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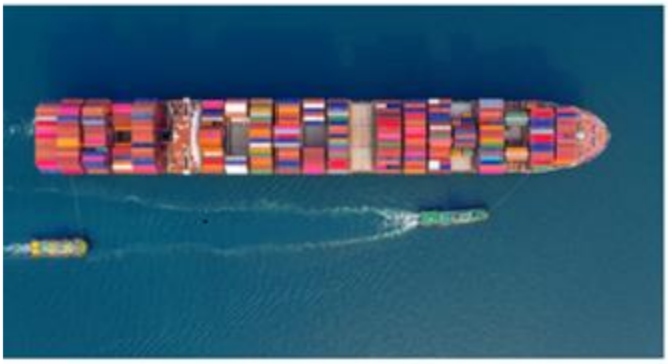
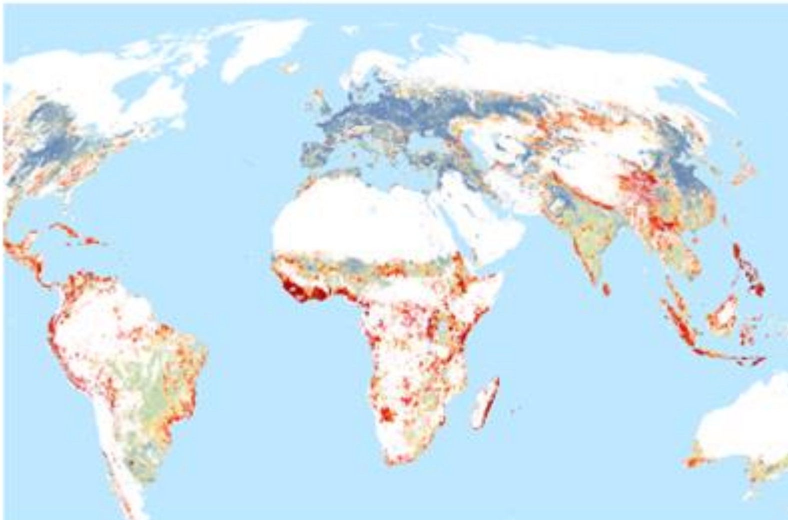
POLICY BRIEF - UPDATED

Holistic spatial planning is imperative to operationalise transformative goals

Recommendations for the post-2020 Global Biodiversity Framework





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INDEX

KEY MESSAGES

It is possible to halt and potentially reverse biodiversity decline, but strong efforts to tackle different threats should be taken simultaneously. Even more so because the relative importance of each threat, such as the over-exploitation of natural resources, land use, and climate change, is likely to change in the future.

SECTION 2: Goals A-B; Milestones A.1-A-2; Targets 1-8.

Holistic spatial planning, which considers the full range of resources and indicators and the blend of management actions at national and global scales, is key to achieving positive outcomes for people and nature, and integrating the goals of the post-2020 Global Biodiversity Framework with the achievements of the Glasgow Climate Pact and the Sustainable Development Agenda.

SECTION 3: Goal A-B; Targets 1-3; 20-21.

Meeting increasing food demands while supporting biodiversity protection through ecosystem conservation and restoration is a formidable challenge. Sustainably increased food production, while reducing the overall land footprint, and incorporation of environmental sustainability standards in trade agreements and supply chains are among the factors that must be addressed with substantial effort.

SECTION 4: Goals A-B; Targets 1-3; 8-10; 14-15; 19.

1. INTRODUCTION

1.1 THE ROLE OF INTERNATIONAL AGENDAS

Human activities have been pushing Earth's complex living system towards a direction of irreversible negative change. The unprecedented biodiversity loss is both a consequence of this pathway and a cause of drastic shifts in ecological processes that put human livelihoods in jeopardy. To tackle these ongoing challenges, a globally-coordinated plan is focused on how to protect nature and "build back better" – through stronger science, policies that back a healthier planet, and more green investments. All these aspects are featured in Working With the Environment to Protect People, by the United Nations (UN) Environment Programme. Restoring damaged ecosystems is particularly crucial in this approach, reinforcing the actions in the UN Decade on Ecosystem Restoration (2021-2030). This ten-year period also marks the deadline for achieving the ambitious Sustainable Development Goals (SDGs) that nations signed in 2015. As people and institutions could not fully implement the Strategic Plan for Biodiversity and achieve the Aichi Biodiversity Targets related to the UN General Assembly in the Decade on Biodiversity (2011–2020; Resolution 65/161), there is no time to waste to redirect our pathway towards sustainable livelihoods in harmony with nature.

In this sense, the 2021 UN Climate Change Conference (COP26) was remarkable for a growing recognition of the role of the food system, forests, land use, and nature as both a source of and solution to climate change. Leaders from more than 100 countries - containing 85% of the world's forests - promised to halt and reverse forest loss and land degradation by 2030. Other highlights were the acknowledgement of the role of ecosystem-based approach and Article 6 of the Paris Agreement which finalised the Paris "rulebook".

With this spirit of taking strong and urgent actions to overcome environmental challenges, ambitious goals are expected to be agreed upon in the post-2020 Global Biodiversity Framework (GBF). Governments and relevant stakeholders are also further encouraged to use the outcomes of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services global assessments, and the Global Environmental Outlook, to analyse options for transformative change to conserve, protect and restore ecosystems.

1.2 A MULTI-INSTITUTIONAL WORK TO SUBSIDISE DISCUSSIONS

Renowned organisations have advocated halting ecosystem degradation and wiser use of natural assets in order to maintain human livelihoods and safeguard biodiversity. In the context of the relevant upcoming negotiations by the Conference of the Parties (COP) to the Convention on Biological Diversity (CBD) at its Fifteenth meeting, a multi-institutional group of experts, led by the International Institute of Sustainability (IIS), have evaluated, through a scientific modelling approach, different levels of global efforts to achieve better results for biodiversity and ecosystem services. This novel modelling work is oriented by the goals and action targets of the **first draft of the post-2020 GBF** (CBD/WG2020/3/3). An integrated modelling exercise seeks to achieve the optimisation of the allocation of restoration, conservation, and conversion actions, in order to increase outcomes for nature and people, accounting for 2050 projections on agriculture and urban expansion, population growth, and climate change.

The present document was received by the Secretariat to support the discussion to achieve better results for biodiversity and ecosystem services at the Fourth meeting of the Open-ended Working Group on the post-2020 GBF. It summarises the conclusions and recommendations of this multi-institutional work, building upon recent scientific literature that is also cited in the text. The terms used in this document refer to the glossary of the first draft of post-2020 GBF (CBD/WG2020/3/3/Add.2).

2. REDUCING THREATS TO BIODIVERSITY

2.1 NATURAL ECOSYSTEMS: A HEALTH ISSUE

Ecosystems' health: **Goal A** highlights ecosystems' health, focusing on the increase of at least three metrics related to it: area, connectivity, and integrity of natural ecosystems (**Milestone A.1**). These metrics aim to guarantee the quality of internal ecological processes that underpin life within all types of ecosystems. Although ecosystems are just one facet of the definition of biodiversity, they can serve as surrogates for species distribution, communities, physicochemical conditions, and ecological processes that sustain biodiversity and ecosystem services. Actions combined under the targets (in particular **Targets 1-3**) should reflect positive outcomes to this goal. That is, healthy ecosystems must be preserved for climate and biodiversity ambitions to be achieved (**Target 3**; Watson et al. 2020). Less healthy ecosystems, but with high potential to serve as habitat and provide benefits, need to be restored (**Target 2**). Conserving remaining healthy natural ecosystems and ecologically restoring landscapes are central actions to safeguard biodiversity and limit species extinctions (Di Marco et al. 2019).

Current condition: Scientists have been working to evaluate ecosystems' conditions for a number of years. A recent study, which used terrestrial ecologically defined areas (ecoregions) as biodiversity surrogates, demonstrated that most of them are highly impacted and degraded through human activities (74%) and only 6% are on improving trajectories (Beyer et al. 2020). This study states that policymaking should look beyond habitat area and integrate multiple indicators of health and resilience in order to achieve effective outcomes related to ecosystems' conservation. This recommendation is already captured within **Goal A and Milestone A.1**, which aim to enhance ecosystems' health allowing countries to decide how to address specific aspects related to it. This idea can not be missed in the GBF discussions, as it allows the necessary flexibility to achieve better outcomes when determining national and sub-national actions.

Projected pressures: Historically, land-use change has played a main role in degrading ecosystems through the reduction in their area, integrity, and/or connectivity. However, under a projected scenario for 2050 with high levels of population and consumption growth, the Shared Socioeconomic Pathway 3 (SSP3), human pressures related to high population densities - e.g. pollution, overexploitation, and others - will have an even greater impact than land-use change *per se* (IIS et al. in prep.). Hence, prioritising systems that minimise competition with food production while increasing connectivity, accompanied by restoration of degraded natural areas and rehabilitation of degraded productive lands within highly populated landscapes can offer key contributions towards achieving the **Goals A and B**. Restoration actions cited in **Target 2** should ensure not only connectivity but also the integrity of ecosystems, which can be directly stated in this target and have indicators related to it. In addition, reducing other stressors to species and ecosystems is important to help them adapt to human-induced changes. Certainly, actions to achieve targets that directly address these prospective pressures, such as overexploitation, species invasion, and pollution **(Targets 4-7)**, should be implemented with and within the restoration and conservation efforts to mitigate the impacts of human pressures.

2.2 SIGNIFICANT EFFORT TO HALT SPECIES EXTINCTION RISK

Potential outcomes of a global restoration effort: Even though megadiverse tropical countries have knowledge gaps related to the number of existing species and their habitat range, which makes it hard to estimate their current status, restoring species' habitat is an important path that needs to be included in the policy-making process (**Target 2**). Strassburg et al. (2020) work showed that it is possible to substantially decrease the extinction risk of vertebrate species (**Goal A, Milestone A.2**), with relatively low implementation and opportunity costs, by net increasing the number of natural ecosystems in priority areas. This global study highlights that the net global increase of 430 million hectares of natural areas (equivalent to both an increase of 3.5% of current remaining natural areas and the restoration of 15% of current agricultural areas) in optimal locations can avoid up to 60% of expected extinctions of mammals, birds, and amphibians. At the same time, this action should sequester almost 300 gigatonnes of CO_2, i.e., 30% of the total CO_2 increase in the atmosphere (equivalent to 14% of emissions) since the Industrial Revolution (about AD 1750).

A strong interlinkage with climate change: Climate change is already amplifying the impacts of habitat loss and fragmentation (Segan et al. 2016, Northrup et al. 2019). Recent research demonstrates that it is likely to exert substantial pressure on biodiversity even under the highest levels of international ambition toward mitigation (Newbold et al. 2018, Loyola 2022, IIS et al. in prep.), directly threatening the achievement of **Milestone A.2**.

When considering the land cover and climate projections of the SSP3 RCP 7.0 scenario for 2050, species' extinction risk could increase between 35 and 150% (IIS et al. in prep.). This pattern is consistent across taxa, including plants, vertebrates, and insects, as well as biodiversity indicators, such as species' geographic range, local species richness, and population size (Warren et al. 2018, Newbold et al. 2018). Considering the growing recognition of the fundamental role of climate change mitigation and adaptation in achieving multiple biodiversity goals (Pörtner et al. 2021), this message should be incorporated in the implementation of other targets besides **Target 8.** For instance, it is necessary to pursue paths that result in gains for both biodiversity and carbon sequestration through ecological restoration (**Target 2**) and conservation actions (**Target 3**) in priority ecosystems. In fact, the potential of ecosystem-based approaches to mitigate climate change and conserve biodiversity is reinforced by multiple studies (IPBES 2019, Keith et al. 2021, Seddon et al. 2021). Although trade-offs exist, allocating restoration of 15% of the anthropic areas focusing simultaneously on reducing species extinction risk and carbon sequestration would deliver approximately 90% of the maximum potential gains for both these goals (Strassburg et al. 2020). Additionally, reducing other stressors to species and ecosystems (**Targets 4-7**) is necessary to help them adapt to a changing climate and achieve **Goal A**. Last, species range shifts to track suitable climate is another potential species adaptive response (Hannah et al. 2020) that needs to be considered under the landscape connectivity (Sales et al. 2020) cited in **Targets 2 and 3** as means to reduce risks of extinction (**Milestone A.2**).

3. TOWARDS MORE HOLISTIC SPATIAL PLANNING

Integrated planning across multiple objectives: Land-use decisions driven by a focus only on biodiversity or ecosystem services can generate considerable trade-offs between **Goals A and B** (Girardello et al. 2019, Chaplin-Kramer et al. under review.). **Target 1** translated the need for integrated spatial planning to create synergies between multiple objectives such as biodiversity and ecosystem services, using the information obtained across spatial and temporal scales - from local to global and from past and now to future - to induce cooperation and efficiencies towards better outcomes for people and nature (Chaplin-Kramer et al. 2021). To achieve these objectives, a diverse set of management actions must be considered in the planning process. Conserving remaining natural ecosystems (**Target 3**), through both protection and sustainable management, is still the most important action to safeguard biodiversity. In addition, large-scale restoration (**Target 2**) is seen as critical to limit impacts and regain ecological processes that sustain life on Earth. Moreover, it is important to better understand the relationships between nature conservation and economic development. The productivity and security of many human enterprises rely on material and regulating contributions of nature and, if its role is not adequately represented in our economic forecasts, we will continue to make decisions that erode the long-term viability of these activities. Therefore, a holistic approach is critical to address all the interconnected aspects when implementing **Target 1**.

Inclusive spatial planning: The inclusion of indigenous peoples' and local communities' knowledge, innovations, practices, institutions, and values in the spatial planning process is a key factor to thrive in the achievement of the goals (**Targets 20-21**). These specific stakeholders traditionally own, manage, use, or occupy around a quarter of the global land area (IPBES 2019). Thus, any spatial planning must recognize their contributions in a participatory way, seeking holistic spatial planning and increasing the sense of legitimacy and chance of implementation of the plan (Posner et al. 2016, IPBES 2019). The spatial planning should address the challenge of inclusively setting priorities for different management actions simultaneously, considering their interaction and emergent properties, and the resulting socio-ecological impacts that feed into our economy and well-being (**Target 1**).

Acknowledging threats, vulnerability, and equity: As the relative importance of the major threats to biodiversity is expected to change within the time frame determined for the goals, inclusive and integrated planning should anticipate exposure and deal with socio-ecological vulnerabilities (**Target 1**). The general idea is to plan actions now toward a future scenario where human-driven impacts on nature are reduced with healthy and functioning ecosystems (Resende et al. 2019). For instance, well-planned actions for conservation and restoration can substantially enhance ecosystem health while diminishing ecoregions' vulnerability in 2050 (IIS et al. in prep.). These inputs need to be combined with socio-economic metrics of human vulnerability to assess who will benefit and bear the costs of different management decisions, and to address concerns over equity to ensure that future development is not only sustainable but equal.

4. SUSTAINABLE FOOD PRODUCTION AND TRADE

Challenges in the food production system: Over-exploitation of natural resources, biodiversity loss, and climate change impacts are listed among the major threats that food and agriculture systems face when moving towards a sustainable future (FAO 2021). For instance, studies based on the SSP3 scenario project an extensive conversion of natural areas into agricultural lands in Sub-Saharan Africa (Doelman et al. 2018, IIS et al. in prep.). However, many lands located in this region are within the top 10% of global terrestrial priority areas for conservation (Hannah et al. 2020, Jung et al. 2021, IIS et al. in prep.). Hence, besides behavioural and cultural changes (e.g., dietary changes, reduction of food loss and waste; Leclère et al. 2020, Stratton et al. 2021), one of the biggest challenges for society is building a food system that can sustain a rapidly growing human population, in an equitable way, while being able to set aside lands for conservation and restoration of natural vegetation (Fastré et al. 2021; IIS et al. in prep.). Besides behavioural and cultural changes (*e.g.*, dietary changes, reduction of food loss and waste; Leclère et al. 2020, Stratton et al. 2021), two other fronts – directly related to conservation and restoration global planning (**Targets 1-3**) – could help reverse this path ensure multiple benefits to people (**Target 9**):

a. Sustainable agriculture production intensification: To provide a global net increase in natural areas (**Goal A**) and still meet the increasing demand for food, the sustainable intensification of agricultural production should be promoted over area expansion (**Target 10**). For instance, it would be necessary to close at least 70% of yield gaps of crops and pastures to spare enough land to net increase the current amount of natural areas by 7% (around 750 Mha), while also assuring the projected agricultural production of the SSP3 2050 scenario (IIS et al. in prep.). In this context, the Glasgow Leaders' declaration highlights the implementation and redesign of agricultural policies and programmes to incentivise sustainable agriculture, promote food security, and benefit the environment simultaneously. However, agricultural intensification is not trivial and may have negative externalities related to some important ecosystem services (**Goal B**), such as water quality regulation and pollination, especially due to the increase of fertilisers, chemical inputs, and decrease of natural habitats within agricultural lands (Chaplin-Kramer et al. 2019). It will require investments (**Target 19**) and innovative policies (**Target 14**) that minimise trade-offs among other Sustainable Development Goals (Leclère et al. 2020, Garnett et al. 2013). Hence, it is also important to account for ecosystem services metrics (**Goal B**), such as pollination, coastal protection, nutrient retention (**Target 9**), and climate change mitigation (**Target 8**), in integrated spatial planning (Resende et al. 2019, IIS et al. in prep.).

b. International food trade with safeguards: In the SSP3 projected scenario, countries have a focus on achieving food provision within their own region, with a small share of agricultural goods expected to be internationally traded (Popp et al. 2017). Preliminary results demonstrate that even with high levels of yield growth until 2050, some countries, especially in Africa, would still need to convert natural areas to meet the SSP3 agricultural demands, while in other countries, current agricultural lands could be restored (IIS et al. in prep.). Hence, international trade also has an important role to help bend the curve of biodiversity (Leclère et al. 2020). Accordingly, the Glasgow Leaders' declaration indicates that facilitating trade and development policies, internationally and domestically, may promote sustainable commodity production and consumption and avoid drivers of deforestation and land degradation. Future trade agreements should consider multiple biodiversity goals and key human needs (IIS 2022), incorporating new language regarding trade and responsible management of supply chains, such as European Union legislation on Deforestation Free Supply Chains, the proposed directive on Corporate Sustainability Due Diligence, and the United Kingdom Environment Act 2021. The documents recognize the importance of responsible business conduct and corporate social responsibility practices based on internationally agreed guidance. They could help reconcile food production, conservation, and restoration of natural areas. Incorporating these environmental sustainability standards in global trade is crucial to align the biodiversity outcomes to **Target 14 and 15**.

5. CLOSING REMARKS

Operationalisation across scales: Multinational agreements have the role to protect globally important species and ecosystems. However, different biodiversity patterns and processes, which sustain life and livelihoods, are operating at national and sub-national scales (Chaplin-Kramer et al. 2021). Therefore, cooperation between decision-makers and other stakeholders across these scales is mandatory to ensure the achievement of the global targets.

Integrated agenda: There are many impacts of climate change on ecosystems and biodiversity and high awareness of possible tipping points that will affect human well-being. In the latest United Nations Climate Change Conference (COP26), the Glasgow Climate Pact was clear on this linkage and on the urgency of addressing these issues in a more synergetic way. The post-2020 GBF already echoes this message, but the document can be more specific in recognizing the major role that addressing climate change possesses in meeting biodiversity goals. The contribution of conservation and restoration activities (**Target 2-3**) in the mitigation and adaptation through ecosystem-based approaches brings hope to tackle the challenge in a synergetic way (**Target 8**).

Cooperative and well-planned actions: The achievement of ambitious goals related to complex natural processes and human livelihoods requires coordination among all actors involved in the negotiation and implementation of the post-2020 GBF (**Targets 14-16**). It is essential that they are fully engaged in the planning process and are committed to putting it into practice. This can only be done through strong communication, cooperation, and well-planned actions toward a sustainable future.

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