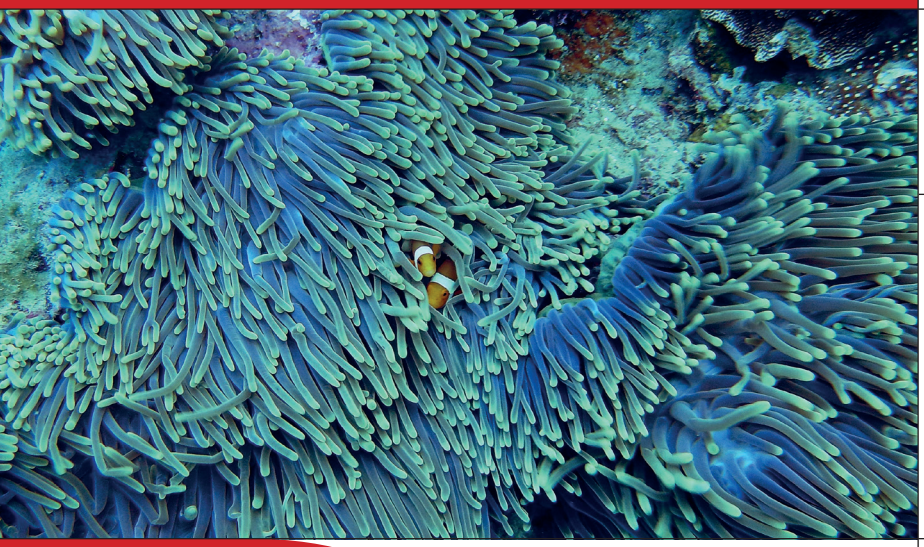
POST
BIODIVERSITY FRAMEWORK
EU SUPPORT
2020

TOWARDS POST-2020 EXPERTISE WITH #16

MARINE BIODIVERSITY: A KEY ELEMENT OF ECOSYSTEMIC BALANCE AND LONG-TERM DEVELOPMENT



Julia Tasse
Research Fellow, French Institute for International and Strategic Affairs

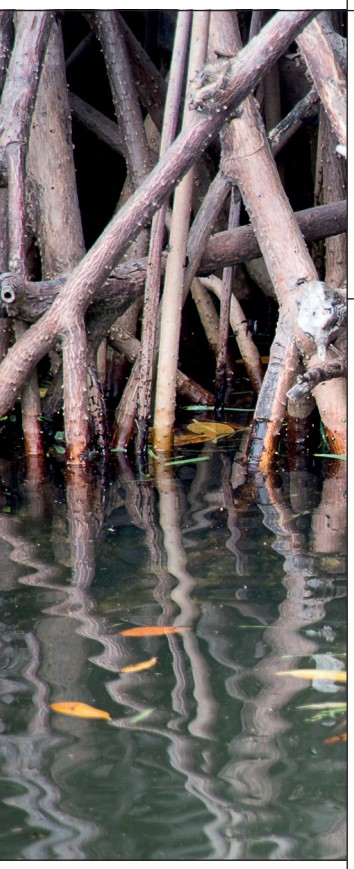
Marine biodiversity is a unique and endangered support system of prosperity, for coastal and landlocked countries alike. Providing multiple services (food security, medication, climate regulation), its sustainable use conditions its survival and relies on strong coordinated action from international conventions.

"WE CAN CONTINUE TO PROGRESS BY INSTILLING OCEAN PROTECTION IN THE FUTURE OF THE POST-2020 GLOBAL BIODIVERSITY FRAMEWORK. TO BREAK DOWN SECTORAL SILOS AND IDEOLOGICAL BARRIERS OF THE PAST, WE MUST FORGE A NEW SPIRIT OF COOPERATION."
Elizabeth Mrema, Executive Secretary, CBD Secretariat

Livelihoods depend on a healthy marine biodiversity. Birthplace of life, the ocean provides essential living conditions for humankind. Plankton and microorganisms generate up to 50% of the oxygen we breathe. Marine and coastal ecosystems are critical nature-based solutions, mitigating climate change – they absorbed 30% of anthropic CO^2 – and protecting 600 million people living in coastal areas 1 against extreme weather events and erosion.

Marine biodiversity is also a vital source of food and represents 20% of animal protein sources for 3.3 billion people [2]. It directly contributes to medicine progress [3]. Partial knowledge of these ecosystems (91% of marine species remain to be described [4]) hinders efficient marine biodiversity protection.

These essential services make marine biodiversity a necessary component of goals and targets in the post-2020 Global Biodiversity Framework (GBF).



Mangrove trees, Florida Keys, Florida, USA

1. HEALTHY MARINE BIODIVERSITY, CORNERSTONE OF HUMAN SUSTAINABLE DEVELOPMENT

1. HUMAN ACTIVITIES AT SEA: TACKLING BIODIVERSITY OVEREXPLOITATION AND HABITAT DESTRUCTION

Among drivers of marine biodiversity loss, "direct exploitation" (29% of loss) demonstrates how alarmingly human activities impact marine ecosystems, and thus socio-economic development.

Fish constitutes a key animal protein supply. Small scale fisheries employ over 90% of fish workers, about half of them being women. In 2017, 93.8% of fish stocks were fully exploited or overexploited [5]. Overfishing and harmful fishing practices threaten long term food security, urgently calling for more ambitious policies. In addition, coastal and marine activities can generate noise and light pollution, disrupting and altering marine species communication and navigation signals [6].

Marine and coastal ecosystems provide various ecosystem services, being fish nurseries and contributing to blue tourism. They are also crucial coastal stabilisers, significantly diminishing risks for the estimated 300 million people who will experience annual coastal flooding [7].

The above services are greatly altered by the second leading driver of marine biodiversity loss: "land/sea use change". Current practices (urban development, tourism, sedimentation disruptions) cause dramatic ecosystem degradation. 67% of historical mangrove habitats have been degraded worldwide, a global rate 3-5 times greater than overall forest loss [8].

2. CONTINUOUS LAND-SEA INTERACTIONS: LAND-BASED ACTIVITIES' IMPACT ON MARINE BIODIVERSITY

Land-sea interactions are numerous. Terrestrial biodiversity and phenomena (such as sedimentation or climate events) can negatively impact marine biodiversity, notably through the water cycle. For the same reasons, continental human activities affect biodiversity on both land and at sea. It is thus necessary to holistically appreciate human activities for efficient biodiversity protection. Several land-based activities can be harmful to marine biodiversity due to pollution (accounting for 15% of biodiversity degradation).

With 80% of plastic at sea coming from land, both macroplastics and microplastics [9] have harmful metabolic and endocrine consequences. On the other hand, chemical pollution is due to nutrients, antibiotics, pesticides, or chemicals leaking.

Biological pollution refers to invasive alien species [10], the fifth driver of marine biodiversity degradation. Pollution affects marine species metabolism, reproduction and interactions (predatory or escape). It is often cumulative and can induce acute, chronic disorders. These circumstances have indirect negative consequences on economic activities and human health. The cost of ocean hypoxia – partly due to nitrogen pollution – has for example been estimated to USD200-800 billion/yr [11].

More broadly, marine biodiversity degradation has repercussion on land: marine species depletion affects trophic chains – thus livelihoods – and modifies the environment. Algae eutrophication, endangering coastal activities and severely impacting tourism, illustrates how marine biodiversity degradation can alter in turn all aspects of human development. Conservation needs to be underpinned by broad economic and social systemic change, at sea and on land, in both production and consumption systems [12].

2. CBD PARTIES, LEADERS OF TRANSFORMATION ON MARINE ISSUES

Parties to the CBD have a central role to play in reversing this situation. They can support conservation policies but also promote sustainable activities. They have a sovereign control on areas under their jurisdiction and regulate ships flying their flag. Importantly, their supervision of land-based activities is crucial in reducing land-to-sea pollution.

"SILOS ARE UNACCEPTABLE AT THIS STAGE OF THE GAME (...) OCEAN, CLIMATE CHANGE AND BIODIVERSITY ARE INSEPARABLE. THEREFORE, THE BIODIVERSITY COP CONFERENCE IN KUNMING AND THE UN OCEAN CONFERENCE IN LISBON MUST BE PART OF A RISING GLOBAL SWELL THAT SWEEPS US INTO TRANSFORMATIONAL PROGRESS AT COP26 IN GLASGOW NEXT YEAR."

Peter Thomson, UN Special Envoy for the Ocean

1. SWITCHING PRACTICES THROUGH FINANCIAL INCENTIVES AND REGULATION

Governments, as CBD Parties, lead in moving towards a more sustainable blue economy through harmful subsidies removal [13] and cross-sectoral transformation.

[1] This figure only includes people living in coastal areas located less than 10 meters above sea level. Source: The UN Ocean Conference, 2017, Factsheet: People and Oceans.

[2] UN Food and Agriculture Organization (FAO), 2020, State of Fisheries and Aquaculture 2020.

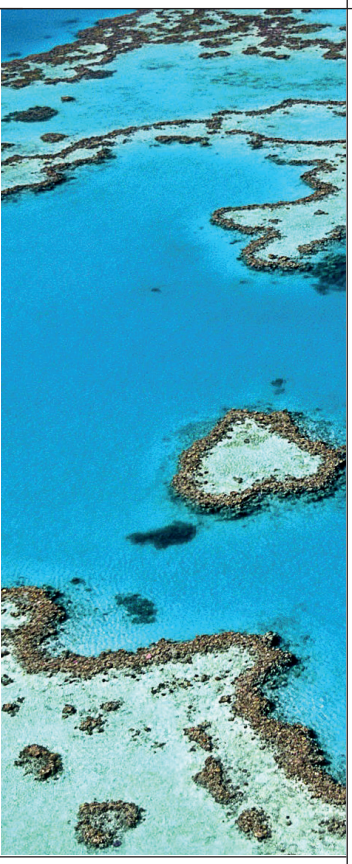
[3] Crèmes, Wright, Rochette, 2020, Biotechnologies marines : un avenir façonné par les discussions onusiennes sur les ressources génétiques marines et la course aux nouveaux médicaments.

[4] CBD Secretariat, 2019, Background briefs for 2020 Ocean Pathways Week

[5] UN Food and Agriculture Organization (FAO), 2020, State of Fisheries and Aquaculture 2020.

[6] Herbert-Read J. Fremer L, Bruinties R. Radford A. Joannou C, 2017, Anthropogenic noise pollution from pile-driving disrupts the structure and dynamics of fish shoals https://cutt.ly/Wf663CH

[7] Scott A. Kulp & Benjamin H. Strauss, 2019, "New elevation data triple estimates of global vulnerability to sea-level rise and coastal flooding", Nature Communication, 10, 4844.



Coral reefs shelter about 25% of all marine species (known to this day). Direct local pressures currently affect 60% of reefs.

Financial flow reallocation will come hand-in-hand with marine biodiversity-positive practices, across the socio-economic spectrum. A first step consists in removing harmful subsidies such as programs fostering overfishing (i.e. subsidising increased fishing capacity) or pollution (i.e. the support for the use of harmful chemicals). Those two sectors should be in a second step assisted in switching practices, leading intensive agriculture to adopt further agroecology practices.

A sustainable fishing framework would require stable and transparent fish trade regimes, properly designed tenure, user and access rights systems (with particular consideration for small-scale fisheries), and science-based management models [14]. Enforcing catch and bycatch limiting policies, building capacity for data collection, fostering technology transfer to limit waste along the value chain are biodiversity-conscious initiatives. Even though SDG 14.6 (harmful subsidies removal) will not be achieved in 2020, progress can be assessed: the ecosystem approach to fisheries has been adopted by three quarters of the UN Food and Agriculture Organization (FAO) members over the last decade. Such initiatives can trigger momentous success, as fish stocks are potentially able to recover from pressure after 10 to 30 years [15].

To limit habitat destruction, coastal infrastructure development should be conditioned to environmental impact assessments and biodiversity footprint reduction. Plastic pollution can be tackled through better water treatment systems and single-use plastic ban.

Going further, preventing microplastic leak requires extensive investments in technology and behaviour change. Microplastics sources (road construction, cosmetics, synthetic clothes, etc.) should be dramatically cut down. Reducing invasive species transport15 (anti-trafficking law, ship hull biofouling reduction and ballast water discard prevention) and more strictly controlling hazardous substances transport (oil & gas, chemicals, toxic waste) are critical steps to protect ecosystems [16].

These sectoral initiatives will come together in an integrated policy to reach true transformative change while supporting innovative solutions. CBD Parties have an important role in fostering technological developments (eco-design), reducing risks (better surveillance enforcement tools, and controlling evolutions in the blue economy (deep-sea mining, marine renewable energy, biotechnology). They are instrumental in catalysing biodiversity footprint [17] reductions.

Those policy priorities, reflected in post-2020 GBF goals and targets, constitute a strong message for more proactivity on marine biodiversity governance. A corresponding set of indicators on key issues (species invasion rate, operational noise, fishing exploitation, microplastics in indicative species) would complement the above with evidence-based means.

2. PLANNING, PROTECTING, SUSTAINING OUR USAGE OF MARINE BIODIVERSITY: THE NEED FOR AN INTEGRATED APPROACH

Only 3% of the ocean was considered free of human pressures in 2014, and this figure has likely decreased in the past 6 years [18]. Protecting key ecological areas is thus crucial. Area-based conservation measures [19] (ABCM) grounded on biodiversity representativeness have shown to be positive for ecosystem recovery and beneficial for involved communities. ABCM status (no take zone, locally managed marine areas, Other-Effective Area-Based Conservation Measures) should be tailored to local communities' usages of marine biodiversity and consider their implication in maintaining and controlling the zone [20]. To be efficient, ABCM projects require systematic initial data collection, multi-vector (ship, satellite, buoys) sea surveillance, concrete law enforcement, and efficient governance.

More broadly, cross-sectoral marine spatial planning (MSP) [21] provides CBD Parties with an overview of all coastal and maritime activities and fosters stakeholder dialogue. At regional level – municipalities and harbour authorities being key in enforcing and strengthening maritime laws, it allows for consistent action, taking into account economic activity needs while aiming at limiting their cumulative impacts on marine biodiversity. Optimizing maritime space usage can accelerate habitat restoration and recovery.

"INDIGENOUS PEOPLE, LOCAL COMMUNITIES, SMALL SCALE FISHER FOLKS ARE CUSTODIANS OF MARINE BIODIVERSITY WITHIN PROTECTED AREAS, FUNDAMENTAL FOR THE VITALITY OF OUR OCEANS BUT ALSO FOR FOOD SECURITY, CULTURAL IDENTITY, RESILIENCE, AND LIVELIHOODS."

Vivienne Solis Riviera, Board of Director of ICSF, Costa Rica

3. A CALL FOR INTERCONNECTED MARINE GOVERNANCE

1. IDENTIFYING THE CONVENTION ON BIOLOGICAL DIVERSITY (CBD)'S SCOPE FOR ACTION IN A FRAGMENTED GOVERNANCE SYSTEM

Ocean governance is fragmented and complex. Each area (Exclusive Economic Zones, Area beyond National Jurisdiction) is subject to its own governance scheme. National waters are under national sovereignty, activities at sea are regulated by the UN Convention for the Law of the Sea (UNCLOS).

[8] UNESCO, Speech for the International Day for the Conservation of the Mangrove Ecosystem. https://cutt.ly/5fCptqH

[9] Particles of plastics smaller than 5mm.

[10] Read Expertise on #14.

[11] UNDP, GEF, 2012, Catalysing Ocean Finance, Volume I, Transforming Markets to Restore and Protect the Global Ocean.

[12] According to IPBES, 2019, Global Assessment Report on Biodiversity and Ecosystem Services.

[13] Read Expertise on #8.

[14] UN Food and Agriculture Organization (FAO), 2020, State of Fisheries and Aquaculture 2020.

[15] Duarte, C. M.I; Agustí, S.; Barbier, E; Britten, G L; Castilla, J C; Gattuso, J.-P.; (2020). "Rebuilding marine life". Nature, 580(7801), 39-51.

[16] Read Expertise on #14.

[17] Read Expertise on #11.

[18] IPBES, 2019, Global Assessment Report on Biodiversity and Ecosystem Services.

[19] https://cutt.ly/3gqwkXd

UN "Biodiversity Beyond National Jurisdiction" Intergovernmental Conference, 2019

In contrast, international organizations such as the International Seabed Authority (ISA) or Regional Fisheries Management Organizations have a mandate to monitor and control specific activities at sea. International coordination is then key to overcome this fragmentation. Aichi target 11 bespeaks of CBD's successes in marine biodiversity conservation: marine protected area (MPA) surface coverage has reached 7.8% in 2019 and will probably achieve its 10% target in 2020 thanks to mobilized Parties showing leadership.

Parties can continue driving conservation by supporting a coherent MPA approach, especially through the protection of Key Biodiversity Areas [22]. Very large MPAs in less busy zones (i.e. Antarctica) helped to reach Aichi Target 11, but raised concern regarding ecological representativeness.

Another illustration of the CBD's essential role lies in the specific dependency of island states on marine resources. Harbouring more than half of known marine biodiversity (notably around coral reefs), Small Island Developing States (SIDS) face major constraints in implementing marine biodiversity area-based management, linked to specific economic, climate and biological threats [23] and limited institutional capacity. International conventions can convey ambitious facilitation programs, leveraging funds to foster capacity-building and knowledge transfer, among others.

2. CONSIDERING BIODIVERSITY TRAVELLING ONE GLOBAL OCEAN

Human-made fragmented ocean governance delineates artificial boundaries, while marine ecosystems are broadly connected [24]. Plastic waste found in the deepest oceanic trench illustrates the worldwide impact of human activities.

Echoing ocean connectivity, flexibility and adaptability should overarch governance, including the junction between MPAs and collaborative management schemes. During ABMC development, whether under strictly protective or regulating usages, one should thus integrate seasonal species migrations and oceanic currents.

The above would encompass considering protected areas implementation in areas beyond national jurisdictions, which raises questions regarding their management, as global commons.

In parallel, policies aiming at limiting pollution and habitat destruction may mirror this situation and strive for global coherence.

3. CATALYSING CONVERGENCE OF INTERNATIONAL GOVERNANCE PROGRAMS

Legal fragmentation hinders systemic, global, efficient coordinated action towards marine biodiversity protection.

Recent years have seen a global momentum for integrated ocean governance. Going beyond separated ocean governance arenas (ongoing UNCLOS's Biodiversity Beyond National Jurisdiction negotiations, ISA) and state-based fora (CBD, UN Framework Convention on Climate Change), the UN Ocean Conference and the UN Decade of Ocean Science for Sustainable Development (2021-2030) catalyse international coordination among policymakers, scientists, and other civil society representatives.

Tackling the lack of collaboration and reinforcing synergies is vital for a coherent and effective governance. The CBD, through its 15th Conference of the Parties, could take leadership in this regard when developing goals, targets and indicators for the post-2020 GBF. Nature-based solutions – marine biodiversity being a cornerstone of the blue economy, climate mitigation, and global development – represent a unique base for ambitious discussions and sound-approach to marine governance and risks.

FOSTERING OCEAN SCIENCE FOR BETTER MANAGEMENT

Pressure, temperature, and salinity require specific equipment, leading to costly scientific operations. As a result, observation and assessment campaigns often remain incomplete. Capacity-building and technology transfer are essential to foster developing countries' knowledge of their own maritime space. A better understanding of the ocean is crucial for long-term development. Fostering marine biodiversity science encompasses:

+ Addressing knowledge gaps (ecosystem status and cumulative impacts),
+ Improving monitoring (data collection, shared computation protocols, instruments),
+ Boosting participative sciences.

[20] Cinner et al. 2012, Comanagement of coral reef social-ecological systems.

[21] https://cutt.ly/FgtLZED

[22] https://cutt.ly/JgtL0R7

[23] Read Expertise on #14

[24] Connected to other marine ecosystems as well as to atmosphere and terrestrial ecosystems.

Cover page picture:
Deep-sea corals host a partly unknown biodiversity, species with specific molecules and metabolisms which could help leapfrog medical research.

TOGETHER
CBD COP 15 — KUNMING 2021
TOWARDS A GLOBAL DEAL FOR NATURE & PEOPLE

4POST2020BD.NET
@4POST2020BD

IN PARTNERSHIP WITH

POST2020 BIODIVERSITY FRAMEWORK – EU SUPPORT IS FUNDED BY THE EUROPEAN UNION AND IMPLEMENTED BY EXPERTISE FRANCE. IT AIMS AT FACILITATING A COMPREHENSIVE AND PARTICIPATORY PROCESS LEADING TO THE ADOPTION OF AN AMBITIOUS POST-2020 GLOBAL BIODIVERSITY FRAMEWORK THAT FOSTERS COMMITMENT AND IMPLEMENTATION.

THIS PROJECT IS FUNDED BY THE EUROPEAN UNION

IMPLEMENTED BY EXPERTISE FRANCE