Future Earth / CNRS open online consultation on post-2020 biodiversity framework – Full results

1- Through your research, what pressing challenges do you identify for biodiversity that could be translated into national priorities?
Conservation and Sustainable use
Ecosystem services and agrosystems sustainability
Valuation, sustainable use, ecosystem services
Protecting biodiversity requires effectively addressing the key driver of habitat loss: increasing consumption of land-intensive goods, such as meat and dairy products, and palm oil. The Aichi Targets recognize the need for lifestyle changes but little progress has been made on that front. If governments are serious about protecting biodiversity globally, much more needs to be done to transform lifestyles and consumption patterns.
How to better value biodiversity and to maintain ecosystem services
1) Not so much valuation, but finance. How to secure proper level of investment in biodiversity. 2) Better connection between biodiversity and society/poverty reduction.
restoration and sustainable use: both require knowledge on the unperturbed state of the system, which is hard to obtain from observational data as the majority fo these derives from the industrial era. The challenge is how to know what is the state of ecosystem services and biodiversity to which we want to restore and/or which we want to maintain.
Valuation: The science behind conservation and sustainable use is frequently well-enough known. However what is often lacking is the financial incentive to carry out. This requires things like effective and agreed valuation, proper markets that achieve system-level benefit for eg. offsets, and accounting for the true environmental cost of development, inaction, and in some case ineffective conservation. Restoration: With pervasive pressures, including climate warming, pollution and invasive species, the idea that anywhere on the planet is pristine or that it can be protected merely by closing it off to local threats is no longer tenable. Restoration is required to guide our future trajectory and needs to include restoring existing systems where local pressures have been removed, assisted evolution of communities that might be failing under changed global conditions (eg. coral reefs), and even sometimes development of new habitats and assisted translocation.
Link between biodiversity and society: need to integrate biodiversity concerns across all sectors (cf mainstreaming of biodiversity), so that policies are examined for their impact on biodiversity, and adjusted accordingly. Also, alternative pathways need to be explored on how societies can develop in "harmony with nature", i.e. with reduced pressure on biodiversity and ecosystems. The role of biodiversity and ecosystems in how societies can adapt to environmental change, and how biodiversity can mitigate change should be explored further, and synergies sought. Recognition of the role biodiversity plays in contributing to human wellbeing and sustainable development.
How to maintain ecosystem services
Planetary health and the importance of the link between biodiversity and society > Challenges: (1) how to ensure a just future for humanity in the process of and in achieving planetary health - implying not only to look at the end result but also how to ensure justice in the process and (2) how to achieve planetary health and healthy socio-ecological systems while allowing for social innovation to shape governance, policy and ways of knowledge production in the process - implying that we need to rethink the ways we govern and the ways we generate evidence for policy

how to better protect biodiversity (conservation)
How better to protect biodiversity, and the link between biodiversity and society
conservation
The key challenge clearly is in addressing biodiversity loss (“conservation”); other aspects should be recognised as secondary to this core issue. Note that the CBD’s post 2020 papers state that "a post-2020 global biodiversity framework should focus on the overall trends and drivers of biodiversity loss.”
How to better value and protect biodiversity? We are at the crux of an Integrated Earth System's complete multi-degradation and baseline breakdown in minima et maxima threshold via anthropogenic re-configurations. Most notable are the biologically conjoining niche ecosystems, which are failing now more than ever recorded. Niche's form the inter-related environments upon which they were thermobiologically evolved and naturally engineered to suite.
The need for more effective governance relating to research and consideration of large-scale Carbon Dioxide Removal (CDR) and Solar Radiation Modification (SRM), often also referred to as climate-related geoengineering. Building on existing CBD decisions (https://www.cbd.int/climate/geoengineering/), effective governance would reflect the definition of governance as defined in the glossary of the recent IPCC SR1.5, recognizing the contributions of various levels of government (global, international, regional, sub-national and local) and the contributing roles of the private sector, of nongovernmental actors, and of civil society. Addressing specific knowledge gaps on climate-related geoengineering relevant to the Convention on Biological Diversity (CBD) such as those identified in a recent workshop with members of CBD SBSTTA: https://www.c2g2.net/wp-content/uploads/20180704-C2G2-CBD-ResGaps.pdf
How to better protect biodiversity? (Conservation)

2- To address these challenges, which indicators or targets would you propose? Please, propose measures for monitoring challenges identified in question 1.
Better integrate social and political sciences in Conservation
Measuring reproduction of wild and agronomic insects
Statistics of valued ecosystems (biodiversity), area or number of organizations for sustainable certificates, examples of PES
The Ecological Footprint and the Material Footprint provide a robust indication of humanity's overall pressure on the planet, which is correlated with biodiversity loss.
Valuation of ecosystem services and biodiversity to improve environmental decision making, and improving incentives and mechanisms to pay for biodiversity and ecosystem conservation
Generally falling under current Targets 17 and 20: 1) NBSAPs are adopted as official planning and implementation documents by the Minister of Finance, Planning and/or Development, as appropriate; 2) NBSAPs are articulated in terms of biodiversity results and costable actions; 3) NBSAPs are fully costed including sources of investment from public and private sector actors and civil society and finance solutions that: deliver better (more efficiently), avoid future costs, redirect current investment (prioritize better), and/or generate additional biodiversity investment.

Amount of change in the mean state and temporal dynamics of ecosystem performance and composition since human intervention.
Valuation: 1. Number of countries reporting changes in environmental status, change and benefits (capital and income). 2. A functioning market that accounts for environmental loss and gain, including regular audits to ensure that the economic and environmental outcomes are meeting objectives. 3. Removal of economic subsidies that promote environmental overuse (eg. fishing subsidies, agricultural subsidies)
Reduction of subsidies harmful to biodiversity (that is part of the current target 3, but not really pursued by countries). Biodiversity concerns taken into consideration when making decisions (proper trade-off and synergy analyses). Biodiversity is mainstreamed across all sectors. Nature-based solutions are preferred over technological solutions (e.g. when addressing climate change). Models and scenarios of biodiversity are used consistently to support decision-making on all levels.
Target: increase agriculture production while maintaining and improving natural areas
Need to connect to social targets of the SDGs - Do not consider the Aichi Targets in isolation of SDGs. SDG on Eradicating Poverty has great implications for planetary health. > Monitor education levels in countries, access to health services, obesity as indicators for social accessibility and justice. Avoid Gini coefficient as indicative to injustice - it does not reflect the reality in our century.
Feed mind of human for the life of the body and the life of the body. - Government capacity building and community natural resource management institutions, - Sustainable management of natural resources through improved land use practices with reduction of soil degradation and sediment loads. The implementation of the Strategic Action Program (SAP) for the sustainable management of natural resources to conserve biodiversity and sustainably exploit resources.through six strategic components including priority actions on: • Sustainable fisheries, • The fight against pollution, • Sediment management, • Habitat conservation, • Adaptation to climate change from the fight against biological invasions. Ensure concrete actions for sustainable land management on the coast with proposals from potential partners. Through actions that will have as main goals: - The promotion of afforestation, - the introduction of adapted farming practices, - planned urbanization, - development and interventions in ravines and riverbeds. - The control of bushfires - The rational exploitation of mines and quarries - Construction according to the norms of new roads on the littoral of, Lake Tanganyika or near the rivers.
targets: protected areas adopted through wide public and stakeholder consultation, equitable use and distribution of resources as well as negative impacts; monitoring: public health indicators, community well-being indicators, protected areas, key species (depending on location), climate change indicators
100% of ocean in sustainable use, 30% with no fishing
I propose expanded use of red-list indicators plus indicators that provide surrogates for broader (e.g. considering all species) biodiversity losses

We all, as an Earth-System-Species', cannot afford to propagate single-species complete resource dominance. In nature, a singular dominating species/celestial body/energy system can not thermoequilibriantly reproduce within the predefined multivariate systems configured and coded for ever-complex biochemical energy pathway systems thermodynamically advancing their respective evolutionary times by ingenious hyper-mutabilities.
I.e. Hyper-mutable Flu viri; being one of the oldest known evolutionary precursors from the native non-eroded elemental pre-continental inorganic chemistry --> Amino Acid::nucleotide --> joined helical + ADP::ATP energy-efficient syn-hydrolysis of biochemo- and photosynthesizing (Photosystems II & I) organic polypeptides --> macro-molecules.

Indicator 1a: Effective governance arrangements are in place relating to research and consideration for emerging technologies and their potential impact on biodiversity.

Indicator 1b: Effective governance arrangements are in place relating to research and consideration of large-scale Carbon Dioxide Removal (CDR) and its potential impact on biodiversity.

Indicator 1c: Effective governance arrangements are in place relating to research and consideration of Solar Radiation Modification (SRM) and its potential impact on biodiversity.

a) Proposed Indicators: Number of hectares of natural landscapes and seascapes with legislated and implemented Rights of Nature based on the values and principles of Earth Law; Number of court cases where Rights of Nature of certain landscape or seascape are successfully defended; Number of hectares restored due to successful legislation and implementation of Rights of Nature and other conservation measures; Number of threatened species whose populations recovered due to conservation measures including Rights of Nature and other rights based measures. b) Proposed Measures for monitoring challenges of conservation: An extensive and intensive capacity building for monitoring and evaluation including adaptive management should be conducted including the use of relevant softwares and other current technologies. Corollary to this is capacity building for development and/or/both use of current technologies to advance conservation. Innovations based on pluralism, from multiple sources of knowledge system i.e. including both indigenous and scientific knowledge system should be developed and promoted. This should be coupled with participation of multiple stakeholders based on the values and principles of inclusiveness and diversity. Also important is to incorporate values and principles such as system-based; resilience and integrated in conservation research, design, implementation and monitoring and evaluation including for adaptive management.

3- How would these proposals provide better results than the Aichi Targets (2011-2020)? The Aichi targets (and their corresponding 2050 Vision themes) are listed in the table below.

We now know solution to protect nature, we need just to act with social and political involvments

They are included in the Aichi targets, but more focused

See Barbier, E.B., J.C. Burgess and T.J. Dean. 2018. “How to pay for saving biodiversity.” Science 360 (6388): 486-488. DOI: 10.1126/science.aar3454

Currently, NBSAPs, presumably the principal guiding document for countries to fulfill their commitments to the CBD Strategic Plan, tend to be aspirational, lacking concrete action, connection to biodiversity outcomes, linkage to SDGs, and political sway/commitment. The

measures above would bring that strategy and plan front and center in the country's development plan and would provide a prioritized and 'projectized' roadmap to reach joint development and biodiversity investment outcomes.
The Aichi targets lack benchmark. There is no information on what the desired "healthy" state of the biosphere is and how the observational trends that are to be monitored should be evaluated.
Valuation: current indicators are lacking or a communication too. Revised indicators would start to make biodiversity a part of our everyday business transactions. Restoration: current indices are either species based or pressure based and do not address the importance of the important habitats that need restoration. The current indicators also tend to accentuate the negative, whereas restoration could be a vehicle to show (local) environmental improvement, encouraging further engagement by public, industries and government.
The problem is not necessarily the Aichi Targets per se, but the fact that biodiversity and ecosystems are still considered low priority - only once the role of biodiversity in supporting the planet's life support system is universally recognised, and measures are put in place across ALL sectors, we will be able to achieve the 2050 vision.
By specifically addressing the trade offs between agriculture production and nature conservation
They would connect the Aichi targets with social well-being.
The biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people”
additional information would help refine the targets; less aggregation would enhance locally relevant solutions in addition to aggregated, globally relevant solutions
They would clarify the present lie that MPA protect biodiversity when 90% of them allow fishing which alters food webs and ecosystems and compromises survival of endangered species (e.g. birds competing for food with commercial fisheries). These MPA are trying to implment "sustainable fishing" which is of course worthy, but is actually what countries aspire to do for all of the ocean under UNCLOS and CBD and UN SDG.
The CBD calls for a “a bold post-2020 global biodiversity framework.” A bold framework would be one that focuses on biodiversity loss, and minimises the distraction of too many targets covering other aspects.
Large-scale groundwater-surface water complexities need to be monitored per their respective cycling seasonality(s). Watershed analysis, using hydrogeology as a medium, one can integrate most Earth-Systems via: current LandUse/LandCover schema; Dig. Elev. Models (DEMs); Cation/Anion analyses; Innovative & Inexpensive inter-aquifer exchange and solute contamination techniques, analyses, and real-time scenario(s) transport modelling. In plain English, characterizing the groundwater and surficial waters incorporating a properly delineated environmental watersheds as a regional biodiversity/sustainability/Environmental Impact Statement (EIS)/Human Population proxy.
A specific indicator for governance of emerging technologies (including large-scale Carbon Dioxide Removal (CDR) and Solar Radiation Modification (SRM)) is not included in Aichi targets, and there is now broad agreement among scientists and governments (e.g. from the recent IPCC Special Report on Global Warming of 1.5C) that temperatures cannot be limited to less than 1.5C without recourse to large-scale CDR.
Current environmental laws and policies proved insufficient to protect biodiversity. Earth Law including Rights of Nature can provide system-based and holistic solution to many environmental ills. Its more than just an environmental legal instrument, its a way of living. Beyond the pragmatic concerns that this will address, it will provide the necessary shift in

humanity's relationship with Nature, and thus ecologically-sound behavior towards living in harmony with nature.

4- What are your thoughts on currently used indicators? Feel free to select a few that you are familiar with. Reference indicators are listed in the table below, and further described on the website of the Biodiversity Indicators Partnership (www.bipindicators.net).
They are essential
Aichi Target 7: Sustainable agriculture, aquaculture, forestry
The indicators now are not well-linked among drivers, states, impacts and response. It is necessary to adopt the indicators to connect them to identify the bottle neck.
The Ecological Footprint indicator is already included, but unfavourable trends continue. The policy community does not appear to recognize the significance of this indicator and the crucial role of fundamental changes in consumption patterns.
The lack of progress on valuation indicators is startling. The lack of any indicator related to funding and paying for biodiversity and ecosystem conservation is disappointing.
Nature of the beast, I suppose, but negotiated (long and equivocating) text and ad hoc global indicators do not always resonate with policy makers, particularly in finance and planning ministries.
The indicators itself are ok, there is good diversity of objective and subjective measures and system relavtn properties. It is just not clear against waht the values of these indices should be evaluated. Against the present day is hardly the right answer.
A few of the indicators are scientifically contentious (eg. marine trophic index) and there may need to be a more rigorous selection process. Many are input-based indicators (especially for Aichi Target 11) and so measure good intentions but may not necessarily good outcomes, if as is the case for most Protected Areas, they are typically placed in areas area from some of the greatest pressures, and there are insufficient funds for governance, management, enforcement. Many indicators (eg. AT 4) are very indirect and it seems unlikely that lack of performance against the target would directly lead to response. Some (eg. AT 5 & parts of 6) seem quite soundly based on measurable quantities directly linked to a clear target. However, these may often be hard to report against in developing countries, so a hierarchy of indicators is needed to enable even the lowest reporting country to be able to show progress. For AT6 this might be; a) is governance in place; b) are management targets based on available science; c) is enforcement adequate; d) are target stocks managed at or above MSY; e) are bycatch species and habitats protected.
Currently used indicators are familiar, tried and trusted, but they do not necessarily do the job in measuring what we need to measure. On the one hand, they need to be scientifically sound and traceable, on the other, easy to use and fairly cheap. There are already some indicators that fit the bill, others are being developed under various umbrellas - and these need promoting.
They are often one sided (ie, indices of nature conservation), but they do not consider the opportunnity costs and synergies with agriculture production or uban expansion
Indicators are useful and needed for the baseline assessments. I have no specific objection about the ones listed here. What I would like to consider is that next to traditional knowledge (Target 18), new knowledge from social innovation for example needs to find space to be accounted and considered.

-Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.
I'm not familiar with that many of the indicators below, but would say that sustainable seafood measures are not always adequately geared to fisheries health and that the OHI, while an excellent idea and an interesting approach, suffers from the aggregation problem I noted above as well as from a problem for a number of indicators, which is scaling it for both global and regional/local use
OHI mixes to many variables and is thus meaningless. More transparent and simple indicators would be better (as underly OHI). "protected areas" coverage is grossly misleading because countries include areas that allow comercial scale extractive use that are not sustainable (e.g. fisheries). It need to be limited to "fully (no extractive use) protected areas".
The most useful indicators will be informative about biodiversity loss, including red-list indicators plus indicators that provide surrogates for broader biodiversity losses
Solute/Sediment Transport models need to be implemented in Developing Nations; especially with Monsoon cyclicities. Open sewers and drainage infrastructure needs to be re-invented to facilitate exponential population increases. Harmful Algal Bloom (HABs) phenomena need to be monitored world-wide to better understand world-wide nutrient cyclicities and over excitation of Earth-Systems.
A specific indicator for effective governance of emerging technologies (including large-scale Carbon Dioxide Removal (CDR) and Solar Radiation Modification (SRM)) is absent.
Indicators should be translatable at all spatial and temporal scales. There must be a way global indicators can be appropriately scaled at national and subnational levels. It is also important that indicators are based on what matters to stakeholders, beyond the science, it should also be bio-cultural and inclusive.

5- Please identify possible target/indicator-related knowledge gaps. Are knowledge gaps at the heart of the difficulty to act on biodiversity?
We need more indicators about social interest for Nature, decribing the relation with nature
Relation between animal groups, studying birds without considering insects or instance
number of PES systems introduced, number of (local) governments that have applied natural capital account, number of countries who valuated ecosystem services
More progress on determining how best to pay for biodiversity and ecosystem conservation, especially through involving the private sector with a stake in such conservation.
There are substantial knowledge gaps among biodiversity outcome, human action/intervention/project, and financial need. There are additional challenges in identifying tradeoffs and synergies, where they exist, between human development outcomes and biodiversity outcomes resulting from such investments.
Comprehensive knowledge on the unperturbed state of the system, including its fluctuations that are not driven by human intervention. A particular gap of knowledge in this area refers to ecosystem functionality.
See response to question 4 wrt AT6. Knowledge is often lacking, especially at the more sophisticated level, but this should not preclude progress. Instead of defining indicators on science and lowest common denominator enabling many countries to report, a stepped hierarchy of indicators would assist measurement of progress at many different levels, so that all countries could measure and report their progress effectively.

Knowledge gaps are not at the heart of the difficulties - see my answer to point 3 above.
Ration between increases in agriculture production and biodiversity "costs"...at different scales; yes
I think knowledge on emerging social, ecological, governance innovations for biodiversity requires systematization to inform additional targets and related indicators.
- Degradation of habitat - Excessive erosion and sedimentation - Loss of agricultural productivity - Loss of biodiversity - Loss of ecosystem services
filling knowledge gaps is useful, but as we know, the knowledge deficit model is not generally accurate, and the problems with action stem more from values, politics, and institutional constraints than from a lack of knowledge
% of each ocean realm, biome and ecosystem (see recent publications mapping these objectively using data, not just expert opinion) fully protected from fishing.
The big knowledge gap involves quantifying losses in biodiversity that reflect all components (e.g. all species). Knowledge gaps are not foremost in the difficulty to act on biodiversity – besides increasing pressuresmaking it difficult, the other big problem is weak science – including the problem of equating biodiversity with anything/everything. This confusion frustrates formulation of biodiversity policy
Yes, a multi-disciplinary background in STEM-oriented education is our goal in advancing achievable sustainability.
Indicator 2a: Effective transdisciplinary knowledge is available to enable effective governance relating to research and consideration of emerging technologies and their potential impact on biodiversity. Indicator 2b: Effective transdisciplinary knowledge is available to enable effective governance relating to research and consideration of large-scale Carbon Dioxide Removal (CDR) and its potential impact on biodiversity. Indicator 2c: Effective transdisciplinary knowledge is available to enable effective governance relating to research and consideration of Solar Radiation Modification (SRM) and its potential impact on biodiversity.
Innovations on target/indicators related to IPLCs should be addressed. What matters to IPLCs should be incorporated beyond what matters to mainstream conservation sector.

6- How should the post-2020 biodiversity framework interact with other international sustainability frameworks (e.g. the Sustainable Development Goals, New Urban Agenda...)?
I don't know
SDGs, Paris agreements and so on. However, it seems effective to adopt common goals and indicators with these activities.
This is less important than addressing the global financing crisis for biodiversity and ecosystem conservation. See Barbier, E.B., J.C. Burgess and T.J. Dean. 2018. “How to pay for saving biodiversity.” Science 360 (6388): 486-488. DOI: 10.1126/science.aar3454
It is essential to link closely with the SDGs and the Climate Change agendas, the former to make the case for biodiversity and human well being and the latter to take advantage of

global awareness and inertia in securing climate finance for biodiversity. Moreover, integration with appropriate business/private sector platforms, including the Natural Capital Coalition (Natural Capital Protocol) would seem essential for success, if complicated.
By identifying interfaces with individual goals and organising work along these interfaces.
The Post-2020 should lead on biodiversity monitoring and be designed so that other sustainability frameworks can use the information directly for their reporting. Ideally countries' own national reporting frameworks (eg. State of Environment, or OECD reporting) would also link to the broader frameworks. In many countries, especially smaller developing countries (eg. P-SIDS) there is an over-reporting burden which reduces the value of each individual report and inhibits the collection of new information. The links between CBD and FAO on target 6 are a useful approach to where a few additional (environmental) questions can be added to an established (FAO) reporting mechanism to get the relevant information effectively.
They need to speak to each other, and the contribution of biodiversity to these needs to be highlighted. Also, it needs be made clear where the trade-offs are, and which alternative pathways could be taken.
The framework should specifically target the trade offs and synergies with food production and population development. SDGs and Urban agenda are very useful frameworks to do so.
Create knowledge brokerage and knowledge transfer events/opportunities and try to synchronize/connect databases on global assessments and monitoring across these frameworks.
In our side we prefer this post -2020 become in the framework of convention of sustainable the biological diversity.
closely, especially given that the same anthropogenic threats (in particular, climate change) touch on all these frameworks, and solutions will be more powerful if coordinated
They should be closely related. Marine conservation is essential for food securtiy of indigenous peoples - see developments in the PAcific Islands.
There is a good link to the Sustainable Development Goals –(SDG 15) “halt biodiversity loss.”. Target 15.5: “Take urgent and significant action to …. halt the loss of biodiversity and protect and prevent the extinction of threatened species.”
Both Groundwater Resources and Freshwater Resources will be the pressing issue(s); even more so than the ever-increasing need for dwindling non-renewable hydrocarbon resources and energy manipulation technologies. Currently, this regimen is already being observed, and, forecasted to shape our very near future.
Assessment of interaction with SDGs undertaken, knowledge gaps addressed, and governance arrangements strengthened. In relation to large-scale Carbon Dioxide Removal (CDR) and Solar Radiation Modification (SRM) some initial early work has been undertaken in this area, e.g. See: • IPCC (2018) Chapter 5: Sustainable Development, Poverty Eradication and Reducing Inequalities. Special Report on Global Warming of 1.5C. IPCC. http://report.ipcc.ch/sr15/pdf/sr15_chapter5.pdf • Honegger et al. (2018). Carbon Removal and Solar Geoengineering: Potential implications for delivery of the Sustainable Development Goals. https://www.c2g2.net/wp-content/uploads/C2G2-Geoeng-SDGs_20180521.pdf

Action Plans including targets and indicators of interrelated targets should be harmonized. Whereas knowledge management across these international sustainability frameworks should also be harmonized and implemented at various scales.

7- Other proposals and comments.
Including even more fundamental biology in research programs to cross gaps between living groups (insects, birds, fishes, mamals...)
The current strategic plan makes the case between biodiversity and human well being and poverty reduction/elimination quite poorly and there is no mention of private sector engagement, though subsequent actions have moved in the right direction. Codifying these priorities in the next plan is essential to avoid being viewed as a luxury we may not be able to afford.
Future Earth core project PAGES could help to support the CBD efforts by organising research to address the historical dimension of biodiversity change and its functional impact. Without knowing the history of the system, we cannot correctly assess the merits of any future action pathways.
Vision 2050 (and to a lessor extent Agenda 2030) provide the opportunity to develop long-term approaches to monitoring and reporting. The scientific community needs to be more organised providing more consistent advice so that scientifically valid indicators can be developed and tested, rather than what seems at present to be driven by policy and availability.
Please don't hesitate to contact me regarding the work on indicators done for IPBES.
We need a strong effort in development a more transdisciplinary agenda for biodiversity, currently too much dominated by biodiversity experts...we clearly need more integrated approaches. In addition, the merits of simplicity (as oppossed to diversity) should be acknowledged and betters studied.
Involvement the participation of women on the conservation and preservation of biodiversity must play an important role in the field be uncountable
Weak science has produced weak targets; there is a risk for post 2020 that the tendency to interpret biodiversity as ecology will again produce weak targets – e.g. as in Mace et al's (Nature Sustainability 2018) counter-productive assertion that ""Halting the loss of biodiversity" should be interpreted to also halt the declines in abundance and distribution of species as well as the structure and functioning of biological communities." There are endless ways to assess important aspects of ecology, but this distracts from the core need to address biodiversity loss – loss of living variation. The CBD has the opportunity to create "a bold post-2020 global biodiversity framework" by resisting the pressures to build in anything/everything into "biodiversity".

Plastics in the environment. Polluted Soils, Oceans, Fresh Waters (ground and surface); plastics eventually propagating through the food-web cycling into biologically up-taken and incorporated nano-plastics. I believe this, plastics 'neuro-bunching' further bio-concentrating, be one of the foremost precursors in Alzheimer's synaptic junction miss-firings between the axon and dendrite neural gap.
Collaboration between climate change and biodiversity research communities to develop an agreed research framework for transdisciplinary research into the impacts of large-scale Carbon Dioxide Removal (CDR) and Solar Radiation Modification (SRM). Designed to produce peer reviewed literature to feed into official intergovernmental assessment processes (e.g. IPCC AR6, UNEP and IPBES assessments). Examples of the above could include: - a joint IPCC/IPBES special report (or special reports) on geoengineering (possibly one or more reports on specific groups of technologies, and their impacts, such as nature-based CDR technologies; hybrids like BECCS; or SRM). - a report on governance of SRM research that specifically looks at how a strategic research program might prioritize protection of biodiversity.

8- Please, don’t hesitate to share any relevant supporting literature which would be integrated in the input transmitted to CBD.
Barbier, E.B., J.C. Burgess and T.J. Dean. 2018. “How to pay for saving biodiversity.” Science 360 (6388): 486-488. DOI: 10.1126/science.aar3454
Biodiversity Finance Initiative (BIOFIN): www.biodiversityfinance.net
Nogués-Bravo, David, et al. "Cracking the code of biodiversity responses to past climate change." Trends in ecology & evolution (2018).
Hedge, P., F. Molloy, H. Sweatman, K. R. Hayes, J. M. Dambacher, J. Chandler, N. Bax, M. Gooch, K. Anthony, and B. Elliot. 2017. An integrated monitoring framework for the Great Barrier Reef World Heritage Area. Marine Policy 77:90-96. Builds on US National Parks Service approach to developing a monitoring program identifying the governance, policy and knowledge-based processes that are required to identify and prioritise indicators. It is driving the multi-million dollar Great Barrier Reef Monitoring Program (RIMREP). Miloslavich, P., N. Bax, S. Simmons, E. Klein, W. Appeltans, O. Aburto-Oropeza, M. Anderson-García, S. Batten, L. Benedetti-Cecchi, D. Checkley, S. Chiba, E. Duffy, D. I. Dunn, A. Fischer, J. Gunn, R. Kudela, F. Marsac, F. Muller-Karger, D. Obura, and Y.-J. Shin. 2018. Essential Ocean Variables for sustained observations of marine biodiversity and ecosystems. Global Change Biology 24:2416-2433. Assessed 24 interantional conventions and agreements to identify the key areas that required marine monitoring. A CBD/CSIRO/IOC/GEOBON workshop held at SBSTTA 20 addressed parties most important needs for monitoring. The results were presented in plenary and are being

developed as a paper. The key recommendations were: 1. Existing marine global assessments encountered difficulties in gathering quantitative data on trends in the marine environment, or even consensus on how they should be monitored. Information on trends in human use and impacts were especially poor making it difficult to evaluate how ecosystems and livelihoods are affected by the many ocean uses and their combined and cumulative impact. 2. There is an urgent need for baselines, sustained standardized monitoring and improved data availability and access to meet ongoing and future challenges related to measuring progress on Aichi targets and SDG goals, and to provide a long-term perspective on the changing marine environment. 3. There are many existing monitoring programs and data series and there are further opportunities to work together with governments, academic institutions and the private sector to coordinate and extend these initiatives. 4. There is a need for improved cooperation across sectors at local, national, regional and international levels, as well as between existing monitoring programmes and between international organisations with a mandate in science, observation and services. 5. Several areas of marine biodiversity science have reached a level of maturity such that monitoring systems can be designed to respond to societal needs, especially with new technologies and communication opportunities available. 6. Participants recognised the existence of at least three knowledge systems which could inform marine assessments including scientific, local and traditional knowledge. 7. There is a need to link monitoring of biodiversity to ecosystem services and incorporate that valuation into national accounting systems. 8. Monitoring programmes needs to be driven from the bottom up by national needs, within an agreed global framework of standards, protocols, interoperability and data access developed by intergovernmental agencies. 9. Monitoring should cross the science policy interface and address current and emerging management needs. 10. Monitoring data need to be regularly reviewed for relevance, reliability and effectiveness. 11. Despite the wealth of existing and potential marine monitoring, many countries are currently unaware of, or lack the capacity to access currently available information from global databases relevant to their respective marine areas. 12. Considering the above, participants highlighted a need for interactive fora at a regional scale involving different countries and relevant organizations, building on relevant existing regional initiatives (e.g. regional seas Conventions and Action Plans, LME programmes, regional fisheries bodies, etc.), to facilitate capacity transfer from resource rich to resource poor countries and engage collaboration with indigenous peoples and local communities, civil society groups, and industries. Such cross-sectoral collaboration for monitoring can also contribute to, and therefore should be closely linked to, national or regional efforts on marine spatial planning. 13. Additional and more recent technology developments, including options like MOOCS (massive open online courses) and regional training centres, should also be explored as an additional capacity building and communication option. 14. Finally, in view of the rapidly changing marine environment including ocean acidification, and the looming dates for reporting against Aichi targets, participants emphasized that action needs to be taken quickly if relevant monitoring and information are to be available to meet these needs.
- CLIMATE CHANGE IMPACT ADAPTATION COMPONENT and Strategic Actions for Sustainable Land Management need to consider activities of sustainable practices (Agriculture, Livestock, Aquaculture) through the promotion of poverty alleviation activities

and management of population , - The promotion of private reforestation and agroforestry (extension, demonstrations) - Identification of forest areas to be protected - Update of the legislation, - Capacity building of environmental services, - Education and awareness
The IUCN position paper “IUCN views on the preparation, scope and content of the post-2020 global biodiversity framework” provides a useful perspective. It says “The conservation imperative is more urgent than ever. Biodiversity loss continues; the Earth’s sixth mass extinction is so severe that humanity must take measures to address the decimation of biodiversity immediately.” IUCN suggests we need a small number of targets: “Such long-term 2050 targets could include, for example, “Improve the survival probability of all species to that natural over Earth’s history””
As Climate Change and Pollution are now truly beginning to take root world-wide, many renowned International Scientific Authorities, Institutes, and Journals (AGU-Wiley, GSA, AAPG, USGS, NIH, CDC, DOE, UN, EU) are focusing massive business remodeling protocols for healthy work environments that promote healthy worker lifestyles and environmentally-friendly or acceptable standard practices. No Plastics in the workplace being one of them! New technology does not mean we are replacing human ingeniousness.
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Please see the websites of the following organizations: Earth Law Center, Global Alliance for Rights of Nature; UN Harmony with Nature