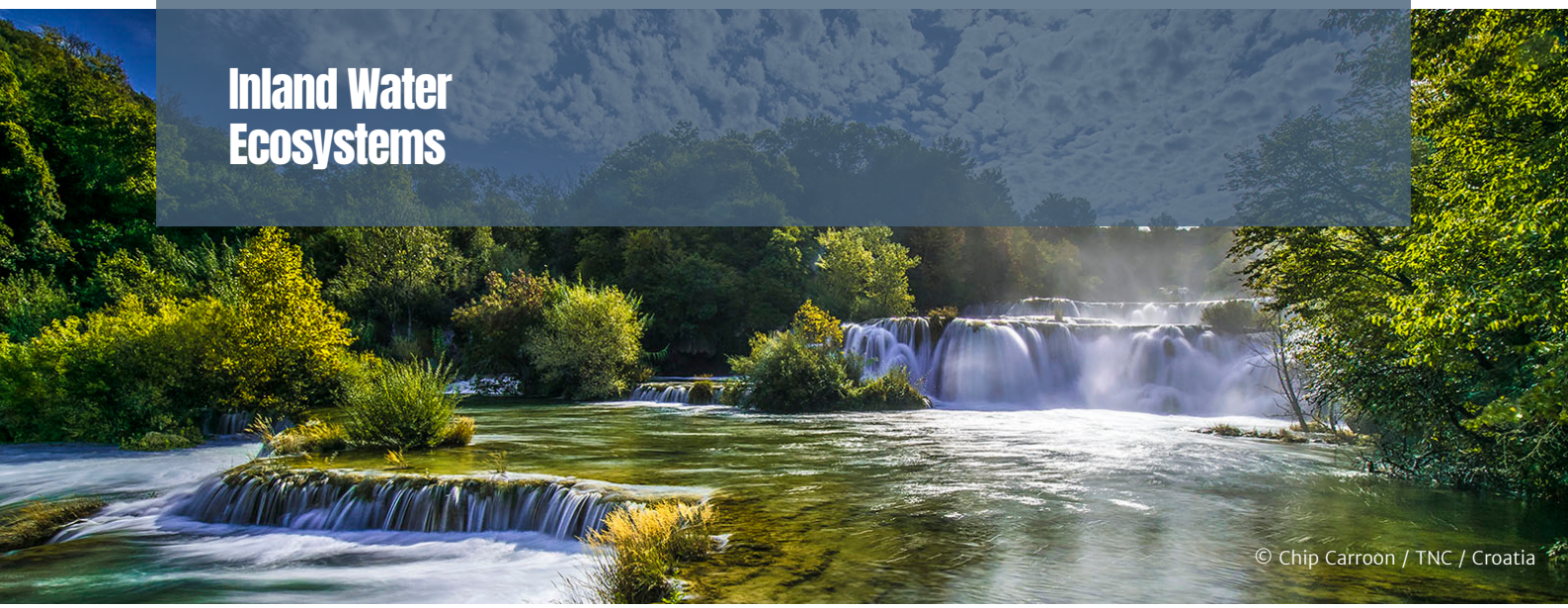
Inland Water Ecosystems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Post-2020 Global Biodiversity Framework: Support and a Pathway for Inland Water Ecosystems in the '30 by 30' Target, Monitoring Framework and Implementation

Key Recommendations:

Explicit inclusion of inland water* ecosystems in the area-based conservation targets and indicators is critical to recover and safeguard the most threatened and least protected ecosystems and biodiversity on the planet. This briefing provides an overview of the evidence for this recommendation, a global baseline estimate of their current protection status and recommended pathways for inclusion, beginning with a call for the following changes to include inland waters in the final text of the Post-2020 Global Biodiversity Framework: **

- "Target 1. Ensure all land, *inland water* and sea areas globally are under integrated biodiversity-inclusive spatial planning addressing land-, *inland water-* and sea-use change…"
- "Target 3. Ensure that at least 30 per cent globally of land, *inland water* and sea areas, especially areas of particular importance for biodiversity … are conserved through … systems of protected areas and other effective area-based conservation measures…"

An Information Document addressing these topics in detail will be produced in coordination with and for use by Parties and organizations in advance of COP15. The consortium of organizations supporting this brief is committed to operationalizing the recommendations outlined below.

*The term inland waters includes freshwater ecosystems like rivers, lakes, wetlands and peatlands as well as inland brackish river and wetland ecosystems and estuaries.

** Endorse explicit inclusion of the text in blue 'inland waters,' recognizing surrounding text is draft and subject to change

Imperative and Evidence

01 **Inland water ecosystems are rich but threatened:**

Inland waters cover less than 2% of the Earth's surface, but support 12% of known species,[1] and more than half of all fish species,[2] with high levels of endemism.[3] They have also lost a greater proportion of their species and habitat than ecosystems on land or in the ocean.[4] Almost one in three of these species are threatened with extinction, proportionately more than lands and oceans. Monitored freshwater species populations have declined by an average of 84%,[4] migratory fish by 76%,[5] aquatic megafauna by 88%,[6] and mega-fishes by 94%.[6] Less than one fifth of the world's preindustrial freshwater wetlands remain, projected to decline to under one-tenth by mid-century, with imminent threats from megaprojects.[7]

02 **Treating inland waters as part of the terrestrial realm has resulted in their underrepresentation in conservation investments**

Inland waters are under represented in protected area systems and other effective area-based conservation measures, both in terms of area coverage and management effectiveness.[8,9,10] Inland waters require special attention, but they should not be managed in isolation from other ecosystems. A slowly growing body of information highlights the exponential biodiversity- and cost-benefits of intentionally designating, and designing and managing protected areas for integrated terrestrial and freshwater biodiversity and service outcomes, especially when freshwater conservation is a central objective in spatial planning.[11] At the same time, the dynamic, connected nature of inland waters will often require tailored consideration in designations, which may differ from those targeting terrestrial and marine conservation.[12] When designated and managed with the unique needs of inland water ecosystems and biodiversity in mind, like ecological flows and connectivity, tools for protection can include traditional protected areas like national parks and biosphere reserves. They can also include other effective area-based measures like community-managed river reserves[13] and religious sanctuaries as well as inland water-focused tools like national river conservation systems, specific laws and edicts and the relatively new concept of Rights of Rivers, already applied legally to several rivers around the world.[14,15,16]

03 **Threats are growing**

Habitat loss affects 80% of threatened freshwater species.[17,18] Climate change causes damage,[19] particularly in rivers[20] and riparian ecosystems,[21] and can shift wetlands from carbon sinks to carbon sources.[22] Plans for dams threaten the free-flowing status of 260,000 km of rivers.[23] Mining, such as gold mining, and other extractive processes such as sand mining, directly destroy inland water ecosystems where they occur, and produce pollution and sedimentation effects that may extend far downstream to river mouths and deltas.[24,25,26] Pesticides[27] and fertilizers[28] pollute, and invasive species disrupt ecosystems.[29] Fifty million hectares of peat has been drained, responsible for ~4% of anthropogenic greenhouse gas emissions. By 2100, this could grow to 12-14% of the emission budget needed to keep global warming at less than 1.5°C[30,31] without restoration.

See how a local community in Croatia recently protected the unique cultural and biodiversity values of the River Krupa: Protecting the River Krupa

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04 **Ecosystem services provided by inland waters are irreplaceable.**[32]

They include drinking and irrigation water,[33] food security (e.g., rice paddy[34]and 40% of global fish protein),[35] flood- and drought-risk reduction, pollution control[36]and carbon sequestration and storage. Peatlands, a type of wetland, hold ~600 Gt of carbon.[37] One third of our global food production relies on rivers[38] but critical challenges remain in upscaling investment and knowledge.[39]

05 **Inland waters are critical for communities and human livelihoods.**

Lake Skadar, straddling Montenegro and Albania, is a protected area generating 80 kg fish/ha/year, bringing US$2.1 million a year to the economy.[40] Sixty percent of Cambodia's animal protein comes from fish in Tonle Sap Lake, a biosphere reserve.[41] Fisheries in Malawi supply up to 75% of animal protein for low-income families.[42] Inland waters also provide learning and inspiration, recreation, spiritual and sacred values,[43] mental and physical health[44] and a sense of place.[45] For example, Loch Garten Nature Reserve in Scotland attracts around 22,000 visitors a year, generating approximately US$3.3 million annually.[46]

The Post-2020 Global Biodiversity Framework (GBF) provides an important and timely opportunity for mobilizing support and commitments for the conservation of inland waters. Integrated with global treaties and commitments including the Sustainable Development Goals, UN Framework Convention on Climate Change, the Convention on Migratory Species and the Ramsar Convention on Wetlands, explicit consideration of inland water ecosystems in the goals, targets and indicators of the post-2020 GBF is critical to recover and safeguard the most threatened and least protected ecosystems on the planet.

Estimated Global Baseline and Pathway for Measuring Progress

06 **Learning from Aichi Target 11.**

Inclusion of inland waters in the Post-2020 GBF area-based targets, including the proposed 30 x 30, requires the ability to establish a baseline and measure progress against it. Aichi Target 11 lacked a standard mechanism for estimating a global baseline and measuring progress toward the target of 17% inland water coverage. Moving forward, a global expert consortium* is working together to develop a readily implementable methodology that uses best available data to define the global extent of inland waters and to track coverage in protected areas and OECMs. There is commitment to develop a method that is simple, has clear caveats, and can serve as a foundation that can accommodate growth and complexity over time.

07 **Estimated baseline.**

In recent years, several methods and datasets have been proposed for measuring global coverage of inland waters protection.[47,48,49,50] Interpreted collectively, they provide valuable indicative estimates. We can estimate that globally, at least 15% of the extent of inland waters are covered by protected areas (Table 1).** These baselines, which suggest spatial levels of coverage near or exceeding the 17% Aichi 11 Target, are considered to be only indicative for several reasons: 1) global inland waters datasets are incomplete, especially for wetlands; 2) the approaches do not incorporate upstream, downstream, and catchment influences, which are known to be critical to freshwater ecosystem health; 3) the calculations include all protected areas, although currently we cannot determine which protected areas in the World Database of Protected Areas include freshwater management objectives and therefore could be assumed to provide freshwater conservation; 4) OECMs have strong potential to confer protection to inland waters, depending on their design and management, and improved OECM datasets may lead to increased coverage calculations.

*This includes but is not limited to Equilibrium Research, IUCN WCPA,Conservation International, The Nature Conservancy, Wetlands International, Flora and Fauna International, World Wildlife Fund, Ramsar, Aston University UK, Confluvio, UNEP and in coordination with, UNEP-WCMC and Campaign for Nature

**The estimates in these studies include a range of inland water bodies including wetlands, rivers, fresh, brackish and saline systems, but do not include estuaries.

Table 1. Estimates of global extent of inland waters in protected areas and OECMs published in peer-reviewed literature

COVERAGE ESTIMATE	INLAND WATER FOCUS	REFERENCE AND NOTES
15 - 16.4 %	Permanent and seasonal inland surface waters covered by protected areas	Bastin et al. 2019. First to use high-resolution 30 m validated Landsat data to define the global extent - and 30-year changes in extent - of permanent and seasonal surface waters detectable by Landsat Values range from 15-16.4% depending on inclusion of seasonal waters as well as protected areas with no boundaries (areas delineated as points with estimated circular buffers)
16 %	Global proportion of river reaches by length within protected areas or forming their borders	Abell et al. 2016. Uses high-resolution hydrographic dataset and proposes additional measure of upstream catchment protection
17 %	Global proportion of total free-flowing river length within protected areas	Opperman et al. 2021. Uses recent global assessment of free-flowing rivers and highlights gaps in ecological representation
20.7 %	Waterbodies included in the Global Lakes and Wetlands Database (GLWD) within protected areas	Juffe-Bignoli et al. 2014. Provided one of the first global estimates using the 2004 GLWD

Recommendations

1 In the context of the post 2020 GBF, the importance of, threats to, and under-representation of inland waters in protected area policies suggests a need for ***explicit recognition of inland waters in wording of draft Targets 1 and 3*** as follows (changes to the First Draft in italics):

- "Target 1. Ensure all land, ***inland water*** and sea areas globally are under integrated biodiversity-inclusive spatial planning addressing land-, ***inland water***- and sea-use change…"
- "Target 3. Ensure that at least 30 per cent globally of land, ***inland water*** and sea areas, especially areas of particular importance for biodiversity … are conserved through … systems of protected areas and other effective area-based conservation measures…"

2 In order to measure progress on the inland water component of Target 3, development of ***an accurate baseline of inland waters in protected areas is essential, along with agreed indicators of change.***

Background: Building on the research cited above, an expert consortium is working to develop a standardized, globally applicable methodology for measuring coverage of inland waters, via overlay of protected areas and OECMs with existing global inland waters data layers. This would constitute guidance for immediate application of the draft Target 3 headline indicator. In addition, the consortium will provide a roadmap for improving inland waters data layers over the next 5 years, as well as subsequent guidance for refining measurement of that indicator using new and improved data.

3 Critical to effective implementation of Target 3, ***explicit reporting on inland waters coverage of protected and conserved areas*** should be required by signatories to the CBD.

Background: Core to improving data will be recommendations for how to integrate information in inland waters protection into the World Database on Protected Areas. The expert consortium, in consultation with UNEP-WCMC, will provide recommendations by the end of 2022, with a timeline and plan to operationalize them. The recommendations will consider approaches to streamline with related reporting, like SDG 6.6.1, to simplify efforts.

4 A ***globally comprehensive set of inland water Key Biodiversity Areas*** (KBAs) should be delineated and validated, for use in the draft component KBA indicator for Target 3.

Background: KBAs are listed as a component indicator for Target 3 in the draft monitoring framework, to capture areas of particular importance for biodiversity. There is strong support from IUCN, Re:wild, BirdLife and several KBA partners for the use of KBAs in the monitoring framework, not only for Target 3 but also for targets 1 and 4. SDG Target 15.1, focused on ensuring the conservation, restoration and sustainable use of terrestrial and freshwater ecosystems, also uses KBAs to measure sites that are important for biodiversity. Freshwater KBAs should be included in the Target 3 component indicator. They have been delineated for some regions of the world, but not all. To ensure that areas of high inland waters/freshwater biodiversity importance are equitably captured in the component indicator, a global map of inland waters/freshwater KBAs should be completed.

5 Add Connectivity Status Index as a component indicator for Goal A and Targets 2 and 3.

Background: The connectivity status indicator (CSI) measures the global status of river connectivity across several axes (lateral, longitudinal, vertical and temporal) and includes a methodology to apply the index at multiple scales.[51] The CSI can be applied, for example, at the scale of countries, basins, regions, globally, protected areas and can be tracked over time. The CSI meets multiple criteria identified by UNEP-WCMC for viable CBD indicators:[52] 1) Alignment with target; 2) Availability and suitability for use at global and national scales; 3) Scientific robustness; 4) Data availability anticipated for the time period post-2020, and historical data available; 5) Geographic coverage of data for all regions of the world; 6) Indicator planned for use at national level (Canada); and 7) Easily understandable. The CSI addresses inland water connectivity more comprehensively than other indicators and is as such positioned to play a key role for tracking connectivity for multiple proposed goals and targets of the CBD framework. In particular, the CSI allows tracking a key component of Goal A (Connectivity of natural ecosystems), as well as estimating the status and extent of degraded inland waters (using applied thresholds), supporting Target 2. Furthermore, the CSI can be applied to multiple scales, such as protected areas, and can therefore estimate areas of particular importance for biodiversity (free-flowing rivers) in support of Target 3.

Table 2. Summary of proposed additions (in bold) to headline and component indicators for the Post-2020 Global Biodiversity Monitoring Framework

GOAL / TARGET / MILESTONE	COMPONENT	HEADLINE INDICATOR	COMPONENT INDICATOR
Goal A	Connectivity and integrity of natural ecosystems		**Connectivity status index (CSI; replacing River Fragmentation Index, currently listed as a complementary indicator)** (*Recommendation 5*)
Target 2	Extent of degraded river ecosystems under restoration		Length of degraded river habitat under restoration (using CSI degradation threshold) (*Recommendation 5*)
Target 3	Area protected and conserved	**Inland waters** coverage of protected areas and OECMS. (*Recommendations 2 and 3*)	
	Areas of particular importance for biodiversity protected and conserved		Protected area **coverage of inland waters/freshwater Key Biodiversity Areas** (*Recommendation 4*)
			Protected area coverage of free-flowing rivers, as measured by CSI (*Recommendation 5*)

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