**TEMPLATE FOR COMMENTS**

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| **Review comments on the draft monitoring framework for the post-2020 global biodiversity framework** |
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| ***General Comments*** |
| * The comments in this paper represent the views of experts representing the IUCN constituencies – Secretariat Global Thematic and Regional Programmes, Commissions’ Specialist Groups and Council. They are a reflection of IUCN’s governance structure and the diversity of knowledge comprised in its various expert groups. **This submission represents the one ‘official’ position from IUCN.**
* IUCN welcomes the documents prepared by the CBD for peer review and believe these represent a useful basis for continuing the discussions. We congratulate the Secretariat for the work done. The comments in this document are presented for consideration for this peer review exercise without prejudice to IUCN’s evolving and final position on the Post-2020 global biodiversity framework.
* IUCN recommends that the next iteration of this analysis highlights and addresses gaps in the SDG framework on the issue of health in particular, notably in relation to biodiversity and environmental aspects which must be addressed comprehensively by the post-2020 Global Biodiversity Framework. With this in mind, IUCN notes proposed Targets in the post-2020 GBF do not address biodiversity and human health interlinkages in a holistic way (e.g. through a Target). It is important to note the lack of a biodiversity / environmental dimension to human health in SDG 3 and its associated targets. The current COVID-19 pandemic has shone a light on the intrinsic relationship between human health and the status of biodiversity and the natural resources in which we all depend. IUCN therefore suggests that the post-2020 GBF include these interlinkages, beyond the proposed Target 6 dealing with pollution and Target 11 on green/blue spaces.

This section presents general observations. Detailed comments are contained in the following section identifying the relevant table using the template provided. **Structure & interlinkages**IUCN notes at the outset that there is a structural inconsistency in the way the draft monitoring framework is presented. We understand that this exercise focusses on the components of the goals and targets, draft monitoring elements and indicators - and that the proposed 2050 Goals and 2030 Targets as well as milestones are provided for the sake of context only. However, IUCN emphasizes that it is important to understand the elements of the overall framework, both in relation to each other as well as their relationship (and interrelationships) to the Vision and Mission and also in the context of the Theory of Change. All these elements and the relationships between them need to make sense in the overall structure. * As mentioned, IUCN appreciates that the updated goals (and their milestones) and targets are not up for review in the current consultation. It should be noted however that the comments we make on the elements of the framework would alter if /when the wording of the goals, milestones and targets changes.
* The lack of an agreed Mission for 2030 is a constraint in relation to commenting on the elements of the framework – given that IUCN considers that the components need to ‘add up’ to the achievement of the Mission, and indeed the Vision.
* Throughout the draft document, there is poor “line-of-sight” between goals, targets and indicators. Although the Zero Draft highlighted the need and intention to use an approach built around a Theory of Change, it is unclear in the current draft documents how these elements are related, and which goals the various targets aim to achieve or support. Without clarity on these points, any assessment of appropriateness of goal and target elements (and the likelihood of achieving them) and associated indicators is difficult, if not impossible.
* We recommend that the hierarchy is made clear with understandable and transparent linkages between the Goals, Components of the Goals, Targets, Elements to be Monitored and Indicators.
* There is a lack of consistency in the formulation of the Components’: some call for an increase; others do stipulate the desired trend. (e.g. Component B1 is rather abstract).
* We note that indicators for the Goals and Components of the Goals should be “outcome indicators”, whereas most Targets are measured by “status indicators”.
* The tables are inconsistent in how generic indicators are linked to specific Goal/target components. IUCN recommends either listing all relevant generic indicators against specific goal/target components, or cluster these in a single generic row, and retain only relevant specific indicators against specific goal/target components. Probably the latter makes more sense to reduce the length of the document. Thus, for example, for the ecosystem Goals, we recommend listing the forest specific indicators against the forest specific Goal component, and then list the generic ecosystems indicators against the “other ecosystems” Goal component. Where there are specific Goal components (e.g. drylands, grasslands) with no specific indicators, IUCN suggests merging these with the corresponding rows for generic Goal/target components.
* Moreover, different approaches have been used in the monitoring framework to spell out components. For instance, some components already include an action or indication of measurement (Goal A.1 – *Increased extent of natural ecosystems*) while others do not (Goal C.1 *Access to genetic resources* and C2. *Sharing of the benefits*). This needs to be looked at in subsequent revisions of the post-2020 global biodiversity framework.
* We appreciate that you have maintained all three components of biodiversity (which should be explicit at the level of the Goals) and all three objectives of the CBD in the structure.
* IUCN highlights that expression of some of the targets is long and unwieldy, including too many components, and often with the means and ends conflated. For example, Target 1 includes the process of planning, but it is not clear whether achieving retention and restoration is required to meet the target, or if they need only be included in the spatial plans. The desired outcomes (retention and restoration) should come before the means. Retention and restoration should be separated into different targets, as the process for undertaking each differs as do the outcomes in terms of timeframes and uncertainty.
* Some target components seem to repeat the Goals but this is not consistent and where this is the case this duplication needs to be clearly justified. For example, T1.2 (*Prevention of reduction and fragmentation of natural habitats due to land/sea use change*) overlaps with components of Goal A (A1 on ecosystem extent and A2 on ecosystem integrity and connectivity). Goals and Components should focus on outcomes for biodiversity, whereas targets should identify mechanisms/Strategies for achieving those targets (e.g., Protection of Critical Ecosystems is a mechanism for achieving Goal A).
* Overall, the current framework seems somewhat weak in highlighting the linkages between biodiversity conservation and poverty reduction. Overconsumption of biological resources is a key factor for the degradation of biodiversity on the one hand and the perpetuation of poverty on the other and this could be better reflected in the framework.
* The global biodiversity framework and its monitoring framework need to be consistent with the obligation that Parties to the Convention have attain "the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources [...] taking into account all rights over those resources" (CBD, Article 1) regarding "food, health and other needs" with benefits from plants and animals equitably shared" and poverty eradication" belonging to "overriding priorities". (CBD preamble).
* Stronger linkages and emphasis on the benefits of sustainable use to human livelihoods and cultural diversity are needed alongside a wider and deeper view of the monitoring framework’s relevance to the broad question of human and global health.

**Synergies with other conventions and Protocols** * Given that the Post-2020 global biodiversity framework is being developed as a global framework for biodiversity, IUCN sees with some concern the lack of references to the specific mandates and potential entry points for the other Rio Conventions and biodiversity-related conventions in the draft monitoring framework. More importantly, IUCN finds surprising to see no reference to the Nagoya Protocol on Access and Benefit Sharing and very limited reference to the Cartagena Protocol on Biosafety. Both Protocols must be fully referenced to the global biodiversity framework and its monitoring framework.
* Having a mechanism to invite and track contributions beyond the CBD parties and to have goals targets and indicators that would be reported in the post-2020 framework but owned by other mechanisms is not yet addressed in the indicator framework. For instance, both natural and mixed World Heritage Sites conserve key biodiversity areas (KBAs), and are designated through the UNESCO World Heritage Convention. The post-2020 global biodiversity framework does not yet recognize cultural and natural heritage sites, and thus does not invite a direct contributions from the World Heritage Convention (or through other UNESCO sites, or Ramsar sites). In the same way, it omits relevant indicators from the UNCCD and UNFCCC. This is a significant shortcoming in the current (monitoring) framework if it is to become a framework beyond CBD. The other Rio conventions and biodiversity -related conventions all link to the SDGs, so it makes sense to articulate and elaborate these linkages as they relate to biodiversity in the Post-2020 Global Biodiversity Framework.
* An indicator regarding conservation of biodiversity in natural World Heritage Sites and cultural World Heritage Sites that overlap KBAs should be included in the framework, and could be monitored through existing State of Conservation procedures of UNESCO, and the IUCN World Heritage Outlook.
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| **Goals &Targets** * IUCN recognises that SBSTTA is here seeking input regarding the indicators and monitoring framework, rather than the goals and targets per se, but the two are fundamentally interlinked, and so we share some initial comments regarding the revised goals and targets here. We will expand on these and communicate them to the OEWG as the relevant mechanism for drafting the post-2020 framework in due course.
* Most important, IUCN recommends retaining distinct outcome-level goals for ecosystems, species, and genetic diversity, consistent with the CBD definition and the Zero Draft. It is fundamental to emphasise that each of these three should be framed as goals for biodiversity (and not for “conservation” per se – rather, they should support all three objectives of the CBD).
* Goal A as outlined in the revised monitoring framework documents is fundamentally weaker than its earlier form in the Zero Draft. The new draft obscures what was a clear emphasis on the dual importance of ecosystems *both* as a level of biodiversity in their own right, as well as their critical importance in sustaining species, genetic diversity and benefits to human well-being. Thus, restoring a balanced expression of the importance of ecosystems to both biodiversity and human well-being is critical to the effectiveness of Goal A.
* Reference in the previous draft to ensuring ecosystems are resilient or avoidance of collapse has been removed from this revised version. We suggest that a component for Goal A should be added that addresses the need to ‘prevent ecosystem collapse and improve the conservation status of ecosystems’, analogous to Component A3 (Prevent extinction and improve the conservation status of species). Just as the species-related components for Goal A do not solely address population and health (i.e. Component A4), components for an ecosystem goal cannot simply address area (Component A1) and integrity (Component A2). The components must also identify the risk of collapse as a benchmark for unacceptable declines and its consequences for biodiversity and human well-being.
* IUCN emphasizes that for Goal A, increasing the coverage of area under protection of spatial planning and protecting the ecological integrity therein must be achieved through the full participation of the resource dependent IPLCs and respecting their traditional rights, failing which the whole Goal may remain elusive as the past experience in this regard have shown. Without this, the Goal may also be at odds with SDGs 1, 2 and 10. IUCN sees with concern that considerations for human rights within the framework have not been adequately addressed.
* Regarding the 2030 Milestone ii) under Goal B, IUCN recommends it be revised to make its language aligned with the preambular provisions and operative Articles of the CBD. Similarly, Milestone i) under Goal C “Access and benefit sharing mechanisms are established in all countries…” must be strengthened.
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| **Indicators** Comments made on the information document on indicators for the post 2020 global biodiversity framework, prepared by UNDP-WCMC, are relevant here.* Some indicators are ‘state’ indicators; others are ‘process’ and ‘response’ indicators. One way to structure would be to make state indicators relevant at the Goal level, and process and response indicators relevant at the Target level.
* IUCN is of the view that there should be a limited number of key indicators (headline indicators) that enable monitoring the essential elements of the Goals or Targets, and these may change as the language of the Goals and Targets changes as the negotiations continue. This will also enable a better communication with the Parties in the implementation phase.
* IUCN notes that there is confusion in the indicators for protection and conservation (Goal A and Target 1). These indicators should apply only to protected areas and OECMs. References to FSC certified forests should not be used in Goal A, nor Targets 1 and 2. They apply only in Target 8 on sustainability. This is fundamental.
* In **all** indicators concerning levels of protection, it is important to separate protected areas and OECMs. They are not the same and should not be lumped together. It is important we track their trends and effectiveness separately.
* Two indicators that explicitly and uniquely interlink the goal on preventing extinctions and improving conservation status with that on valuing nature’s contributions to people are proposed. These indicators fill an important current gap in the draft monitoring framework relating to Nature’s Contributions to People. These are:
	+ expected loss of Phylogenetic Diversity, which is already recognized and used as an indicator for the maintenance of options (NCP 18), and for medicinal, biochemical and genetic resources (NCP 14), and which can effectively serve both elements in this framework.

 * + changing status of Evolutionarily Distinct and Globally Endangered species (EDGE Index), a newly developed indicator which adds value to existing broader species measures, as this subset of species represents billions of years of evolutionary history and thus future options for humanity. This indicator can be applied to trends in conservation status, extinctions, and recovery.
* These paired indicators link nature’s contributions to people as measured by phylogenetic diversity to the conservation of EDGE species. This is an effective mechanism to address the CBD Vision’s dual challenges to better appreciate the value of biodiversity and to halt its loss. Details are provided in the relevant rows, in the Indicators review template, and in the previous [submissions to the CBD](https://www.cbd.int/api/v2013/documents/6445B22E-1BA7-18B7-6D28-61A95052E841/attachments/IUCN-6.docx).
* Regarding indicators under for *Maintaining Genetic Diversity*, IUCN considers the indicators of genetic diversity in the draft documents to be weak. The lack of indicators and the difficulty of measuring genetic diversity change, especially in nonagricultural species, was also noted in the Global Biodiversity Outlook 3 and Outlook 4, and in numerous scientific articles (Bruford et al 2017, Laikre 2010, Laikre et al 2020, Hoban et al 2020, Willoughby et al 2015). No indicator exists for “Trends in the diversity of wild species”. See also specific comments in the table below.
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| **Culture and Nature** * There is a lack of adequate understanding and focus on the connection of nature and culture in the biodiversity framework at present, including cross reference to the recently agreed [Recommendation WG8J-11/3](https://www.cbd.int/recommendations/wg8j/?m=wg8j-11) - *Options for possible elements of work aimed at an integration of nature and culture in the post-2020 global biodiversity framework.*
* In this regard, IUCN recommends that existing indicators including those developed by UNESCO for culture and the SDGs, 5 of which relate to environment and resilience, be considered and adopted where possible. See: [https://unesdoc.unesco.org/ark:/48223/pf0000371562](https://unesdoc.unesco.org/ark%3A/48223/pf0000371562) and relevant indicators in other significant datasets such as the Nature-Culture Indicators and Knowledge Systems Resource Directory (see: <http://resources.cbc.amnh.org/indicators/>)
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**Specific comments by Table**

| **Table** | **Page** | **Column letter** | **Row number** | **Comment** |
| --- | --- | --- | --- | --- |
| 1 | 2 |  | 1-15 | Suggest re-ordering to show monitoring elements relating to all ecosystems first (currently row 4), followed by biome and ecosystem specific monitoring elements. |
| 1 | 2-3 |  | 1-28 | Strongly support the focus on area, connectivity and integrity of natural ecosystems (i.e. current components A1 and A2). There are a number of proposed indices (in the UNEP-WCMC document) that should be included that track changes in these measures of ecosystems. They include the Human Footprint Index, the Ecosystem Intactness Index, and the Forest Landscape Integrity Index. |
| 1 | 2-5 |  | 1-50 | Reference in the previous draft to ensuring ecosystems are resilient or avoidance of collapse has been removed from this revised version. We suggest that a component for an ecosystems Goal should be added that addresses the need to ‘prevent ecosystem collapse and improve the conservation status of ecosystems’, analogous to the current Component “Prevent extinction and improve the conservation status of species”. Just as the species-related components for Goal A do not solely address population and health, components for an ecosystem goal cannot simply address area and integrity. The components must also identify the risk of collapse as a benchmark for unacceptable declines and its consequences for biodiversity and human well-being. |
| 1 | 2-5 |  | 1-50 | The current goal specifically addresses connectivity and integrity of natural ecosystems, but the current elements and indicators do not provide information how well these ecosystems are connected. The proposed elements reflect the existing Aichi Target 7 indicators that treated forest and agriculture as independent land-use systems; however to assess the contribution of an agricultural area to biodiversity across the landscape integrated indicators are needed. |
| 1 | 2-5 |  | 1-50 | There is no 2030 Milestone for genetic diversity. |
| 1 | 2 | A | 1 | Refer to ‘inland water’ rather than ‘freshwater,’ to be inclusive of soda lakes, inland seas etc. |
| 1 | 2 | C | 2 | Tree Cover loss is useful but will need to be carefully applied as the database has weaknesses: It does not account for the fire cycles in the boreal realm, it misses treed areas with low crown cover, and it misinterprets some ecosystems. |
| 1 | 2 | B | 2 | Trends in area of other terrestrial ecosystems (Please add: “Such as tundra, taigas, temperate deciduous forests, tropical rainforests, grasslands, and deserts”). |
| 1 | 2 | C | 4 | This is a valid indicator not only for terrestrial ecosystems but also for marine and freshwater (theoretically also submarine, but often data deficient). |
| 1 | 2 | A | 8 | Should consider ecological integrity of the ecosystems as an indicator. |
| 1 | 2 | C | 12 | Add a new indicator for number of free-flowing rivers by country. Grill, G., Lehner, B., Thieme, M., Geenen, B., Tickner, D., Antonelli, F., Babu, S., Borrelli, P., Cheng, L., Crochetiere, H. and Macedo, H.E., 2019. Mapping the world’s free-flowing rivers. Nature, 569(7755), pp.215-221. \*data available now |
| 1 | 2 | B | 14 | Trends in ‘inland waters’ – not wetlands (which may be interpreted as a different set of ecosystems). |
| 1 | 2 | C | 14 | Recommend looking at new sets of indicators that will be used for SDG 6.6.1:(i) Assessment of extent of water bodies will disaggregate lakes from reservoirs, so that changes in natural compared to non-natural ecosystems can be compared.(ii) An indicator on global water quality including trophic state (monthly and annual data) and turbidity (to be developed around a 5 year baseline from 2006-2010 data; use of 3 years of recent satellite data to compare change.(iii) UNEP DHI developed indicator on inland wetland status, from European satellite data – no change statistic; just a baseline. |
| 1 | 2-3 | C | 15-28 | The Biodiversity Intactness Index, while appropriately named, seems to have fundamental problems (Martin et al. 2019 Nature Ecol), and probably should not be included.Consider including the Contextual Intactness Index that gives a good overall pattern of biodiversity intactness.  |
| 1 | 2 | A | 15 | Refer to ‘inland water’ rather than ‘freshwater,’ to be inclusive of soda lakes, inland seas etc. |
| 1 | 2 | B | 15 | The Red List of Ecosystems can also provide information on integrity of ecosystems, not only forests but terrestrial, marine and fresh water ( See Rowland 2019 and 2020) |
| 1 | 2 | B | 15 | Include “Proportion of land that is degraded over total land area” (SDG indicator for SDG15.3.1)This is repeated below, but it is a strong indicator of sustainable agricultural land |
| 1 | 3 | B | 27 | ‘Trends in fragmentation and quality of inland waters’ rather than ‘inland wetlands’ (to align with CBD terminology, and assuming that inland wetland systems does refer to all inland waters; which it should. |
| 1 | 3 | C | 27 | Assuming ‘inland wetland systems’ refers to all inland waters, then an indicator for fragmentation of rivers is the River Connectivity Status Index (CSI) (Grill, G., Lehner, B., Thieme, M. et al. 2019. Mapping the world’s free-flowing rivers. Nature 569, 215–221). It is highly recommended that this indicator is included in the Framework. A baseline Connectivity Status Index was published in 2019. Plans are being considered for periodic updates, subject to availability of resources.as an indicator. The index is global - the methodology is down-scalable and can be applied at river basin and other levels. |
| 1 | 3 | C | 27 | Another potential indicator for fragmentation and quality of inland waters would be the proportion of river basins, in a country, where environmental flows are provided in accordance with the e-flow methodology of SDG indicator 6.4.2 (Dickens, C., Smakhtin, V., Biancalani, R., Villholth, K.G., Eriyagama, N. and Marinelli, M. (2019). How to Include Environmental Flows into “Water Stress” Indicator 6.4.2 Guidelines for a Minimum Standard Method for Global Reporting. Report to the Food and Agricultural Organisation of the UN. Rome. 32 pp. License: CC BY-NC-SA 3.0 IGO). |
| 1 | 3 | C | 27 | Indicators of quality of inland waters can be provided by the new sets of indicators that will be used for SDG 6.6.1:(i) An indicator on global water quality including trophic state (monthly and annual data) and turbidity. I recall this would be developed around a 5 year baseline from 2006-2010 data then use of 3 years of recent satellite data to compare change.(ii) UNEP DHI developed indicator on inland wetland status, from European satellite data – no change statistic; just a baseline. |
| 1 | 3 | C | 29 | Red List Index: There is no reason to restrict the measurement of number of species extinctions to bird and mammals; this can be measured for all taxonomic groups that have been comprehensively assessed (i.e. all species assessed by IUCN Red List criteria) at the geographic scale at which trends are being reported (national, regional, or global). |
| 1 | 3 | C | 30 | This indicator has been updated for 2020, but is available for birds and mammals only (see preprint at <https://www.biorxiv.org/content/10.1101/2020.02.11.943902v1>)  |
| 1 | 3 | C | 30 | A new indicator could be: Number of extinctions prevented by conservation action (IUCN Green Status of Species). Supporting organization: IUCN; Baseline: 2021; Frequency of updates: Annually |
| 1 | 3 | C | 31 | New indicator proposed for Trends in species extinctions: Changing status of Evolutionarily Distinct and Globally Endangered species (EDGE Index), subset by numbers of EDGE species that have gone extinct. Supporting organization: IUCN SSC Phylogenetic Diversity Task Force & Zoological Society of London, based on existing ZSL EDGE lists and IUCN Red List data. Baseline: 2020, annually updated. This indicator (EDGE Index) is paired with the proposed Phylogenetic Diversity indicator in Goal B, explicitly linking species conservation to nature’s contributions to people. This indicator adds value to existing broader species indicators, as this subset of species represents billions of years of evolutionary history and thus future options for humanity. Refs in:<https://www.cbd.int/api/v2013/documents/6445B22E-1BA7-18B7-6D28-61A95052E841/attachments/IUCN-6.docx>, and [Gumbs et al. 2020, Nat Comms 11:2616](https://www.nature.com/articles/s41467-020-16410-6). |
| 1 | 3 | C | 32 | New indicator proposed for Trends in conservation status of species: Changing status of Evolutionarily Distinct and Globally Endangered species (EDGE Index). Supporting organisation: IUCN SSC Phylogenetic Diversity Task Force & Zoological Society of London, based on existing ZSL EDGE lists and IUCN Red List data. Baseline: 2020, annually updated. This indicator (EDGE Index) is paired with the proposed Phylogenetic Diversity indicator in Goal B, explicitly linking species conservation to nature’s contributions to people. This indicator adds value to existing broader species indicators, as this subset of species represents billions of years of evolutionary history and thus future options for humanity. Refs in:<https://www.cbd.int/api/v2013/documents/6445B22E-1BA7-18B7-6D28-61A95052E841/attachments/IUCN-6.docx>, and [Gumbs et al. 2020, Nat Comms 11:2616](https://www.nature.com/articles/s41467-020-16410-6). |
| 1 | 3 | C | 32 | New indicator proposed: IUCN Green Status of Species Index (species recovery status). Supporting organization: IUCN; Baseline: 2025; Frequency of updates: Annually |
| 1 | 3 | C | 34-35 | Column A refers to health - should there be an indicator of health or disease? |
| 1 | 4 | A |  | There is a problem of consistency among the five A components (species, genes and ecosystems). Of these, only genetic diversity does not have a 2030 milestone.Hoban et al (2020) proposed that a 2030 milestone be “Loss of genetic diversity within all species has been halted and existing genetic diversity is maintained. Strategies to avoid loss in the future have been developed and are initiated.” Halting loss of and maintaining existing genetic diversity would be achieved by high values of indicators 1 and 2. Strategies to avoid loss could be partly informed by achieving indicator 3. It is not known how much genetic diversity is needed, for how many species, to avoid large losses to society and nature, just as it is not known how much loss of ecosystems or species can be tolerated. A threshold proposed by agricultural geneticists has been to conserve 95% of genetic diversity within species (Marshall and Brown 1975), which could be achieved in the near term with large population sizes and realistic conservation interventions. If it is not feasible to conserve 95% of genetic diversity within “all species”, this could be changed to “all species, or as many as possible, with a minimum of 90% of species.” The following should be achievable: Maintaining [95%] of genetic diversity and halting any further loss, within at least [90%] of species by 2030, and developing and initiating strategies that achieve conditions that prevent any future loss of genetic diversity for all species. |
| 1 | 4 | C | 36 | Above, we discuss improvements to the current indicators for “cultivated” species and their “wild relatives.” **Here we focus on the lack of any indicators for “wild species.”** “Wild species” encompass between 90 and 99% of all species- this is a huge biodiversity monitoring gap. Such species contribute to maintaining ecosystem functions, livelihoods (e.g. wild harvesting or gathering), and culture. The monitoring element “trends in (genetic) diversity of wild species” in the draft document is currently blank. **We propose that the CBD incorporates three recently proposed indicators in development**, for which data is available, which are good proxies for the genetic diversity within wild species. They are scientifically sound- they are based on well developed population genetic theory, have sound methodology, and are in published journal articles- Hoban et al 2020 (Biological Conservation) and Laikre et al 2020 (Science). They are aligned with the previous Target 13, with the zero draft, and with the revised monitoring framework Goal A (“maintain genetic diversity”). **They are under active development** by the GEO BON Genetic Composition Working Group in partnership with IUCN CGSG, GBIKE, and the SCB Conservation Genetics Working Group. **They are usable, understandable, and connected to management actions**- change in these indicators points directly to clear issues of concern. We expect detailed methodology and datasets available in the second half of 2021. **They should be able to be updated annually at global scale and disagregattable to country level.** These indicators cover three areas: preventing genetic erosion, maintaining genetic diversity including adaptations, and increasing knowledge of genetic diversity within wild species.We acknowledge that adding more indicators to a lengthy list is not desirable, but **there must be indicators of wild species’ genetic diversity**- the foundation of all other biodiversity and the source of adaptation and resilience.(1) *Number of populations within species with effective population size (Ne) above 500* versus *those with Ne below 500.* According to Hoban et al (2020), this proposed indicator “determines rates of inbreeding, loss of genetic variation, and loss of adaptive potential.” This is based on well-established and well-regarded theoretical framework and research. Effective population sizes below 500 will result in genetic erosion and reduced ability to adapt to environmental change (Jamieson and Allendorf, 2012)- particularly important in a rapidly changing world. This indicator can be calculated from numerous data sources but in particular can be calculated as a rough approximation using 10% of populations’ census size (Hoban et al (2020)). Census size can be obtained from databases such as the Living Planet Index. Although directly monitoring genetic data using DNA samples is preferred, such monitoring remains relatively rare, expensive and taxonomically and spatially biased. This indicator is pragmatic- effective population size is correlated to the actual genetic diversity at the DNA level. A shorter name for this indicator could be “Number of genetically resilient populations.”*(2) The proportion of distinct populations maintained within species:* A second important indicator is the number of distinct populations which are maintained. The loss of distinct wild populations will result in large losses of genetic diversity within species, including the loss of unique traits and adaptations. As Hoban et al (2020) write, “Conservation's historic focus on species extinctions has neglected the loss of diversity as species' ranges shrink and millions of populations disappear (Ceballos et al., 2017).” Being a proportion, this must have a denominator- a baseline, preferably from historic records, including GBIF, museum and herbarium specimens, remnants such as fossils, or indigenous and local knowledge. The Living Planet Index, the PREDICTS database, or the Species Habitat Index could be appropriate data sources for this indicator. Distinct populations would be those with some minimum genetic distinction, occurrence in a unique environment, or geographically distant.*(3) Number of species and populations in which genetic diversity is being monitored using DNA based methods:* For countries and biodiversity organizations to successfully safeguard genetic diversity, they need knowledge on the genetic diversity within and among populations (populations here being a broad term referring to in situ wild populations and ex situ/ captive/ managed populations). Knowledge is needed on where unique genetic diversity is, how genetic diversity is changing, which environmental drivers cause changes in genetic diversity, and how genetically connected are populations. Management of genetic diversity relies on this knowledge (Bowman et al 2016; Holliday et al 2017; Koskela et al 2013). This indicator would be composed of the number of populations in which within-species genetic diversity has been measured in a publication, published in online databases (e.g. GEOME, BOLD, GenBank), and/or where such data is collected to inform conservation. A shorter name for this indicator could be “genetic monitoring index.” In addition, three indicators of genetic diversity that can be applied to all species were recently proposed see: Hoban et al. 2020; <https://www.sciencedirect.com/science/article/pii/S0006320720307126>). |
| 1 | 4 | B | 36-41 | In addition, **the use of “diversity of” in column B under A5 should be changed to “genetic diversity within” to make it clear.** The original CBD declaration of 1992 and previous Global Biodiversity Outlooks used genetic diversity to mean “within species” diversity. |
| 1 | 4 | C | 37 and 41 | The indicator “Comprehensiveness of conservation of socioeconomically as well as culturally valuable species” is included under both “cultivated plans, farmed and domesticated animals” and “wild relatives.” It is a fairly good indicator of protection of genetic diversity, it has global coverage and is disaggregated, and is easily updated. It represents how much of a species’ geographic range is protected in situ or ex situ (e.g. via seed banks). It has caveats such as assuming that land area correlates to genetic diversity. **This indicator could be calculated for all species**, not just “valuable” species and we recommend that it be calculated for, *all species*. Nonetheless, it must be clear this represents an area of land protected or genetic material conserved ex situ and does not necessarily track genetic diversity change in wild populations or loss of such populations.Proposed indicators 1 and 2 below are more relevant to genetic diversity. |
| 1 | 4 | C | 38 | The indicator “Number of plant and animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities” is included under “Trends in the diversity of cultivated plans, farmed and domesticated animals.” *We emphasize that this indicator could use additional wording to make sure it reflects conservation of genetic diversity.* **Specifically, the words, “resilient, representative and redundant” should be added prior to “genetic resources”.** It is well known that seed and gene banks may not capture sufficient amounts of species’ genetic diversity due to limited sampling within a species as well as degradation or use over time. Sampling for seed and gene banks must encompass as much of the species’ geographic distribution as possible (e.g. be representative), must sample extensively within populations typically 50 individuals (e.g. be resilient- high amount of genetic diversity), and must be at least duplicated to allow for normal loss or use and for disasters (e.g. be redundant). Moreover this indicator tends to focus on agricultural seed and gene banks but we suggest to include data from zoos and botanic gardens which hold millions of accessions in well curated databases (Mounce et al 2017). **We therefore recommend that after “conservation facilities” this text be added: “(e.g. seed or gene banks, botanic gardens, zoos, germplasm repositories and other well curated facilities).”** |
| 1 | 4 | C | 39 | The indicator “Proportion of local breeds classified as being at risk of extinction” is included for “cultivated, farmed and domesticated” species. This should correlate with loss of genetic diversity within breeds (genetic erosion or genetic drift) as well as loss of breed diversity itself (essentially equivalent to loss of distinct wild populations). Generally local breeds are classified as at risk due to small effective population size. **We suggest that this indicator could be subsumed into an indicator we propose below, “Number of populations [or breeds] within species with effective population size (Ne) above 500 versus those with Ne below 500.”** We emphasize that genetic erosion within populations or breeds occurs by the same genetic process- small effective size. |
| 1 | 4 | C | 42-43 | As well as measuring protected area coverage for terrestrial and inland water areas, and OECMs, add an indicator for trends in management effectiveness, as in Target 2; using appropriate Management Effectiveness tracking Tools as stated in target 2 |
| 1 | 4 | A | 42-49 | KBAs are used to monitor the protected area coverage of 4 major ecosystems for the SDGs (terrestrial, marine, freshwater and mountains). We therefore propose that the component GA.6 should be reworded as “Protection of *key biodiversity areas and* *other areas of importance for biodiversity*”. |
| 1 | 4 | C | 42 | Indicators for trends in protected areas covered should include the protected area downgrading, downsizing, and degazettement (PADDD) indicator to assess quality and change in protected areas. By tracking upgrades, downgrades, expansions, downsizes, establishments, and degazettements of protection it is possible to have a more accurate description of protected areas and OECM progress. |
| 1 | 4 | C | 43 | Coverage of OECMs for terrestrial and inland water areas should includeareas that are conserved by IPLCs where appropriate. |
| 1 | 4 | C | 46 | As well as measuring protected area coverage for KBAs, add an indicator for trends in management effectiveness, as in Target 2; using appropriate Management Effectiveness tracking Tools as stated in target 2 |
| 1 | 4 | C | 46 | Support the inclusion of the indicator of protected area coverage of KBAs for Component GA.6. Subsets of this indicator are official indicators for SDGs 14 and 15 - specifically indicators 14.5.1; 15.1.2 and 15.4.1. This indicator is reported by BirdLife International, IUCN and UNEP-WCMC based on analysis of data in the *World Database* *of KBAs* and the *World Database on Protected Areas.* |
| 1 | 4 | B | 46 | KBAs represent the most comprehensive and systematic site-scale dataset of areas of particular importance for biodiversity. The Global Standard for their identification was developed through extensive consultations across the conservation community. As such we suggest that this monitoring element should be reworded as “Trends in conservation of *key biodiversity areas and* other areas of particular importance for biodiversity” |
| 1 | 4 | C | 48 | Indicator in line 48 and 56 could include Number of certified forest areas under sustainable management with verified impacts on carbon sequestration/storage owned by women and men or Indigenous people. |
| 1 | 4 | B | 42 | It will be important to separate terrestrial and freshwater as separate components, just as was done for marine. Freshwater rivers and lakes are under enormous pressure globally and need protection. |
| 1 | 5 | B+C |  | Effectively-managed and equitably-governed protected areas and OECMs have proven to achieve optimum conservation outcomes for ecosystem services and for delivering direct and indirect benefits to people. They are therefore an essential element to achieving Goal B. Investments in PAs and OECMs should therefore be used as a direct indicator for Goal B, and particularly milestone (ii) (Nature is valued through green investments, ecosystem service valuation in national accounts, and public and private sector financial disclosure), for which there are currently no appropriate indicators listed. It is proposed to add the following additional monitoring element:“Trends in investments in protected areas and OECMs”, and the following indicators:“Percentage of national budgets dedicated to establishing and managing PAs and OECMs”“Percentage of National Ecosystem Service Accounting include the contribution of PAs and OECMs” |
| 1 | 5 | A | 50 | Trends in habitat creation, protection and maintenance |
| 1 | 5 | B+C | 51-62 | To align biodiversity conservation with nature-based contributions to climate change, we need to ensure that indices of carbon storage and carbon sequestration are included here. |
| 1 | 5 |  | 51-71  | References to the Paris Agreement which was included in the Zero Draft (Goal (d) (iv) and Target 6) are now gone. Recommend that they are reinstated.  |
| 1 | 5 | C | 51 | Indicator in line 51 could include Number of certified forest areas under sustainable management with verified impacts on habitat conservation/ restoration own by women and men or Indigenous people. |
| 1  | 5 | B | 51 | None of the monitoring elements of Goal B relate directly to “Nature contribute [s] to the sustainable nutrition and food security, access…”. Needs additional element “Trends in soil fertility” in B; in C indicators: add “soil carbon” and “soil erosion” |
| 1  | 5  | B | 51 | Measuring certified forests areas is irrelevant for the monitoring element “Trends in habitat creation and maintenance”. The requirement of certification seems to be aimed at avoiding monocultures being counted as ‘new forests’ (without a real benefit to biodiversity and ecosystem services). It should be noted that certification is expensive which could impact reporting. Indicators that require certification repeat in several monitoring elements of Goal B |
| 1 | 5 | B | 55 | Need additional indicators for climate regulation in addition to forests:- Area of peatlands with verified impacts for carbon sequestration/storage;- Area of wetlands...- Area of mangroves... |
| 1 | 5 | C | 56 | Indicator in line 48 and 56 could include Number of certified forest areas under sustainable management with verified impacts on carbon sequestration/storage owned by women and men or Indigenous people. |
| 1 | 5 | B | 58 | Refer to ‘inland water’ rather than ‘freshwater,’ to be inclusive of soda lakes, inland seas etc. |
| 1 | 5 | C | 59 | Indicators of quality of inland waters can be provided by the new sets of indicators that will be used for SDG 6.6.1:(i) An indicator on global water quality including trophic state (monthly and annual data) and turbidity. I recall this would be developed around a 5 year baseline from 2006-2010 data then use of 3 years of recent satellite data to compare change.(ii) UNEP DHI developed indicator on inland wetland status, from European satellite data – no change statistic; just a baseline.An indicator for timing would be the proportion of river basins, in a country, where environmental flows are provided in accordance with the e-flow methodology of SDG indicator 6.4.2, as recommended for A1 (Dickens, C., Smakhtin, V., Biancalani, R., Villholth, K.G., Eriyagama, N. and Marinelli, M. (2019). How to Include Environmental Flows into “Water Stress” Indicator 6.4.2 Guidelines for a Minimum Standard Method for Global Reporting. Report to the Food and Agricultural Organisation of the UN. Rome. 32 pp. License: CC BY-NC-SA 3.0 IGO). |
| 1 | 5 | B | 60 | Area of mangroves |
| 1 | 5 | C | 61 | Trends in hazards frequency and severity Trends and characteristics of natural hazards Trends of number and magnitude of disasters |
| 1 | 5 | B | 62 | Sendai Framework - Global target A - Indicators A1 to 3 |
| 1 | 6 | A | 64-67 | Add a Monitoring element on “Trends in status of ecosystems providing globally important services for water security and health”. Indicator could be the Freshwater Provisioning Index for Humans (Green, P.A., Vörösmarty, C.J., Harrison, I., Farrell, T. Saenz, L. & Fekete, B.M. (2015). Freshwater ecosystem services supporting humans: pivoting from water crisis to water solutions. Global Environmental Change 34, 108–118) |
| 1 | 6 | C | 64 | Consider adding an indicator on number of women with access to clean energy for cooking. |
| 1 | 6 | C | 65 | Consider adding an indicator on nutritional needs of adolescent girls; pregnant and lactating women are addressed.  Consider adding an indicator on increase in economic income of women and men due to use of biodiversity/ biological resources |
| 1 | 6 | C | 65 | The North American Wild Harvest Initiative, of which IUCN’s Sustainable Use and Livelihoods Specialist Group (SULi) is a partner, could be added as an indicator. Its dataset quantifies food benefits of recreationally wild harvested terrestrial and marine species in Canada and the United States. <https://www.iucn.org/commissions/commission-environmental-economic-and-social-policy/our-work/specialist-group-sustainable-use-and-livelihoods-suli/hunting-and-sustainable-wildlife-management/north-american-wild-harvest#:~:text=The%20Wild%20Harvest%20Initiative%20will,Canada%20and%20the%20United%20States.> |
| 1 | 6 | D | 65 | 2014-15, 2015-16. Data collection/compilation for 2016-17, 2017-18, and 2018-19 is underway. The dataset will be updated annually.  |
| 1 | 6 | B | 66 | This is important as this is how food and fodder are produced  |
| 1 | 6 | C | 67 | Consider adding an indicator on reduction of diseases in women and men by the access to medicine from biological resources |
| 1 | 6 |  | 68-71 | Welcome the inclusion of these indicators and the explicit reference to cultural values. Unlike Goal A, the Goal formulation does not include a “doing word”. Suggest that B3 is retitled “Enhancing nature’s non-material and cultural contributions to people”In general terms, there is a lack of adequate understanding and focus of the connection of nature and culture in the biodiversity framework at present, including cross reference to the recently agreed [Recommendation WG8J-11/3](https://www.cbd.int/recommendations/wg8j/?m=wg8j-11) - *Options for possible elements of work aimed at an integration of nature and culture in the post-2020 global biodiversity framework.* Proposed task 2 of that work programme directly envisages consideration of updated indicators regarding traditional knowledge.Existing indicators including those developed by UNESCO for culture and the SDGs, 5 of which relate to environment and resilience, should be considered and adopted where possible. See: [https://unesdoc.unesco.org/ark:/48223/pf0000371562](https://unesdoc.unesco.org/ark%3A/48223/pf0000371562) and relevant indicators in other significant datasets such as the Nature-Culture Indicators and Knowledge Systems Resource Directory (see: <http://resources.cbc.amnh.org/indicators/>)The indicators proposed miss the mutually supporting elements of nature and culture … not just nature’s benefits to culture, but the connection of nature and culture supporting better conservation of nature itself.A better set of four headings could be: * Learning and inspiration
* Physical and psychological connections to place and community
* Supporting cultural identities
* Maintenance of cultural values and practices
 |
| 1 | 6 | B+C | 68 | “Learning and inspiration” is a good heading.Measurement of this should be discussed jointly with UNESCO and IUCN Commission on Communication and Education (CEC), and other partners. Surrogate metrics could include a measure of access of schools to nature and greenspace, the number of visitors to protected areas, the number of undergraduate students taking part in courses with nature and biodiversity included in the curricula.We also enourage the GBF to consider relevant indicators on land-based learning, for instance those developed at the sub-national scale by the First Nations with Schools Collective (Canada): <https://fnwsceducation.files.wordpress.com/2019/04/2019-04-15-d2-land-based-summary-report-final.pdf> |
| 1 | 6 | B | 69 | Physical and psychological experiences is slightly unclear as a heading, and sounds more locatable under health related contributions. A more relevant heading would be the recognition of nature’s connections to culture in terms of the attachment of people (individually or collectively) to a particular place. See: Sterling et al - Sustainability Science (2020) 15:1129–1147 <https://doi.org/10.1007/s11625-020-00822-w> for the importance of this and lack of current attention in SDG frameworks. |
| 1 | 6 | B+C | 70 | Supporting identities could be more clearly expressed as “supporting cultural identities”. Indicators in this case might include those already adopted in relation to Article 8j (for instance regarding indigenous languages) and also those from UNESCO (see earlier comments). |
| 1 | 6 | B+C | 71 | Suggest this could be better expressed as “Maintenance of cultural values and practices”. |
| 1 | 6 |  | 72-76 | Welcome the inclusion of a Goal looking at benefits and linked to the third objective of the Convention – access and benefit sharing (ABS). However, IUCN notes with concern the apparent disparity between Goal C, its components, monitoring elements and indicators and Goals A and B. IUCN also notes the absence of the mention “access” at the level of the Goal itself. We stress that the reference to “associated traditional knowledge” that was included in the Zero Draft (Goal (e)) is now gone and strongly suggest that it be reinserted.Of particular concern is the lack of mention of the Nagoya Protocol on ABS within the monitoring framework. The Nagoya Protocol is the legal instrument under the CBD that supports the effective implementation of the ABS provisions of the Convention. It is thus unclear how the monitoring framework and the global biodiversity framework will relate to the Nagoya Protocol. The lack of data to substantiate indicators under Goal C and in particular, those associated with non-monetary benefits, remains a major challenge.  |
| 1 | 6-7 | A | 77-85 | As for Goal C, IUCN notes that Goal D’s components (as well as monitoring elements and indicators) are weak and less developed than others. The formulation of components could be confusing (e.g. what does sufficient mean?). The positioning of this Goal could be further considered within the current structure.  |
| 1 | 6 | A | 77-80 | At present there is an imbalance in resource distribution for conservation; for example, freshwater is frequently receiving less than marine and terrestrial. Suggest Goal D also reflects that there should be equitable division of resources – e.g. Availability and equitable division of financial resources across realms. |
| 1 | 6 | C | 67 | New indicator proposed for Trends in the provision of medicinal, biochemical and genetic resources from biodiversity: Expected loss of Phylogenetic Diversity. This indicator has already been developed for use by IPBES in NCP14 (medicinal, biochemical and genetic resources). Supporting organization: IUCN SSC Phylogenetic Diversity Task Force & Australian Museum. Baseline: 2020, annually updated. This indicator is paired with the proposed EDGE Index for Goal A, explicitly linking species conservation to nature’s contributions to people.Refs in <https://www.cbd.int/api/v2013/documents/6445B22E-1BA7-18B7-6D28-61A95052E841/attachments/IUCN-6.docx>, and [IPBES 2019](https://ipbes.net/ga/spm). |
| 1 | 6 | B+C | 71 | New monitoring element proposed: Maintenance of options; and associated new indicator: Expected loss of Phylogenetic Diversity. This indicator has already been developed for use by IPBES for NCP18 (maintenance of options). Supporting organization: IUCN SSC Phylogenetic Diversity Task Force & Australian Museum. Baseline: 2020, annually updated. This element and indicator fills an important gap in the concept of Nature’s Contributions to People, and is paired with the proposed EDGE Index for Goal A, explicitly linking species conservation to nature’s contributions to people.Refs in <https://www.cbd.int/api/v2013/documents/6445B22E-1BA7-18B7-6D28-61A95052E841/attachments/IUCN-6.docx>, and [IPBES 2019](https://ipbes.net/ga/spm). |
| 1 | 7 | A | 81 | Technology and knowledge transfer |
| 1 | 5 | D | 133 | Sendai Framework - Global target A - Indicators A1 to 3 |
| 2 | 8 | A |  | Suggest including reference to “maintaining or restoring ecosystem integrity and functioning” as an objective. This is consistent with the Ecosystem Approach (as per CBD decisions V/6 and VII/11), and Aichi Target 10. Furthermore, it can benefit from the scientific efforts deployed under the UN Decade of Ocean Science for Sustainable Development, which in its draft implementation plan has emphasized the need to protect ecosystem functioning to ensure the resilience of the system. |
| 2 | 8 | B+C | 6 | Trees outside forests, e.g. trees on agricultural land, are important for connectivity of natural forest ecosystems and essential for achievement of T1.2. Suggest including an additional monitoring element “Trends in woody biomass in agricultural areas” |
| 2 | 8 | C | 1 | It is crucial that the ‘spatial planning’ referred to in T1.1 mainstreams and reduces impacts on biodiversity. If countries assess KBAs nationally across multiple taxonomic groups and ecosystems and incorporate them in national spatial plans this will contribute greatly to achieving several of the CBD targets and goals. We therefore believe adding the following indicator proposed by BIP will help CBD track progress in achieving these targets and goals under component T1.1: “*Percentage of spatial plans utilising information on key biodiversity areas*”. This indicator is being tracked by the KBA Partnership who will be able to provide data from 2019 onwards. |
| 2 | 8 | A |  | Clarify that “land” includes freshwater biodiversity and inland water ecosystems. |
| 2 | 8 | A | 1 | Refer to ‘inland water’ rather than ‘freshwater,’ to be inclusive of soda lakes, inland seas etc. |
| 2 | 8 | B | 3 | Add Trends in cross-sectoral cooperation and collaboration at the regional (ocean basin/sub-basin) and global levels |
| 2 | 8 | C | 3 | Proposed indicators: Number of countries (lower level public authorities?) applying ICZM plansNumber of cross-sectoral cooperation and collaboration at the regional (ocean basin/sub-basin) and global levels |
| 2 | 8 | C+D | 2 | Proposed indicators: Percentage of land by country and global under spatial planning, with effective provisions for community rights; Habitat connectivity indicator (‘functional connectivity’).(Related with SDG indicator 15.1.1, 15.2.1 y 15.3.1 )Period of availability of baseline data and frequency of updates: 2015 (every two years). |
| 2 | 8 | C+D | 3 | Proposed indicators: Percentage of coastal zone by country and global under integrated management, following the ecosystem approach.(Related with SDG indicator 14.2.1 )Period of availability of baseline data and frequency of updates: 2015 (every two years). |
| 2 | 8 | D | 3 | Annually |
| 2 | 8 | C | 4 | Number of countries (lower level public authorities?) applying MSP |
| 2 | 8 | D | 4 | Annually |
| 2 | 8 | C | 5 | SDG indicator 6.5.1 is useful because it includes an assessment of how water-related ecosystems are managed. It includes a 5-step scale from “No management instrument being applied” to a level where “Management instruments are implemented on a long-term basis, with excellent coverage across different ecosystem types and the country and are highly effective. Environmental water requirements are analyzed for whole country.” (In the future this could be expanded upon to more specifically include aspects of freshwater biodiversity). |
| 2 | 8 | C | 8 | This is an overarching indicator - it does not only relate to dry and sub-humid lands. |
| 2 | 9 | B | 16-18 | Suggest including either here or as an additional monitoring element reference to deep sea ecosystems, including cold water areas (below 200m) and vulnerable marine ecosystems (e.g. deep water corals, sponges, hydrothermal vents, seamounts, underwater canyon heads, etc). Suggested indicators for deep sea ecosystems, should include degree of implementation by States and competent organizations.  |
| 2 | 9 | B | 19 | ‘Trends in extent and rate of change of inland waters’ rather than ‘wetlands’ (to align with CBD terminology, and assuming that inland wetland systems does refer to all inland waters; which it should. |
| 2 | 9 | C | 20 | The following new sets of indicators will be used for SDG 6.6.1, and it would be useful if for the Post 2020 Framework these were considered:(i) Assessment of extent of water bodies will disaggregate lakes from reservoirs, so that changes in natural compared to non-natural ecosystems can be compared(ii) An indicator on global water quality including trophic state (monthly and annual data) and turbidity. I recall this would be developed around a 5 year baseline from 2006-2010 data then use of 3 years of recent satellite data to compare change.(iii) UNEP DHI developed indicator on inland wetland status, from European satellite data – no change statistic; just a baseline. |
| 2 | 9 | C | 21 | Land cover change (one of three agreed sub-indicators of SDG indicator 15.3.1) |
| 2 | 9 | B+C | 23bis (new) | To enhance the linkages and synergies between the Targets and to enhance the role of protected areas and OECMs and retention of intact areas, a new indicator is suggested:“The percentage of protected areas and OECMs integrated into spatial planning at landscape/seascape scale”. |
| 2 | 10 | B | 28 | Need to find an indicator for ‘Trend in the area of degraded wetlands restored’ |
| 2 | 10 | C | 29 | Land cover change (one of three agreed sub-indicators of SDG indicator 15.3.1) |
| 2 | 10 | B | 30 | Suggest to add:’’ including migratory connectivity in the ocean (MiCO System)’’ |
| 2 | 10 | B | 30-34 | Add Reference to IUCN’s Guidelines on Connectivity ConservationHilty, J.\*, Worboys, G.L., Keeley, A.\*, Woodley, S.\*, Lausche, B., Locke, H., Carr, M., Pulsford I., Pittock, J., White, J.W., Theobald, D.M., Levine, J., Reuling, M., Watson, J.E.M., Ament, R., and Tabor, G.M.\* (2020). *Guidelines for conserving connectivity through ecological networks and corridors*. Best Practice Protected Area Guidelines Series No. 30. Gland, Switzerland: IUCN. |
| 2 | 10 | C | 30-34 | Indicators of trends in habitat connectivity should include an indicator of freshwater connectivity, from the River Connectivity Status Index (CSI) (Grill, G., Lehner, B., Thieme, M. et al. 2019. Mapping the world’s free-flowing rivers. Nature 569, 215–221). A baseline Connectivity Status Index was published in 2019. Plans are being considered for periodic updates, subject to availability of resources.as an indicator. The index is global - the methodology is down-scalable and can be applied at river basin and other levels. |
| 2 | 10 | A | 35-38 | ‘Area of terrestrial, freshwater and marine ecosystem under protection and conservation’ should refer to Area of terrestrial, *inland water* and marine ecosystem under protection and conservation |
| 2 | 10 | C | 35 | In addition to the area-based target which is measureable, also need to consider indicators for measuring the management effectiveness and impact. Reference Best Practice and benchmarks, e.g. X # of certified protected areas etc |
| 2 | 10 | C | 36 | Indicators do not seem to capture ‘’well connected and effective’’. |
| 2 | 10 | C | 37bis (new)  | A new indicator is proposed: “The proportion of country borders conserved through a transboundary network of PAs and OECMs.  |
| 2 | 11 | B | 39 | Suggest including in the end of the sentence: “from multiple pressures” to convey the notion that cross-sectoral measures are needed for effective MPAs and OECMs as per various IUCN guidance on MPAs/PAs and OECMs, as well as CBD decision 14/8. |
| 2 | 11 | C | 39 | Support the inclusion of the indicator of protected area coverage of KBAs. Subsets of this indicator are official indicators for SDGs 14 and 15 - specifically indicators 14.5.1; 15.1.2 and 15.4.1. This indicator is reported by BirdLife International, IUCN and UNEP-WCMC on behalf of the KBA Partnership, based on analysis of data in the *World Database* *of KBAs* and the *World Database on Protected Areas*. |
| 2 | 11 | C | 39 | Indicator states: “Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type´- this should refer to ‘sites for terrestrial and inland water biodiversity that are covered by protected areas or other protections (e.g. OECMs)’ |
| 2 | 11 | A | 39-42 | KBAs represent the most comprehensive and systematic site-scale dataset of areas of particular importance for biodiversity, although it is clear that many countries need to update their KBA identification based on the new Global Standard and as such there are gaps in the database. The Global Standard for their identification was developed through extensive consultations across the conservation community. Their coverage by protected areas provides three of the official SDG indicators (14.5.1, 15.1.2 and 15.4.1). As such we suggest that component T2.2 should be reworded as “Trends in conservation of *key biodiversity areas and* other areas of particular importance for biodiversity” |
| 2 | 11 | B | 39-42 | KBAs represent the most comprehensive and systematic site-scale dataset of areas of particular importance for biodiversity. The Global Standard for their identification was developed through extensive consultations across the conservation community. Their coverage by protected areas provides three of the official SDG indicators (14.5.1, 15.1.2 and 15.4.1). As such we believe this monitoring element for T2.2 should be expanded as follows; “Trends in the proportion of *key biodiversity areas and other* areas of particular importance for biodiversity that are protected and conserved” |
| 2 | 11 | C | 39-42 | It is important to not only measure protected area coverage but also have an indicator of impact – for example there remain large numbers of “paper parks” where the biodiversity impact is minimal. We propose adding the additional indicator suggested by BIP for Component T2.2; *Proportion of key biodiversity areas in favourable condition* -this indicator is being measured by the KBA Partnership and data can be provided from the *World* *Database of KBAs*. |
| 2 | 11 | C | 40 & 42 | We support the inclusion of indicators of Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type (SDG indicator 15.1.2) - this is measured by the proportion of terrestrial and freshwater KBAs covered by protected areas. This indicator is reported by BirdLife International, IUCN and UNEP-WCMC on behalf of the KBA Partnership, based on analysis of data in the *World Database* *of KBAs* and the *World Database on Protected Areas*. |
| 2 | 11  | B+C | 42bis (new) | OECMs are often identified or designed for areas of importance for ecosystem services given that biodiversity conservation is not always their primary objective. In addition, to improve coherence between the Targets and Goals, it is suggested to add the indicator:“Proportion of areas of particular importance for ecosystem services that are protected or conserved”This is in line with the indicator proposed for Goal B above (Table 1- Row 48). |
| 2 | 11 | C | 42 | Add Coverage of protected areas in relation to coastal and marine areas (SDG indicator 14.5.1) |
| 2 | 11 | C | 42 | Indicator states: “Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type (SDG indicator 15.1.2)’- this should refer to ‘sites for terrestrial and inland water biodiversity that are covered by protected areas or other protections (e.g. OECMs) type (SDG indicator 15.1.2)’ |
| 2 | 11 | C | 44 | Indicator states: “Proportion of terrestrial, freshwater and marine ecological regions which are conserved by PAs or OECMs’ – this should refer to ‘Proportion of terrestrial, inland water and marine ecological regions which are conserved by PAs or OECMs. |
| 2 | 11-12 | A | 46-47 | IUCN welcomes the important distinction in Table 2 Component T2.4 of effective management and equitable governance, and believes these could be further split into two separate components as they cannot be measured using the same indicators. |
| 2 | 11-12 | B  | 46bis (new) | A new indicator is proposed to reflect the importance of Indigenous rights and the protection of intact ecosystems. The reason is that a high proportion of intact ecosystems are on lands to which Indigenous peoples have rights. It is proposed to add:“Intact ecosystems in the governance of Indigenous Peoples”. There are many supportive references for this, but it is suggested that Garnett et al. 2018 would be best https://doi.org/10.1038/s41893-018-0100-6 |
| 2 | 11 | C | 46 | The Ramsar Management Effectiveness Tracking Tool (rMETT) (which is a revised version of the terrestrial METT tool) can be applied to inland water PAs.<https://www.ramsar.org/sites/default/files/documents/library/cop12_dr15_management_effectiveness_e.pdf> |
| 2 | 11 | A | 46 | Equitably managed PAs protect biodiversity more effectively (Oldekop, J.A., Holmes, G., Harris, W.E. and Evans, K.L., 2016. A global assessment of the social and conservation outcomes of protected areas. Conservation Biology, 30(1), pp.133-141.). An additional indicator could be “% of PAs are equitably managed”. |
| 2 | 11 | C | 46 | Community involvement/rights in the PA system should be considered. |
| 2 | 12 | C | 48 | Add Number of certified coastal and marine areas under sustainable management with verified impacts on biodiversity conservation |
| 2 | 12 | C | 48 | A new indicator is proposed to replace the existing indicator (Trends in proportion of PAs and OECMs under various governance regimes”)Replacement indicator:“The number and area of protected areas and OECMs in each of the four IUCN Governance Types”  |
| 2 | 12 | C | 48 | This indicator (the number of certified forest areas) is neither useful nor appropriate to measure protected areas or OECMs. This belongs under sustainable development Target T8.1. Sustainable management of aquatic wild species of fauna and flora, including fisheries. This is **fundamental**, as it contemplates activities that do not belong in protected areas. |
| 2 | 12 | C | 48bis (new) | A new indicator is proposed to measure the quality of equitable governance: “The percentage of protected areas and OECMs that have conducted a governance assessment and have a governance and equity action plan” |
| 2 | 12 | C | 49 | Protected Area Connectedness Index can be linked with the River Connectivity Status Index (CSI) for inland waters, so that PA connectivity can be compared against extent of river fragmentation (ie,. so that PA connectivity can be optimized in regions where the ecosystem is not fragmented. |
| 2 | 12 | C | 51 | The Ramsar Management Effectiveness Tracking Tool (rMETT) (which is a revised version of the terrestrial METT tool) can be applied to inland water PAs |
| 2 | 12 | C | 51 | It is suggested to add a new indicator for connectivity in rivers – the measure of riverine connectivity by country. A suitable reference is Grill, G., Lehner, B., Thieme, M., Geenen, B., Tickner, D., Antonelli, F., Babu, S., Borrelli, P., Cheng, L., Crochetiere, H. and Macedo, H.E., 2019. Mapping the world’s free-flowing rivers. Nature, 569(7755), pp.215-221. |
| 2 | 12 | C | 51bis | The inclusion of conservation effectiveness in this component T2.6 is strongly supported and it is suggested to add an indicator that can be used to measure effectiveness (management effectiveness is a sub-component of effectiveness)“Proportion of protected areas and OECMs that are assessed as meeting the IUCN Green List of Protected and Conserved Areas Standard (noting CBD Decision 13/2 “to promote the IUCN Green List of Protected and Conserved Areas as a voluntary standard to promote and encourage protected area management effectiveness)” |
| 2 | 12 | A | 52 | It is important to include and highlight the connectivity between the marine and freshwater systems, and also recognises the latter is not simply an extension of the landscape and reflect this in the Framework  |
| 2 | 12 | C+D | 52 | Policy and governance practices outside of protected areas and OECMs compatible with their management objectivesProposed new indicator:Number of countries that establish measures to improve management objectives outside protected areas; Period of availability of baseline data and frequency of updates:2010 (every two years) |
| 2 | 12 | A | 53 | Consider adding as a monitoring element, “Trend in sustainable wildlife management” or “Trend in sustainable wildlife use.” |
| 2 | 12 | B | 53bis | It is suggested to add an additional component T.2.8 on “Conservation outcomes of protected areas and OECMs” |
| 2 | 12 | C | new | It is suggested to add a new indicator“Percentage of Protected Areas and OECMs by area with documented conservation objectives” |
| 2 | 12 | C | new | It is suggested to add a new indicator:“Percentage of Protected Areas and OECMs by area that are meeting their conservation objectives” |
| 2 | 12 | C | 55 | While there are considerable gaps in available datasets on human-wildlife conflict, IUCN SSC’s Human-Wildlife Conflict Task Force has resources which may help in terms of identifying best indicators - <http://www.hwctf.org/resources/document-library> |
| 2 | 12 | C | 54 | Proposed new indicator: Proportion of Conservation Dependent species (IUCN Green Status of Species Index); Supporting organization: IUCN; Baseline: 2025; Frequency of updates: Annually |
| 2 | 12 | C | 54 | Proposed new indicator: Proportion of Threatened species improving in recovery status (IUCN Green Status of Species Index); ***Green Status of species***; Supporting organization: IUCN; Baseline: 2025; Frequency of updates: Annually |
| 2 | 12 | C | 54 | Proposed new indicator for Trends in species recovery programmes: Changing status of Evolutionarily Distinct and Globally Endangered species (EDGE Index), subset by percentage of EDGE species improving in status. Supporting organisation: IUCN SSC Phylogenetic Diversity Task Force & Zoological Society of London, based on existing ZSL EDGE lists and IUCN Red List data. Baseline: 2020, annually updated. This indicator (EDGE Index) is paired with the proposed Phylogenetic Diversity indicator in Goal B, explicitly linking species conservation to nature’s contributions to people. This indicator adds value to existing broader species indicators, as this subset of species represents billions of years of evolutionary history and thus future options for humanity. Refs in:<https://www.cbd.int/api/v2013/documents/6445B22E-1BA7-18B7-6D28-61A95052E841/attachments/IUCN-6.docx>, and [Gumbs et al. 2020, Nat Comms 11:2616](https://www.nature.com/articles/s41467-020-16410-6). |
| 2 | 12 | C | 53 - 54 | Proposed new indicator: species receiving recovery actions in response to threats due to intrinsic processes, with 2020 baseline of 1,751 species across comprehensively assessed taxonomic groups; Supporting organizations: IUCN, BirdLife (tbc) |
| 2 | 12-13 | C | 56 | Suggest using ‘Proportion of illegally harvested and/or trafficked wildlife’ as an indicator, if this is already measured. |
| 2 | 12 | A | 56 | For measures of sustainability, the gap in biological data must be resolved (e.g. logging; medicinal plants) |
| 2 | 13 | A | 56 | Consider adding “Trend in governance” as a monitoring element. Good governance is essential to this target. |
| 2 | 13 | C | 57 | Suggest changing ‘Degree’ to ‘Effectiveness’. |
| 2 | 13 | C | 58 | In many cases data is insufficient to determine whether fisheries are sustainable – it is important that data is collected, and appropriate assessments are developed/updated. |
| 2 | 13 | C | 58 | Another indicator in addition to fish stock is volume as # of fish stocks can give a skewed picture of sustainability- we should move towards measuring volume instead of stocks |
| 2 | 13 | C | 58 | The proposed indicator is “Proportion of fish stocks within biologically sustainable levels (SDG indicator 14.4.1)”. Note that SDG 14 tends to be applied to marine stocks and not to inland water stocks. The Post-2020 Framework must address this and provide an indicator that can be applied to inland water fisheries. An IUCN motion is in place to address this (<https://www.iucncongress2020.org/motion/020>) and FAO are in the process of determining globally applicable indicators for inland water fisheries. |
| 2 | 13 | C | 61 | The indicator proposed is: ‘Proportion of traded wildlife that was poached or illicitly trafficked (SDG indicators 15.7.1 and 15.c.1)’. It could also be useful to have an indicator related to fisheries (**inland and** marine) that addresses illegal, unreported and unregulated fishing (IUU) - if such an indicator exists. |
| 2 | 13 | C | 61 | Suggest using ‘Proportion of illegally harvested and/or trafficked wildlife’ as an indicator, if this is already captured. |
| 2 | 13 | C | 62 | In many cases there is not the data to determine whether fisheries are sustainable and implement limits/quotas – it is important that data is collected, and appropriate assessments are developed/updated. |
| 2 | 14-15 | A+B+C | 67-80 | “manage, and where possible control, pathways…”is unclear. Managing pathways would include the management of vectors but also the regulation of movements of goods? Unclear of terminology in relation the difference between ‘control/eradication’ and ‘manage’ (see comment on row 73-76)Need to ensure that the Target supports the reduction of harmful impacts from priority IAS, and that it is the priority pathways that are managed. Clear up terminology, control/manage.EICAT can support the prioritisation of IAS based on their impacts upon the environment (T5.2 Row 70-72) and Trends in the impact of IAS’ (T5.4 – row 77); GRIIS can support the ‘Trends in identification of IAS’ (T5.2, Row 71). ISSG already run many of the indicators (row 68 / 74 / 75) |
| 2 | 14-15 |  | 67-80 | Target 5 gets at disease risk from wildlife trade. The use of "safety” is excellent and allows the scope to address both emerging and endemic disease risks. This target is needed but we will want to note that wildlife trade is one of several interfaces for disease risk and risk looks very different in each country. We somehow need to address other sources of disease risk under another target if we cannot broaden Target 5. Comments on Target 16 relate to this as well. |
| 2 | 14 |  | 67-69 | T5.1 - the prioritization of pathways of introduction is missing |
| 2 | 14 | B | 68 | Suggest adding more specifically here or as an additional monitoring element: Number of States that have become parties to the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention under the IMO (International Maritime Organization)) |
| 2 | 14 |  | 70-72 | T5.2 - the monitoring elements don’t cover ways of prioritizing IAS (‘species’ pillar) – IUCN ISSG can support this through EICAT based on the magnitude of their impacts on the environment |
| 2 | 14 |  | 72 | Unclear what ‘trends monitoring of IAS’ is – is this the number of IAS monitoring schemes? |
| 2 | 14 | C | 72 | It is important to monitor invasive and alien species impacts on sites of particular importance for biodiversity. IUCN supports the inclusion of the BIP proposed indicator for target 5 component T5.2: “*Proportion of key biodiversity areas threatened by invasive alien species*” which is being monitored by the KBA Partnership using data from the *World Database of KBAs.* |
| 2 | 14 |  | 73-76 | T5.3 - Unclear what the difference between eradication/control measures and management measures is? It is understood that the first two are objectives of a management measure, i.e. a management can eradicate a population or control it (or its impacts) – there is also a third objective (contain, i.e. stop its spreading) |
| 2 | 14 |  | 73 | Do the trends in IAS vertebrate eradications include continental eradications, if not it’s the same as islands element in T5? |
| 2 | 15 |  | 76 | Clear mention to **effective** management must be made. It works for eradications, but for control and management there is a risk of wasting resources. Monitoring the establishment of measures (esp. control/management) does not ensure that these are effective (for eradications easier to say if effective or not). |
| 2 | 15 |  | 77 | T5.4 – may want to include this under T5.3. as it’s the result of the measures to control/eradicate that will result in reduction of impacts (this ties into the ‘effectiveness management’ comment above’).EICAT can also be used here to provide evidence of the reduction in impact.Suggest using something similar as in the EU Biodiversity Strategy IAS target – “to decrease the number of Red List species threatened by IAS by 50% by 2030”. |
| 2 | 15 |  | 78-80 | T5.5. –Add freshwater– trends in elimination of IAS in freshwater systems; |
| 2 | 15-16 |  | 81-96 | Target 6 on pollution: welcome the mentioning of lead - this is warranted from a public health point of view. Another monitoring element is needed to capture other sources of poisoning - none of the existing elements or indicators would capture situations like 1) intentional poisoning of wildlife related to human-animal conflict or poaching and 2) toxicity from veterinary medicines - as seen in the major vulture mortalities in Southern Asia associated with the anti-inflammatory drug diclofenac. |
| 2 | 15 | C | 81 | Plastic debris can range from macro- to micro-. Unclear if this indicator aims to include all types of plastic pollution. |
| 2 | 15 | C | 81 | Indicators should include inland water systems, not just coastal systems, i.e.: (a) Index of coastal eutrophication; Index of inland water eutrophication; and (c) plastic debris density (SDG indicator 14.1.1) |
| 2 | 15 | B | 81 | Suggest including a global threshold based on Nitrogen global in terms of industrial and intentional biological nitrogen fixation (control variable): 62 Tg Nyr-1 (62-82 Tg N yr-1). (See Will Steffen et al, (2015) 347 Science 1259855; and D Diz “Nitrogen and Phosphorus Flows to the Biosphere and Oceans” in D French, LJ Kotze (eds), *Research Handbook on Law, Governance and Planetary Boundaries* (Edward Elgar Publishing, forthcoming).) |
| 2 | 15 | C | 81 | Suggest including the following regional (sub)indicators related to eutrophication (based on regional seas indicators for SDG 14.1 (see UN Environment *Regional Seas Follow Up and Review of the Sustainable Development Goals (SDGS)* (UN Environment Regional Seas Reports and Studies No. 208, 2018):-Chlorophyll concentration as an indicator of phytoplankton biomass;-Locations and frequency of algal blooms reported;-Pollution hotspots: concentration of status of selected pollutant contamination in biota and sediments and temporal trends, and number of hotspots;-% of national action plans ratified and operational;-Waste water: % of coastal population connected to sewage facilities; % of waste facilities complying with adequate standards; and % of untreated waste water. |
| 2 | 15 | B | 85 | Suggest adding global thresholds forphosphorus global in terms of its flow from freshwater systems into the ocean (control variable): 11 Tg P yr-1 (11-100 Tg P yr-1). |
| 2 | 15-16 | B | 86-88 | The use of the term ‘excess’ would suggest we need indicators relating to the reduction of use, so some new indicators should be developed. |
| 2 | 16 | B | 89 | Trends in levels of pollution with **inland water** and marine plastic |
| 2 | 16 | C | 89 | (a) Index of coastal and inland water eutrophication; and (b) plastic debris density (SDG Indicator 14.1.1) [note SDG 14.1.1 refers only to marine pollution; inland water pollution should be linked to SDG indicator 6.3.2.] |
| 2 | 16 | B | 89 | “Trends in levels of pollution from plastic in marine and coastal environments” – current wording is confusing. New wording is similar to line below for clarity. |
| 2 | 16 | C | 89 | “Suggest also including as indicators (based on regional seas indicators under development (see UN Environment (2018). Regional Seas Follow Up and Review of the Sustainable Development Goals (SDGS). UN Environment Regional Seas Reports and Studies No. 208):-quantification and classification of beach litter items;-amount of recycled waste on land (%)-% of port facilities available”Indicators for specific areas of the marine environment could be added. (seabed, etc) |
| 2 | 16 | C | 91 | Suggest as indicators (as per UNEP 2018 supra row 81):-% of waste water facilities complying with adequate standards;-% of untreated waste water |
| 2 | 16 | B | 93 | Suggest adding explicit reference to underwater noise, by adding “including anthropogenic underwater noise” at the end of the sentence. |
| 2 | 16 | C | 93 |  Suggest including:Proportion of countries and competent organizations applying mitigation and management measures to prevent or minimize anthropogenic underwater noise consistent with best available science and standards, including those contained in:The CBD Technical Series report on the impacts of anthropogenic underwater noise on marine and coastal biodiversity (which will be issued as an information document for SBSTTA-24). The Convention on Conservation of Migratory Species of Wild Animals (CMS) Family Guidelines on Environmental Impact Assessments for Marine Noise-generating Activities and the Technical Support Information to these guidelines (CMS Resolution 12.14 (2017).  |
| 2 | 16 | A+B | 97-102 | In the currently proposed framework, Target 7 does not directly address climate change as a threat to biodiversity even though a significant proportion of species and ecosystems are being increasingly threatened by it, as illustrated through the recent IPCC and IPBES assessments. This threat is expected to exacerbate over time. Reducing the emission of GHGs that causes climate change, and building resilience, is critical to addressing this global threat to biodiversity. This, therefore, needs to be adequately taken into account within the proposed targets framework, either by (i) including it specifically under Target 6, with a dedicated component T6.5 (Reduction of pollution from GHG emissions) or (ii) introducing a new specific target aimed at reducing the threat to biodiversity from climate change. In both cases, the targets/components would need to be supported by the relevant monitoring elements and indicators (e.g. trends in levels of GHG emissions), ensuring consistency with what has been agreed to under the UNFCCC and the Paris Agreement. Furthermore, it is also proposed that Target 7, as currently written, is better suited to be included under the category of “Meeting people’s needs through sustainable use and benefit-sharing”. It should be noted that it also complements Target 10 and therefore, some alignment between the two may be needed.  |
| 2 | 16-17 | C | 97-102 | IUCN suggests that a new indicator that looks at the extent that nature based solutions are being integrated into national policy frameworks including (not limited to NBSAPs and NDCs). The indicator proposed for T7.2. could thus be expanded.  |
| 2 | 16 | C | 97 | A new indicator is required to reflect the relationship between biodiversity and climate change. A possible formulation is:“The percentage of areas with overlapping importance for both climate change mitigation and biodiversity conserved.” There are many mapping exercises that would allow this at the global level that are recently published. A lot of this mapping work is being done by WCMC, CI Reference examples are: Soto-Navarro et al. 2020 - <https://doi.org/10.1098/rstb.2019.0128>; Goldstein et al. 2020 <https://doi.org/10.1038/s41558-020-0738-8>; It is suggest that mitigation and adaptation indicators are split. |
| 2 | 16 | B | 97 | Trends in carbon stocks in different **terrestrial, freshwater and coastal/marine** ecosystems. |
| 2 | 16 | C | 97 | IPCC guidance/methodologies; national GHG inventoriesNumber of countries that adopt and implement NbS into their NDCs (mitigation component) |
| 2 | 16 | B | 97 | No of countries that adapt and implement EbA and NbS for climate change into their Nationally Determined Contributions (NDCs), national adaptation plans, national biodiversity actions plans (SDG 13.1.2) |
| 2 | 16 | B | 98 | Trends in contribution of different **terrestrial, freshwater and coastal/marine** ecosystems to climate change adaptation.  |
| 2 | 16 | C | 98 | Number of countries that adopt and implement NbS/ecosystem-based approaches into their national adaptation plans (NAPs)/NDC (adaptation component) |
| 2 | 16 | C | 98 | It is suggested to add the following indicators:“Number of countries (local governments) that adopt and implement nature-based solutions as part of their Nationally Determined Contributions to UNFCCC”.“Number of projects and/or proportion of adaptation funding dedicated to nature-based solutions”It is important that Parties document and account for the contribution of their biodiversity conservation strategies, including protected areas and OECMs to climate mitigation and adaptation. It is suggested to use the following indicator:“Proportion of PAs and OECM systems that contribute to climate change adaptation.” |
| 2 | 16 | B | 99 | Trends in contribution of different **terrestrial, freshwater and coastal/marine** ecosystems to disaster-risk reduction.  |
| 2 | 16 | C | 99 | Number of countries that adopt and implement NbS/ecosystem-based approaches to national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015–2030 (SDG indicator 13.1.2) |
| 2 | 16 | C | 99-100 | The suggested indicators do not necessarily reflect on or measures trends in biodiversity contribution to disaster risk reduction. It is suggested to use the following formulation:“ The number of countries (local governments) that adopt and implement nature-based solutions as part of their national disaster risk reduction strategies” |
| 2 | 17 | C | 99 | Sendai Framework - Global target E (indicators E1, E2) |
| 2 | 17 | C | 100 | Sendai Framework - Global target E (indicators E1, E2) |
| 2 | 17 | B | 101 | [EbA Qualification Standards and Criteria](https://www.iucn.org/news/cambio-clim%C3%A1tico/201705/how-define-eba-practical-framework) in designing EbA and NbS for climate change provides information on designing projects to integrate biodiversity considerations into adaptation, mitigation and disaster risk reduction projects (https://www.iucn.org/sites/dev/files/feba\_eba\_qualification\_and\_quality\_criteria\_final\_en.pdf) |
| 2 | 17 | C | 101 | This should be in line with Sendai Framework Global target F - Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of this framework by 2030. Particularly indicators F5 & F7 |
| 2 | 17 | C | 101 | Add another indicator: “Numbers of countries including NbS in climate resilient infrastructure planning” |
| 2 | 17 | C | 101 | This indicator is not fit for purpose. It is suggested to use:“The number of countries with environmental safeguards in their nationally determined contributions, long-term strategies, national adaptation plans, and DRR strategies” |
| 2 | 17 | B | 102 | Trends in environmental impacts assessments of mitigation, adaptation and disaster risk reduction projects **on biodiversity**. |
| 2 | 17 | C | 102 | The indicator should be rephrased as“Proportion of environmental assessments that require mitigation measures to protect carbon stocks and carbon sequestration”. Note that some environmental assessments include consideration of habitat rehabilitation, but which would result in reduced carbon stocks and carbon sequestration For one example see Rooney et al. 2012 <https://doil.org/10.1073/pnas.1117693108> but there are many examples – would require research.  |
| 2 | 17-18 | A+B+C | 103-109 | Consider adding human rights. E.g. XX countries adopting IMO C188 or countries ratifying it. |
| 2 | 17 | C | 103 | The proposed indicator is “Proportion of fish stocks within biologically sustainable levels (SDG indicator 14.4.1)”. Note that SDG 14 tends to be applied to marine stocks and not to inland water stocks. The Post 2020 Framework must address this and provide an indicator that can be applied to inland water fisheries. An IUCN motion is in place to address this (<https://www.iucncongress2020.org/motion/020>) and FAO are in the process of determining globally applicable indicators for inland water fisheries. |
| 2 | 18 | C  | 104 | Species and ecosystems protection can boost ecosystems productivity and thus increase/maintain food services. Therefore, it would be worth adding an indicator that monitors NbS interventions that are part of integrated management approaches. |
| 2 | 18 | C | 104 | Note that SDG indicator 14.7.1 refers only to marine resources. The Post 2020 Framework must address this and provide an indicator that can be applied to inland water fisheries, with respect to ‘Sustainable fisheries as a percentage of GDP in small island developing States, least developed countries and all countries’ |
| 2 | 18 | C | 105 | See comment above for line 103. |
| 2 | 18 | C | 105 | Volume as a measurement in addition to stocks |
| 2 | 18-19 | B | 105-109 | In many cases there is not the data to determine whether fisheries are sustainable – it is important that data is collected, and appropriate assessments are developed/updated. |
| 2 | 18 | C | 106 | Suggest changing ‘Degree’ to ‘Effectiveness’. |
| 2 | 18 | C | 106 | The proposed indicator is “Degree of implementation of international instruments aiming to combat illegal, unreported and unregulated fishing (SDG indicator 14.6.1)”. Note that SDG 14 tends to be applied to marine stocks and not to inland water stocks. The Post 2020 Framework must address this and provide an indicator that can be applied to inland water fisheries. |
| 2 | 18 | C | 107 | Note that SDG indicator 14.B.1 refers only to marine resources. The Post 2020 Framework must address this and provide an indicator that can be applied to inland water fisheries, with respect to ‘Degree of application of a legal/regulatory/ policy/institutional framework which recognizes and protects access rights for small-scale fisheries’ |
| 2 | 18 | C | 108 | MSC Certified Catch; **with equivalent sustainability certification scheme applied to inland fisheries**. [add text in bold to cover inland fisheries] |
| 2 | 18 | C | 108 | Better articulated as “internationally recognized certification and labelling schemes” |
| 2 | 18 | C | 109 | Note that SDG indicator 14.B.1 refers only to marine resources. The Post 2020 Framework must address this and provide an indicator that can be applied to inland water fisheries, with respect to ‘Degree of application of a legal/regulatory/ policy/institutional framework which recognizes and protects access rights for small-scale fisheries’ |
| 2 | 19 | C | 110 | At regional levels there may be other taxonomic groups that represent important bycatch species (e.g. some species of fishes; some aquatic mammals) for which there are Red List data /Red List Index data for all species. |
| 2 | 19 | C | 112 | At regional levels there may be some groups of aquatic plants for which there is Red List data / Red List Index data for all species. |
| 2 | 19 | C | 113 | Current indicator is for fish stocks; need to have something more invertebrate focused. Red List Index for decapods might become available. |
| 2 | 19 | A | 114 | Reciprocal links between sustainable wildlife use and benefits to nature and people must be established. More datasets are needed to measure benefits. |
| 2 | 19 | C | 114 | The North American Wild Harvest Initiative, of which IUCN/SULi is a partner, could be added as an indicator. Its dataset reports available harvest records for all legally harvested terrestrial species, and some marine species, in Canada and the United States. <https://www.iucn.org/commissions/commission-environmental-economic-and-social-policy/our-work/specialist-group-sustainable-use-and-livelihoods-suli/hunting-and-sustainable-wildlife-management/north-american-wild-harvest#:~:text=The%20Wild%20Harvest%20Initiative%20will,Canada%20and%20the%20United%20States.> |
| 2 | 19 | D | 114 | 2014-15, 2015-16. Data collection/compilation for 2016-17, 2017-18, and 2018-19 is underway. The dataset will be updated annually. |
| 2 | 20 | C | 119 | Indicator in line 119 Areas of agricultural land under conservation agriculture own by women and men. |
| 2 | 20 | B+C | 117 | T9.1 Nutrient reduction in agriculture without compromising productivity is only effectively achieved through integrated (Agro-ecological) farming systems that combine a diversity of crops, animals and trees with a variety of spatial and seasonal arrangements. Such systems mimic natural water and nutrient processes, with less need for artificial inputs like fertilizers, herbicides and pesticides. Rotating crops in diverse and complex patterns is estimated to reduce by three the nitrogen fertilization requirements of fields. Add monitoring element “area of agro-ecological or integrated framing practices” and in Column C add indicator “proportion of agricultural area under integrated or agro-ecological land-use as proportion of total agricultural area”; |
| 2 | 20 | C | 124 | Need to add indicators for inland water aquaculture; some measure of proportion of aquacultured species within biologically sustainable levels. As MSC has been referenced previously, ASC may be an option, though this is not as well established. |
| 2 | 21 | C | 127 | Indicators should monitor the number of countries adopting/ integrating measures as well as local governments - the indicators should be in line with Sendai Framework indicators |
| 2 | 21 | C | 128 | Indicator in line 128 Number of deaths, missing persons and directly affected persons disaggregated by sex attributed to disasters per 100,000 population (SDG indicator 11.5.1) |
| 2 | 21 | A | 129 |  Regulation of **inland water** quantity, quality, location and timing |
| 2 | 21 | B | 129 | Trends in natural **inland water** ecosystems proving good ambient water |
| 2 | 21 | C | 129 | Note that, for an indicator of water quality, the following new sets of indicators will be used for SDG 6.6.1, and it would be useful if the Post 2020 Framework adopted these:(i) Assessment of extent of water bodies will disaggregate lakes from reservoirs, so that changes in natural compared to non-natural ecosystems can be compared(ii) An indicator on global water quality including trophic state (monthly and annual data) and turbidity. I recall this would be developed around a 5 year baseline from 2006-2010 data then use of 3 years of recent satellite data to compare change. |
| 2 | 21 | C | 129 | Another indicator for ‘Trends in natural freshwater ecosystems proving good ambient water’ could be the Freshwater Provisioning Index for Humans (Green, P.A., Vörösmarty, C.J., Harrison, I., Farrell, T. Saenz, L. & Fekete, B.M. (2015). Freshwater ecosystem services supporting humans: pivoting from water crisis to water solutions. Global Environmental Change 34, 108–118) |
| 2 | 21 | C | 131 | An another potential indicator for timing of flows would be the proportion of river basins, in a country, where environmental flows are provided in accordance with the e-flow methodology of SDG indicator 6.4.2 (Dickens, C., Smakhtin, V., Biancalani, R., Villholth, K.G., Eriyagama, N. and Marinelli, M. (2019). How to Include Environmental Flows into “Water Stress” Indicator 6.4.2 Guidelines for a Minimum Standard Method for Global Reporting. Report to the Food and Agricultural Organisation of the UN. Rome. 32 pp. License: CC BY-NC-SA 3.0 IGO). |
| 2 | 21 | A | 132 | An indicator is needed here to monitor the number of implemented measures that allow access to people. Reference to Sendai Framework - Indicator D4 & C5 |
| 2 | 21 | C | 132 | An additional indicator is proposed:“The number of visitors to protected areas (or number of km2 of protected areas/100000 people) |
| 2 | 22 | A+B+C | 132-139 | Target 11 seems to be missing anything about disease risk reduction. - in the context of T11.1, which could potentially have adverse impacts in terms of encroachment on wildlife habitat and resulting disease risk. Recommend adding indicators on: “Number of countries that adopt a multi-sectoral (e.g. One Health) strategic plan to identify and mitigate emerging disease risks” ; alternately “Number of countries with early warning systems in place for environmentally-sensitive and/or zoonotic diseases (SDG 3.d)”, and one on land use in particular: “Number of countries with policy in place to assess disease risks as part of land use planning”. |
| 2 | 22 | B | 139 | Trends in contributions to human health and well-being from inland waters (rather than wetlands, which defines a different set of ecosystems). |
| 2 | 22 | C | 139 | Need to suggest indicators for ‘Trends in contributions to human health and well-being from inland waters’. |
| 2 | 22 | C | 139 | There should be an indicator for:“Trends in the contribution of protected areas and OECMs to human health and well-being” |
| 2 | 22 | A | 140 | Unclear whether Marine Genetic Resources are included. This is one of the agreed elements of the UN BBNJ negotiations on high seas biodiversity. |
| 2 | 24 | C+D | 146 | Possible new indicators could be developed around the number of infractions of CBD provisions on ABS and the Nagoya ABS Protocol; and Percentage of monetary and non-monetary benefits received by local communities or other stakeholders in the providing countries (annually). |
| 2 | 24 | C+D | 150 | New indicators could be framed around the number of infractions of CBD provisions on ABS and the ABS Protocol; and percentage of monetary and non-monetary benefits received by local communities or other stakeholders in the providing countries (annually). |
| 2 | 25 | C+D | 151 | New indicators could be developed around number of agreements fulfilled regarding fair and equitable benefits to indigenous people or local communities. Period of availability of baseline data and frequency of updates: 2015 (annually). |
| 2 | 25 | B | 152-156 | A link needs to be made between the spatial planning in target 1 and mainstreaming in target 13. Spatial plans for biodiversity conservation need to be adopted and applied across multiple sectors of government to guide development in ways that will reduce negative impacts on biodiversity. We believe this component should be reworded as; “Trends in integration *of spatial biodiversity values, specifically Key Biodiversity Areas and other sites of importance for biodiversity,*  into *cross sectoral* and other planning processes. |
| 2 | 25 | C | 152-156 | A useful indicator for target 13 component T13.1 could be; “*The proportion of policies and plans that incorporate spatial assessments of KBAs and other areas of importance for biodiversity’*. Identification and conservation of KBAs would achieve many of the CBD goals and targets. Using spatial mapping of KBAs and other areas of importance for biodiversity to guide policy would contribute greatly to mainstreaming biodiversity. The KBA Partnership will be monitoring this indicator and will be able to provide the data.  |
| 2 | 25 | A | 152 | Consider adding as a monitoring element, “Trends in landscape conservation.” Increased landscape scale conservation, beyond protected areas, is needed. |
| 2 | 25 | A | 152 | There is a need to strengthen accountability mechanisms for governments and to ensure policy coherence – government policies must be coherent with national and international commitments on biodiversity and sustainable wildlife management/use. |
| 2 | 27 | C | 164 | Suggest also including: “implementation of circular economy principles through policies and legal frameworks”  |
| 2 | 27 | C | 166 | Fisheries’ efforts to reduce bycatch and bycatch mortality. |
| 2 | 28 | C | 172 | Duplicates indicator in line 167. Also, it would be valuable to add an element in the indicator enabling the differentiation between successful and not measures. |
| 2 | 28 | C | 173 | Publishing a sustainability report is quite weak as an indicator of sustainable production (it doesn’t say anything about performance in general, and the report might include very little about biodiversity). There are various ways to strengthen the indicator:1. The sustainability report should be in accordance to the GRI Standards
2. The report shall include a biodiversity section

In addition, there could be an indicator such as “Number of companies having published a biodiversity policy addressing their direct and indirect impacts including the impacts associated through their raw materials”. Or even better, use the proposed indicators in the LTAM:Number of companies integrating the value of nature into decision-making (SDG indicators 12.6.1) * Number of companies publishing their biodiversity dependencies and net impacts in sustainability reports (SDG indicators 12.6.1)
* Number of companies which demonstrate, in their sustainability reports, their net impacts and contributions to ecosystems, species and human health

For financial institutions:* Number of financial institutions integrating the biodiversity risks and opportunities into decision-making (similar to SDG indicators 12.6.1)
* Number of financial institutions publishing sustainability reports (similar to SDG indicators 12.6.1).

Number of financial institutions which demonstrate, in their sustainability reports, significantly improving their impacts and opportunities on ecosystems, biodiversity and human health in their portfolios. |
| 2 | 29 | C | 174 | Not clear why MSC is singled out here as part of T14.2 and not as part of T14.3 |
| 2 | 29 | C | 174 | Or equivalent, EU regulations, ASC, block chain |
| 2 | 29 | C | 176 | Why only hazardous waste singled out? We know (e.g. plastics) that also non hazardous waste can have huge impacts on biodiversity. Consider using recycling rate/country as indicator (eventually by type of material). |
| 2 | 29 | C | 177 | (1)Why only forestry as indicator for this target? And (2) why in forestry only 2 certification schemes? How have these been singled out? Suggestion: focus on all certifications that have achieved ISEAL membership <https://www.isealalliance.org/community-members?f%5B0%5D=community_status%3A176> and that are “area based”. Otherwise CBD should identify the certification schemes that adequately address the pressures on biodiversity associated to the specific commodity or process. |
| 2 | 29 | C | 178 | As indicator (now missing) : Adoption of biodiversity safeguards (IFC Performance Standards or similar) |
| 2 | 30 | C | 179 | Merge with 177 |
| 2 | 30 | C | 179 | MSC Certified Catch; **with equivalent sustainability certification scheme applied to inland fisheries**. [add text in bold to cover inland fisheries] |
| 2 | 30  | C | 179 | Add new indicator here on Trends in FSC certified forests |
| 2 | 30 | C | 180-184 | These indicators are linked to “Trends in use of non-renewable natural resources”, however they (the indicators) don’t diversify for renewable/non renewable. |
| 2 | 30 | C | 183 | Repeats 182 |
| 2 | 31 | C | 187 | Not clear why this is added given that the trend in non-renewable and trend in renewable are already included |
| 2 | 30 | A | 190 | More datasets on human dependence are needed |
| 2 | 31 | A | 190 | There is a need to improve understanding of sustainability |
| 2 | 31 | A | 193 | The potential contradiction of human population pressures and overall species abundance need to be reconciled. |
| 2 | 31 | C | 193 | Consider using (also) the UEBT Biodiversity Barometer biodiversitybarometer.org |
| 2 | 32-33 |  | 194-204 | Target 16 is needed, but the call for "measures to prevent, manage or control potential adverse impacts of biotechnology on biodiversity and human health reducing these impacts by” for biotechnology specifically, without a parallel for potential adverse effects of land use change, is a huge missed opportunity. See comment for Target 7 to ensure we can include this somehow. The risk of wildlife poisoning by veterinary medicines could be addressed with an indicator like: "Number of countries assessing biodiversity impacts as part of criteria for licensing therapeutics for veterinary use" |
| 2 | 33 |  | 205-208 | WTO declaration on harmful fisheries subsidies expected to be adopted by end 2020. N.B. harmful fisheries subsidies often focus on the capture sector but harmful fisheries subsidies to the supply chain and infrastructure needs to be considered/included as they provide incentives for IUU. |
| 2 | 33 | B | 208 | This monitoring element should also include indicators for (i) ‘Trends in potentially environmentally harmful elements of government support to water management’ (e.g. subsidies for pumping aquifers for irrigation; poorly planned water-related infrastructure); Trends in potentially environmentally harmful elements of government support to marine and inland fisheries’ (e.g. fuel for fisheries, subsidies for poor fish and aquaculture practices; see SDG 14.6 which addresses the need to prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing ) |
| 2 | 34 | A+B+C | 211-225 | Inclusion of all means of implementation into one Target makes these extremely complex, very difficult to understand, disaggregate and measure. Consideration should be given to separating the issue of financial resources with issues such as capacity building, technology transfer or scientific cooperation. All these are measured in very distinct ways and by putting them together attention (and thus potential action around these) is diluted.  |
| 2 | 36 | A | 224 | Here, we can mention cooperation in marine scientific research field, including during expeditions-at-sea (e.g. Indicator: number of international expeditions with a technology transfer and scientific cooperation component.) |
| 2 | 36 | C | 226 | Proposed new indicator: Growth in number of species with Green Status assessments; *Green Status of species*; Supporting organization: IUCN; Baseline: 2021; Frequency of updates: Annually |
| 2 | 36 | C | 226-231 | Given the increasing use of KBAs by financial institutions, corporates and donors to assess biodiversity risk or target funding, the existence of accurate and up to date national maps of KBAs is a crucial component of T19 in terms of ‘ensuring quality information … is available to decision makers for… for the effective management of biodiversity.’We therefore propose an additional indicator for target 19 component T19.1 here as follows; “*Number of countries in which comprehensive national key biodiversity area assessments have been updated using the KBA Global Standard*” |
| 2 | 36 | C | 226-231 | Most conservation action is driven by what we know about mammals and birds. There is a need to more comprehensively assess biodiversity and use the information to guide policy. We therefore propose an additional indicator for target 19 component T19.1 as; “*Percentage of taxonomic classes and ecosystem types for which comprehensive national key biodiversity area assessments have been undertaken*” |
| 2 | 37 | C | 230 | ‘Proportion of total research budget allocated to research in the field of marine technology (SDG indicator 14.A.1)’. Why is marine technology specifically called out here? Research budgets also go into freshwater technology and engineering; and various aspects terrestrial systems. |
| 2 | 37 | C | 231 | UN Global Compact now are releasing guidelines for several industries |
| 2 | 38 | C | 236 | New indicator: Number of IUCN Green Status of Species assessments; ***Green Status of species***; Supporting organization: IUCN; Baseline: 2021; Frequency of updates: Annually |
| 2 | 40 | C | 246 | Suggest including gender specific element e.g. in relation to women and land rights.  |
| 3 | 41 | A | after 11 | Assessment of extent of inland water bodies (based on a revision of SDG 6.6.1 [for Goals A and B, Targets 1 and 10] |
| 3 | 41 | A | after 11 | Assessment of global water quality (based on a revision of SDG 6.6.1) |
| 3 | 41 | A | After 23 | Changing status of Evolutionarily Distinct and Globally Endangered species (EDGE Index) |
| 3 | 41 | B | After 23 | Relevant Goals & Targets: A3, T3.1 |
| 3 | 42 | A | after 40 | Expected loss of Phylogenetic Diversity [Goal B2, B3] |
| 3 | 42 | A | after 41 | Freshwater Provisioning Index for Humans (Green, P.A., Vörösmarty, C.J., Harrison, I., Farrell, T. Saenz, L. & Fekete, B.M. (2015). Freshwater ecosystem services supporting humans: pivoting from water crisis to water solutions. Global Environmental Change 34, 108–118) [for Goal B and Target 10] |
| 3 | 42 | A | after 45 | Green List of Protected Areas (<https://www.iucn.org/theme/protected-areas/our-work/iucn-green-list-protected-and-conserved-areas>) [for Target 2] |
| 3 | 42 | A | after 45 | The Green Status of Species<https://www.iucn.org/commissions/species-survival-commission/resources/iucn-green-status-species>) [for Goal A and Target 3] |
| 3 | 44 | A | 106 | New indicator: “Proportion of important sites for coastal and marine biodiversity that are covered by protected areas, by ecosystem type” |
| 3 | 44 | A | after 112 | Proportion of river basins, in a country, where environmental flows are provided in accordance with the e-flow methodology of SDG indicator 6.4.2 (Dickens, C., Smakhtin, V., Biancalani, R., Villholth, K.G., Eriyagama, N. and Marinelli, M. (2019). How to Include Environmental Flows into “Water Stress” Indicator 6.4.2 Guidelines for a Minimum Standard Method for Global Reporting. Report to the Food and Agricultural Organisation of the UN. Rome. 32 pp. License: CC BY-NC-SA 3.0 IGO). [for Goals A & B] |
| 3 | 45 | A | after 123 | Ramsar Management Effectiveness Tracking Tool (rMETT) (which is a revised version of the terrestrial METT tool) can be applied to inland water PAs.<https://www.ramsar.org/sites/default/files/documents/library/cop12_dr15_management_effectiveness_e.pdf> [for Target 2] |
| 3 | 45 | A | after 126 | River Connectivity Status Index (CSI) (Grill, G., Lehner, B., Thieme, M. et al. 2019. Mapping the world’s free-flowing rivers. Nature 569, 215–221). [for Goal A; Targets 1 & 2] |

*Comments should be sent by e-mail to* *secretariat@cbd.int****no later than 25 July 2020****.*