BACKGROUND ANALYSIS TO INFORM THE DEVELOPMENT OF THE SUSTAINABLE OCEAN INITIATIVE POST-2020 ACTION PLAN

An analysis to provide substantive background on the global landscape of capacity building needs and opportunities for marine and coastal biodiversity to inform the development of the SOI Post-2020 Action Plan[1]

Report by Simon Harding for the CBD Secretariat

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Executive Summary

The Sustainable Ocean Initiative (SOI) was developed in 2010 under the auspices of the Convention on Biological Diversity in response to the many requests from Parties to provide support for developing countries through capacity-building activities in the implementation of the CBD's Strategic Plan for Biodiversity 2011-2020. This call was particularly focused on least developed countries and small island developing States. The mission of the Sustainable Ocean Initiative was '*to provide a global platform to build partnerships and enhance capacity to achieve the Aichi Biodiversity Targets related to marine and coastal biodiversity in a holistic manner',* which was further elaborated through the SOI Action Plan 2015-2020.

With the ending of the time period of the SOI Action Plan 2015-2020 and the development of the Post-2020 Global Biodiversity Framework, a new action plan is required to provide a framework for the future of SOI. This report is intended to inform the development of the SOI post-2020 action plan by providing substantive background on the global landscape of capacity building needs and initiatives relevant to the achievement of global goals marine and coastal biodiversity.

A background section (Section 1) briefly reviews the success of SOI up to 2020 in achieving the activities set out by the first action plan. Overall, it was considered that SOI had made good progress over this time and achieved almost all of the objectives in the 2015-2020 action plan, as well as completing additional activities such as launching, together with FAO and UNEP, the SOI Global Dialogue with Regional Seas Organizations and Regional Fishery Bodies. 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 draft post-2020 global biodiversity framework to the Sustainable Ocean Initiative and capacity-building. Fourteen of the twenty-two targets of version CBD/WG2020/REC/4/1 (26th June 2022)) can be considered highly relevant to SOI, 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) firstly 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 one of the most recent needs assessments 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 the development of the SOI post-2020 action plan.

Capacity-building needs for particular aspects of marine and coastal ecosystems are summarised for ocean observation including for areas beyond national jurisdiction, and inshore monitoring and management including for marine protected areas and community-based management. However, 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 global biodiversity framework suggests that needs are extensive and cover all of the action targets identified by this report as relevant to SOI. Building institutional capacity both within government and at the local level was regarded as a priority, especially so that there is timely reporting of indicators for the post-2020 framework. Designating a dedicated focal point within national governments to coordinate the reporting process that is linked to the national economic accounting is suggested by this report.

An analysis of capacity-building initiatives and opportunities for marine and coastal biodiversity (Section 3) highlights recent and ongoing efforts to build capacity for ocean science, marine governance, marine protected areas, small-scale fisheries, integrated coastal management and areas beyond national

jurisdiction. A number of initiatives are presented at both the global and regional level. Successful approaches and programs are highlighted through case studies in the Western Indian Ocean, South-east Asia and the Coral Triangle. The two UN Decades that start in 2021 for Ocean Science and Ecosystem Restoration are also regarded as important drivers of capacity-building for the marine and coastal environment. Building synergies with these UN decades will be critical for SOI, including developing or strengthening partnerships with the regional implementing agencies. A range of other potential synergies and partners for SOI going forward are also provided, 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.

After reviewing the synthesised information in the report regarding capacity-building for the marine and coastal environment a number of recommendations are proposed for SOI and the development of the next action plan (Section 4). These suggestions cover a range of possibilities for SOI going forward which depend on the scale of ambition and the resources available for the Initiative. The recommendations fall under the following themes:

1. Building on previous successful SOI activities
2. Strategic planning based on proposed criteria
3. Incorporation of targets and evaluation into the action plan
4. Further exploring the level of ambition for SOI
5. Developing and strengthening synergies and partnerships
6. Implementing a bottom-up approach
7. Developing South-South and Triangular Cooperation
8. Facilitate national reporting mechanisms for the post-2020 framework
9. Factoring in the COVID-19 pandemic and the types of learning possible

The above recommendations can be starting point for discussions concerning the development of the next action plan for SOI, whilst also considering the capacity needs and extent of capacity-building efforts outlined in this report for marine and coastal biodiversity. Such discussions should also take into consideration the specific niche of the CBD Secretariat and of SOI itself. A cross-cutting approach of biodiversity mainstreaming is proposed for SOI as a key activity, that fits well with the needs of CBD Parties and could be an effective way to ensure timely reporting for the post-2020 framework.

1. Background and Introduction

In 2010, the 10th meeting of the Conference of Parties (COP 10) to the CBD highlighted the urgent need for training and capacity building to achieve the CBD's 10-year Strategic Pan for Biodiversity 2011-2020 and meet the Aichi Targets[2]. CBD COP decision X/2 "*Emphasizes the need for capacity-building activities and the effective sharing of knowledge, consistent with decisions VIII/8, IX/8 and other relevant decisions of the Conference of the Parties, in order to support all countries, especially developing countries, in particular the least developed countries, small island developing States, and the most environmentally vulnerable countries, as well as countries with economies in transition, and indigenous and local communities, in the implementation of the Strategic Plan for Biodiversity 2011-2020.*"[3]

In response to this urgent need, the Sustainable Ocean Initiative (SOI) was conceived, through the support of the government Japan (COP 10 Presidency), and in collaboration with a range of partners to provide expertise, and technical and financial resources. SOI is a global capacity building partnership coordinated by the Secretariat of the Convention on Biological Diversity focused on addressing the capacity needs of developing country Parties to enhance the conservation and sustainable use of marine and coastal biodiversity. The SOI concept was further developed through a series of meetings in 2011-2012, including a SOI Programme Development Meeting (2-4 August 2011, Kanazawa, Japan) and the first SOI High-level Meeting in Yeosu, South Korea, in June 2012. The first SOI Action Plan[4] was published in 2014, setting out the programme's goals and objectives for the next five years (2015-2020).

SOI activities have been supported through funding from a range of donors, including the Government of Japan (via the Japan Biodiversity Fund), the Government of France (through the Agence Française pour la Biodiversité), the Ministry of Oceans and Fisheries of the Republic of Korea, the Ministry of Environment of Sweden, and the European Union.

With the ending of the time period of the SOI Action Plan 2015-2020 and the development of the Post-2020 Global Biodiversity Framework, a new action plan is needed to provide a framework for the future of SOI. This new action plan will be co-developed by the Secretariat and various SOI collaborators. This report provides a background analysis to support the process to develop the SOI Post-2020 Action Plan. The report consists of three main sections that address the following elements:

- A general review of capacity building needs related to marine, coastal and island biodiversity elements of the Post-2020 Global Biodiversity Framework, in particular the needs of developing country Parties to implement the Framework;
- An analysis of the global landscape of capacity building initiatives and opportunities, including gaps as well as areas for improved synergy to address the capacity building needs associated with the Post-2020 Global Biodiversity Framework, and;
- Recommendations for potential approaches for the Sustainable Ocean Initiative Post-2020 Action Plan.

The SOI post-2020 action plan should also be closely aligned with the CBD's Long-Term Strategic Framework for Capacity Development which is under preparation and will be considered at COP 15. This framework is intended to guide the capacity development efforts of government and non-government actors in support of nationally determined priorities for the implementation of the post-2020 global biodiversity framework[5]. Like the aforementioned framework, the capacity development framework is underpinned by a theory of change (Annex 1), which outlines the intended pathways of change in capacity,

[2] An overarching framework to safeguard biodiversity and enhance its benefits for people, adopted under decision X/2 at the 10th Conference of the Parties, Nagoya, 18-29 October 2010. See www.cbd.int/sp/

[3] CBD COP Decision X/2 para 6.

[4] www.cbd.int/doc/meetings/mar/soiom-2014-02/official/soiom-2014-02-actionplan-en.pdf

[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

the important contextual factors, underlying assumptions and the anticipated high-level outcomes[6]. 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 the post-2020 SOI Action Plan is developed. Similarly, the proposals being developed to strengthen technical and scientific cooperation in support of the post-2020 global biodiversity framework[7] should also be considered to plan SOI's activities going forward.

A study to provide an information base for the preparation of the long-term strategic framework for capacity development indicated that efforts to develop capacity have been limited, fragmented, undertaken in silos and largely implemented by externally funded short-term projects[8]. This is especially the case for developing countries such as SIDS and LDCs. Many countries do not have systemic, long-term and institutionalized approaches to capacity development for biodiversity, with interventions often implemented in an ad hoc manner and without a strong enabling environment[9].

1.1. The Progress and Success of the Sustainable Ocean Initiative

Up to 2020, the SOI focused on the commitments of CBD Parties and the work undertaken through the CBD on marine and coastal biodiversity to identify opportunities for addressing capacity needs in order to achieve the Aichi Biodiversity Targets. Building on existing efforts, resources and experiences at the national and regional level, SOI has provided a holistic and strategic framework to catalyse partnerships and leverage resources for the achievement of marine-related Aichi Targets. The first action plan states that the mission of the Sustainable Ocean Initiative is '*to provide a global platform to build partnerships and enhance capacity to achieve the Aichi Biodiversity Targets related to marine and coastal biodiversity in a holistic manner'*[10].

The key aims of SOI over this time were to:

- Achieve a balance between sustainable use and conservation and the promotion of flexible and diverse approaches;
- Identify best practices, facilitating information sharing, and learning from experiences;
- Create partnerships that can provide for targeted capacity building, training, technical assistance and learning exchange;
- Provide for two-way communication among policymakers, scientific communities and local stakeholders;
- Monitor progress towards the Aichi Biodiversity Targets on marine and coastal biodiversity (particularly Targets 6, 10 and 11);
- Facilitate the provision of guidance and guidelines that will help their achievement, and:
- Improve the scientific basis for implementation.

Since the adoption of the 2011-2020 Strategic Plan, CBD Parties have consistently highlighted that the limited progress to meet the Aichi Biodiversity Targets has been the result of a limited capacity to respond to the challenges faced[11].

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[6] Ibid

[7] CBD 2022. Recommendation adopted by the Subsidiary Body on Implementation: Annex II. Proposals to strengthen technical and scientific cooperation in support of the post-2020 global biodiversity framework. CBD/SBI/REC/3/8/. https://www.cbd.int/doc/recommendations/sbi-03/sbi-03-rec-08-en.pdf

[8] CBD/POST2020/WS/2020/2/INF/1

[9] CBD 2020. Draft Long-term Strategic Framework for Capacity Development to Support Implementation of the Post-2020 Global Biodiversity Framework. CBD/SBI/3/7/Add. 1.

[10] www.cbd.int/doc/meetings/mar/soiom-2014-02/official/soiom-2014-02-actionplan-en.pdf

[11] 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-

SOI identified three key areas of need from Parties to meet the Aichi Targets. These have formed the central pillars of the SOI approach to date and are still very relevant to the post-2020 context:

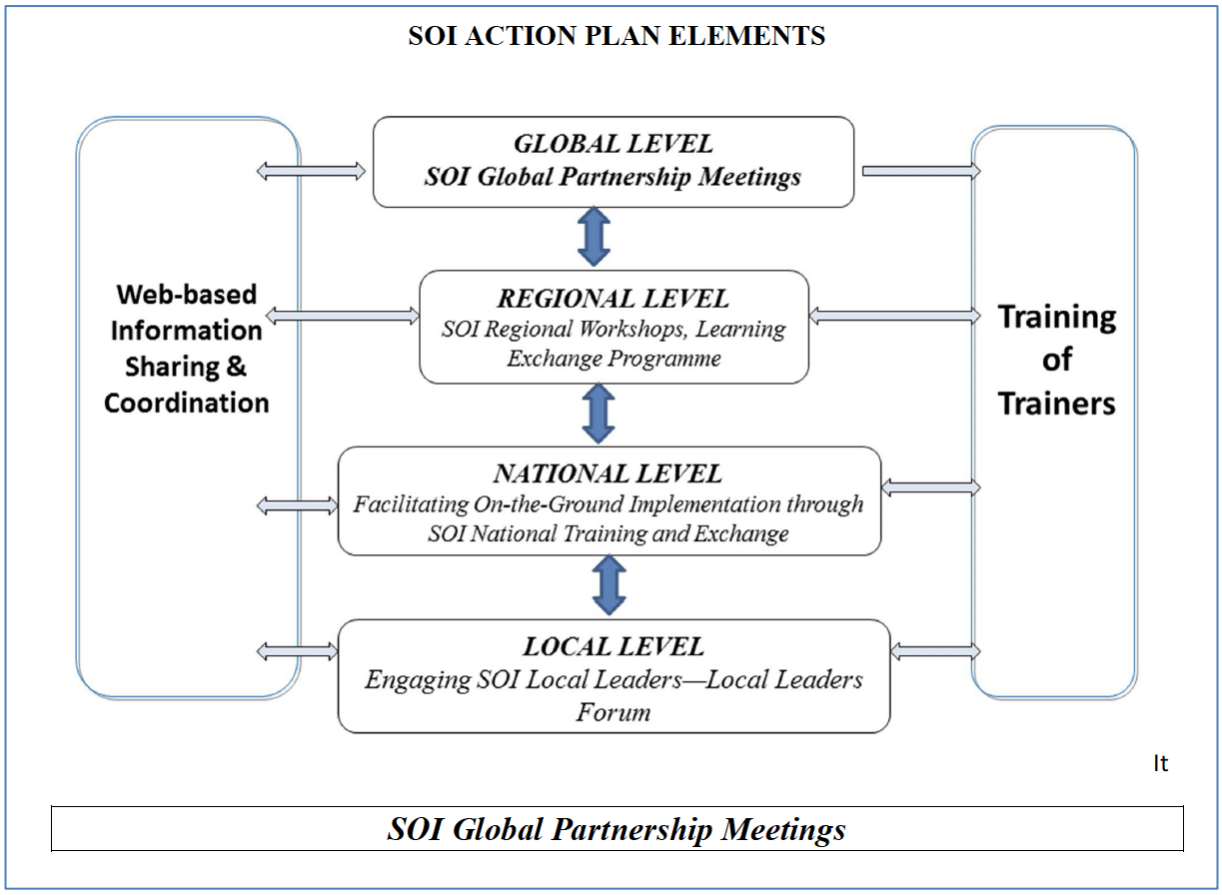
i. **Capacity gaps**: Lack of institutional, technical, managerial, and scientific resources; poor understanding of capacity needs at various levels in the context of cross-sectoral management; lack of cross-sectoral training for managers at the ground-level;

ii. **Issues related to governance and cross-sectoral engagement**: Sectoral conflicts; lack of coordination across governmental agencies and levels of governments; limited participation of indigenous and local communities;

iii. **Limited information base**: Lack of policy-relevant information to support decision-making; inadequate coordination of existing knowledge.

SOI addressed these key areas of need by implementing a range of activities through the action plan to build capacity at multiple levels, summarised in the figure below (Figure 1). The main activities completed between 2015 and 2020 were capacity building at the national and regional level through events and workshops, training of trainers events aimed at practitioners working at the national level, meetings of the Global Dialogue with Regional Seas Organizations and Regional Fishery Bodies and an initial global partnership meeting, as well as various partnership, engagement and outreach events on the margins of major intergovernmental fora. One proposed activity was not achieved: the local leaders' fora, while the global dialogue meetings were an additional activity that were not in the 2015-2020 action plan. Progress made up to 2020 in terms of SOI activities is summarised in Table 1 and displayed in a timeline in Figure 2.

Figure 1. Planned activities of SOI as per the 2015-2020 Action Plan



International Union for Conservation of Nature. Capacity-Building for Biodiversity Beyond 2020. 53pp. https://www.cbd.int/doc/c/233f/98e7/b5e4973c007e4562aefb4dcc/post2020-ws-2020-02-inf-03-en.pdf

Capacity-building workshops at the national level were completed in six countries (Table 1) indicating that there is scope to expand this activity in the next phase of SOI. At the regional level, activities were conducted for all regions apart from Antarctica and the Arctic. Although no specific activities were completed at the local level, the capacity-building efforts at the national level did feed into the local context in that some participants used the skills and knowledge acquired to develop sub-national or local government level activities after the SOI event[12].

Table 1. A summary of SOI Action Plan Activities completed up to 2020.

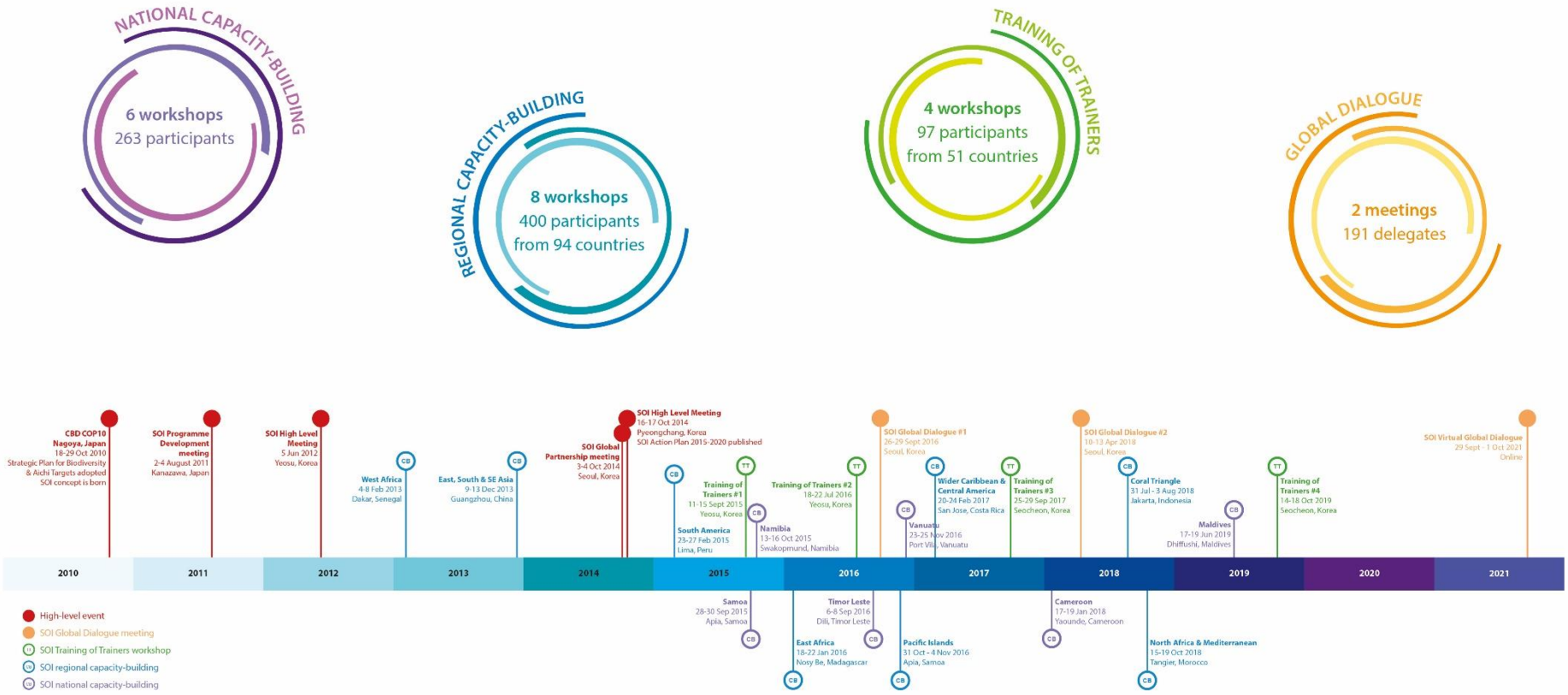
Activity	No. completed	Further Information
Regional and Sub-Regional Capacity Building	Nine workshops	• More than 400 participants • 94 countries • Eight regions covered[13]
National Capacity Building	Seven workshops	• Around 300 participants from a range of marine-based sectors[14] • Samoa, Namibia, Timor Leste, Vanuatu, CameroonMaldives, and Thailand
Training of Trainers	Four events	• 97 participants from 51 countries; All held in South Korea • Tools, guidance and information provided to develop and implement successful training programmes at the national and/or subnational levels
Local Leaders Fora	None completed	
Global Dialogue	Three events	• All held in South Korea in 2016,2018 and 2022 • Involved 191 delegates from Regional Seas Organisations, Regional Fisheries Bodies, UN agencies, relevant global and regional initiatives, governments and NGOs
Global Partnership Meetings	One meeting	• Held to develop the original SOI Action Plan • Time and resource constraints prevented further meetings
Side events and parallel events at major international fora	Many	• Numerous side events, special events, and receptions held during major meetings, such as CBD SBSTTAs and COPs, FAO Committee on Fisheries, BBNJ negotiations, UN Ocean Conferences, International Marine Protected Areas Congress, among others

[12] Secretariat of the Convention on Biological Diversity (2022) The Sustainable Ocean Initiative: 10 years of building capacity and catalyzing partnerships to achieve global ocean goals. https://www.cbd.int/marine/soi/booklet-soi-10years-en.pdf

[13] West Africa, East, South & SE Asia, South America, East Africa, Pacific Islands, Wider Caribbean & Central America, Coral Triangle (Indonesia), North Africa & Mediterranean

[14] Included government departments and ministries, conservation groups, NGOs, local communities, scientists and regional organisations.

Figure 2. Timeline of SOI activities completed up to 2020 and key figures



A preliminary comparison of the expected impacts of the SOI action plan to the progress over the last five years indicates that most of the impacts have been met to some degree although it is difficult to quantify the level of impact without a post-activity evaluation assessment. Feedback from SOI event participants[15] indicates that these were regarded as valuable and useful for helping to build capacity, increase awareness, gain or share knowledge and encourage networking and collaboration at both the regional and national level.

[15] Secretariat of the Convention on Biological Diversity (2022) The Sustainable Ocean Initiative: 10 years of building capacity and catalyzing partnerships to achieve global ocean goals. https://www.cbd.int/marine/soi/booklet-soi-10years-en.pdf

Post-event follow-up was particularly highlighted as important by participants for attention to ensure the momentum built up through SOI continues, particularly at the national, but also regional level. Substantial continued engagement after national workshops was reported in some, but not all cases. Attendance at national workshops was also thought to help build confidence for some participants, identify internal expertise and build cross-sectoral dialogue between different parts of government (e.g., fisheries and environment sectors), which can be lacking[16]. A second series of regional workshops has also been suggested to maintain momentum at this broader level.

In terms of technical subjects and resources, there has been some focus on marine spatial planning across a number of SOI activities, which is linked to specific requests to the CBD Secretariat for this topic at national and regional events. SOI has also developed a series of technical resources which are available online[17] on subjects such as integrated coastal management, marine and coastal governance, environmental impact assessment, stakeholder involvement and on designing and developing training.

SOI has also developed alignments with initiatives that are aligned with the SOI mission including Blue Solutions, the French Marine Protected Areas Agency, IOC-UNESCO Ocean Teacher Global Academy (OGTA) and the Network of Managers of Marine Protected Areas in the Mediterranean (MedPAN)[18].

Overall, SOI has made considerable progress in facilitating capacity-building for marine and coastal biodiversity over its first decade, and is well positioned to build on this effort for post-2020 through the development and implementation of the next SOI action plan. Further information on SOI capacity-building up to 2020 can be found in a recent impact study of SOI[19] and on the SOI website[20].

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 increasing[21]. These trends were also shown for marine and coastal ecosystems with no part of the ocean thought to be unaffected by human influence[22]. Areas of the ocean that are still devoid of intense human impacts (marine wilderness areas) can provide important refugia for marine biodiversity[23]. 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 latitudes[24].

[16] Ibid
[17] https://www.cbd.int/soi/training/soi-training-modules
[18] https://www.cbd.int/soi/aligned-initiatives
[19] Secretariat of the Convention on Biological Diversity (2022) The Sustainable Ocean Initiative: 10 years of building capacity and catalyzing partnerships to achieve global ocean goals. https://www.cbd.int/marine/soi/booklet-soi-10years-en.pdf
[20] https://www.cbd.int/soi/
[21] Butchart, S.H.M., Walpole, M. Collen, B. et al. 2010. Global biodiversity: indicators of recent declines. Science 328: 1164-1168.
[22] Halpern, B.S., Walbridge, S., Selkoe, K.S. et al. 2008. A global Map of Human Impact on Marine Ecosystems. Science 319: 948-952
[23] 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
[24] Ibid

The ocean is becoming warmer, more acidic and less oxygenated[25], 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[26] [27] [28].

Human actions have radically changed, and are continuing to change, ecosystem structure (extent and physical condition), especially in sensitive ecosystems, across much of the world[29]. The IPBES Global Assessment on Biodiversity and Ecosystem Services found that all five ecosystem structure indicators[30] 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% decrease[31]. 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 rapidly[32], 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 estimated for the oceans both as an overall marine value and in terms of six essential biodiversity variables[33] (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 2). 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 effects[34].

Figure 2. The relative impact of six direct drivers on the state of marine and coastal biodiversity at the global level (Adapted from IPBES 2019)

[25] 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)

[26] 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.

[27] 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.

[28] 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.

[29] 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

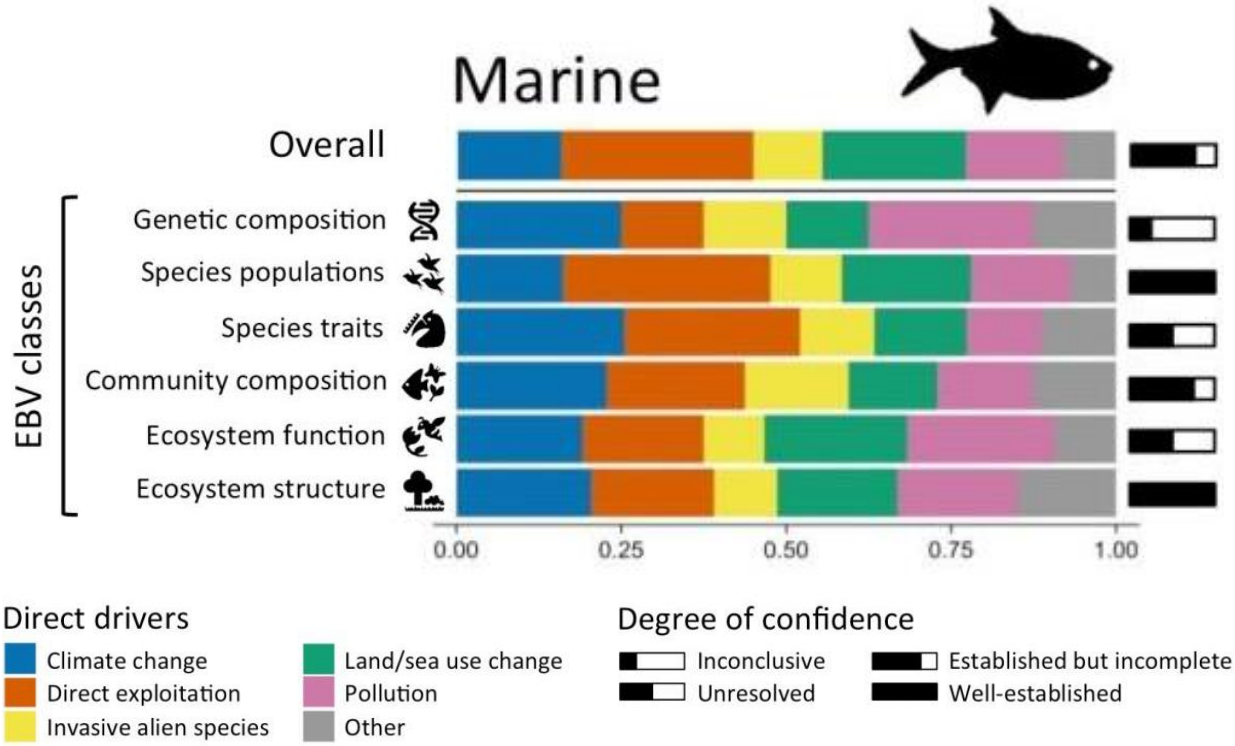
[30] Five indicators: Mangrove forest area, coastal protection habitats, percentage of live coral cover, coastal carbon-rich habitat, seagrass meadow area

[31] 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.

[32] Ibid

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

[34] 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



Direct extraction of living marine resources has had a substantial effect on the ocean. Predatory fish biomass has been falling by 14% per decade[35], and the proportion of fish stocks within biologically sustainable levels by 6% per decade[36]. The proportion of global fish biomass that is made up of predatory fish has declined by a factor of around 10 since 1880[37] while the Marine Trophic Index, a measure of the average trophic level of fish caught within multiple regions, has fallen from around 4.0 to around 3.6 in the last 60 years[38]. 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 species[39]. The declines in range size, numbers of populations, and population sizes of many species will all tend to reduce their genetic diversity[40]. Reduced genetic diversity reduces a species' resilience to changes in environmental conditions and increases its risk of extinction[41].

There are indications that marine habitat modification is accelerating and may be posing a growing threat to marine fauna[42]. 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

[35] 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
[36] FAO. 2016. The State of World Fisheries and Aquaculture 2016. Food and Agriculture Organisation of the United Nations. Rome.
[37] Ibid
[38] Ibid
[39] 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
[40] 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
[41] 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
[42] McCauley, et al. 2015. Marine defaunation: Animal loss in the global ocean. Science 347: 1255641. doi: 10.1126/science.1255641

waters[43] [44]. 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 regions[45].

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 sea[46]. The status of and threats to these biomes is provided briefly below, with an emphasis on SIDS and LDCs.

The multiple use of shelf systems[47], especially for marine and coastal natural resources, tourism and coastal development, has resulted in cumulative impacts[48] and the loss or degradation of ecosystems and habitats. Drivers of shelf ecosystem decline include fishing, eutrophication, solid and liquid waste, habitat fragmentation, underwater noise and invasive species[49]. Indirect effects of land-use change are mediated through freshwater runoff from land and in rivers. Climate change is increasingly pervasive in shelf systems[50], through increasing temperature, acidification, deoxygenation and intensifying storms.

These pressures have substantially altered the marine and coastal biodiversity of shelf systems. Global spatial coverage of mangroves declined by 37.8% up to 2010[51] while seagrass meadows have declined by 10.9% per decade[52]. Warm water coral reefs have also shown long-term decline[53] and are losing live coral cover at a rate of 4% per decade[54]. Severe coral bleaching events are increasing in frequency and intensity because of rising sea temperatures[55]. 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[56] [57].

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

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[43] 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

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

[45] 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.

[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] Shelf system**s** extend from the shoreline to 200 m depth, comprising 8% of the earth's surface

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

[49] 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.

[50] 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

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

[52] 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.

[53] 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.

[54] 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.

[55] 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.

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[57] 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.

100 km of the coast[58]. 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 Ocean[59] 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 noise[60]. The ocean surface is sensitive to climate change, experiencing a globally averaged 0.44°C warming between 1971 and 2010[61]. Environmental changes have been documented in ocean circulation and chemistry, thermal stratification, composition and growth of phytoplankton[62] [63], biogeochemical cycling[64] [65], and the distribution of ecologically key species with effects on food webs[66] [67]. Fishing has altered trophic relationships[68] and the number of overexploited fish stocks. For example, increased fishing for tuna and billfish over the past decades has resulted in a 50% decline in yields in some regions[69]. Marine debris accumulation is increasingly being documented though the effects on biodiversity are often poorly known[70].

The deep-sea[71] is the largest and most three-dimensional biome on Earth. Biological processes here remineralise nutrients and sequester carbon, including of anthropogenic origin[72]. Almost all life in the deep-sea depends on climate-sensitive biological processes in the surface layer[73] and in sea-ice. Species numbers in the deep-sea are hard to assess, but thought to rival other global biodiversity hotspots[74].

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[58] Kummu, 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

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

[60] 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.

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[64] 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

[65] 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.

[66] 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.

[67] 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

[68] Pauly, D. 1998: Fishing down marine food webs. Science, 279: 860–863.

[69] Sherman, K and Hempel, G. 2009. The UNEP large marine ecosystem report: A perspective on the changing conditions of the LMEs of the world's regional seas. UNEP Regional Seas Report and Studies, United Nations Environment Programme, Nairobi, Kenya.

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

[71] The waters and seabed below the euphotic zone (200 m)

[72] 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.

[73] 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

[74] 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.

Anthropogenic damage in the deep-sea is less than in shallower waters but is increasing rapidly[75]. Some damage to deep-sea ecosystems, occurs via the globally connected current system especially through pollutants. A severe impact is bottom trawling, which can result in rapid declines in populations of slow growing fish species and extensive damage to unique benthic habitats[76], especially on seamounts. Deep-sea mining is expected to be a major threat in the near future[77]. Long-term effects of dumped waste, especially radioactive material and plastics from marine debris are still largely unknown[78]. 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 interactions[79].

Marine and Coastal Ecosystem Services

The biotic and abiotic assets of the marine environment constitute natural marine capital generating a bundle of ecosystem services vital for human well-being[80]. 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 structures[81]. Ecosystem functioning is based on the relationship between abiotic and biotic factors. For the latter, the importance of biodiversity is widely recognised as being fundamental[82].

The ecosystem services provided by the oceans can be broken down into three main categories[83]. 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'[84]. 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[85] [86].

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

[75] Ibid

[76] 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

[77] 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

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

[79] 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.

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

[81] Ibid

[82] 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.

[83] WOA 2016 Part II Ch 1.

[84] Halpern et al., 2012

[85] Halpern et al., 2012

[86] Cavanagh et al. 2016

policies and strategies oriented toward the sustainable use of marine natural capital stocks[87]. Assessment of marine ecosystem services often lags behind the assessment of terrestrial ecosystem services, hindered by inadequate knowledge and lack of data[88]. 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-being[89]. 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 ecosystems[90].

1.3. Action Targets within the Global Biodiversity Framework that are Relevant to Marine and Coastal Biodiversity and Capacity Development.

The post-2020 global biodiversity framework builds on the Strategic Plan for Biodiversity 2011-2020 and will set 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, is expected to adopt the new post-2020 global biodiversity framework. This framework will address 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. Many Parties to the Convention at SBSTTA 24 noted, however, that the theme of marine and coastal biodiversity was not adequately represented in the draft framework. While the targets are intended to cover all ecosystems, the framework has since been further developed by the Parties reflecting some marine and coastal biodiversity elements..

This report used the Recommendation adopted by the Working Group on the Post-2020 Global Biodiversity Framework, with the draft framework outlined in the Annex, that was released on 26 June 2022[91]. This version of the framework has 22 action-oriented targets for 2030 (see Annex 2) which, if achieved, will contribute to 2030 Milestones and the outcome-oriented goals for 2050[92]. 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. As the framework is still in development at the time of writing this report, the targets mentioned here may be subject to change.

Effective implementation of the framework will require a substantial level of capacity development and includes[93]:

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

[87] 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.
[88] Townsend, M., et al., 2014. Overcoming the challenges of data scarcity in mapping marine ecosystem service potential. Ecosyst. Serv. 8, 44–55.
[89] Buonocore, E. et al. 2021. Trends and evolution in the concept of marine ecosystem services: An overview. Water 13: 2060
[90] 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.
[91] CBD 2022. Recommendation adopted by the Working Group on the Post-2020 Global Biodiversity Framework. CBD/WG2020/REC/4/1: https://www.cbd.int/doc/recommendations/wg2020-04/wg2020-04-rec-01-en.pdf
[92] Ibid
[93] 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.

The Sustainable Ocean Initiative is in an opportune position to support capacity-building activities to enable the achievement of the goals and targets of the GBF in marine and coastal areas. A preliminary assessment of the relevance of each of the Action Targets within the GBF to the Sustainable Ocean Initiative is provided in Annex 2. Targets which are thought to have the highest relevance for SOI are those that tackle the key drivers of change for marine and coastal ecosystems as defined by IPBES[94] (Table 3). 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 to SOI. 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 GBF (Table 3). 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). Supporting the delivery of these secondary targets is also an option for SOI depending on the resources available for the initiative going forward. There are a number of action targets not listed in Table 3, which are regarded as having a lower relevance to SOI (Targets 11 – 13 and 17). Potential SOI activities to support these targets are also provided in Annex 2.

Table 3. A Preliminary Assessment of the Relevance of the GBF Action Targets to the Sustainable Ocean Initiative 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

[94] 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

2. Review of Capacity Building Needs Related to the Marine and Coastal Biodiversity Elements of the Post-2020 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 Programme[95]. 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 them[96]. 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[97] [98].

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 embedded[99]. For capacity-building to be effective, all three levels must be addressed[100].

2.2 Capacity Building Needs and Gaps for Marine and Coastal Biodiversity

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).

The importance of marine capacity development and technology transfer has been clearly expressed at many intergovernmental processes and fora[101]. National inventories of ocean science capacity exist only

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

[96] 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

[97] CBD/POST2020/WS/2020/2/INF/1

[98] 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

[99] 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

[100] 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.

[101] 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.

in a few countries[102]. The first World Ocean Assessment (WOA I) of the Regular Process[103] noted a gap in capacity for the integrated assessment of the marine environment and contained two chapters specifically on capacity-building[104]. Chapter 32 focuses on capacity-building in relation to human activities affecting the marine environment[105] while Chapter 53 provides information on capacity-building needs in relation to the status of species and habitats[106]. 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 32[107]. A subsequent series of regional workshops was held in 2018 to inform the second World Ocean Assessment (WOA II), which is due to be launched in 2021. This second WOA focuses on evaluating trends and identifying gaps, building on the baseline set by WOA I.

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 States[108].

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 externally[109]. 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 platform[110].

Capacity development is a key element in current negotiations under UNCLOS to develop a legally binding implementing agreement to conserve and sustainably use marine biodiversity in areas beyond national

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

[103] 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 to regularly review the environmental, economic and social aspects of the world's oceans, both current and foreseeable: https://www.un.org/regularprocess/

[104] 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

[105] https://www.un.org/Depts/los/global_reporting/WOA_RPROC/Chapter_32.pdf

[106] 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

[107] https://www.un.org/Depts/los/global_reporting/WOA_RPROC/Chapter_32.pdf

[108] 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.

[109] CBD/POST2020/WS/2020/2/INF/1

[110] See https://ipbes.net/sites/default/files/downloads/Decision_IPBES_3_1_EN_0.pdf

jurisdiction[111]. The GEF/FAO Global sustainable fisheries management and biodiversity conservation in the Areas Beyond National Jurisdiction Program (Common Oceans ABNJ Program)[112] 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 agreements[113].

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 recently conducted a second online CD needs assessment[114] 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 form[115].

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 report in 2019 to review all capacity-building programmes and initiatives implemented by ISA between 1994 and 2019, through the organization of an international workshop on "Capacity development, needs and resources assessment" 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.

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 14[116]. 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 capacity-building

[111] 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.

[112] http://www.fao.org/in-action/commonoceans/en/

[113] http://www.fao.org/fileadmin/user_upload/common_oceans/docs/FinalEmailVersionCapacitySurvey_em_071617b.pdf

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

[115] https://www.ioc-cd.org/index.php?option=com_oe&task=viewDocumentRecord&docID=27723

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

efforts[117], 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 management[118]. 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 scales[119]. 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 2020[120] 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) [121].

Capacity needs and gaps for the implementation of the Convention were divided into two groups: functional and technical capacities[122]. 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.

The main types of functional capacity needs were further divided into five categories[123]:

[117] 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
[118] Ibid
[119] Ibid
[120] CBD/POST2020/WS/2020/2/INF/1
[121] 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)
[122] CBD/POST2020/WS/2020/2/INF/1
[123] 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

- 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 study[124] and are summarised below (Table 4):

Table 4. 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
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

[124] CBD/POST2020/WS/2020/2/INF/1

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 issue[125]. 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
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

[125] CBD/POST2020/WS/2020/2/INF/1

It should be noted that, as mentioned in Decision CBD/COP/14/L.12, the process for preparing a long-term strategic framework for capacity building beyond 2020, must be fully aligned with, and support the follow-up to the Strategic Plan for Biodiversity 2011-2020 and the development of the post-2020 global biodiversity framework. This includes coordinating the timetables of both processes to be mutually supportive. In other words, as capacity needs are identified through the process of preparation and design of the post-2020 global biodiversity framework, capacity-related challenges in the implementation of the current Strategic Plan are identified and lessons learned are surfaced, response measures must be formulated and adapted accordingly in the strategic framework for capacity building beyond 2020[126].

It should also be noted that there are a number of capacity-building needs assessments at the global level such as the review of Capacity Development needs by UNESCO-IOC, or a capacity needs assessment for all ecosystems by the FAO to inform the United Nations Decade on Ecosystem Restoration in the form of a global online survey.

2.3 Capacity Needs for Marine Issues Across the GBF in Relation to Implementing and Reporting on the Action Targets for the Marine and Coastal Environment.

In section 1.3, the GBF Action Targets that can be considered most relevant to SOI going forward 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 countries that can be targeted by the SOI through its next action plan. 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 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 3). A recent 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 countries[127]. 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 government, NGOs, local communities, academia and the private sector.

Offshore waters[128] both within nations' EEZ's and ABNJ are particularly in need of attention especially for SIDS and LDCs where information is scarce. 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 targets while other, often remote areas, can be very data-poor.

[126] 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.

[127] 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

[128] Waters beyond 12 nautical miles of the coast

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 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.

3. Analysis of the Global Landscape of Capacity Building Initiatives and Opportunities Relevant to the Post-2020 Global Biodiversity Framework for Marine and Coastal Biodiversity.

This section provides an assessment of selected capacity building initiatives across the world focused on the marine and coastal environment. The initiatives reviewed are implemented by a range of actors, including global organizations, funded development programmes and projects, national authorities, non-governmental organisations and regional bodies. The initiatives highlighted primarily focus on activities that tackle the key issues for marine and coastal biodiversity and are relevant to the post-2020 GBF. A number of case studies are provided for successful capacity building initiatives with regards to marine and coastal biodiversity.

Building capacity for research and management of marine and coastal ecosystems is a critical aspect of meeting agreed goals of MEAs such as the SDG's and the post-2020 GBF. Capacity-building or development is therefore a crucial part of the plans and programs to achieve marine biodiversity conservation and the sustainable use of marine resources. A number of ongoing efforts to build capacity for the assessment and management of marine and coastal systems are provided in this section. Global initiatives over the next decade will also have a very important role in building capacity for the marine and coastal environment. As mentioned in the previous section (1.2) the main drivers of change for the oceans, in order of influence, are direct exploitation, land/sea use change, climate change and pollution[129]. Capacity-building efforts presented in this section are linked to addressing these drivers and to the main target recipients of future activities of the Sustainable Ocean Initiative (namely SIDS, African Coastal States and LDCs). Several regional, national, and international programs and initiatives are already in place to support SIDS to acquire the prerequisite capacity and infrastructure (SDG 14.a) required to understand, monitor, and protect their marine environment in line with nationally identified targets under SDG 14 and the SAMOA Pathway and to fulfil their obligations in the framework of global conventions[130].

3.1. Building Ocean Science Capacity

A cross-cutting theme that became very apparent in the assessment of capacity-building needs (Section 2.2) is the inherent lack of scientific knowledge for marine and coastal ecosystems in many parts of the world but particularly for SIDS and LDC's. This is also coupled with a poor understanding of the current capacity of these countries to collect marine information and act on it.

There are concerted efforts at the global level to tackle the gaps in capacity to collect and report on scientific information for the marine and coastal environment. The Group on Earth Observations (GEO) is a voluntary international partnership of 102 governments and more than 100 participating organisations working to improve the availability, access and use of open Earth observations to impact policy and decision making in a wide range of sectors[131]. During its first ten-year implementation period, 2005–2015, GEO identified biodiversity as a key 'Societal Benefit Area', resulting in the formation of the GEO Biodiversity Observation Network, GEO BON[132]. The Marine Biodiversity Observation Network (MBON)[133], a thematic focus of GEO BON, has emerged as a global community of practice for sustained, operationalized measurements of marine biodiversity[134]. MBON facilitates the coordination between

[129] 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

[130] 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

[131] https://earthobservations.org/index.php

[132] https://geobon.org/

[133] https://geobon.org/bons/thematic-bon/mbon/

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

individual monitoring programs and existing networks, promotes monitoring best practices and provides a framework for data management, communication, and application of results. MBON also serves as the biodiversity arm of GEO Blue Planet, through which the social and economic needs of governments, intergovernmental bodies, and other stakeholders for marine biodiversity data are addressed. MBON is also participating in GEO Blue Planet efforts to support marine biodiversity and fisheries monitoring activities in developing nations, including SIDS. Overall, GEO BON is currently focusing its efforts on the implementation and adoption of the Essential Biodiversity Variables (EBVs) and related monitoring guidelines and interoperable data management systems, and through targeted capacity building efforts at the national and regional level (e.g. development of a "BON in a Box" toolkit) focused on improved observations to facilitate policy and decision-making. This approach reflects the need to provide a top-down design for a global observation system (e.g. EBV's, monitoring guidelines, interoperable data systems) with the pragmatism of a bottom-up construction process (e.g. through national and regional capacity building)[135].

In 2014, the UN General Assembly adopted the Oceans and the law of the sea Resolution (A/RES/69/245) which reiterated the essential need for cooperation, including through capacity building and transfer of marine technology, "to ensure that States, especially developing countries, in particular the least developed countries and small island developing States, as well as coastal African States, are able both to implement the Convention[136] and to benefit from the sustainable development of the oceans and seas, as well as to participate fully in global and regional forums and processes dealing with oceans and law of the sea issues".

UNESCO-IOC is an integral part of these efforts through its capacity development strategy and technology transfer guidelines[137] [138], which are implemented through the International Oceanographic Data and Information Exchange (IODE). The IOC also coordinates ocean observation and monitoring through the Global Ocean Observation System (GOOS), which is developing a global network to provide information and data exchange on the physical, chemical and biological aspects of the ocean[139]. Another project within IODE is the Ocean Biogeographic Information System (OBIS)[140], a standardized, globally-accessible database for the observations of diversity, distribution, and abundance of life in the sea. OBIS actively supports international processes, such as the UN World Ocean Assessment, the CBD and IPBES assessments.

The MBON, GOOS, and OBIS have agreed to leverage the strengths and broad partnerships represented by these three groups. One on the agreed activities is to develop global capacity for data collection, data management, and ecological forecasting by sharing and promoting best practices, manuals and guides. Another is to support assessments and targets such as those established by IPBES, CBD, the United Nations and others, and liaise with other relevant national and international initiatives[141].

Capacity development efforts of the Ocean Decade will focus on, but not be limited to LDCs and SIDS and resource needs for these countries will be addressed as part of the Ocean Science Decade's resource mobilisation efforts. A strategic framework to guide capacity development initiatives has been developed

[135] https://geobon.org/about/vision-goals/

[136] UNCLOS

[137] UNESCO-IOC. 2005. IOC criteria and guidelines on the transfer of marine technology (CGTMT). Paris: IOC Advisory Board of Experts of the Law of the Sea (IOC/ABE-LOS). http://unesdoc.unesco.org/images/0013/001391/139193m.pdf

[138] UNESCO. 2016. IOC capacity development strategy (2015-2021). Paris. http://unesdoc.unesco.org/images/0024/002440/244047m.pdf

[139] 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.

[140] https://obis.org/

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

(Table 6) as part of the implementation plan, which builds on IOC's capacity development strategy (Table 5) for 2015-2021.

Table 6. Strategic framework for capacity development initiatives during the Ocean Decade

Desired Result	Priority Activities
1. Human resources developed at individual and institutional levels	• Academic and higher education opportunities including through online and distance learning • Continuous professional development • Sharing of knowledge and expertise including through community building • Training, including training of trainers • Integration of ocean science in curricula in primary and secondary schools including information on ocean science careers • Actively improving gender, generational and geographic diversity
2. Access to technology and physical infrastructure established or improved	• Facilitating access to technology and infrastructure (e.g. research facilities, instruments, research vessels, high power computing, digital telecommunications) • Developing skills to lead and participate in technology and infrastructure development • Promoting technical and technological cooperation and peer to peer exchange between stakeholders
3. Global, regional, and sub-regional mechanisms strengthened	• Identifying specific national and regional capacity development needs through needs assessments • Strengthening existing national and regional resources and networks for capacity development • Supporting regional and sub-regional organisations to be leaders in, and amplifiers of, capacity development
4. Development of ocean research policies in support of sustainable development promoted	• Supporting identification of ocean research priorities • Supporting development of national marine science management procedures and national policies
5. Awareness and understanding increased, and exchanges facilitated on role and values of the ocean	• Ocean literacy initiatives • Informal education including through museums, zoos or aquariums • Public information and communication[142]
6. Sustained, long-term resource mobilisation reinforced	• Mobilising in-kind and financial support for capacity development initiatives[143]

Ocean literacy[144] is also an important component of the Ocean Decade with the overall aim to scale up action in all sectors of society so that there is a fundamental shift in the way the ocean is valued, understood and managed.

IOC-based initiatives such as the GOOS and the OBIS, as well as others outside the IOC umbrella[145], are key aspects of the Ocean Decade to help standardise ocean data collection within and between nations and build capacity where needed. Linking capacity development and technology transfer to sustained ocean monitoring is regarded as a win-win proposition in that trained local experts will benefit from joining global communities of experts[146]. However, significant funds will be required to set up and maintain the technical

[142] Further detail provided in Section 2.7 of the Implementation Plan

[143] Further detail provided in Section 3.2 of the Implementation Plan

[144] Defined here as the understanding of human influence on the ocean and the ocean's influence on people

[145] For example, the Partnership for Observation of the Global Oceans (POGO), the Scientific Committee on Ocean Research (SCOR), the Group on Earth Observations Biodiversity Observation Network (GEO BON) and GEO Blue Planet

[146] 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

and scientific infrastructure of the GOOS and to develop the human capacity to implement, deploy and maintain it[147]. Achieving the ambitions of the Ocean Decade in terms of global ocean observation will require all maritime and coastal nations within the IOC to contribute and support capacity-building activities[148]. Collaboration and partnerships with all stakeholders, particularly the private sector will be critical to achieve success.

3.2. Addressing the Drivers of Change through Capacity-Building

Direct exploitation of Living Marine Resources

Direct exploitation of living marine resources (primarily fishing) has been reasonably well-monitored in developed countries but is often poorly reported in countries with fewer resources for monitoring and management. This is particularly the case for small-scale fisheries (SSF) in developing countries (e.g. many SIDS and LDCs) where catch monitoring is both logistically and economically challenging. Assessing the sustainability of small-scale fisheries and then implementing measures to improve or maintain sustainable resource use is extremely important in terms of biodiversity conservation, food security and poverty eradication. The Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines) were endorsed by the FAO in 2014 to support the visibility, recognition and enhancement of small-scale fisheries and are the first international instrument entirely dedicated to SSF[149]. The guidelines support responsible fisheries and sustainable social and economic development through the promotion of a rights-based approach and are focussed on the needs of developing countries.

Implementing the SSF Guidelines are one of the components of the FAO's Fisheries and Aquaculture Department that contribute to the organisations cross-cutting theme of capacity building[150]. Other activities include:

- Responsible and efficient small-scale fishing technologies
- Use of socio-economic and demographic indicators in community-based and integrated coastal zone management
- Microfinance and micro-enterprise development
- Strengthening fisher organizations, cooperatives and self-help groups
- Disaster preparedness; support to emergency assistance and rehabilitation
- Training on selective fishing gear, bycatch reduction and sustainable fishing methods.

Capacity building is achieved through a range of techniques such as the provision of training courses within Technical Cooperation Projects (TCPs), preparation of training materials (e.g. surveillance methods, extension manuals, technical manuals, etc.), awareness raising through training/workshops, financial and technical support to existing training programmes carried out by partner institutions and custom training courses on specific topics[151].

[147] 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.
[148] Ibid
[149] FAO. 2015. Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication. Food and Agriculture Organization of the United Nations, Rome.
[150]
[151] http://www.fao.org/fishery/topic/16033/en

A range of best practice case studies have been published in recent years relating to the implementation of the SSF Guidelines to encourage the sharing of knowledge and experiences[152] [153]. There are many examples of the best practice to choose from in these reports, but the following one highlights an approach that can be used to effectively tackle the issue of capacity for small-scale fisheries that will help to reduce unsustainable exploitation of marine resources and therefore benefit marine and coastal ecosystems:

***Fisheries learning exchanges as a good practice in small-scale fisheries in Madagascar and Mozambique*[154]**

Fisheries learning exchanges (FLEs) are a form of knowledge exchange that is becoming increasingly popular. FLEs are peer-to-peer gatherings in which fisheries stakeholders from different communities freely exchange information and experiences surrounding fisheries challenges and solutions. An FLE between Mozambique and Madagascar was used to explore how FLEs can aid the sharing of experiences and good practices among SSF stakeholders and the further application of these practices. In 2015, a delegation from Mozambique including fishers from two villages visited a fishing community in south-west Madagascar and engaged in hands-on or informal activities to promote knowledge-sharing.. A number of challenges were also identified including insufficient levels of translation, reduced participation by women, complex and time-consuming travel logistics and a lack of follow-up support. To helps address these challenges, the main recommendations from the study for FLE organisers were to focus on (i) maximizing hands-on and informal activities, (ii) fully understanding the cultural norms at play when inviting participants, (iii) dedicating adequate time and personnel to make travel arrangements for participants, and (iv) providing financial and logistical support for participants to implement what they have learned after the FLE.Since this FLE, further exchanges were completed by Blue Ventures, one of the collaborating organisations, in Kenya, Tanzania, Mayotte, Comoros, Mexico, India and Indonesia. Experiences from these FLEs and others contributed to the development of a handbook on FLE best practice in collaboration with the FAO[155].

Capacity-building within the Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security (CTI-CFF)

A good example of a large-scale regional approach to address marine governance with a substantial capacity-building component is the Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security (CTI-CFF)[156], a regional collaboration between six countries to better manage the marine resources of the Coral Triangle region. Human and financial support for the CTI-CFF was provided through the U.S. Coral Triangle Initiative Support Program (USCTI), a five-year, multiparty effort, which included a focus on

[152] FAO. 2019. Westlund, L. & Zelasney, J. eds. Securing sustainable small-scale fisheries: sharing good practices from around the world. FAO Fisheries and Aquaculture Technical Paper No. 644. Rome. 184 pp. Licence: CC BY-NC-SA 3.0 IGO.

[153] Zelasney, J., Ford, A., Westlund, L., Ward, A. and Riego Peñarubia, O. eds. 2020. Securing sustainable small-scale fisheries: Showcasing applied practices in value chains, post-harvest operations and trade. FAO Fisheries and Aquaculture Technical Paper No. 652. Rome, FAO. https://doi.org/10.4060/ca8402en

[154] Thomson, K.R. et al., 2019. Fisheries learning exchanges as a good practice in small-scale fisheries in Madagascar and Mozambique. In: FAO. 2019. Westlund, L. & Zelasney, J. eds. Securing sustainable small-scale fisheries: sharing good practices from around the world. FAO Fisheries and Aquaculture Technical Paper No. 644. Rome. 184 pp. Licence: CC BY-NC-SA 3.0 IGO

[155] Rocliffe, S. 2018. Fisheries learning exchanges: a short guide to best practice. Rome, FAO. Licence: CC BY-NC-SA 3.0 IGO.

[156] The Coral Triangle Initiative (CTI): Regional Plan of Action: Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF). The Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security; 2009.

strengthening institutional capacity[157]. Capacity-building activities included training at project sites and at the national level, regional exchanges and multi-day meetings between CT country individuals and technical experts. Regional exchanges were a key activity to foster leadership and increase institutional capacity for improved marine management. The exchanges also led to an extensive social network across the CT region. Analysis of the regional exchange network showed that it fostered information sharing among participants across national and organisation boundaries but also required a strong coordinating entity to ensure the continued strength and sustainability of the network[158]. Capacity building programs for MPA networks at the national level as part of the CTI-CFF were implemented by the National Oceanic and Atmospheric Administration (NOAA) Marine Protected Areas Center International Marine Protected Areas Capacity Building Team (IMPACT)[159]. The IMPACT provides a structured framework for resource managers to come together, directly experience and learn from one another, and apply the best available information, tools and skills to the management of MPAs. The team establishes agreements with in-country partners to support training and skill building on an array of topics prioritized by in-country managers and practitioners dealing with pressing and changing management challenges. Topics are co-determined with the in-country partners as part of the programme needs assessment process before program implementation. An assessment of IMPACT's capacity building programs in the Philippines and Indonesia but with reference to other regions outside the Coral Triangle concluded that three elements were important for the success of MPA networks: (a) ensuring and maintaining strong leadership, commitment, and political will at multiple levels; (b) developing an MPA social and learning network for sharing capacity across individual MPAs within the network; and (c) providing a means for continuous opportunities for learning and capacity development at the site and network levels[160].

Deep Sea Fisheries

Capacity-building to sustainably manage deep sea fisheries further offshore in the high seas / ABNJ has also been an important part of the FAO's capacity development program. A five-year project funded by the Norwegian Government was implemented by the FAO in 2011 entitled 'Support to the Implementation of the International Guidelines on the Management of Deep-sea Fisheries in the High Seas'[161]. The FAO International Guidelines for the Management of Deep-sea Fisheries in the High Seas were adopted in 2008; to provide guidance for States and deep-sea Regional fishery management organizations or arrangements (RFMO/As) in the adoption of management and conservation measures for deep-sea fisheries in the high seas, prevent significant adverse impacts to vulnerable marine ecosystems (VMEs), and protect marine biodiversity. However, many challenges remain in the management of deep-sea fisheries. The aim of the project was to improve the management of deep-sea fisheries and conservation of marine biodiversity by States and deep-sea RFMO/As, and enhance engagement and communication among stakeholders by building capacity in these fields. The project also worked to establish a knowledge baseline in relation to these fisheries and related ecosystems.

The objective was to contribute to the sustainable use of deep-sea marine living resources and the protection of VMEs through the implementation of the International Guidelines on the Management of Deep-sea Fisheries in the High Seas, specifically by addressing areas for further guidance and gaps in knowledge as identified through multi-stakeholder consultation. The project outcomes were the improved regional understanding of States, deep-sea RFMO/As, and other relevant stakeholders of management

[157] Christie, P. et al. 2016. Improving human and environmental conditions through the Coral Triangle Initiative: progress and challenges. Current Opinion in Environmental Sustainability 2016, 19:169–181. http://dx.doi.org/10.1016/j.cosust.2016.03.002

[158] Pietri DM, Stevenson TC, Christie P: The Coral Triangle Initiative and regional exchanges: strengthening capacity through a regional learning network. Glob Environ Change 2015, 33:165-176.

[159] https://nmsmarineprotectedareas.blob.core.windows.net/marineprotectedareas-prod/media/archive/nationalsystem/international/mpa-impact.pdf

[160] Ibid

[161] http://www.fao.org/3/I8526EN/i8526en.pdf

measures for sustainable deep-sea fisheries management and the conservation of associated marine biodiversity, and enhanced scientific knowledge on VMEs through information-sharing and collaborative processes. Project outputs included collaboration in the collection of relevant data, improved tools for the identification of VME species, an improved knowledge base of VMEs in major deep-sea fishing areas, technical assistance in areas not covered by RFMOs, and the sharing of experience and best practices at a global level.

The project successfully built capacity at a technical level, through its contribution to scientific surveys in deep-sea areas in the high seas and the subsequent analysis and reporting of results, and enhanced regional understanding of management processes for regulating deep-sea fisheries in the areas beyond national jurisdiction, including inter-governmental and other collaborative processes. Implementation of the International Deep-sea Fisheries Guidelines was supported through information-sharing and cross-sectorial collaboration with the fishing industry, national research institutes, governments, and intergovernmental and non-governmental organizations. The project established the foundations for the development of processes and practices for sustainable deep-sea fisheries management and associated biodiversity conservation at the global level. The main activities completed over the five years were:

- Consultation guidelines developed on the collection and use of data, and published after meetings with stakeholders.
- Collaboration links developed and awareness raised among stakeholders.
- Expert groups met to develop regional deep-sea shark, sponge, and coral reviews and guides that were subsequently prepared, discussed and tested, with training for their use.
- Regional meetings held for the dissemination of technical information and tools on VMEs, and global guidance given on the application of VME criteria.
- Multi-stakeholder meetings organized to engage parties in development of possible management and conservation measures.
- Workshops held on assessment and management of key deep-sea stocks globally, and technical advice, information and tools provided.
- Global assessments for data-poor areas complemented through partnerships and use of new technologies.
- Scientific surveys conducted in a data-poor case study area and results analysed to address knowledge gaps.
- Best practices and effective solutions identified among regions on VME encounter protocols, and background document published.
- Multi-stakeholder meetings held on impact assessments.
- Worldwide Review on Bottom Fisheries in the High Seas publication update initiated.
- Regional workshops held to compile knowledge on deep-sea fisheries in data-poor areas for inclusion in relevant chapters of the Worldwide Review.

Illegal, Unreported and Unregulated Fishing

Tackling illegal, unreported and unregulated fishing is also critical to ensure the sustainable use of marine resources, mainly in offshore waters. The Agreement on Port State Measures (PSMA) is the first binding international agreement that specifically targets IUU fishing. It established a minimum set of standard measures for Parties to apply when foreign vessels seek entry into their ports or while they are in their ports. The Agreement entered into force in June 2016. After the approval of the PSMA, FAO initiated a global awareness-raising and capacity building campaign[162] to ensure that States understood both the benefits of the PSMA as well as the requirements of implementation. It also gave countries, RFMOs, and

[162] http://www.fao.org/port-state-measures/capacity-development/overview/en/

other organizations an opportunity to discuss their concerns and questions regarding the process for becoming Party and their responsibilities in the implementation of the PSMA. Following this campaign and to bolster FAO's technical assistance in combatting IUU fishing, FAO developed a global Capacity Development Programme, which is currently ongoing, to provide assistance to developing States to implement the PSMA, plus complementary instruments and tools.

Regional workshops involving over 100 countries were held in South East Asia, the south Pacific, Caribbean, South America, North West Indian Ocean, the Atlantic coast of Africa and the Mediterranean between 2012 and 2016. The ongoing capacity development program has provided assistance through three mechanisms:

1. Technical Cooperation Programmes (TCPs) – activities to support the adoption or implementation of the PSMA, with 37 countries involved since 2015
2. FAO's Global Capacity Development Progamme to support the implementation of the PSMA and complementary international instruments and regional mechanisms to combat IUU fishing

This program was endorsed by FAO in December 2016 with the core aim to improve States' capacity for the effective implementation of port State measures (PSMs) and complementary monitoring, control and surveillance (MCS) operations, measures and tools to combat IUU fishing[163]. The implementation of different program elements in each country depends on their state of advancement in the adoption and implementation of provisions and procedures consistent with the PSMA and complementary MCS operations, measures and tools to combat IUU fishing. At the country level, projects' activities include assistance to:

- strengthen national policy and legislative frameworks to combat IUU fishing;
- the strengthening of MCS enforcement institutions and systems, including through South-South Cooperation and mechanisms for regional harmonisation, coordination and cooperation;
- the enhancement of capacity to improve flag State performance in line with the FAO Voluntary Guidelines, to perform inspections in port and to more effectively take action against persons and entities engaged in IUU fishing; and,
- the implementation of market access measures, such as catch documentation and traceability schemes.

Marine Protected Areas and Capacity-Building

There have been extensive efforts globally to build capacity for MPA designation and effective management over the last few decades in order to try and meet Aichi Target 11 and ensure that any new MPAs are adequately managed and not 'paper parks'. However, substantial gaps in capacity remain, especially for many SIDs and LDCs. A lack of trained personnel was regarded as a major constraint to effective MPA management as far back as the late 1990's[164] and is still the case for some countries. The extent and range of capacity-building initiatives for MPAs is too large to cover in this report, but this section provides a number of successful examples at the global and regional level. Protecting marine and coastal biodiversity spatially is an important tool to address one of the key drivers of change for these ecosystems as reported by IPBES. However, MPAs are not a panacea, and should be used with other activities that

[163] These include: conservation and management measures adopted by relevant RFMOs, the FAO Voluntary Guidelines for Flag State Performance, the International Plan of Action to Prevent, Deter, and Eliminate IUU Fishing, the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas, the United Nations Fish Stocks Agreement, other bilateral agreements, market access measures, including the FAO Voluntary Guidelines for Catch Documentation Schemes.

[164] Wells, S., Francis, J and Muthiga, N. 2003. Marine Protected Area Management in the Western Indian Ocean. In: *Capacity Needs to Manage Protected Areas in Africa.* Publication for World Parks Congress, Durban. TNC/WCPA/IUCN

address issues such as land- or sea-based pollution, direct extraction and climate change to ensure marine biodiversity has the best chance of protection and recovery from multiple stressors.

The provision of training for MPA managers and practitioners is a key component of capacity building. There is a wide range of approaches and materials available such as in-situ training, on-line courses and webinars, and guidance materials such as guidelines and manuals. Key examples of training programs and some reflections on the 'pros and cons' of the approach are summarised below.

In-situ Training and Certification

In-situ capacity building opportunities are often considered to be the best option when or where available. For MPA practitioners based in the field and directly responsible for decision-making either nationally or at site-level, an on-line or remote learning course (although useful as an introduction to a topic) may not be the best option for developing the practical skills and real understanding of good management. Access to on-line resources can also be an issue in some locations due to low band width or intermittent coverage. Some good examples of successful programmes are aspects of the IMPACT approach mentioned previously and the certification program for MPA professionals in the Western Indian Ocean (WIO-COMPAS)[165], a joint initiative of the Western Indian Ocean Marine Science Association (WIOMSA) and the Coastal Resources Center (CRC) at the University of Rhode Island (URI).

The overall goal of WIO-COMPAS is to establish a professional association that provides a framework to promote competence, professionalism, leadership, innovation and ethical conduct amongst Marine Protected Area (MPA) managers[166]. It recognizes and accredits individuals working in MPAs whose knowledge and skills meet a clearly defined professional standard. It then further enhances their knowledge and skills through networking with other professionals, sharing new ideas and thinking about MPA management and coastal governance. The WIO-COMPAS programme is structured around the four elements of Experience, Examination, Education and Ethics. The program provides candidates with professional development sessions during the certification assessment. Applicants are selected on merit and undergo a rigorous assessment during which they are scored in their competence in multiple areas. A code of ethics binds together individuals who become certified – known as MPA PROs - to uphold the high standards of the programme and their profession. Over 80 MPA PROs from six countries[167] in the region have been accredited since the launch of WIO-COMPAS in 2012. WIOMSA also runs a regional MPA management training course as well as providing other short courses and writing workshops for a wider range of marine and coastal related topics through the Marine and Coastal Science for Management (MASMA) program[168]

Other key recent or ongoing initiatives and examples for in-situ training are:

- The Coral Triangle Center Academy. This center, based in Indonesia, runs an extensive training programme on MPAs and related issues throughout the six Coral Triangle countries;
- Blue Solutions is a global initiative funded by the German government, which provides training courses on four MPA-related topics: conservation finance, ecosystem-based marine and coastal planning, integrating ecosystem services into marine and coastal development planning, and climate change adaptation;
- The Reef Resilience Network: provides training on a range of topics related to coral reef management;

[165] https://www.wio-compas.org/

[166] Francis, J., Celliers, L. and Rosendo, S. 2016. Coastal and Marine Research and Capacity Building (Box 35.2 M.H. Schleyer). In: Regional State of the Coast Report: Western Indian Ocean, Chapter: 35, Publisher: United Nations Environment Programme/Nairobi Convention Secretariat, Editors: José Paula, pp.473-527

[167] Kenya, Tanzania, South Africa, Seychelles, Mauritius and Mozambique

[168] https://www.wiomsa.org/research-support/masma-2/

- MPA Enforcement and WildAid are two separate organisations that provide training on protected area monitoring and compliance – the first specifically for MPAs, the second for conservation areas of all kinds;
- The Tropical Biology Association (TBA) Specialist Courses. The TBA is primarily oriented to providing training for non-marine conservationists, but its specialist courses are among the few to provide training on the specific, but vital, skills for MPA practitioners such as fundraising and grant proposal writing, and project design.

On-line Training Resources

There are relatively few on-line courses of direct relevance to MPAs and in some cases, these are more than 10 years old and likely need revision. At present there is no central platform that provides a guide for on-line courses. Some courses/modules are available through multiple platforms but the lack of source information means that this may not be clear. For example, the CBD Programme of Work of Protected Areas (POWPA) curriculum modules can be found on Learning for Nature and on ConservationTraining. The POWPA curriculum modules, along with the protected area MOOC[169] produced through IUCN's Program on African Protected Areas and Conservation (PAPACO) and the Coral Triangle on-line modules provide a good basic introduction to the subject. IUCN-PAPACO is currently developing a MOOC on MPA management with the MAVA Foundation and the World Commission on Protected Areas (WCPA), to complete the series of other MOOCs. This should be available by the end of 2021 and will allow a successful candidate to obtain a certificate with a marine specialization.

Notable on-line learning platforms are as follows:

- Learning for Nature (LfN): This e-learning programme, provided by the United National Development Programme (UNDP), is aimed at improving capacity in the delivery of the CBD's Aichi Biodiversity Targets and the achievement of the UN's Sustainable Development Goals. It runs MOOCs, self-paced e-learning modules and webinars on a range of topics, and protected areas is a key focus. Courses of particular relevance to MPAs include the CBD POWPA curriculum and Protected Areas and Sustainable Development course produced by a partnership of UNDP, CBD, NBSAP Forum and TNC;
- ConservationTraining.org[170]: This is an open and free learning community that offers a range of conservation-based training materials from The Nature Conservancy (TNC) and its partner organizations. Over 400 hours of free online courses have been built in partnership with scientists from conservation organizations such as IUCN, UNDP, UNEP and the CBD. The CBD's POWPA curriculum can be accessed here but is not supported or maintained. Other modules that are useful for MPA practitioners include Biodiversity valuation, GIS and Conservation Action Planning, and ones which focus on tropical MPAs such as 'Advanced Studies in Coral Reef Resilience' and 'Corals and Climate Adaptation Planning: Adaptation Design Tool' and a series of modules for the Coral Triangle developed with the Coral Triangle Academy
- MOOC Conservation[171]: A partnership between IUCN-PAPACO and Senghor University in Alexandria, Egypt. Courses focus on protected area management and are developed through the École Polytechnique Fédérale de Lausanne, with a focus on francophone West Africa, plus a specific course on protected areas and law enforcement. An on-line specific MPA module is also being developed. The coursework explores how protected areas work and why they are important, with a specific focus in Africa. The modules use best practices from IUCN/WCPA and case studies from the field from all over the African continent.
- GEF International Waters Learning Exchange and Resource Network (GEF IW: LEARN): GEF IW: LEARN collects and shares best practices and lessons learned across the GEF International Waters portfolio, and the website hosts a range of materials including guidelines, and case studies with a focus on LMEs.

[169] Massive Open Online Course
[170] https://www.conservationtraining.org/
[171] https://mooc-conservation.org/en/index_EN.html

There are several online courses[172] of which the most relevant ones to MPAs are a) Large Marine Ecosystems: Assessment and Management MOOC, University of Cape Town/NOAA; b) Transboundary Marine Spatial Planning (MSP) and Sustainable Blue Economy; and c) Ocean Governance.

- TNC's Reef Resilience Network Webinars[173]: The Network regularly hosts interactive webinars on a range of topics relating to coral reefs, many of which are relevant to MPA practitioners. Many of the webinars are relevant to MPAs but only those relating to the financing of MPAs are listed here as this topic has been identified as a particular capacity gap and highly relevant to many SIDS and LDCs:
    - Financing coral reef conservation and management: conservation trust funds and impact investing (Oct 2019): discusses how protected area, national, and regional conservation trust funds can raise, manage, and invest financing for coral reef conservation and restoration. The webinar also reviews how impact investing can be used to manage coral reef areas through public private partnerships. Presented by staff of the Conservation Finance Alliance, WCS, and Blue Finance
    - Financing Coral Reef Conservation and Management with Tourism-Related Tools (July 2019): discusses the use of: entry, activity, and special use fees; commercial concessions; departure taxes; partnerships with hotels; and voluntary donations. Presented by the Conservation Finance Alliance
    - Finance tools for coral reef conservation – an overview (June 2019): presents the guide to Finance Tools that was published by WCS and the Conservation Finance Alliance. Tools include tourism-based fees, biodiversity offsets, bonds, debt swaps, and conservation trust funds.
    - Marine Protected Area Financing Tool (Feb 2019): presents Reef Support, a tool designed to help MPA managers collect and sell marine park fees to visitors. Reef Support is a simple, customized tool that offers a safe way to receive money, and provides a database of park visitors, a ticketing system, and the possibility to generate customized financial reports.

MOOC trainings have been criticised because of their low completion rates, but studies have shown that this is largely because not all learners want to validate a MOOC. Many choose to watch videos on a topic of interest with no particular interest to complete the course and receive a certificate. In the case of the courses offered by IUCN-PAPACO, the MOOCs have an average certification rate of 5.6%, which is slightly above the global MOOC average. However, by 2018, 708 people had received a MOOC certificate in protected area management and ecological monitoring, which is 2.5 times more that the number of certificates delivered through IUCN-PAPACO on-site Master's degree and university diploma trainings that were organised over the same period, at a much cheaper cost[174]. Given the tens of thousands of individuals that need training in a wide range of competencies if protected areas are to be well managed[175], and the lack of in-situ training opportunities, distance learning, via the Internet, may be essential.to meet post-2020 global biodiversity targets for marine protection. Approximately 90% of applications for IUCN-PAPACO in-situ training are unsuccessful due to lack of places available. In addition, in many cases, protected area staff have little or no access to tertiary educations such as a university[176] suggesting that on-line learning through MOOCs and other tools may be a crucial element of capacity-building going forward.

Guidelines, Manuals and Toolkits

There are numerous guidelines, manuals and toolkits aimed to help MPA managers, staff and other practitioners address the range of issues encountered in managing a site (see Annex 1 for a list of

[172] https://iwlearn.net/learning/courses
[173] http://reefresilience.org/webinars-online/
[174] https://www.iucn.org/news/protected-areas/201801/moocs-and-protected-areas-capacity-building-%E2%80%93-where-we-stand
[175] See Appleton 2016 listed in section 4 in Overview
[176] Mauvais, G. 2017. Editorial: building capacities for conservation of nature: can this be done at a distance? *Parks* 13(1).

materials). However, there is currently no central repository for these materials. Some of the guidance manuals are complex and can be quite technical, depending on the intended target audience. It may require an MPA specialist to work through such materials to pull out relevant information for the situation and/or adapt them to the local context. Development of national or sub-national guidelines and toolkits is an area worthy of investigation.

Capacity Building for Ecosystem Restoration

The scale of biodiversity loss globally has led to calls for substantial ecosystem restoration efforts in addition to the more usual approaches of spatial protection and management of stressors such as resource extraction. Moreover, the objectives of the 2030 Agenda for Sustainable Development, implemented through the 17 Sustainable Development Goals (SDGs), are unlikely to be met unless ecosystem degradation is stopped and ecosystem restoration is undertaken at the immense scale of hundreds of millions of hectares globally[177]. With this in mind, on March 1st 2019, the UNGA declared 2021-2030 as the UN Decade on Ecosystem Restoration[178], with the primary aim to prevent, halt and reverse the degradation of ecosystems worldwide. This call to action recognises the need to massively accelerate the global restoration of degraded ecosystems to help tackle climate change effects, enhance food security, provide clean water and both protect and enhance biodiversity. However substantial investment is needed to achieve such a restoration effort, with technical capacity building one of the key elements required. Investment for large-scale ecosystem restoration is thought to generate more livelihoods per dollar spent than other sectors such as transportation and building infrastructure while also providing long-term economic returns[179].

The Ecosystem Restoration Strategy has identified six key barriers to the implementation and success of the Restoration Decade which will need to be overcome, including one that focuses on capacity:

- Barrier 1 - the limited awareness across societies globally of the considerable negative effects that ecosystem degradation is having on the well-being and livelihoods of billions of people, the costs of this degradation, and the profound societal benefits that would accrue with major investments in ecosystem restoration;
- Barrier 2 - despite the economic benefits that restoration investments would bring societies, the pressure on decision-makers in public and private sector to invest in long-term ecosystem restoration initiatives is relatively small compared with the pressures to invest in other sectors like health care, manufacturing, education and defence;
- Barrier 3 - the relative scarcity of legislation, policies, regulations, tax incentives and subsidies that incentivise a shift in investments towards large scale restoration and production systems, value chains and infrastructure that do not degrade ecosystems.;
- Barrier 4 - the limited technical knowledge and capacity of national governments, local governments, local NGOs and private companies to design and implement large-scale restoration initiatives
- Barrier 5 - the relatively small amount of finance that societies are making available for investing in large scale restoration because of the perceived and/or real risks involved in such investments, and;
- Barrier 6 is the limited investment into long-term research, including social as well as natural sciences, that focusses on innovation to improve restoration protocols through time

As mentioned in Section 2.2, a capacity-building needs assessment is currently being undertaken to provide information that will help to shape implementation plans for the Restoration Decade. The findings

[177] UNEP & FAO (2020). Strategy of The United Nations Decade on Ecosystem Restoration. 51pp. Available online: https://wedocs.unep.org/bitstream/handle/20.500.11822/31813/ERDStrat.pdf?sequence=1&isAllowed=y
[178] UNGA Resolution 73/284
[179] UNEP & FAO (2020). Strategy of The United Nations Decade on Ecosystem Restoration. 51pp (and references therein)

of the needs assessment will feed into one of three pathways created to address the six primary barriers. Pathway III aims to catalyse research and development that generates the technical capacity that is needed to restore ecosystems at scale. This will be achieved by promoting and building capacity across sectors on:

- Designing, implementing, monitoring and sustaining ecosystem restoration initiatives;
- Undertaking long-term scientific research on the implementation and benefits of ecosystem restoration;
- Synthesising lessons learned from existing ecosystem restoration initiatives;
- Integrating indigenous knowledge and traditional practices into ecosystem restoration initiatives, and;
- Applying free, prior & informed consent in ecosystem restoration initiatives.

Pathway III will focus on providing the best available methods for designing, implementing, monitoring and sustaining ecosystem restoration initiatives to institutions involved in ecosystem restoration as well as individual restoration practitioners globally. The aim will be, using appropriate institutional mechanisms, to increase the upscaling of ecosystem restoration globally by strengthening the role of science, indigenous knowledge and traditional practices and applying best technical knowledge and practice. Existing tools for monitoring and evaluating, conducting baseline studies, verifying data, undertaking primary research, implementing multi-stakeholder governance and developing site specific ecosystem restoration protocols will be disseminated via the digital hub of the UN Decade. Capacity building on upscaling ecosystem restoration will also be conducted, by partners, for a wide range of stakeholders.

For implementation the UN Restoration Decade's core team and partners will provide technical support to ecosystem restoration initiatives globally. This will include providing scientific guidance, undertaking research, assessing socio-economic and ecological impacts of restoration, deploying technology where feasible, and guiding policymakers on evidence-based best practices. Technical support to design, implement and sustain ecosystem restoration with stakeholders will be provided by a wide range of organisations, networks, and individual experts.

Capacity Building for Ecosystem Valuation

As mentioned previously (Section 2.2.), one of the ten priorities recommended for capacity-building by the UNEP-WCMC study was for 'technical skills related to assessment of biodiversity and ecosystem services, including understanding values'. At the global level the capacity-building is one of the six objectives of the IPBES 2030 work programme. The IPBES capacity-building programme works to enhance knowledge and skills of institutions and individuals to enable and facilitate engagement in the production and use of IPBES products. The aim is to build capacities that strengthen the science-policy interface for biodiversity and ecosystem services for the conservation and sustainable use of biodiversity, long-term human well-being and sustainable development. The IPBES Capacity-building Rolling Plan[180] describes the three strategies for addressing capacity-building needs and approaches for working with partners. These are:

(a) Enhanced learning and engagement. This includes the continuation of the fellowship programme and of the training and familiarization programme, including through webinars and other online resources, guides, learning materials, workshops, training and dialogues for actors in the science-policy interface facilitated by IPBES;

[180] https://ipbes.net/sites/default/files/inline/files/ipbes_capacity-building_rolling_plan_and_executive_summary_2.pdf

(b) Facilitated access to expertise and information. Efforts will focus on approved assessments and objectives and deliverables related to policy support tools and methodologies, knowledge and data, and indigenous and local knowledge;

(c) Strengthened national and regional capacities. This objective includes efforts to encourage the development of science-policy platforms, networks and assessments for biodiversity and ecosystem services at the national and (sub)regional levels, such as facilitation of the development of guidance for such initiatives. Strengthening the role of national focal points is also key to enhancing national capacities in the science-policy interface.

Although all strategies will contribute to building capacity for ecosystem valuation, the third is likely to be the most instrumental in developing capacity to assess and value marine and coastal ecosystems. Implementation of this strategy is heavily reliant on the experience and support of partner organisations[181]. One of these ValuES[182], a global project that helps decision-makers to recognise and integrate ecosystem services into policy making by developing instruments and training courses and providing technical advice. Training courses cover subjects such as the basics of ecosystem services, principles of ecosystem service assessments for policy impacts and the economic valuation of ecosystem services[183]. The ValuES project is implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) in close collaboration with the Helmholtz Centre for Environmental Research (UFZ) and the Conservation Strategy Fund (CSF). On behalf of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) as part of the International Climate Initiative (IKI).

Capacity Building and Integrated Coastal Management

Capacity building has been an integral part of integrated coastal zone management for some time. Some examples of good practice in this field are Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) and Mangroves for the Future (MFF). PEMSEA recently completed a six-year project funded by the GEF and UNDP entitled 'Scaling Up the Implementation of the Sustainable Development Strategy for the Seas of East Asia' (SDS-SEA), building in previous accomplishments in the region. Notable achievements of the SDS-SEA included establishing a country-owned regional mechanism; developing innovative knowledge products and services; strengthening National Ocean Policies and institutional support; expanding integrated coastal management (ICM) coverage in the region and replicating ICM tools, approaches and good practices; creating a regional knowledge sharing platform for ecosystems management; and contributing to global learning[184]. Component three of the SDS-SEA was responsible for building a knowledge platform for building a sustainable ocean-based economy. Over the six years (2014-2020) an estimated 7000 participants benefitted from capacity building activities, with almost 350 pieces of knowledge product generated[185]. The online knowledge platform is operational and will be a regional hub for coastal and ocean governance and the blue economy. In addition, a number of networks have been expanded such as the PEMSEA Network of Learning Centers (PNLC), PEMSEA Network of Local Governments (PNLG) and the Regional Centers of Excellence (RCOEs). The Seas of East Asia Knowledge Bank (SEAKB)[186] has strengthened knowledge sharing across projects and between stakeholders in the region. It includes resources for the entire ICM cycle such as: i. an e-library with case studies, best practices and manuals; ii. Online tools such as the State of the Coasts reporting and investment-readiness quick assessments; and iii. An online directory and communities of practice for connecting with experts.

[181] https://ipbes.net/collaborative-supporters
[182] http://www.aboutvalues.net/
[183] http://www.aboutvalues.net/trainings/
[184] PEMSEA. 2021. PEMSEA Annual Report 2020: A Time of Reflection and Resilience. Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), Quezon City, Philippines. 51 p.
[185] Ibid
[186] http://seaknowledgebank.net/

Along similar lines, Mangroves for the Future (MFF)[187] is a partner-led initiative, co-chaired by IUCN and UNDP, that provides a platform for collaboration to address the challenges to coastal ecosystems and livelihood issues and promotes investment in coastal ecosystem conservation and sustainable development. The initiative is not restricted to mangroves and includes all types of coastal ecosystem such as coral reefs, estuaries, lagoons, sandy beaches, seagrasses and wetlands. In terms of capacity-building MFF has developed three knowledge networks for gender and coastal resources management, marine protected areas and integrated coastal management training development. The main objectives of the knowledge networks are to:

- Provide access to expertise to advise, but also maintain linkages with MFF structures and partners already established in each country;
- Draw on knowledge and expertise to guide MFF members and partners going forward as they seek to build on MFF and scale up approaches and activities, sharing best practice and lessons learned;
- Generate discourse on current and emerging issues relevant to these thematic areas;
- Strengthen networks and providing avenues for connecting MFF partners with emerging projects and issues in the region, and;
- Facilitating opportunities for practitioners and policy makes to access the latest knowledge of key topics.

Capacity Building for Marine Spatial Planning

Marine Spatial Planning (MSP), by fostering integrated management practices to protect and restore marine and coastal ecosystems, strengthen resilience and promote a healthy and productive ocean, is an important approach to achieve global ocean governance goals and the 2030 Agenda for Sustainable Development[188]. Although the use of MSP is increasing globally there is a need to support MSP adoption or full implementation at the regional, national and local scale, with capacity-building a key component of this. In 2017, IOC-UNESCO and the European Commission adopted a joint roadmap to accelerate Maritime or Marine Spatial Planning worldwide, with capacity-building as one of the priority actions. This partnership led to the establishment of the MSPForum[189] and the MSPglobal Initiative[190] in 2018. The MSPforum provides a platform to discuss and exchange information while also offering examples of best practice and guidelines for the application of MSP. Six workshops were planned to take place up to 2020, with four conducted to date, mainly in Europe. The MSPglobal is a three-year initiative to develop international guidelines on MSP in support of the Sustainable Blue Economy with the overall objective to triple the marine area benefiting from MSP effectively implemented by 2030 and cover 30% of maritime areas under national jurisdiction. The initiative includes two pilot projects in the West Mediterranean and the South-east Pacific as well as capacity-building activities including the development of guidance, support for knowledge exchange, stakeholder engagement and the promotion of cross-sectoral and cross-border dialogue. MSPglobal supports the implementation of the joint roadmap and is a major contribution to the UN Decade of Ocean Science for Sustainable Development An MSPglobal policy brief specifically on capacity development provides further information on the subject as well as a list of resources available online[191] (Annex 3).

MSP is one of the topics offered by the IOC's OceanTeacher Global Academy[192], which provides a web-based training platform that supports classroom training (face-to-face), blended training (combines

[187] http://www.mangrovesforthefuture.org/
[188] https://unesdoc.unesco.org/ark:/48223/pf0000366731
[189] https://www.mspglobal2030.org/msp-forum/
[190] https://www.mspglobal2030.org/msp-global/
[191] UNESCO-IOC. 2021. MSPglobal Policy Brief: Capacity Development in Marine Spatial Planning. Paris, UNESCO. (IOC Policy Brief no. 4)
[192] https://classroom.oceanteacher.org/

classroom and distance learning), and online (distance) learning. The programs are provided through a number of regional centres including in languages other than English. The courses cover a range of topics realted to the IOC programs and contribute to the implementation of the IOC capacity development strategy. Topics include MSP, implementing international maritime law, sustainable use of marine resources, disaster risk reduction and marine pollution.

Blue Solutions[193], a global project implemented through a partnership of GIZ, GRID-Arendal, IUCN and UN Environment provides a number of training courses and opportunities for global knowledge exchange. One of the training courses, Blue Planning in Practice[194], provides an introduction to the theory and practical starting points of coastal and marine spatial planning. The training is designed for professionals responsible for the planning and management of coastal and marine areas and their natural resources and covers a wide range of sectors including environment, fisheries, tourism, transportation, energy and sea mining.

SOI has also conducted a number of capacity-building activities between 2015 and 2018 with a focus on MSP at workshops / meetings in multiple regions including the Coral Triangle and the Western Pacific[195]. Building capacity for MSP is regarded as one of the key areas for SOI going forward.

Capacity Building and Pollution

To address the main challenges of land-based pollution in the marine and coastal environment, the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities (GPA) and the UN Environment Programme (UNEP) launched a five-year project titled "Protecting the Marine Environment from Land-Based Pollution through Strengthened Coordination of Global Action."[196] in January 2019. The project aims to strengthen responses to land-based pollution, enhance co-operation and foster action to tackle the issues related to wastewater pollution, nutrient management, and marine litter also through the key role of global partnerships, including the Global Partnership on Marine Litter (GPML), the Global Partnership on Nutrient Management (GPNM), and the Global Wastewater Initiative (GW^2I).

The project is organized into six components and aims to provide technical and policy support to strengthen intergovernmental processes for a global, coordinated response against land-based pollution. The components, listed below, have a strong capacity-building theme running through them, especially for components E and F:

Component A: Technical and policy support to strengthen intergovernmental processes for a global coordinated response

Component B: Policy support, technical assistance, demonstration sites in support of the governance framework to address marine litter and microplastics

Component C: Tools, approaches, frameworks, and demonstration sites for enhanced sustainable nutrient management

Component D: Technical assistance, guidance, demonstration sites, and knowledge to support enhanced sustainable wastewater management.

[193] https://bluesolutions.info/

[194] https://bluesolutions.info/capacity-development/blue-planning-practice/

[195] Secretariat of the Convention on Biological Diversity (2022) The Sustainable Ocean Initiative: 10 years of building capacity and catalyzing partnerships to achieve global ocean goals. https://www.cbd.int/marine/soi/booklet-soi-10years-en.pdf

[196] https://www.unep.org/explore-topics/oceans-seas/what-we-do/addressing-land-based-pollution/global-action-protect-marine?_ga=2.258756489.2007404444.1623925495-1726580331.1616514802

Component E: Monitoring and assessment tools and methodologies to enhance national and regional capacities

Component F: Knowledge hub established, tools disseminated, awareness and capacity to change behavior and drive action

Building capacity to tackle marine pollution is also part of the remit of the International Maritime Organisation (IMO) through the delivery of the Integrated Technical Cooperation Programme (ITCP) for the specific workstream on marine environmental protection. This programme is designed to assist developing countries to effectively implement maritime rules and standards in a harmonised manner in accordance with IMO's global mandate to 'promote safe, secure, environmentally sound, efficient and sustainable shipping through cooperation'. The ITCP is developed in response to the technical assistance needs of Member States and its implementation supports IMO's objectives of strengthening marine competencies and promoting marine development globally.

Development and implementation of the ITCP also takes into consideration the strategic directions and outputs of the 'Strategic Plan for the Organisation for the six-year period 2018 to 2023 and the United Nations Agenda for Sustainable Development (2030 Agenda), with particular emphasis on strengthening institutional capacities and human resource development in the regions[197]. In 2019, the ITCP completed 70 activities involving 1563 trainees for the discipline of marine environment protection, which were the largest numbers for a single discipline within the programme. Activities in 2020 were restricted by the COVID-19 pandemic with some reprogrammed for 2021[198]. A number of activities were implemented in coordination with organisations established under UNEP's Regional Seas Programmes including the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC) and the Regional Organisation for the Conservation of the environment of the Red Sea and the Gulf of Aden (PERSGA).

Capacity-building for the protection of the marine environment in the deep sea has been the remit of the International Seabed Authority (ISA) as well as developing capacity to manage access and use of deep seabed mineral resources. A review of capacity-building activities implemented by the ISA between 1994 and 2019 provides a detailed assessment of both the three core capacity development schemes and other initiatives that have contributed to capacity development of its members[199]. The three core capacity-building schemes are the contractor training programme, the endowment fund for marine scientific research and the internship programme. Other initiatives that have contributed to capacity-building by ISA include a number of voluntary commitments to support the implementation of Agenda 2030 such as the Africa Deep Seabed Resources (ADSR) project and enhancing the role of women in marine scientific research.

Capacity-Building and Climate Change

Global processes to build capacity with regard to climate change through the UNFCCC have been in place for the last twenty years. In 2001, the Convention's COP 7 launched two frameworks guiding capacity-building (2/CP.7 and 3/CP.7), one dedicated to developing counties and the other dedicated to countries with economies in transition (EITs)[200]. The frameworks aim to enable these countries to implement the provisions of the Convention and effectively participate in the Kyoto Protocol process. Capacity building under the Convention usually aims to achieve one of two goals: i. Improve "the institutional structures, mechanisms, procedures, policies and laws in order to carry out" larger projects; or ii. perform "core

[197] IMO 2020. Integrated Technical Cooperation Programme. Annual Report for 2019. Technical Cooperation Committee 70th Session, Agenda item 3. TC 70/3.

[198] IMO 2021. Technical Cooperation Activities for the Protection of the Marine Environment. Marine Environment Protection Committee, 76th Session. MEPC 76/11.

[199] Review of Capacity Building Programmes and Initiatives Implemented by the International Seabed Authority 1994-2019. Report by the Secretariat. July 2020. 94 pp.

[200] https://unfccc.int/topics/capacity-building/the-big-picture/capacity-in-the-unfccc-process

functions and objectives relevant to the Convention, for example, the ability to gather, analyze and report specific information requested by the Convention."[201].

Developed countries provide financial and technical resources to assist developing countries and EITs in implementing the frameworks on capacity-building and report on provision of capacity-building support in their biennial reports to the UNFCCC. The Paris Agreement (PA) adopted in 2015 requests all developed countries to enhance support for capacity-building actions in developing countries. The number of national policies and government and research entities dedicated to climate change established in developing countries has grown significantly in recent years, contributing to the enhancement of climate-related capacities in these countries. National reports of developing countries to the UNFCCC also highlight progress made with regard to awareness-raising as well as educational activities and integration of climate change issues in school curricula[202].

The 2015 Paris Agreement also includes a Global Adaptation Goal. A fundamental prerequisite for climate adaptation is economic, ecological or technological knowledge, which can be difficult to access for actors on-the-ground. The UN Environment Programme founded the Global Adaptation Network (GAN)[203] in 2010 to provide a worldwide platform to distribute and exchange climate change adaptation knowledge in a variety of ways. As an umbrella organization spanning most continents, GAN is composed of many regional networks and partners, each of which provide knowledge services in their respective regions, which are:

- The Asia Pacific Adaptation Network (APAN)
- Regional Gateway for Technology Transfer & Climate Action in Latin America and the Caribbean (REGATTA)
- Ecosystem-based Adaptation for Food Security in Africa Assembly (EBAFOSA)
- EcoAdapt
- The West-Asia Regional Network on Climate Change (WARN-CC)

The Global Adaptation Network has a strong relationship with the UNFCCC through a variety of linkages, including the Adaptation Committee, the Lima Adaptation Knowledge Initiative and the Talanoa Dialogue. By utilizing these relationships, GAN has a proven record of supporting and advancing innovation across the world through wide-ranging activities, all primarily centered around the exchange of knowledge, an important part of capacity-building.

Multi-regional Efforts to Support Marine and Coastal Capacity-Building

Multi-regional efforts to support capacity-building regarding the marine and coastal environment are also important. Two examples are the efforts of the European Union (EU) and the Commonwealth through its Blue charter. Capacity-building is one of the key actions being taken by the EU as part of its 'Improving International Ocean Governance' framework[204]. The EU has committed 35 million Euros to the Pacific-European Union Marine Partnership Programme (PEUMP)[205] to support 15 Pacific States in terms of the sustainable management and development of fisheries and will address challenges of IUU fishing, climate change resilience and marine biodiversity conservation. One component of the PEUMP, implemented by

[201] Dagnet, Y., E. Northrop, and D. Tirpak. 2015. How to Strengthen the Institutional Architecture for Capacity Building to Support the Post-2020 Climate Regime. Working paper. Washington, DC: World Resources Institute
[202] https://unfccc.int/topics/capacity-building/the-big-picture/capacity-in-the-unfccc-process
[203] https://www.unep.org/gan/
[204] European Commission 2019. Joint Staff Working Document. Improving International Ocean Governance – Two Years of Progress. JOIN (2019) 4 final. 23 pp.
[205] https://peump.dev/home

the University of the South Pacific is focussing on capacity-building through education, training and research[206]. Implementing partners for other PEUMP components are the Secretariat of the Pacific Community (SPC), the Fisheries Forum agency (FFA) and the Secretariat of the Pacific Regional Environment Programme (SPREP) along with a number of NGOs including IUCN.

The Commonwealth Blue Charter[207] is an agreement by all 54 Commonwealth countries, adopted at the Commonwealth Heads of Government Meeting in London, April 2018. Commonwealth countries have agreed to cooperate to solve ocean-related problems and meet commitments for sustainable ocean development, with particular emphasis on the UN Sustainable Development Goals (SDGs), especially SDG. The Blue Charter is implemented by Commonwealth Blue Charter Action Groups. Actions are member-driven, and led by 'Champion' countries'. To date, 15 countries have stepped forward to be Champions on ten topics they identified as priorities. The Action Groups will guide the development of tools and training for the following topics: Commonwealth Clean Ocean Alliance, Coral Reef Protection and Restoration, Mangrove Ecosystems and Livelihoods, Marine Protected Areas, Ocean Acidification, Ocean and Climate Change, Ocean Observation, Sustainable Aquaculture, Sustainable Blue Economy and Sustainable Coastal Fisheries. The Commonwealth includes two-thirds of all SIDS, 45% of all coral reefs, 25% of mangroves and one-third of all waters within national jurisdictions[208].

Capacity Building and ABNJ

Capacity building for the monitoring and management of international waters or areas beyond national jurisdiction (ABNJ) has been the focus of one of the projects that make up the 'Program on Global Sustainable Fisheries Management and Biodiversity Conservation in Areas Beyond National Jurisdiction' (known as the Common Oceans Program[209]). The program, supported by GEF with significant co-financing, completed Phase 1 between 2014 and 2018. The success of the first phase has enabled GEF to provide support to the Common Oceans program for a further five years. The program consists of four projects:

(i) Sustainable management of tuna fisheries and biodiversity conservation in ABNJ (The Tuna Project);
(ii) Sustainable fisheries management and biodiversity conservation of deep-sea living resources and ecosystems in ABNJ (The Deep Sea Project);
(iii) Oceans Partnership Fund aimed at catalysing public and private sector investments in problems of overfishing, pollution, and habitat loss (The Ocean Partnerships Project), and;
(iv) Strengthening global capacity to effectively manage areas beyond national jurisdiction: focused on linking global and regional/national ABNJ processes (The Capacity Project).

The capacity project has been implemented by FAO, the Global Oceans Forum and partner organisations. Overall, phase one of the project has helped to fill the need for stronger global and regional coordination, stakeholder engagement and greater information exchange to build capacity and raise awareness of key ABNJ issues[210]. Notable successes for this project include:

- Development of the 'ABNJ Regional Leaders Program' that provided training for 44 regional leaders from 34 countries on ABNJ and related policy frameworks particularly for fisheries and biodiversity conservation. The regional leaders also took part in preparatory sessions of the Intergovernmental Conference on an international legally binding instrument under UNCLOS on the conservation and sustainable use of marine biological diversity in the ABNJ (BBNJ process);

[206] https://peump.dev/index.php/KRA/capacity-building
[207] https://bluecharter.thecommonwealth.org/
[208] Commonwealth Secretariat. 2021. A Resilient Blue Commonwealth: Building Sustainable Ocean Governance. Final report to the UK Government regarding financial support provided to the Commonwealth Blue Charter programme. ARIES Number: 300318-102.
[209] http://www.fao.org/in-action/commonoceans/en/
[210] FAO 2021. Not a Drop in the Ocean. Key Successes Common Oceans ABNJ Program 2014-2019. Rome. http://www.fao.org/documents/card/en/c/cb3698en/

- Completion of eight high level cross-sectorial dialogues and side events at meetings for the BBNJ process to raise awareness of decision makers
- A comprehensive assessment of the needs, gaps and understanding of capacity development in the ABNJ through the completion of two cross-sectoral workshops and a survey;
- Building capacity through communities of practice – two communities of practice were brought together for i. fisheries, biodiversity and climate change, and ii. Multisector-based planning. These contributed to two key policy briefs on capacity development in ABNJ (see below).

The two policy briefs, summarised in one document[211], provide information on capacity development needs; possible modalities for linking capacity efforts at global, regional, and national levels, especially on area-based management (ABMT), environmental impact assessment (EIA), and marine genetic resources (MGRs) in the context of climate change; financing capacity building for BBNJ; and a possible clearing-house mechanism.

Other projects within the Common Oceans program have also contributed substantially to capacity-building over phase one. For example, the 'Tuna Project' has provided training to more than 500 fisheries experts, managers and industry representatives on sustainable management strategies for tuna fisheries[212] while the 'Deep Sea project' conducted a capacity assessment for area-based planning in ABNJ for the Nairobi Convention[213].

Phase two (the GEF-7 ABNJ Program) has been developed to demonstrate and promote more comprehensive processes and integrated approaches to the sustainable use and management of the ABNJ, building on the results and lessons of the GEF-5 Common Oceans program (Phase one) and complementing the efforts of various partners and parallel initiatives including the GEF multi-country Large-Marine Ecosystem (LME) approach and Regional Seas Programs[214]. Phase two focuses on four areas:

(i) strengthening governance and management including frameworks, processes and incentives; (ii) increasing capacity for more sustainable fisheries through greater implementation of the ecosystem approach; (iii) building capacity to better coordinate and engage in multi-sectoral processes; and (iv) improving knowledge and information sharing for better decision-making. The overall objective of the Phase two program is to 'promote sustainable use of ABNJ living natural resources and strengthened biodiversity conservation in face of a changing environment'.

Capacity-Building and Ocean Governance

Efforts to build capacity for the governance of the marine and coastal environment has been highlighted for some particular areas such as MPAs, small-scale fisheries and ABNJ. This section provides further information on specific initiatives that focus on capacity-building for effective governance of the oceans. The Nippon Foundation offers a range of scholarships and fellowships with institutions around the world for global ocean issues[215]. In particular, the United Nations-Nippon Foundation capacity-building programme includes a series of fellowships and training activities that are implemented by the UN Division

[211] GEF/FAO/GOF Project on Strengthening Global Capacity to Effectively Manage Areas Beyond National Jurisdiction. 2020. Summary Policy Briefs on Capacity Building in Areas Beyond National Jurisdiction. Global Ocean Forum 11 pp. https://globaloceanforum.com/wp-content/uploads/2019/09/summaries-of-two-capacity-policy-briefs.pdf

[212] http://www.fao.org/in-action/commonoceans/news/detail-events/en/c/1255945/

[213] Macmillan-Lawler, M., et al. 2018. Capacity assessment for area based planning in areas beyond national jurisdiction for the Nairobi Convention. Technical document produced as part of the GEF ABNJ Deep Seas Project. Cambridge (UK): UN Environment World Conservation Monitoring Centre. 22 pp. https://www.unep-wcmc.org/system/dataset_file_fields/files/000/000/542/original/Capacity_Assessment_-_Nairobi_Convention_-_final.pdf?1536767821

[214] https://www.thegef.org/sites/default/files/web-documents/10548_IW_PFD.pdf

[215] https://www.nippon-foundation.or.jp/en/what/scholarships/maritime

for Ocean Affairs and the Law of the Sea[216]. One example of the fellowships is the NF-UN Partnership Training Program on Ocean Affairs and the Law of the Sea, which was established in 2005 to provide approximately ten fellowships per year for a nine-month course on Global Ocean Governance[217]. The UN DOALOS is a specialised body of the UN responsible for assisting the practical implementation of the laws and regulations in countries in accordance with the guidelines of UNCLOS. As of March 2018, 144 UNNF fellowships had been awarded. The UNNF Thematic fellowship programme also addresses marine governance issues by helping to increase the capacity of States to formulate and implement ocean policies and regulatory frameworks for sustainable development[218]. The four-month fellowship provides advanced training on oceans affairs and the law of the sea as well as related disciplines such as marine science to support management.

The International Ocean Institute (IOI)[219] is an independent, non-governmental non-profit organisation conducting training and capacity building in Ocean Governance with the aim of creating knowledgeable future leaders. IOI trains young and mid-career practitioners in contemporary approaches to coastal and ocean management, with an emphasis on the moral, ethical and legal values in Ocean Governance. The IOI offers a number of training courses on ocean governance and related issues at national, regional, and international levels. Since 1981, the IOI has trained about 4000 young practitioners from developing countries and countries in transition. The portfolio of regular training courses offered includes regional ocean governance programs for the Mediterranean, Black, Baltic and Caspian Seas, Africa, the Western Pacific and South East Asian Seas and the Indian Ocean[220].

The World Maritime University (WMU)[221] was founded in 1983 by the IMO as a centre of excellence for maritime postgraduate education, research and capacity building. The WMU offers specialised postgraduate programs and continues maritime capacity building in line with the UN Sustainable Development Goals. The MSc. course in Maritime Affairs[222] offers a specialisation Ocean Sustainability, Governance and Management after building a foundation in maritime policy and the IMO system for maritime governance as well as an introduction to the environmental, economic and managerial aspects of sea use.

3.3. Current Gaps in the Implementation of Capacity Building Programs at the Global Level and Areas of Improved Synergy to Meet Capacity Building Needs

The previous section has provided selected examples of capacity-building efforts for marine and coastal ecosystems with a focus on SIDS and LDCs. These have covered a broad range of areas such as ocean science and research, small-scale fisheries, marine protected areas, coastal zone management and governance, ecosystem restoration and areas beyond national jurisdiction. Capacity to monitor and manage offshore waters within national jurisdiction or exclusive economic zones (EEZs) is gap, particularly for SIDS as well as 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 management[223] 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

[216] https://www.un.org/oceancapacity/UNNF
[217] https://www.un.org/oceancapacity/content/unnf-fellowship
[218] https://www.un.org/oceancapacity/content/unnf-thematic-fellowship
[219] https://www.ioinst.org/
[220] https://www.ioinst.org/training/ioi-training-programmes-portfolio/
[221] https://www.wmu.se/
[222] https://www.wmu.se/programmes/msc-malmo
[223] Community-based management is often based on maintaining or re-vitalising traditional management practices

academic institutions can be successful in maintaining assessment and management systems at the local level.

The system of Ecologically or Biologically Significant Marine Areas (EBSAs) facilitated by the CBD is one area that could be focussed on by SOI 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 the LME and RSP sis 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 align activities with 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 SOI with the other biodiversity-related conventions (BRCs)[224] 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 activities[225]. SOI could potentially facilitate this for marine and coastal biodiversity. Also at a global scale, other areas of improved synergy for SOI could be to align closely with the two UN Decades that start in 2021; 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 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 SOI. Example are the ongoing BBNJ process[226]and the GEF-FAO Common Oceans program which has a capacity-building component implemented by the Global Ocean Forum (see previous page).

Lastly, as two-thirds of all SIDS are in the Commonwealth, developing synergies with the Commonwealth Secretariat regarding its Blue Charter is also worth exploring.

[224] 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

[225] 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

[226] https://www.un.org/bbnj/

4. Recommendations for potential approaches for the Sustainable Ocean Initiative Post-2020 Action Plan

There has been a multitude of recommendations made for ways to increase capacity for the monitoring and management of biodiversity and for sustainable development in the last few decades. Key recommendations have been provided to improve capacity-building programs for the protection and sustainable use of oceans and coasts[227]. In the last decade, more attention has been spent on capacity-building recommendations for global ocean science and monitoring[228] [229] [230]. This report will not attempt to summarise all these recommendations for marine and coastal ecosystems to provide guidance for future SOI activities. Instead, we focus on the recommendations emerging from the CBD process to develop a long-term strategic framework for capacity-building beyond 2020, notably from the thematic consultation held in Rome in 2020[231]. The main recommendations to improve capacity building that emerged from this meeting were as follows:

- focus on long-term initiatives i.e. a five-to-ten-year approach rather than a few years;
- focus efforts on thematic areas rather than on a specific issue, and on activities such as 'training of trainers'
- ensure capacity is retained at the national level through the use of guiding principles for capacity retention and by focusing at the institutional rather than individual level;
- Rethinking the design of efforts to institutionalise capacity-building at different levels e.g.:
    - Global level – share CB among various institutions, consolidate financial flows and ensure that donor and national stakeholder priorities are aligned;
    - Regional level – strengthen regional hubs and training centres for South-South cooperation and knowledge transfer
    - National level – mainstream biodiversity and make biodiversity a national planning priority using a multi-stakeholder approach. Empower subnational and local levels, and identify 'biodiversity champions'.

It was suggested that a bottom-up approach should be taken to assess capacity-building needs for the post-2020 GBF which could involve both national and international institutions and that capacities should be linked to developing key competences. Monitoring and evaluation of capacity-building initiatives is an important part of the process to assess implementation, success and effectiveness. Trans-disciplinary technical and scientific cooperation is also a key aspect of the required capacity-building through developing and maintaining partnerships at different levels, including at the local level and should be inclusive, especially for indigenous peoples and local communities, women and youth.

As the SOI primarily focusses on SIDS and LDCs it is also important to consider capacity-building recommendations that are particular to these countries for the marine and coastal environment both in terms of collecting information and acting on it. The successful implementation of capacity building in SIDS

[227] Committee on International Capacity Building for the Protection and Sustainable Use of Oceans and Coasts - 2008 Report

[228] IOC-UNESCO. 2020. Global Ocean Science Report 2020–Charting Capacity for Ocean Sustainability. K. Isensee (ed.), Paris, UNESCO Publishing

[229] 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.

[230] 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

[231] CBD. 2020. Report on the Thematic Consultation of Capacity-Building and Technical and Scientific Cooperation for the Post-2020 Global Biodiversity Framework. Rome 1-2 March 2020. CBD/POST2020/WS/2020/2/4.

will rely on a holistic approach to address all the gaps in the capacity needs and challenges of SIDS[232] [233]. 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[234] [235]. 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 account[236]:

- 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 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.

Lastly, according to the WCMC study to inform the preparation of the long-term strategic framework for capacity-building beyond 2020[237], 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
6. Blended learning

With the exception of blended learning, SOI is already focussing on these approaches for capacity-building activities but there is scope to diversify the types of activities within each main theme and explore combinations of online and face-to-face learning. For example, the use of exchange programs involving participatory approaches such as the case study provided for Madagascar and Mozambique could be explored both at the regional and national level.

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

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

[234] Ibid

[235] 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

[236] Ibid

[237] CBD/POST2020/WS/2020/2/INF/1

The SOI Action Plan 2015-2020 summarises that the unique role of SOI is to provide an umbrella under which the knowledge, resources and experiences of a range of activities can be organized to link local, national and regional level initiatives to global dialogues and create synergies to address specific capacity needs to achieve agreed targets on marine and coastal biodiversity[238]. The overall approach used by SOI (Figure 1) has been successful to date and there is no reason that this cannot be maintained for the next five or ten years. However, given that the highlighted recent recommendations in this section both mention the need for bottom-up capacity-building, SOI activities at the national or sub-national level involving local stakeholders should be a key part of the next action plan. Engagement with local leaders and developing local champions for marine and coastal conservation and resource management needs to be addressed.

The recommendations should also take into account the 'niche' of the CBD Secretariat as a convener, networker and source of practical relevant information. To date the SOI has been managed and coordinated by the marine team at the CBD Secretariat. Whether the CBD Secretariat can maintain the coordination role for SOI partly depends on the scale of ambition for the initiative over the next decade. The Secretariat is already considered to have an overwhelming workload with a lack of human resource capacity to take on additional work[239]. The ambition for transformative change in the post-2020 GBF suggests that the Secretariat's workload will be increased over the next decade.

The Secretariat is also not a designated implementing or executing agency and so not in a position to implement projects and extensive activities on the ground. The role of the Secretariat with regards to SOI is more as a facilitator and convenor of stakeholders, which has the trust of Parties and knowledge of potential sensitivities and political nuances between and within? countries. It should be seen as a platform to link countries to implementing organisations and a 'neutral broker' that can help to gain traction at the national level for particular activities or initiatives that are implemented by others. Given the ambition of the post-2020 GBF and extensive level of need for capacity-building for SIDS and LDCs, the SOI will have to be strategic in terms of activities unless the initiative is substantially expanded. There are a range of criteria that could be used to focus the efforts of SOI such as addressing the greatest drivers of change or focussing efforts at the institutional or community 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 Session[240] 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 biodiversity[241]. 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)[242]. A focal area for SOI for the next SOI action plan 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.

[238] www.cbd.int/doc/meetings/mar/soiom-2014-02/official/soiom-2014-02-actionplan-en.pdf
[239] CBD. 2020. Report on the Thematic Consultation of Capacity-Building and Technical and Scientific Cooperation for the Post-2020 Global Biodiversity Framework. Rome 1-2 March 2020. CBD/POST2020/WS/2020/2/4.
[240] https://unstats.un.org/unsd/statcom/52nd-session/documents/decisions/Draft-Decisions-Final-5March2021.pdf
[241] https://seea.un.org/news/historic-un-statistical-commission-seea
[242] https://www.oceanaccounts.org/

With the previous recommendations in mind, plus the current knowledge of the most effective capacity-building approaches, and the progress made by SOI so far (Section 1.2), we can start to make recommendations for potential approaches of the SOI post-2020 action plan. These approaches for the SOI post-2020 should consider the following recommendations and points for consideration:

1. Build on previous successful activities and incorporate SOI participants' feedback:
    - SOI Global Dialogue – convene every two years and follow up on the possible 'roadmaps' developed during the previous meeting to translate the 'Seoul Outcomes' into concrete practice; Potential for a second dialogue with regional frameworks (e.g. LMEs and RSPs);
    - Regional Capacity Building Workshops – organise a second round of workshops and link to the UN Ocean Science Decade. If funding and resources permit, consider another round of workshops linked to the UN Restoration Decade (or incorporate both UN Decades into one round of workshops?); Involve regional bodies such as LMEs and RSP's;
    - National Capacity Building Workshops – increase the number of national workshops per year. Select countries (SIDS/LDCs) with the least capacity? Select a cross-cutting 'high-need' topic such as biodiversity mainstreaming;
    - Training of Trainers program – expand to develop regional programs and potentially national or sub-national workshops involving local authorities and communities;
    - General – improve follow-up for participants after SOI events, consider developing a SOI Alumni to facilitate ongoing exchange and networking; develop regional SOI focal points or central ones for specific activities e.g. a 'training of trainers' focal point.
2. Be strategic by focussing on one or more of:
    - capacity-building approaches that are known to be most effective (see above), or;
    - cross-cutting issues that are applicable to all countries and highly needed e.g. biodiversity mainstreaming and the incorporation of ecosystem values into national accounting systems, or;
    - the greatest drivers of change for the marine and coastal environment globally i.e. direct extraction and 'sea-use change', or;
    - the top two stressors for the marine and coastal environment that are the greatest drivers of change at the national or sub-national level i.e. those highlighted by the particular country;
    - building and retaining capacity at the institutional level for both information gathering and management / governance;
    - the further development and maintenance of networks at the regional, national and local level;
    - The number and range of confirmed objectives / activities will also depend on the level of ambition (see point 4).
3. Incorporate targets and evaluation into the next SOI action plan:
    - Potential targets could include the number of events / workshops to be completed for each agreed approach, the number of participants completing training, exchange visits or online courses;
    - Incorporate monitoring and evaluation of the SOI program of work to assess capacity uptake, measure effectiveness and program success and provide feedback for refinement.
4. Explore the Level of Ambition for SOI:
    - Decide on the scale of activities e.g. keep to the same level (Business as Usual) or scale up to become a much more substantial contribution to capacity-building for marine and coastal biodiversity within the post-2020 GBF;
    - The scale of activities will strongly depend on the finance available;
    - The CBD Secretariat will need additional dedicated staff and interns if there is a large increase in SOI activities, or;

- The Secretariat could consider sharing or out-sourcing the SOI coordination workload to an external organisation if there is substantial expansion.

5. Further develop Partnerships and Synergies;

- Further develop synergies with other BRCs and global processes such as the UN Decades for Ocean Science and Ecosystem Restoration;
- Develop or strengthen partnerships with the two UN Decades, the IOC (GOOS/OBIS/MBON) and the GEF/FAO Common Ocean program, IUCN, regional bodies such as WIOMSA, PEMSEA, MFF, SPC and regional universities (e.g. the University of the West Indies and the University of the South Pacific), NGOs such as CI, WCS, TNC, FFI and Blue Ventures, and local management networks such as LMMA;
- Develop linkages with SEEA Ocean and partners for marine and coastal natural capital accounting;
- SOI could act as a regional node for the two UN Decades (Ocean Science and Restoration) to assist in two-way communication on capacity development with the regions;
- Consider developing linkages / synergies with the Commonwealth Blue Charter and its Action Groups.

6. Implement a bottom-up approach as part of the SOI program

- Revitalise the local leaders' forum activity;
- Consider developing a partnership with the Conservation Leadership Program[243] to support local leaders and champions for marine and coastal biodiversity;
- Consider peer-to-peer learning through participatory exchanges between local stakeholders such as small-scale fishers;
- Support equitable local management / governance platforms and initiatives either directly through partner organisations or indirectly through identifying and allocating finance

7. South-South and Triangular Cooperation

- Support south-south cooperation at the global and regional level
- Potential activities are learning exchanges (national or regional level) and technical staff secondments (regional level)
- Especially relevant for SIDS and LDCs that have low human capacity and small populations
- Explore the development of an SSTC marine and coastal program through collaboration with the UN Office for South-South Cooperation and others such as FAO or WorldFish.
- Involve regional bodies such as LMEs and RSPs, and IOC regional centres

8. National Reporting Mechanisms for the post-2020 GBF

- Work with Parties in a regional setting (engaging LMEs and RSPs) with the UN SEEA EA, IOC (including GOOS and OTGA), UNEP -WCMC, FAO and national statistical offices to raise the capacity of countries to report against the post-2020 indicators in a consistent manner.
- One aspect to work on could be the timely processing and reporting of information (e.g. indicators) within and between government departments / offices i.e. Parties to assign responsibility to one government office (e.g. national statistics) to coordinate national reporting across government departments;
- Work with National government departments to streamline internal inter-departmental processes to improve efficiency and reporting

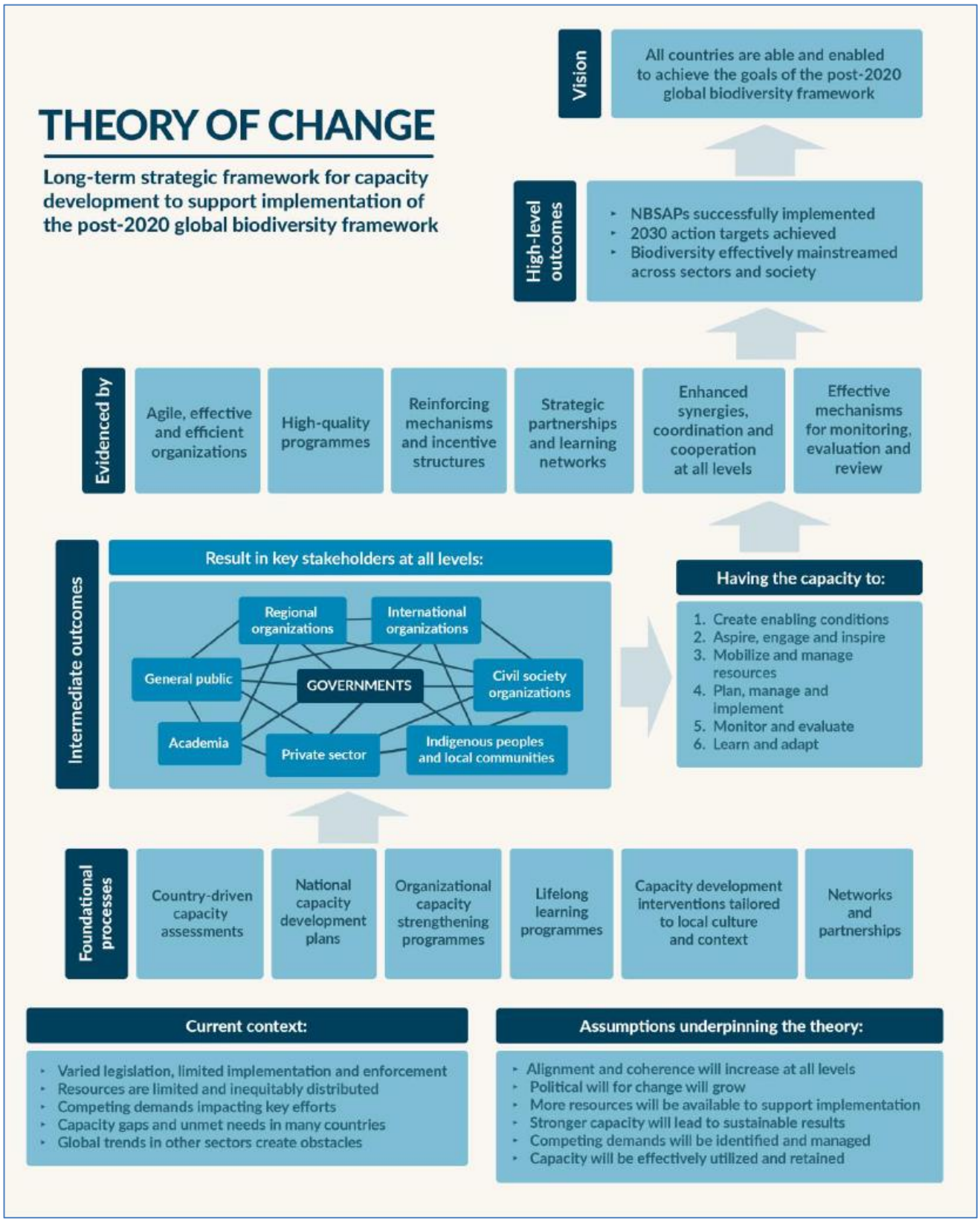
9. Online learning and COVID-19:

- The COVID-19 pandemic has illustrated the benefits and shortcomings of online modalities for engagement, which SOI should consider
- Online or blended learning could focus on cross-cutting topics within the GBF Action Targets.

[243] https://www.conservationleadershipprogramme.org/

The list of recommendations above is not exhaustive and there may be other approaches or priorities for consideration that are not suggested here. However, these recommendations can provide a starting point for discussions around the development of the next action plan for SOI. It should also be noted that the current list of post-2020 Action Targets is still in draft form and there may be some alterations before they are finalised. Lastly, unless there is a major expansion of the SOI program there will need to be strategic prioritisation in the selection of activities.

Annex 1. Theory of Change for the Long-term Strategic Framework for Capacity Development to Support the Implementation of the Post-2020 Global Biodiversity Framework.



Annex 2. Targets under the draft post-2020 Global Biodiversity Framework and their potential relevance to the Sustainable Ocean Initiative

Draft 2030 GBF Target Subjects	Relevance to SOI
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 species	MEDIUM – potential to develop SOI activities for marine and coastal impacts 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	MEDIUM – sustainable aquaculture, minimising downstream effects on marine and coastal through sustainable land use

Draft 2030 GBF Target Subjects	Relevance to SOI
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. Potential for providing guidance and possibly training
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 e.g. training and guidance for biodiversity inclusive EIAs and SEAs
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	MEDIUM – can be part of 2050 biodiversity vision awareness raising at SOI activities such as national workshops or at the local level
Target 17. Biosafety	LOW – potentially as part of 2050 biodiversity vision awareness raising at SOI activities such as regional or national workshops
Target 18. Subsidies and incentives	LOW – but raising awareness of harmful incentives and subsidies can be part of some activities such as national workshops e.g. fisheries subsidies
Target 19. Increasing resources for biodiversity **19.1** – Financial resources **19.2** – Other resources for implementation	HIGH – SOI, through its networks, could facilitate the availability of financial resources for marine and coastal capacity-building activities
Target 20. Information and knowledge	HIGH – Adequate availability of quality information is essential and a crucial aspect of capacity-building for marine and coastal systems
Target 21. Participation of IPLCs	HIGH – Building management and governance systems that involve indigenous peoples and local communities including women and youth in

Draft 2030 GBF Target Subjects	Relevance to SOI
	decision making will require capacity development, especially in SIDS and LDCs
Target 22. Participation of women, girls and youth	As per target 21