., Gonzalez, A., Obura, D., Krug, C.B., Londono-Murcia, M.C., Millette, K.L. et al. 2022. Achieving global biodiversity goals by 2050 requires urgent and integrated actions. One Earth. <https://doi.org/10.1016/j.oneear.2022.05.009>.

²⁶⁶ Xu, H., Cao, Y., Yu, D., Cao, M., He, Y., Gill, M., and Pereira, H.M. 2021. Ensuring effective implementation of the post-2020 global biodiversity targets. Nat. Ecol. Evol. 5: 411-418.

²⁶⁷ <https://www.aosis.org/>

²⁶⁸ <https://enb.iisd.org/launch-sids-coalition-nature-call-for-action>

²⁶⁹ <https://www.glispa.org/>

marine spatial planning, fisheries and aquaculture, marine protected areas, invasive aquatic species and ecosystem restoration. A clear capacity gap for SIDS is the ability to manage the more remote parts of island and atoll nations, which can be logistically difficult to visit and support. These remote areas are often also highly vulnerable to change with small populations in coastal communities who are highly reliant on marine ecosystems for their food and livelihoods. Although there are efforts to build capacity for community-based management²⁷⁰ or co-management approaches, these are still insufficient in many SIDS, and existing national networks can be patchy in nature in terms of management effectiveness. Greater capacity within local management networks at both the national and regional level is needed to assess the status of marine and coastal ecosystems, monitor resource use and maintain management systems. Partnerships with regional or international NGO's or national / regional academic institutions can be successful in maintaining assessment and management systems at the local level.

The capacity of SIDS and LDCs to monitor and manage offshore waters within national jurisdiction or exclusive economic zones (EEZs) is also a substantial gap. The process to describe Ecologically or Biologically Significant Marine Areas (EBSAs) facilitated by the CBD is one area that could be focussed on to build capacity for monitoring and management both offshore within EEZs and in the inshore/coastal zone. Building or strengthening synergies with regional frameworks such as LMEs and RSPs is a potential means to increase the capacity of SIDS and LDCs to better manage their offshore and inshore waters. For the latter, another area of improved synergy would be to encourage knowledge sharing and exchange between bottom-up community-based management approaches for marine and coastal ecosystems. Examples are initiatives implemented by regional organisations such as WIOMSA, PEMSEA, MFF and the LMMA Network, often in partnership with international conservation NGOs. Inshore areas outside of community-based management and under government jurisdiction would benefit from enhanced institutional capacity at the local and national government level. Linking more closely with MPA practitioners such as IUCN can also feed into capacity building for EBSA monitoring and management.

Stronger alignment of the CBD with the other biodiversity-related conventions (BRCs)²⁷¹ for the marine and coastal environment in terms of capacity-building using the Biodiversity Liaison Group would help to improve synergies with these MEAs. Synergies across the conventions can also be significantly improved through a more integrated and coordinated approach to capacity development activities²⁷². Also at a global scale, other areas of improved synergy for SIDS / LDCs could be to engage closely with the two UN Decades; for 'Ocean Science' and 'Ecosystem Restoration', and work with associated partners at the regional level e.g. with SPC and SPREP in the Western Pacific as well as IOC (Ocean Science) and FAO (Ecosystem Restoration). Both these UN Decades are finalising capacity-building

²⁷⁰ Community-based management is often based on maintaining or re-vitalising traditional management practices

²⁷¹ These include: Convention on International Trade in Endangered Species – CITES, Convention on the Conservation of Migratory Species of Wild Animals, Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, Stockholm Convention on Persistent Organic Pollutants, Rotterdam Convention on Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, Vienna Convention for the Protection of the Ozone Layer, and Montreal Protocol on Substances that Deplete the Ozone Layer

²⁷² Peña Moreno S. & Romero V. (2018) Capacity building and Synergies across the Biodiversity-related Conventions: Contributing to the design and subsequent implementation of a Long-term Strategic Framework for Capacity-building for Biodiversity beyond 2020. International Union for Conservation of Nature, 53pp

needs assessments at the time of writing. Stronger alignment with the implementation of the FAO's SSF Guidelines would help with capacity-building for small-scale fisheries management, working with regional nodes of FAO and with organisations such as the Worldfish Center.

Many SIDS and LDCs have an interest in the management of ABNJ in their particular region. Improving synergies with global processes and programs working in this area for capacity-building is also an option for the implementation of the K-M GBF. Examples are the BBNJ process²⁷³ and the GEF-FAO Common Oceans program which has a capacity-building component implemented by the Global Ocean Forum. Lastly, as two-thirds of all SIDS are in the Commonwealth, developing or strengthening synergies with the Commonwealth Secretariat regarding its Blue Charter is also worth exploring.

4. Summary of main capacity needs and gaps and potential approaches to achieve the K-M GBF in relation to marine and coastal biodiversity

This section provides a summary of the key needs and gaps for capacity building identified with regard to marine and coastal biodiversity with a focus on SIDS and LDCs, and suggests some potential approaches to support the achievement the action targets of the K-M GBF.

A Summary of the most pressing Capacity Building needs and enabling conditions to meet the GBF targets with respect to SIDS / LDCs and marine and coastal environments.

A review of the capacity building needs described in section 2 of this report indicates there are some key needs that are commonly mentioned for multiple aspects of efforts to conserve and sustainably manage marine and coastal biodiversity. These capacity building needs, with a focus on SIDS and LDCs, are summarised below:

- A lack of human capacity – staff for both technical and non-technical roles within government, academia / tertiary education, NGOs / CSOs and local communities / IPLCs. This is directly related to subsequent key capacity needs listed here. Lack of qualified / trained people and issues with staff retention (brain drain) are particular factors in SIDS and LDCs;
- Lack of institutional / organisational capacity which is also linked to a lack of coordination, integration and strategic planning for activities / interventions leading to fragmentation and poor implementation;
- A need for improved marine management through governance and enforcement (MCS), better planning, policy development and regulation. Strongly linked to both human and institutional capacity;
- Monitoring and evaluation to inform on ecosystem or species status but also for projects or interventions and their implementation / impact;
- Information (data) and knowledge of marine and coastal biodiversity, pressures and drivers, and the success / failure of interventions and best practice, including traditional knowledge. Data management, access and translation from science to policy is also critical;
- Stakeholder engagement and public education and awareness regarding marine and coastal biodiversity, sustainable use and with regard to projects / interventions. Stakeholders include the private sector as well as local communities and resource users;

²⁷³ <https://www.un.org/bbnj/>

- Better coordination / integration at the sub-national, national and regional levels to meet the Action targets and Goals of the K-M GBF;
- Lack of adequate financial resources over the long-term to meet the above capacity building needs as well as the capacity to access and manage funds for activities and interventions.

For the above needs the two that were mentioned most often were the lack of human capacity (staff) and institutional capacity. It is also worth revisiting the capacity building priorities identified by the UNEP-WCMC study (Section 2.1). These also clearly summarise the key needs required to develop adequate capacity to implement the K-M GBF:

1. Resource mobilisation and fundraising skills
2. Cooperation and collaboration with other actors and sectors
3. Institutional Capacity (e.g. human resources, provision of adequate financial resources)
4. Networking and communication skills
5. Coordination with similar organisations and institutions
6. Knowledge and information sharing
7. Data capture, management and use (including indicators)
8. Technical skills related to assessment of biodiversity and ecosystem services, including understanding values
9. Integration of the value of biodiversity and ecosystem services in sectors
10. Legislation, compliance and enforcement of environmental policies and legislation

The successful implementation of capacity building in SIDS (and LDCs) will rely on a holistic approach to address all the gaps in the capacity needs and challenges of SIDS^{274 275}. The first key objective for this capacity building process is the development of appropriate human and institutional capacity to engage in (1) the identification of problems and needs in a local context, (2) the collection of scientific information, and (3) the implementation of science-based national plans and international agreements to ensure effective mitigation and adaptation solutions^{276 277}. With reference to the SDGs, for institutional, research, and human capacity building activities to be effective in SIDS on a national level the following factors should be taken into account²⁷⁸:

- Coordination and facilitation of capacity building at a national and sub-national level—To empower national ownership and local leadership, the involvement of stakeholders at the national level is necessary to understand national capacity needs, define and shape the national capacity building agenda, and subsequently guide and coordinate appropriate national capacity efforts;
- Enhancement of Collaboration and Coordination—Bridging the gap between scientists, communities, and policy makers is an essential component to increase awareness and

²⁷⁴ Kullenberg, G. Capacity building in marine research and ocean observations: A perspective on why and how. *Mar. Policy* 1998, 22, 185–195.

²⁷⁵ Khan, M.; Sagar, A.; Huq, S.; Thiam, P.K. *Capacity building under the Paris Agreement; European Capacity Building Initiative*: Oxford, UK, 2016.

²⁷⁶ Ibid

²⁷⁷ Zitoun, R. et al. 2020. Review of the Scientific and Institutional Capacity of Small Island Development States in support of a Bottom-up Approach to Achieve Sustainable Development Goal 14 Targets. *Oceans* 1: 109-132. doi:10.3390/oceans1030009

²⁷⁸ Ibid

understanding of marine risks and to develop mitigation and adaptation responses and resource management strategies targeted to local priorities. Further, there is a need for more sustainable and effective international partnerships and collaborations between and among developed and developing nations to build capacity, transfer technology, link initiatives, share networks, and mobilise resources;

- Increase Sustained Financial Support—Develop coordinated funding strategies and identify existing or potential funding sources that will help complement regional long-term actions such as research, monitoring, and outreach activities. There is a strong need for long-term funding in SIDS to support ongoing costs of research and to guarantee monitoring efforts and outputs relevant to improve and inform national strategies and policy.

According to the UNEP-WCMC study to inform the preparation of the long-term strategic framework for capacity-building beyond 2020²⁷⁹, the effectiveness of capacity-building approaches were ranked as follows, based on a survey of key informants: 1. Train-the-trainers; 2. Peer-to-peer learning; 3. Encouraging capacity-building support within regions; 4. Participatory approaches; 5. Building relationships and long-term partnerships, and; 6. Blended learning. With regards to peer-to-peer learning, the use of exchange programs involving participatory approaches could be developed both at the regional and national level.

Concentrating efforts on a cross-cutting issue already identified within the GBF is an approach that can support capacity-building at a wider level. One suggestion could be to focus on biodiversity mainstreaming and national accounting so that GBF indicators are integrated into rigorous reporting systems. In this regard, the recent adoption of the System of Environmental Economic Accounting's Ecosystem Accounting (SEEA EA) framework by the UN Statistical Commission (UNSC) at their 52nd Session²⁸⁰ is a significant step in that all nations will be encouraged, through their national statistics offices, to include ecosystem / biodiversity indicators in their national accounts. The SEEA EA provides statistical principles and recommendations for the valuation of ecosystem services and assets and an impetus for the accurate accounting of the value of biodiversity²⁸¹. This new statistical framework moves beyond GDP and takes better account of biodiversity and ecosystems in national economic planning.

The UNSC has also supported the establishment of SEEA Ocean, a working group to develop a method for ocean accounting. SEEA Ocean will also be supported by the Global Ocean Accounts Partnership (GOAP)²⁸². A focal area for SIDS and LDCs could be to bring the national accounting conversation into regional and national workshops and work with SEEA Ocean and others to help build capacity for the transition to natural capital accounting for the marine and coastal environment.

A Proposed Approach to support the overall achievement of the K-M GBF

This section briefly summarises a proposed approach to deliver the K-M GBF. This should be considered in the context of the key needs and gaps summarised previously with regard to marine and coastal biodiversity in SIDS and LDCs. Reversing biodiversity loss by 2050 requires integrated,

²⁷⁹ [CBD/POST2020/WS/2020/2/INF/1](https://cbd.post2020/ws/2020/2/inf/1)

²⁸⁰ <https://unstats.un.org/unsd/statcom/52nd-session/documents/decisions/Draft-Decisions-Final-5March2021.pdf>

²⁸¹ <https://seea.un.org/news/historic-un-statistical-commission-seea>

²⁸² <https://www.oceanaccounts.org/>

ambitious and prompt action across all targets of the GBF²⁸³. This applies to biodiversity across all environments: terrestrial, freshwater and marine and coastal. It has been suggested that the achievement of the goals and vision of the framework needs to recognise and address three factors that have been lacking in previous global conservation efforts: i. the neglect of increasing drivers of decline, ii. unrealistic expectations and time frames of biodiversity recovery and, iii. insufficient attention to justice within and between generations and across countries²⁸⁴. To address these factors, an Earth system justice approach has been proposed to deliver a nature-positive and people-positive GBF²⁸⁵. Earth system justice embraces the principles of interspecies, intergenerational and intragenerational justice²⁸⁶. The proposed approach consists of six sets of actions to be tackled simultaneously (Table 7):

1. Reduce and reverse direct and indirect drivers causing biodiversity decline;
2. Halt and reverse biodiversity loss;
3. Restore and regenerate biodiversity to a safe state;
4. Raise minimum wellbeing for all;
5. Eliminate over-consumption and excesses associated with accumulation of capital;
6. Uphold and respect the rights and responsibilities of all communities, present and future.

To complete these sets of actions and help deliver the framework there needs to be urgent and extensive upscaling of actions 1, 4, 5 and 6. Firstly, it is essential that direct and indirect drivers are brought below safe thresholds. All conservation actions, and the achievement of goals, are undermined by failing to achieve this²⁸⁷. Decision makers in SIDS and LDCs should keep this in mind at all times when making strategic plans for people and nature. Halting and reversing biodiversity loss is a 2030 ambition for GBF Goal A. This action would prevent the planet from crossing an Earth System Boundary²⁸⁸ (ESB)²⁸⁹ or going substantially below this threshold for nature. It is thought that this action may not be achievable by 2030 due to lag effects but it is important to ensure that this is achieved as soon as possible²⁹⁰ to “bend the curve” of decline. Action 3 is a longer term (2050) ambition for GBF Goal A to raise the level of biodiversity to a safe buffer level above the nature-based ESB. This buffer level has not been estimated quantitatively yet but should be a priority research need going forward to identify measurable targets for all systems (land, freshwater, marine and coastal). Raising minimum

²⁸³ Leadley, P., Gonzalez, A., Obura, D., Krug, C.B., Londono-Murcia, M.C., Millette, K.L. et al. 2022. Achieving global biodiversity goals by 2050 requires urgent and integrated actions. One Earth. <https://doi.org/10.1016/j.oneear.2022.05.009>.

²⁸⁴ Obura, D.O., DeClerck, F., Verburg, P.H. Gupta, J., Abrams, J.F. Bai, X. et al. 2022. Achieving a nature- and people-positive future. One Earth. <https://doi.org/10.1016/j.oneear.2022.11.013>

²⁸⁵ Ibid

²⁸⁶ Gupta, J., Liverman, D., Prodani, K., Aldunce, P., Bai, X. Broadgate, W. et al. 2022. Conceptualizing Earth System Justice. SocArXiv. <https://doi.org/10.31235/osf.io/b36tc>.

²⁸⁷ Obura, D.O., DeClerck, F., Verburg, P.H. Gupta, J., Abrams, J.F. Bai, X. et al. 2022. Achieving a nature- and people-positive future. One Earth. <https://doi.org/10.1016/j.oneear.2022.11.013>

²⁸⁸ **Earth system boundaries (ESBs)** are safe boundaries for nature i.e. the amount of intact nature needed to strongly reduce current levels of species extinctions and provide Earth system functions such as carbon sequestration and multiple functions at local scales. This is currently estimated as 50% of global land area for terrestrial nature. ESB boundary safe levels for freshwater and marine systems are not developed yet.

²⁸⁹ Rockström, J., Gupta, J., Lenton, T. M., Qin, D., Lade, S. J., Abrams, J. F., et al. 2021. Identifying a safe and just corridor for people and the planet. Earth's Future, 9, e2020EF001866. <https://doi.org/10.1029/2020EF001866>

²⁹⁰ Obura, D.O., DeClerck, F., Verburg, P.H. Gupta, J., Abrams, J.F. Bai, X. et al. 2022. Achieving a nature- and people-positive future. One Earth. <https://doi.org/10.1016/j.oneear.2022.11.013>

wellbeing (Action set 4) is a foundation of the SDGs and required to ensure better equity for people. Although improving the welfare of up to a billion people will have an impact on biodiversity it will be important to minimise these impacts through technology and behavioural changes and by making space for an expanded footprint²⁹¹ (see Action set 5). Eliminating overconsumption is critical to achieve action 1 and closely linked to action 4 (Table 8). Overall, by using the Earth system justice approach summarised here²⁹² the implementation of the GBF can fully commit to i. reversing the causal chains of biodiversity decline and ii. building the societal and political will to address inter- and intragenerational justice²⁹³.

Table 8. Ambition for a nature positive world based on interspecies, intergenerational and intragenerational Earth system justice (adapted from Obura et al. 2023. Table 1)

Set of Actions	Address Shortfalls	Principal actors	GBF Target	SDG Goals
<i>Nature-positive focus / biodiversity outcomes (interspecies justice)</i>				
1. Reduce and reverse direct and indirect drivers of biodiversity decline	Reducing drivers – short-term	Economic sectors and actors, all people	5, 6, 7, 8, 9, 10, 14, 15, 16, 18.	7, 8, 9, 11, 12
2. Halt and reverse biodiversity loss ²⁹⁴	Net nature positive outcome – mid-term	Biodiversity actors	2, 3, 4, 5, 6, 7, 8	14, 15
3. Restore / regenerate to a net positive state, to a safe buffer above the Earth system boundary	Net nature positive outcome – long-term	Biodiversity actors	2, 3	14, 15
<i>People-positive focus / human outcomes (intra- and intergenerational justice)</i>				
4. Raise minimum wellbeing to secure each person's fair share of the global biodiversity commons	Equity – from the bottom	State, regulators, employers, all people	9, 11, 12, 22, 23	1, 2, 3, 4, 5, 10, 16
5. Eliminate overconsumption and excesses associated with accumulation of capital	Equity and reducing drivers – from the top	Economic sectors and actors, all people	9, 10, 15, 16, 18	1, 2, 8, 12, 16
6. Uphold and respect the rights, responsibilities, and agency of all, in the present and future	Equity – agency in conservation	State, stakeholders	22, 23	5, 10, 16, 17

For SIDS and LDCs it is also important to factor in their vulnerability to ocean risks and how these can influence their development paths which are very context-specific²⁹⁵. Ocean risks are coupled complex risks to coastal communities experienced across multiple dimensions. They include both environmental and socioeconomic stressors and shock events such as pandemics or financial crises. Strengthening of scientific and technical capacities as well as integration of local indigenous and ecological knowledge can promote resilience, sustainability and equity. Integration of knowledge systems can benefit disaster response, resource management and climate adaptation²⁹⁶ which will all contribute to delivering the K-M GBF.

²⁹¹ Ibid

²⁹² For a more detailed explanation of the Earth system justice approach please refer to Obura et al. 2022.

²⁹³ Obura, D.O., DeClerck, F., Verburg, P.H. Gupta, J., Abrams, J.F. Bai, X. et al. 2022. Achieving a nature- and people-positive future. One Earth. <https://doi.org/10.1016/j.oneear.2022.11.013>

²⁹⁴ i.e. “bend the curve” of decline

²⁹⁵ Tokunaga, K., Blandon, A., Blasiak, R. Jouffray, J-B., Wabnitz, C.C.C. and Norstrom, A.V. 2021. Ocean risks in SIDS and LDCs. Ocean Risk and Resilience Action Alliance (ORRAA) Report.

²⁹⁶ Ibid

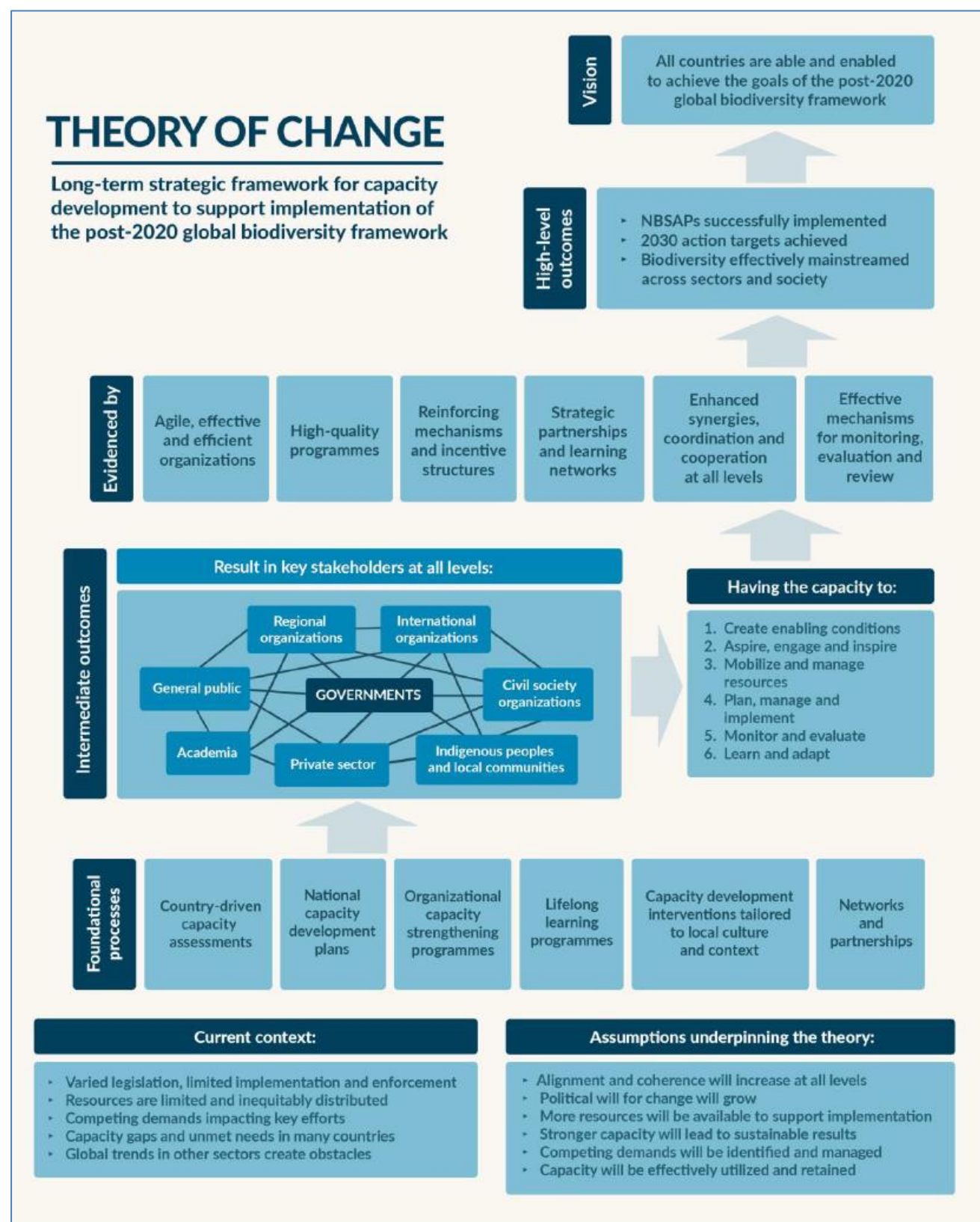
Annexes

Annex 1. Action Targets of the Kunming-Montreal Global Biodiversity Framework and their relevance to marine and coastal biodiversity and capacity building for SIDS and LDCs.

2030 K-M GBF Action Targets	Relevance to marine and coastal biodiversity and SIDS / LDCs
Target 1. Spatial planning and retention of wilderness / intact areas	HIGH – marine and coastal ecosystem extent, integrity, connectivity are all aspects that will require increased capacity to monitor and achieve.
Target 2. Restoration	HIGH - Restoring and protecting critical ecosystems such as coral reefs, mangroves and seagrass systems are activities that will need greater capacity to report on and achieve
Target 3. Protected areas and other effective area-based conservation measures	HIGH – a critical aspect for the recovery of marine and coastal ecosystems. A key aspect is ensuring protected areas are effectively managed and this is where capacity-building is needed
Target 4. Conservation and recovery of species	HIGH – important for endangered marine fauna such as turtles, elasmobranchs and some cetaceans and an important aspect of ecosystem recovery and restoration. Links to T5 and T9 through bycatch mitigation in fisheries
Target 5. Harvest and trade of wild species	HIGH – relevance to high value trade of marine resources such as shark fin, sea cucumber but also strongly linked to sustainable fisheries
Target 6. Invasive alien (aquatic) species	HIGH– need to develop activities for marine and coastal impacts of IAS such as guidance materials and training programs
Target 7. Pollution	HIGH – particularly for land-based pollution from agricultural and urban areas and sea-based pollution such as ghost fishing gear, with an overall focus on nutrients and plastic
Target 8. Biodiversity and climate change	HIGH – promoting the use of nature-based solutions through CB to increase resilience in the marine and coastal environment to CC impacts. Strong linkages with T1, T2, T3, T5, T7 and T9
Target 9. Sustainable use of wild species	HIGH – capacity-building for sustainable fisheries management is key, especially for small-scale fisheries in SIDS and LDCs
Target 10. Sustainable agriculture, forestry, and aquaculture	HIGH – sustainable aquaculture, minimising downstream effects on marine and coastal systems through sustainable land use
Target 11. Ecosystem functions and services	LOW – but connections to marine and coastal in terms of air pollution (micro-particulates including plastics), coastal protection and storm-water management
Target 12. Green/blue spaces in urban areas	LOW – but potential to focus on minimising impacts from urban areas on the marine and coastal environment

Target 13. Access and benefit sharing	MEDIUM – important for SIDS and LDCs to enable benefits and incorporate traditional knowledge.
Target 14. Mainstreaming biodiversity across sectors	HIGH – Building capacity to mainstream biodiversity values across sectors is required along with increasing awareness of a ‘natural capital’ approach within government and decision makers
Target 15. Business and biodiversity	HIGH – Important for seafood supply chains and waste management to minimise plastic use and pollution through a circular economy approach
Target 16. Sustainable consumption	HIGH – As part of actions to reduce drivers of degradation of marine and coastal systems e.g. production of waste
Target 17. Biosafety	MEDIUM – management of marine IAS / Biofouling
Target 18. Subsidies and incentives	HIGH – Addressing harmful incentives and subsidies that encourage overcapacity and harvesting e.g. fisheries subsidies
Target 19. Increasing resources for biodiversity 19.1 – Financial resources 19.2 – Other resources for implementation	HIGH – Extensive and substantial financial and other resources for marine and coastal capacity-building activities required
Target 20. Capacity building and development, technology transfer	HIGH – Extensive and substantial capacity development required for the conservation and sustainable use of marine and coastal biodiversity, especially in SIDS and LDCs
Target 21. Information and knowledge	HIGH – Adequate availability of quality information is essential and a crucial aspect of capacity-building for marine and coastal systems
Target 22. Participation of IPLCs	HIGH – Building management and governance systems that involve indigenous peoples and local communities including women and youth in decision making will require capacity development, especially in SIDS and LDCs
Target 23. Participation of women, girls and youth	HIGH - As per target 21

Annex 2. Theory of Change for the Long-term Strategic Framework for Capacity Development to Support the Implementation of the Kunming-Montreal Global Biodiversity Framework.



Annex 3. Summary of Responses to Notification 2023-016: Call for information to support discussions of the Sustainable Ocean Initiative Workshop on Ocean-related Capacity-building Needs for the Kunming-Montreal Global Biodiversity Framework (June 2023)

Party / Organisation	Capacity Needs / Topics Highlighted	Other Information
Belgium	100% of responses from IOC focal points indicated that their Capacity Development needs were most important under Challenge 2 of the UN Decade of Ocean Science for Sustainable Development: “Understanding the effects of multiple stressors on ocean ecosystems and developing solutions to monitor, protect, manage, and restore ecosystems and their biodiversity under changing environmental, social, and climate conditions”. At the regional level, Africa had a lower priority for Challenge 2, compared to the importance given to the other challenges.	Information from the IOC Capacity Development (CD) survey in 2020-2021 Full results are available at: https://surveys.ioc-cd.org/ IOC CD website including new Ocean CD-Hub: https://www.ioc-cd.org/
India	Suggested Information resources: 1. Peter Bridgewater, Australia (co-chair); Marina Rosales, Peru (co-chair); Douglas Beard, USA; Kalpana Chaudhari, India; Albert S. van Jaarsveld, Austria/South Africa; Karen Jenderedijan, Armenia; Nicholas King, South Africa; Ryo Kohsaka, Japan; Selim Louafi, France; Kalemari Joseph Mulongoy, Democratic Republic of Congo/Canada, External Review Report of work programme of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), United Nations, International Science Council (ISC), 2019. 2. Leadley, Paul & Gonzalez, Andrew & Krug, Cornelia & Londoño-Murcia, Maria & Millette, Katie & Obura, David & Radulovici, Adriana & Rankovic, Aleksandar & Shannon, Lynne & Archer, Emma & Armah, Frederick & Bax, Nic & Chaudhari, Kalpana & Costello, Mark & Davalos, Liliana & Roque, Fabio & Declerck, Fabrice & Dee, Laura & Essl, Franz & Xu, Jianchu. (2022). Achieving Global Biodiversity Goals by 2050 Requires Urgent and Integrated Actions. 10.32942//osf.io/hy7a2. URL https://doi.org/10.32942/osf.io/hy7a2, One Earth, Elsevier, 2022.	
Liberia	Summary of challenges (threats) for the marine and coastal environment of Liberia particularly linked to climate change, pollution and fishing	Environmental Protection Agency White Paper: provides a summary of the EPA work programme and approach to address the challenges arranged under four strategies covering drivers of loss, improving ecosystem resilience, carbon management, and decision support and policy
Mexico	Capacity topics proposed for discussion at the workshop: • Participatory spatial planning for the oceans integrating a vision of the coast and climate change considerations	Highlighted the publication entitled:

	• Operational restoration of coastal-marine ecosystems, considering ecological integrity and connectivity approaches • Efficient management of marine and coastal MPAs • Management and recovery of threatened marine species • Ocean acidification and impacts on marine biological diversity • Food production systems (fishing) that allow the conservation and restoration of marine-coastal ecosystems • Marine pollution from a comprehensive land-sea vision • Connectivity between green-blue spaces in coastal urban areas • Integration of marine-coastal biodiversity in processes of regulatory, development, poverty eradication, and environmental impact / evaluation processes. • Economic / financial risks of marine-coastal biodiversity loss • Planning and management of financial resources for the conservation, restoration and sustainable use of marine-coastal resources • Development of technologies for the conservation of marine-coastal ecosystems • Effective communication for conservation.	Saenz-Arroyo, A., and Camacho-Valdez, V. 2022. Large-Scale Marine Protected Areas by Decree: Lessons learned from the creation of the Revillagigedo Marine Park. Sustainability 14: 4027
South Africa	Challenges associated with deep sea research in South Africa: • Deficiencies in exposure and training • Financial challenges • Access to vessels and technology • Cultural barriers • Integration of traditional knowledge • Limitations in accessing and engaging in international research National Biodiversity assessment needs and gaps:	Source: Sink, K. et al. 2021. Challenges and Solutions to develop capacity for Deep-sea Research and Management in South Africa. South Africa National Biodiversity Institute. 35 pp. Source: Sink, K.J. et al. (eds.). 2019. South African National Biodiversity Assessment 2018. Technical Report Volume 4: Marine Realm. South African National Biodiversity Institute, Pretoria, South Africa.

	• Gaps in taxonomic and molecular knowledge, capacity and opportunities for systematic surveys to understand marine introductions and invasions • Capacity needed for early detection, risk assessment and rapid management action for marine invasive species • Lack of IUCN assessments for marine invertebrates also due to lack of taxonomic knowledge and limited capacity. Limited understanding of marine species status and trends • Suitably skilled human capacity and funding for state-of-the-art data storage, analysis and processing • Limited capacity and budgets for enforcement of environmental laws and managing the EIA process • Lack of fish stock assessments • Strengthening capacity for adaptive management e.g. for MPA governance and assessing effectiveness	Key capacity needs: human capacity – an equitable and suitably skilled workforce to improve the management of biodiversity and addressing the declining taxonomic expertise nationally with the focus on vertebrate compared to invertebrate taxa. Summary of knowledge gaps in Table 48 of the report.
Center for Large Landscape Conservation	List of Information sources focussed on fisheries to support workshop discussions: A. Organizational sources and activities: 1. EDF (Environmental Defense Fund) (web site: https://fisherysolutionscenter.edf.org/) on its major programme to provide fisheries science and policy advice, engage stakeholders, and deliver innovative tools and training to achieve healthy oceans even in the face of climate change. Work driven by recognition that the greatest threat to ocean sustainability is overfishing (catching too many fish at once, so the breeding population becomes too depleted to recover.) To address ocean sustainability, their web site includes case studies (e.g., Chile for the multispecies finfish industry: https://fisherysolutionscenter.edf.org/ecosystem-risk-assessment-chile), proposals to improve fisheries management, correct significantly underestimated catch data including bycatch, address subsidies, and science and data tools to incorporate into a country's fisheries fishery (https://fisherysolutionscenter.edf.org/explore-tools/theme/science-data). 2. The <i>Sea Around Us</i> organization (website: https://www.seaaroundus.org/). The <i>Sea Around Us</i> is a research initiative at the University of British Columbia and the University of Western Australia, assessing the impact of fisheries on the marine ecosystems of the world and offering mitigating solutions; initiated in collaboration with The Pew Charitable Trusts in 1999, and in 2014, also with The Paul G. Allen Family Foundation to provide African and Asian countries with more accurate and comprehensive fisheries data. Focused on ocean sustainability and overfishing as the greatest threat, it's web site provides guidance and analyses through Tools and Data, peer-reviewed journal articles, and a News section, and regularly updates its products at the scale of countries' Exclusive Economic Zones, Large Marine Ecosystems, the High Seas and other spatial scales, and as global maps and summaries.	

	3. UN Food and Agriculture Organization ((FAO) (responsible for operations of the Regional Fisheries Management Organizations (RFMOs), the international organisations regulating regional fishing activities in the high seas with the “ critical role of promoting long-term sustainable fisheries”, see https://www.fao.org/fishery/en/topic/16810. Interesting relevant materials from FAO: a) In 2015, FAO convened a workshop in Rome to consider methods for estimating ‘Illegal, unreported and unregulated’ (IUU) fishing at the global level. Resulting report is at: https://www.fao.org/3/bl765e/bl765e.pdf. b) General FAO website on IUU is at https://www.fao.org/iuu-fishing/en/. c) FAO: INTERNATIONAL PLAN OF ACTION TO PREVENT, DETER AND ELIMINATE ILLEGAL, UNREPORTED AND UNREGULATED FISHING, 2001. See https://www.wto.org/english/tratop_e/rulesneg_e/fish_e/2001_ipoa_iuu.pdf. d) FAO Report of the 34th Session on the Committee of Fisheries, 2021, at https://www.fao.org/3/ng517en/ng517en.pdf, among the decisions: “underscored the central role of Regional Fisheries Management Organizations (RFMOs) and Regional Fisheries Advisory Bodies (RFABs), within their sphere of competence, in the implementation of international fisheries instruments, such as those aimed at combatting IUU fishing” (p. 5); and “ highlighted that RFMOs and RFABs play a key role in supporting and strengthening fisheries science, fisheries management and monitoring, control and surveillance, at both national and regional level” (p. 16). B. Recent peer-reviewed articles of relevance for achieving a Sustainable Ocean: 1. Cullis-Suzuli, S., and Pauly, D. Failing the high seas: A global evaluation of regional fisheries management organizations. Marine Policy (2020), doi: 10.1016/j.marpol.2010.03.002. At: https://www.researchgate.net/publication/222564845_Failing_the_high_seas_A_global_evaluation_of_regional_fisheries_management_organizations. Assessed the world’s 18 RFMOs for performance in practice using the current the current state of stocks RFMO’s manage through biomass and fishing mortality reference points and biomass through time. Concluded that 2/3 of stocks fished on the high seas and under RFMO management are either depleted or overexploited. 2. Bianca, H., McGee, J., Fleming, A., and Haward, M. Factors influencing the performance of regional fisheries management organizations. Marine Policy 113 (2020) 103787. At: https://www.researchgate.net/publication/338987741_Factors_influencing_the_performance_of_regional_fisheries_management_organizations. 3. Costello, C., Ovando, D., Clavelle, T., Strauss, K., Hilborn, R., Melnychuk, M., Branch, T.A., Gaines, S.D., Szuwalski, C.S., Cabral, R.B., Rader, D.N., and Leland, A. Global fishery prospects under contrasting management regimes. PNAS, May 3, 2016, Vol. 113, No. 18, 5125-5129. At: https://www.pnas.org/doi/pdf/10.1073/pnas.1520420113 . 4. Roberts, K.E., Cook, C.N., Beher, J., and Treml, E.A. Assessing the current state of ecological connectivity in a large marine protected area system. Conservation Biology. 2021 Apr; 35(2): 699-710. doi:10.1111/cobi.13580. At: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8048790/
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	5. Brooks, C.M., Weller, J.B., Gjerde, K., Sumaila, R., Ardron, J., Ban, N.C., Freestone, D., Seto, K., Unger, S., Costa, D.P., Fisher, K., Crowder, L., Halpin, P., & Boustany, A. Challenging the 'Right to Fish' in a Fast-Changing Ocean. <i>Stanford Environmental Law Journal/Stanford Journal of Law, Science and Policy</i> (2014) Vol. 33:3, 289-324. At: https://law.stanford.edu/wp-content/uploads/2018/05/brooks-289.pdf. C. UN Global Compact Principles: "Sustainable Ocean Principles" at: https://d306pr3pise04h.cloudfront.net/docs/publications%2FSustainable+Ocean+Principles.pdf. (A framework for responsible business practices across ocean sectors and geographies, serving as a common reference point on ocean sustainability, building upon and supplementing the Ten Principles of the UN Global Compact to cover; ocean health and productivity, governance and engagement, and data and transparency.) D. New Journal by Nature 2022: <i>Ocean Sustainability</i> (see opening editorial at https://nature.com/articles/s44183-022-00004-4) E. Books: 1. Pauly, D. 2019. <i>Vanishing Fish: Shifting Baselines and the Future of Global Fisheries</i>. David Suzuki Institute. Greystone Books: Vancouver, Canada. 288pp. 2. Carpenter, A., Johansson, T.M., and Skinner, J.A. (eds.) 2021. <i>Sustainability in the Maritime Domain: Towards Ocean Governance and Beyond</i>. Springer: Switzerland. 527pp. 3. Barkin, J.S. and DeSobre, E.R. 2014. <i>Saving Global Fisheries: Reducing Fishing Capacity to Promote Sustainability</i>. MIT Press: Cambridge, MA. 276pp.
CoopeSoliDar	Information submitted for consideration at the workshop: 1.- Links to the situation of fisherwomen in Costa Rica. https://youtu.be/AorPtrokUUnc https://drive.google.com/file/d/1KeOOoIIHRVBdn-j6ZbTcyXlkBs4HkdD/view?usp=sharing 2.- Links to the Social Development situation of small scale fishers in a diversity of countries. https://www.icsf.net/resources/icsf-social-development-study-antigua-and-barbuda/ https://www.icsf.net/resources/icsfs-social-development-costa-rica/ https://www.icsf.net/resources/icsfs-social-development-studiesbrazil/ https://www.icsf.net/resources/baffling-shades-of-blue-economy-latin-america/ 3.- Traditional knowledge https://doi.org/10.2305/IUCN.CH.2020.11.en 4.-A good practice guide for ethical and inclusive communications involving small-scale fisheries

	https://drive.google.com/file/d/1nNz61HlJW2ApwECVh82RgTZSn3K_BI2F/view?usp=sharing Also the following information and videos might show concrete situations related to afrodescendants and indigenous people situation in Latin America and the Caribbean. 5.-Afrodescendent territories platform https://rightsandresources.org/es/evento-virtual-territorialidad-de-pueblos-afrodescendientes/ https://rri.maps.arcgis.com/apps/webappviewer/index.html?id=7c0d243a90204f11b227c90e50b722cb Access to the platform: https://rri.maps.arcgis.com/apps/webappviewer/index.html?id=7c0d243a90204f11b227c90e50b722cb 6.- On IPLC marine territories of life https://youtu.be/551-aEPZ_xQ https://youtu.be/EUtcV2vZgIE https://youtu.be/Ppwt0ht2gd8 https://youtu.be/DIk31NelxZg More information can also we reviewed at: https://www.icsf.net www.coopesolidar.org https://www.icsf.net/resources/handbook-on-convention-on-biological-diversity-cbd-for-small-scale-fishing-communities/	
International Coral Reef Initiative (ICRI)	Highest priority capacity needs for MPAs in the Caribbean: • Law Enforcement • Sustainable financing • Socioeconomic monitoring • Biophysical monitoring • Management planning • Outreach / Education	Source: Doyle, E. et al. 2018. An update on marine protected area management capacity in the Caribbean, 2011-2017. Other information provided to address capacity needs for coral reefs: 1. Global Fund for Coral Reefs (GFCR): summary with case studies 2. Caribbean: resources listed for monitoring, Diadema die-off events, Stony Coral Tissue Loss disease (SCTLD) and MPA management capacity (see previous column)

	• Fisheries management Capacity development recommendations for Micronesia fall under strategic planning, coordination, communications, partnerships with academic institutions, and monitoring and evaluation.	3. Micronesia: the Micronesia Challenge Evaluation Report which includes a chapter on capacity development (see previous column)
United Nations Environment Programme	Information resources (30 pdf files) submitted for consideration covering multiple topics for marine and coastal ecosystems Also refer to the site-specific summaries and regional findings presented in ArcGIS Storymap format on GCFI's website – they can be found by scrolling down at this link MPACConnect - Gulf and Caribbean Fisheries Institute (gcfi.org).	