WWF Briefing Note for Convention on Biological Diversity COP15

Global Biodiversity Framework Target 2 – Ecosystem restoration

Proposed Text

Ensure that at least 1.6 billion ha of degraded terrestrial ecosystems, 350 million ha of inland water and coastal ecosystems, 300,000 km of rivers and 30% of marine ecosystems are under restoration, of which a significant part is under ecological restoration, to increase the area of natural ecosystems, and enhance ecological integrity and connectivity within and among ecosystems, supporting equitable and rights-based governance

Rationale

This note presents and explains the key elements that will make Target 2 ambitious, measurable and inclusive. These elements relate to two main aspects: (i) numbers and metrics; (ii) restoration purpose.

Numbers and metrics

Ecosystem-specific objectives

Target 2 on ecosystem restoration must *include ecosystem-specific objectives for the restoration of a variety of ecosystems* and *must use several rather than one single metric to define the level of ambition for global ecosystem restoration efforts*.[1]

Habitats in terrestrial, in inland water, rivers and marine ecosystems differ dramatically in species composition and diversity. Having different objectives for each type of ecosystem is crucial to ensure that restoration efforts are representative of the diversity of all natural ecosystems.

However, to date, restoration efforts disproportionately focus on forest restoration, where-as inland waters,[2] for example, and their specific biodiversity values have been overlooked, as shown by the CBD assessment on the progress towards the Aichi Targets 5 and 15.[3]

Absolute numbers, not percentages

Expressing the target in percentages would not enable measuring progress because there are no agreed baselines of degraded areas.

'Degradation' and 'restoration' are relative terms: 'degraded relative to what?' and 'restored towards what?'. Thus, reference states are required to detect and assess both the magnitude of degradation and the progress of restoration. Due to the lack of consensus over the definition of degradation, estimates of a baseline (and progress in restoration) have been inconsistent.[4]

There is no perfect reference state for all purposes, but allowing free selection of the reference is likely to reduce comparability and increase the risk of deliberate bias.[5]

Therefore, to avoid a percentage target, which needs a reference to be measured, and calculate ecosystem-specific objectives, WWF proposes to select one of the existing, scientifically proven estimations of global degradation and calculate the absolute figures that correspond to 30% restoration for the different ecosystems.

30% is the minimum that is required to meet the proposed Goal A objectives to increase natural ecosystem integrity and areas and become nature positive by 2030 and one third of all the restoration that will need to done to achieve the 2050 vision of living in harmony with nature. Ecosystem-specific objectives expressed in absolute numbers will allow to track progress at global level and increase action over time.

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[1] "Thematic workshop on Ecosystem Restoration for the Post-2020 Global Biodiversity Framework", Rio de Janeiro, 6-8 November 2019, Note by the Executive Secretary (CBD/POST2020/WS/2019/11/3). https://www.cbd.int/doc/c/fcd6/bfba/38ebc826221543e322173507/post2020-ws-2019-11-03-en.pdf

[2] Biodiversity and habitats in freshwater systems are much less frequently assessed than in terrestrial or marine systems, despite the higher proportion of threatened and endangered species - two-to-three faster than that of any other habitat.

[3] The CBD Note by the Executive Secretary, Update Assessment of Progress towards Aichi Biodiversity Targets 5 and 15, (16 November 2016) highlighted that most restoration targets at national level focused exclusively on forests, probably because of the greater availability of information on the state and trends of forests. https://www.cbd.int/doc/meetings/cop/cop-13/information/cop-13-inf-12-en.pdf

[4] IPBES Assessment Report on Land Degradation and Restoration. Assessment Report on Land Degradation and Restoration | IPBES secretariat

[5] IPBES, Assessment Report on Land Degradation and Restoration, 2018. https://ipbes.net/assessment-reports/ldr

1.6 billion hectares of degraded terrestrial ecosystems

According to the Geo-BON science brief on restoration,[6] most assessments show that between 20 and 40% of the global land area is degraded or degrading to varying extents and degrees.[7]

Assumed land degradation	Corresponding (Mha)	30% restoration (Mha)
20%	2700	810
40%	5400	**1620**

These numbers are UNCCD estimations and therefore degraded cropland is also included. Ecosystem restoration encompasses both "ecological restoration", which aims at bringing ecosystems "on a path towards a state of high integrity towards a natural state"[8] (contributing to increased integrity and natural area of Goal A), and "rehabilitation", which improves ecosystem functions and Nature's Contribution to People in transformed ecosystems[9] (only partly contributing to increased integrity of Goal A).

If a large part of restoration will be done in the form of rehabilitation of degraded cropland to improved cropland,[10] this will not lead to increased natural ecosystems and hence not contribute to achieving Goal A.[11] Therefore, WWF proposes that a significant part of the 1.6 billion ha of terrestrial ecosystems (30% of the total degraded land) that must be under restoration by 2030 should apply ecological restoration towards natural ecosystems. The same should apply to the other ecosystems.

Note: There are other estimates of the amount of degraded land. E.g. the IPBES Global Assessment[12] presents an appraisal of "the fraction of land that can still be viewed as 'natural' rather than anthropogenic, which ranges from under 25% to over 50%. Depending on how 'natural' is defined, WWF believes that assuming that the 'rest' is degraded may be an overestimation.

[6] Science Brief on Ecosystem Restoration: https://geobon.org/wp-content/uploads/2022/10/EcosystemRestoration_brief.pdf
[7] UNCCD Global Land Outlook 2
[8] Science Brief on Ecosystem Restoration
[9] Science Brief on Ecosystem Restoration
[10] There is a strong focus on rehabilitation of managed ecosystems in current restoration commitments, as most of the land restoration commitments are in LDN targets (450 million ha).
[11] Science Brief on Restoration.
[12] IPBES Global Assessment (2019; section 2.5.2.2.1) Global Assessment Report on Biodiversity and Ecosystem Services | IPBES secretariat

350 million hectares of inland water and coastal ecosystems

Restoration of inland waters requires restoring lost inland waters, restoration of remaining degraded inland waters and the re-establishment of longitudinal, lateral- and vertical, ecological and hydrological connectivity.

Based on the CBD definition of inland waters,[13] which includes coastal ecosystems, Wetland International, WWF and partners estimated the total amount of (i) inland water loss and (ii) inland water degradation.[14] The Wetland Extent Trends (WET) Index[15] uses over 2,000 time-series data from 1970 to 2015 and is the most recent data source for understanding inland waters loss.[16]

To calculate the total amount of inland water loss, the WET Index was extrapolated until 2022, assuming that the rate of decline over the last ten years (2006-15) remained constant. The amount of inland water degradation estimation is based on two Global Wetland Surveys undertaken in 2017[17] and 2020[18]. Using the average percentage of inland waters classed as degraded (23.5%),[19] the amount of hectares was calculated using the data of the WET Index.

Type of degradation	Area (Mha)	30% restoration (Mha)
Inland water loss[20]	949.3	285
Inland water degradation[21]	229	69
	Total	**354**

Based on these estimations, WWF proposes that at least 350 million ha of inland water and coastal ecosystems (30% of the total degraded inland water and coastal ecosystems) must be under restoration by 2030.

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[13] CBD definition: https://www.cbd.int/waters/inland-waters/#:~:text=Inland%20waters%20include%20lakes%2C%20rivers,traditionally%20grouped%20as%20inland%20wetlands.

[14] WWF, WI and partners. Inland water restoration briefing 1110__int_briefing5lr.pdf (panda.org)

[15] The analysis was published as a part of the Ramsar Convention flagship Global Wetland Outlook 2018. https://www.global-wetland-outlook.ramsar.org/

[16] Dixon, M.J.R., Loh, J., Davidson, N.C. and M.J. Walpole. 2016. Tracking global change in ecosystem area: The Wetland Extent Trends Index. Biological Conservation 193: 27-35

[17] Simpson, M., McInnes, R.J., N.C. Davidson, C.P. Rostron, C. Walsh, and C. M. Finlayson. 2021. An Updated Citizen Science State of the World's Wetlands Survey. Wetlands Science & Practice 38: 3. July

[18] McInnes, R.J., N.C. Davidson, C.P. Rostron, M. Simpson and M. Finlayson. 2020. A Citizen Science State of the World's Wetlands Survey. Wetlands.

[19] Global Wetland Surveys showed a degradation of 24.2% in 2017 and of 22.8% in 2020.

[20] Calculated using the Wetland Extent Trends (WET), which is Index is the most recent and accurate data source for understanding inland waters loss. This collates information using over 2,000 time-series data from 1970 to 2015, subdivided by region and habitat type. To develop an inland waters sub-target for loss restoration, the WET Index was extrapolated until 2022, assuming the rate of decline over the last ten years of the trend index (2006-15) -14% for non-coastal natural inland waters and 10% for natural coastal waters- continued.

[21] Calculated using two Global Wetland Surveys undertaken in 2017 and 2020. These surveys mostly cover different wetlands, with only 9% of those wetlands reported on in both the 2017 and 2020 surveys. This demonstrates that the percentage of wetlands in a poor state has remained broadly consistent across different wetland examples. To develop a target for restoration of degraded inland waters, an average of the two surveys of 23.5% was used, to indicate the percentage of inland waters that would be classified as degraded.

300,000 km of rivers

Rivers are a key ecosystem type that, along with other inland waters, supports a disproportionate amount of Earth's biodiversity.[22] Disruption of flow to inland waters hydrological connectivity is one of the main threats to freshwater ecosystem integrity and has severe impacts on biodiversity.[23]

For rivers, there are several indices which rate individual river reaches using criteria based on major pressures. One such index is the Connectivity Status Index (CSI). For this index, the entire river networks that score above 95 % for all reaches are defined as "free flowing rivers". Based on this the world's rivers have been assessed as "free flowing" or "not free flowing".[24] Using the Connectivity Status Index (CSI) data, WWF and partners calculated the total amount of degraded river[25] and the 30% that should be under restoration by 2030 to establish an ecosystem-specific objective for Target 2.

Moreover, units of reporting for rivers should be in length (km) to account for their longitudinal flow metrics.

Length Degraded (km)	30% restoration (Mha)
1.045.599	**313.680**

Based on these estimations, WWF proposes that at least 300,000 km of rivers (30% of the total degraded rivers) must be under restoration by 2030.

[22] cbd_framework_proposal_for_target_2_ecosystem_restoration_for_rivers_lres_fina.pdf (panda.org)
[23] Grill, G., *et al*. 2019. Mapping the world's free-flowing rivers. Nature 569: 215-221.
[24] Grill, G. et al. 2019
[25] A reach is any length of a stream or river, rather than their entire length.

30% of marine ecosystems

At the current state of knowledge, it is not possible to calculate the total surface area of degraded marine areas.[26] For this reason, WWF proposes to keep the ambition level high and propose 30% of the degraded areas or, even better, of the national marine territory.

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Restoration purpose

Ecological restoration

Restoration of degraded ecosystems is essential for improving biodiversity and nature's contributions to people and therefore for achieving the objectives of the GBF, although restoration should not be used as a substitute for ambitious goals to halt degradation and conserve natural ecosystems.[27]

All types of ecosystem restoration (reduction of pressures such as pollution and overexploitation, remediation to remove sources of degradation, rehabilitation and ecological restoration) contribute to the objectives of the GBF and can be found throughout the GBF Targets. However, there is an important distinction to make between ecological restoration and rehabilitation, if Target 2 considers all ecosystems, including managed ones, for restoration.

An all-encompassing restoration objective in Target 2 that includes both *ecological restoration* and *rehabilitation* must have a qualitative or quantitative objective that sets the ambition for *ecological restoration.*

Natural baseline

Including a reference to natural baseline implies that the restoration considered by the target will only be ecological as all the ecosystems under restoration will have to be "on a path towards a state of high integrity towards a natural state".[28] This excludes managed ecosystems (e.g croplands and rangelands), whose rehabilitation should be measured elsewhere in the Framework.

[26] Most of the restoration of marine areas should be passive, which is defined as "a holistic process allowing the long-term natural recovery or re-establishment of whole ecosystems with their underlying ecological processes, where natural processes are left undisturbed from pressure and threats to the area's overall ecological structure and functioning". This type of restoration is particularly suitable and cost-effective for certain ecosystems, such as coastal and marine ones. The definition seeks to particularly exclude industrial, extractive and destructive activities from taking place in restoration areas.

[27] Science Brief on Restoration

[28] Science Brief on Restoration

Increase the area of natural ecosystems, and enhance ecological integrity and connectivity within and among ecosystems

Considering that the rehabilitation of managed ecosystems is probably going to included in Target 2, it is crucial to reiterate that the objectives of this targets are the same of Goal A "Increase the area of natural ecosystems, and enhance ecological integrity and connectivity", otherwise the target on restoration risks to be contribution to people (Goal B) more than to nature. The *increase in the area of natural ecosystems* will not be met, if Parties decide to interpret "ecosystem restoration" as rehabilitation of managed ecosystems (e.g. croplands).

Ecosystem integrity[29] is the essence of ecological restoration ("put ecosystems on a path towards a state of high integrity"). Explicitly stating in Target 2 that it focuses on restoration that aims to increase ecosystem integrity would highlight the importance of restoration actions that contribute to Goal A and 'discount' restoration actions that contribute little to Goal A (e.g cropland rehabilitation), even though these rehabilitation efforts may be important for other reasons.[30]

Ecological connectivity is necessary for the functionality of ecosystems, as it underpins the survival of wild animals and plant species, ecosystem service provision, and ensures genetic diversity as well as resilience to climate change across all ecosystems and spatial scales.[31] The persistent loss of natural habitats leads to fragmentation, further to landscape "patchiness" and isolation with distinct habitat "islands", also within the same ecosystem. When these "habitat islands" lose their ecological functionality, essential ecological processes can no longer take place and migration to other habitats is no longer possible. The same applies for the disruption of hydrological connectivity and variations in natural flow regimes, which has serious consequences on inland water biodiversity as well as on the transport of sediment, nutrients and organic materials.

Restoration of ecological connectivity is so important that it is also at the core of the UNGA Resolution (75/271) "Nature knows no borders" on transboundary cooperation and ecological connectivity.[32] The conservation of biological diversity and the improvement of ecosystem services must go beyond the approach of self-contained restoration sites or static protected areas. Improvement of the ecological continuum within, among and along ecosystems is crucial to reverse the loss of biodiversity. Target 2 must include language on connectivity and this would also allow to have a specific reference to the specific needs of rivers, which are not mentioned anywhere else in the GBF.

Equitable and rights-based governance

The target should mention equitable and rights-based governance to promote full and effective participation of indigenous peoples and local communities, with proper and fair Free, Prior and Informed Consent (FPIC), and avoid restoration measures that are invasive or might threaten local restoration initiatives and the rich bio-cultural diversity of their territories.

Rights based approaches to restoration mean that policies, governance and management do not violate human rights and that those implementing such policies actively seek ways to support and promote human rights in their design and implementation. Moreover, the science is clear that the most successful ecosystem restoration projects – those able to deliver lasting benefits at scale – happen with the full and effective participation of indigenous peoples and local communities.[33]

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[29] High ecosystem integrity for natural ecosystems is typically defined as having composition, structure, function, and ecological processes close to that of a natural reference ecosystem (CBD/SBSTTA/24/3/Add.2/Rev.1)

[30] Science Brief on Ecosystems: https://geobon.org/wp-content/uploads/2022/06/Ecosystem_brief.pdf

[31] Convention on the Conservation of Migratory Species of Wild Animals https://www.cms.int/en/topics/ecological-connectivity#:~:text=Resources-,What%20is%20Ecological%20Connectivity%3F,all%20biomes%20and%20spatial%20scales.

[32] Resolution 75/271 on "Nature knows no borders: transboundary cooperation – a key factor for biodiversity conservation, restoration and sustainable use" https://documents-dds-ny.un.org/doc/UNDOC/GEN/N21/096/15/PDF/N2109615.pdf?OpenElement

[33] Reyes-García, V., Fernández-Llamazares, Á., McElwee, P., Molnár, Z., Öllerer, K., Wilson, S.J. and Brondizio, E.S. (2019), The contributions of Indigenous Peoples and local communities to ecological restoration. Restor Ecol, 27: 3-8. https://doi.org/10.1111/rec.12894

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