GUIDANCE ON MANGROVE INDICATORS IN THE POST-2020 GLOBAL BIODIVERSITY FRAMEWORK

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SAVE OUR MANGROVES NOW!

GLOBAL MANGROVE ALLIANCE

GLOBAL MANGROVE WATCH

Mangrove Specialist Group

This guidance is intended to contribute to the ongoing discussions towards the adoption of the Post-2020 Global Biodiversity Framework. It illustrates the contribution of mangrove ecosystems towards the achievement of multiple goals, targets and associated indicators towards the achievement of the Post-2020 Global Biodiversity Framework's vision of a world of **"Living in harmony with nature",** where by 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential **for all people.**

Mangroves play a vital role in contributing to climate mitigation, adaptation, coastal resilience, and disaster risk reduction through carbon sequestration, coastal protection and mitigation of erosion and flood risk, as well as biodiversity conservation, livelihoods and food security through provision of habitat to fish and other wildlife.

This guidance provides **scientifically robust data** and resources for consideration by countries in national monitoring and reporting and identifies opportunities to effectively capture the contribution of mangroves in the monitoring of progress towards achievement of the **2050 vision for biodiversity.**

Indicators	What does it measure in the context of mangroves?	Data & metadata	Citation	What is the baseline? How often are updates?	What entity facilitates reporting?
Goal A: The integrity of all ecosystems is enhanced, with an increase of at least 15 per cent in the area, connectivity and integrity of natural ecosystems, supporting healthy and resilient populations of all species, the rate of extinctions has been reduced at least tenfold, and the risk of species extinctions across all taxonomic and functional groups, is halved, and genetic diversity of wild and domesticated species is safeguarded, with at least 90 per cent of genetic diversity within all species maintained.					
Headline Indicator A.0.1: Extent of selected natural and modified ecosystems (i.e. forest, savannahs and grasslands, wetlands, mangroves, saltmarshes, coral reef, seagrass, macroalgae and intertidal habitats) ***Complementary Indicator a.9*** *Continuous Global Mangrove Forest Cover* ***Complementary Indicator a.12*** *Trends in mangrove extent*	Extent and change in extent of mangrove ecosystems	Global Mangrove Watch *(Relevant data layers: mangrove habitat extent and mangrove extent net change)* *	Bunting et al., 2018	Baseline: 2010 Earliest map: 1996 Last update: 2016 GMW extent maps are generated as change maps from the baseline year (2010), both backward and forward in time. Maps are generated annually from 2015. Maps available: 1996, 2007, 2008, 2009, 2010 (baseline), 2015 and 2016. Maps for 2017, 2018, 2019 and 2020 are scheduled for release in Q3 2021.	Aberystwyth University and solo Earth Observation *The GMW maps constitute the official mangrove datasets used by UNEP for reporting on Sustainable Development Goal 6.6.1 (change in the extent of water-related ecosystems over time) – available at* **https://sdg661.app**.
Complementary Indicator a.10 *Trends in mangrove forest fragmentation*	Mangrove ecosystem integrity and connectivity				
Target 1. Ensure that all land and sea areas globally are under integrated biodiversity-inclusive spatial planning addressing land- and sea-use change, retaining existing intact and wilderness areas.					
Target 3. Ensure that at least 30% globally of land areas and of sea areas, especially areas of particular importance for biodiversity and its contributions to people, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.					
Headline Indicator 1.0.1: Percentage of land and seas covered by spatial plans that integrate biodiversity* ***Complementary Indicator t1.3*** *Habitat patches located within marine protected areas or integrated coastal zone management (ICZM)* ***Headline Indicator Indicator 3.0.1: Coverage of Protected areas and OECMS (by effectiveness)*** ***Complementary Indicator t2.3*** *Protected area coverage of key biodiversity areas* ***Complementary Indicator t2.7*** *Proportion of terrestrial, freshwater and marine ecological regions which are conserved by protected areas or other effective area-based conservation measures*	Area of mangrove ecosystems under protection, conservation, and zoned for sustainable use	Protected Planet World Database on Protected Areas and OECMs	Bingham et al., 2019 Riggio et al., 2019 Friedlander et al., 2017	Baseline: 2012 Updated monthly	UN Environment Programme World Conservation Monitoring Programme (UNEP-WCMC) and the International Union for the Conservation of Nature (IUCN)
Target 2. Ensure that at least 20 per cent of degraded freshwater, marine and terrestrial ecosystems are under restoration, ensuring connectivity among them and focusing on priority ecosystems.					
Headline Indicator 2.0.1: Percentage of degraded or converted ecosystems that are under restoration	Area of degraded or converted mangrove ecosystems under restoration **	Restoration Barometer ***	Endorsed by 40+ governments, currently in use by 20+ governments	Baseline – 2010 Updated annually	International Union for the Conservation of Nature (IUCN)

Indicators	What does it measure in the context of mangroves?	Data & metadata	Citation	What is the baseline? How often are updates?	What entity facilitates reporting?
Goal B: Nature's contributions to people are valued, maintained or enhanced through conservation and sustainable use supporting the global development agenda for the benefit of all;					
Target 8. Minimize the impact of climate change on biodiversity, contribute to mitigation and adaptation through ecosystem-based approaches, contributing at least 10 GtCO2e per year to global mitigation efforts, and ensure that all mitigation and adaptation efforts avoid negative impacts on biodiversity.					
Headline indicator B.0.1: National environmental economic accounts of ecosystem services* ***Headline Indicator 8.0.1: National green-house gas inventories from land use and land use change*** ***Complementary Indicator t7.1*** *Above-ground biomass stock in forest (tonnes/ha)*	Contribution of mangroves to climate change mitigation targets ****	Global Mangrove Watch NASA Global Mangrove Distribution, Above-ground Biomass, and Canopy Height	Simard et al., 2019	Baseline: 2000 (based on SRTM DEM) Update scheduled for Q4 2021. New baseline year: 2015 (based on TanDEM-X DEM)	US National Aeronautics and Space Administration (NASA)
Complementary Indicator t7.2 *Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015– 2030 (SDG indicator 13.1.2)* *****	Contribution of nature-based solutions, including mangroves, to disaster risk reduction	Sendai Monitor	Mizutori, 2020	Baseline: 2015 Updated annually	United Nations Office for Disaster Risk Reduction (UNDRR)
Complementary Indicator t7.4 *Number of least developed countries and small island developing States, with nationally determined contributions, long-term strategies, national adaptation plans, strategies as reported in adaptation communications and national communications (SDG indicator 13.b.1)*	Contribution of nature-based solutions, including mangroves, to climate change mitigation and adaptation	UNFCCC Nationally Determined Contribution Registry UNFCCC National Adaptation Plan Registry	Stephenson et al., 2019	Baseline: 2015 Updated every 5 years	United Nations Framework Convention on Climate Change (UNFCCC) Secretariat, National Designated Entities
Target 9: Ensure benefits, including nutrition, food security, medicines, and livelihoods for people especially for the most vulnerable through sustainable management of wild terrestrial, freshwater and marine species and protecting customary sustainable use by indigenous peoples and local communities.					
Headline Indicator 9.0.1: National environmental-economic accounts of benefits from the use of wild species ***Complementary Indicator t8.1*** *Proportion of fish stocks within biologically sustainable levels (SDG indicator 14.4.1)*	Contributions of mangroves to fisheries and livelihoods	Global Fisheries Database	Garibaldi, 2012; Tacon, 2020	Baseline: 1990 Updated every 5 years.	Food and Agriculture Organization of the UN (FAO)
Target 10: Ensure all areas under agriculture, aquaculture and forestry are managed sustainably, in particular through the conservation and sustainable use of biodiversity, increasing the productivity an resilience of these production systems.					
Headline Indicator 10.0.2: Progress towards sustainable forest management (Proportion of forest area under a long-term forest management plan) ***Complementary Indicator t9.5*** *Progress towards sustainable forest management (SDG indicator 15.2.1)*	Resilience and sustainability of managed mangrove resources	Global Forest Resources Assessment	Siry et al., 2005 FAO, 2020	Baseline: 1948 Updated every 5 years	Food and Agriculture Organization of the UN (FAO)
Target 11: Maintain and enhance nature's contributions to regulation of air quality, quality and quantity of water, and protection from hazards and extreme events for all people.					
Headline Indicator 11.0.1: National environmental-economic accounts of regulation of air quality, quality and quantity of water, and protection from hazards and extreme events for all people, from ecosystems	Role of mangroves in regulation of coastal erosion, flooding and extreme events	The Global Flood Protection Benefits of Mangroves	Menendez et al., 2020	2017 dataset	Menendez et al., 2020

CONTRIBUTION OF MANGROVES TOWARDS ACHIEVEMENT OF THE POST-2020 GLOBAL BIODIVERSITY FRAMEWORK'S VISION

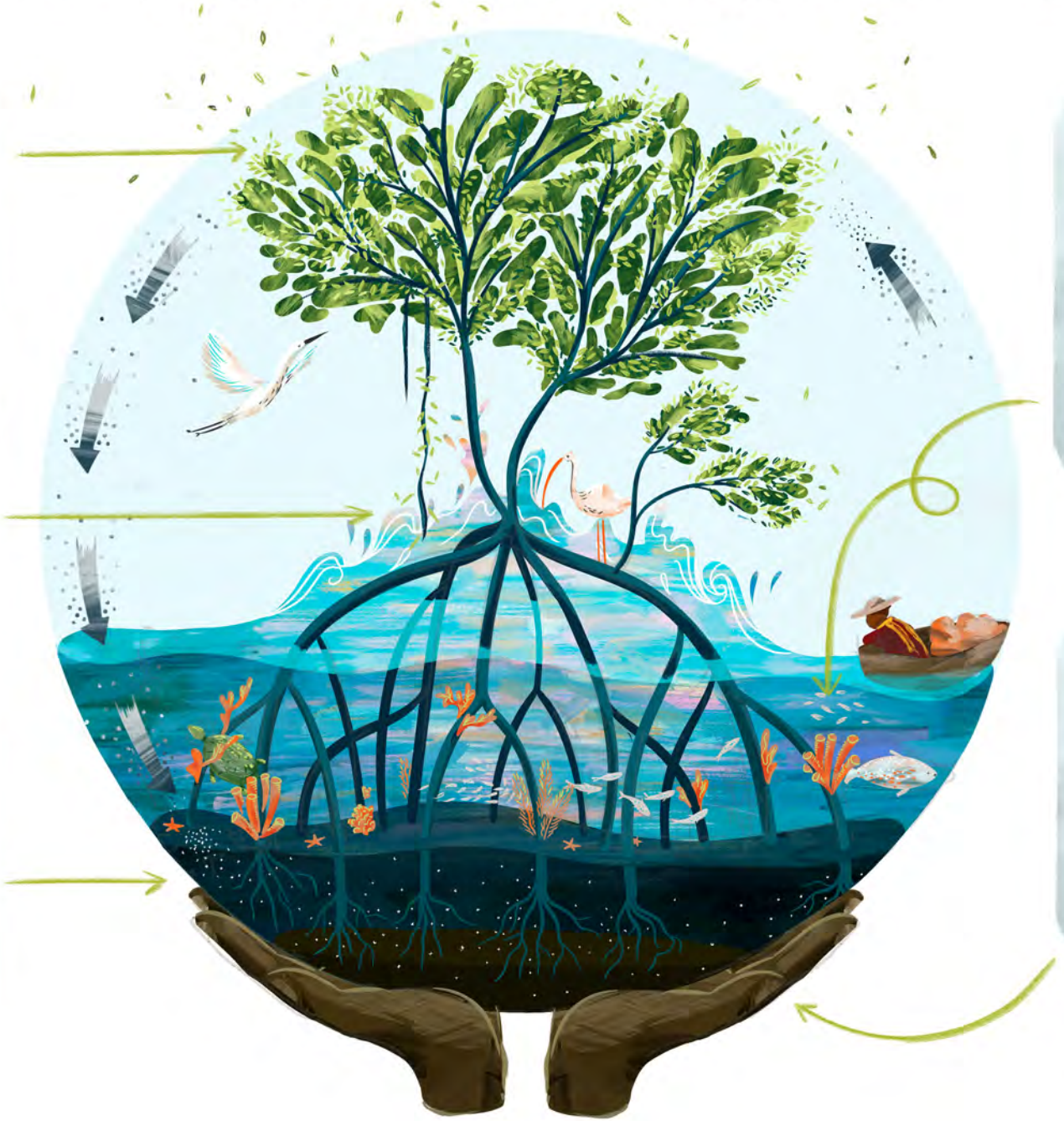
A world of "Living in harmony with nature", where by 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people.

These indicators are critical "ingredients" for effectively capturing the contribution of mangroves in the monitoring of progress in the path towards achievement of this vision.

Mangrove Forest Cover and Trends
Measures extent and change in the extent of mangrove ecosystems, demonstrating trends at local, national and global levels.

Contribution of mangroves to coastal protection and disaster risk reduction
Economic accounting of the role of mangroves in regulation of coastal erosion, flooding and extreme events.

Mangrove biomass and carbon stock
Mangroves are 'superheroes' in carbon sequestration in their biomass and underlying soils. Measures the contribution of mangroves to national climate change mitigation targets.



Contribution of mangroves to fisheries and livelihoods
Measures the contribution of mangroves in supporting coastal biodiversity as nursery and spawning areas for fish and invertebrates, supporting both local livelihoods and national economies by providing subsistence and commercial fisheries and food security.

Area of mangrove ecosystems under protection, conservation, and zoned for sustainable use
The proportion of the world's mangroves included within MPAs, KBAs or other effective area-based conservation and management measures.

#rootsofhope

APPENDIX

* GLOBAL MANGROVE WATCH

The Global Mangrove Watch (GMW) is led by Aberystwyth University and solo Earth Observation, in collaboration with Wetlands International and The Nature Conservancy.

The GMW was informed by multiple sources including Pekel at al. (2016), Spalding et al (2010) and Giri et al (2011). The GMW has data on the following for each country: mangrove extent and mangrove extent change (gain and loss).

The GMW Platform also provides data on mangrove blue carbon, mangrove mean canopy height and mangrove mean above-ground biomass density, derived from Simard et al. (2019).

** AREA OF DEGRADED OR CONVERTED MANGROVE ECOSYSTEMS UNDER RESTORATION

Rapid losses of mangrove ecosystems over the past 50 years have had negative consequences on the environment, climate, and humanity, through diminished benefits such as carbon storage, coastal protection and fish production. However, restoration of mangrove forests is highly possible. **The Mangrove Restoration Potential Map** demonstrates key locations where mangroves can be restored, and calculates the potential benefits for carbon sequestration, coastal protection, and fisheries productivity. See **Worthington and Spalding, 2018.**

Guidance on mangrove restoration case studies and best practices can be found at the Global Mangrove Alliance website at **www.mangrovealliance.org**.

*** RESTORATION BAROMETER

Developed in 2016, the Restoration Barometer is a globally-used tool to track the progress of restoration targets across terrestrial ecosystem types including coastal and inland waters. It has been applied in 20 countries and endorsed by 40+ through various restoration declarations.

The Barometer assesses the enabling environment for restoration – the policies, funding and technical planning that underpin implementation – and then quantifies benefits to species and habitats, livelihoods and carbon sequestration.

The Barometer indicators and reporting forms are aligned with the CBD, Paris Agreement and other global goals to allow for ease of reporting by Parties.

**** CONTRIBUTION OF MANGROVES TO CLIMATE CHANGE MITIGATION TARGETS

We note that, for mangrove ecosystems, above-ground biomass stock is not a comprehensive indicator to capture carbon storage. Attempts to reach this target in isolation of other restoration best practices have previously led to maladaptive strategies such as introduction of exotic fast-growing species and monospecific plantations, with negative impacts on biodiversity.

We strongly recommend the need for transparent and synergetic national reporting for biodiversity and climate change, while recognizing the national contexts in flexibility needed and intent to minimize additional reporting burdens. Climate mitigation benefits from mangroves, such as belowground soil carbon, can be accounted for within the national reporting for the UNFCCC in National Greenhouse Gas Inventories, National Inventory Reports, and/or the Biennial Transparency Reports.

The Global Mangrove Watch presents a key tool for Parties to calculate the total organic carbon stored in a set area of mangroves, while disaggregating between above-ground biomass and soil "blue" carbon, derived from Simard et al. (2019).

***** CONTRIBUTION OF NATURE-BASED SOLUTIONS, INCLUDING MANGROVES, TO DISASTER RISK REDUCTION AND CLIMATE ADAPTATION TARGETS

We recommend that these indicators clarify that said disaster risk reduction and climate adaptation and mitigation strategies should include ecosystem-based approaches and biodiversity protection, such as natural infrastructure, ecosystem-based adaptation, and ecosystem-based disaster risk reduction.

ABOUT THE POST-2020 GLOBAL BIODIVERSITY FRAMEWORK

The post-2020 Global Biodiversity Framework sets out an ambitious plan to implement cross-sectoral action to bring about a transformation in society's relationship with biodiversity, ensuring that by 2050 the shared vision of 'living in harmony with nature' is fulfilled.

The global biodiversity framework has four long-term **Goals** for 2050 related to the 2050 Vision for Biodiversity: "By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people."

These Goals are backed up by 21 action-oriented **Targets** for urgent action over the decade to 2030, which address reducing threats to biodiversity, meeting people's needs through sustainable use and benefit-sharing, and tools and solutions for implementation and mainstreaming [1]. To monitor the implementation of the post-2020 global biodiversity framework nationally as well as to track progress globally, a set of **Headline Indicators** aligned to the Goals and Targets have been proposed [2]. They are complemented with component and complimentary indicators, where the **component indicators** cover specific components of a goal or target and the **complementary indicators** provide for thematic or in-depth analysis of each goal and target [3] .

The post-2020 Global Biodiversity Framework is still under development and is currently under negotiation at the Convention on Biological Diversity (CBD).

THANK YOU

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Our special thanks to the International Coral Reef Initiative (ICRI) for providing inspiration and support throughout this process. The complementary ICRI Recommendation on the inclusion of coral reefs and related ecosystems within the CBD Post-2020 Global Biodiversity Framework is available **here**, as well as supporting material to support negotiations at **www.coralpost2020.org** .

The views presented herein do not necessarily represent the official position of any organisations listed here. The content of this document does not preclude the debates to be held in and the outcomes of the meetings related to the negotiation and adoption of the Post-2020 Global Biodiversity Framework.

[1] The first draft of the post-2020 global biodiversity framework, including Goals and Targets, is available at CBD/WG2020/3/3 (published 5 July 2021).

[2] The proposed headline indicators of the monitoring framework for the post-2020 global biodiversity framework are available at CBD/WG2020/3/3/ADD1 (published 11 July 2021).

[3] The proposed component and complementary indicators used in this publication are available at CBD/WG2020/3/INF/2 (published August 5, 2021)

Endorsed by:

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With support from:

Save Our Mangroves Now! · Federal Ministry for Economic Cooperation and Development