



Convention on Biological Diversity

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Matters related to the work programme of the
Intergovernmental Science-Policy Platform
on Biodiversity and Ecosystem Services**

Review of findings from the summary for policymakers of the thematic assessment of the interlinkages among biodiversity, water, food and health and their implications for the work undertaken under the Convention

Note by the Secretariat

I. Background

1. In decision [14/36](#), the Conference of the Parties to the Convention on Biological Diversity invited the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services to assess issues at the nexus of biodiversity, food and water, agriculture and health, nutrition and food security, forestry and fisheries, considering trade-offs among those areas and related policy options regarding sustainable production and consumption, pollution and urbanization, including implications for energy and climate, taking into account the role of biodiversity and ecosystem services in addressing the Sustainable Development Goals, with a view to enabling decisions that support the coherent policy and transformational change necessary to achieve the 2050 vision for biodiversity.
2. In decision [15/19](#), the Conference of the Parties welcomed the approval by the Plenary of the Platform, at its eighth session, to undertake thematic assessments on the interlinkages among biodiversity, water, food and health (“nexus assessment”) as outlined in its scoping report, as well as the important scientific contribution of those assessments to the implementation of the Kunming-Montreal Global Biodiversity Framework.
3. In decision [16/11](#), the Conference of the Parties took note of the information contained in the overview of previous and future assessments of the Platform, including the nexus assessment, to be considered by the Plenary of the Platform at its eleventh session.
4. In the same decision, the Conference of the Parties requested the Subsidiary Body on Scientific, Technical and Technological Advice to consider the outputs of the Platform according to the schedule contained in the annex to the decision. In the schedule, the nexus assessment was tabled

* CBD/SBSTTA/27/1.

for consideration at a meeting of the Subsidiary Body held before the seventeenth meeting of the Conference of the Parties.

5. At its eleventh session, in its decision IPBES 11/1, the Plenary of the Platform approved the summary for policymakers of the nexus assessment¹ and accepted the chapters of the assessment, including their executive summaries.

II. Objective and scope of the assessment

6. The environmental, social and economic crises that the world faces are all interconnected. Biodiversity, water availability and quality, food supply, human health and climate change are all interlinked. For example, in 2005, 75 per cent of the global population depended on forests for freshwater, and the availability of that primary resource was directly threatened by the loss of forest cover and ecosystems. On the other hand, some food production systems negatively affect biodiversity and ecosystem services, while global malnutrition and inequalities in food security persist (42 per cent of the world's population was unable to afford healthy diets in 2021).²

7. The authors of the summary for policymakers looked specifically at complex sustainability challenges between five “nexus elements”, namely, biodiversity, food, water, health and climate change. Action on any specific nexus element without considering the others should be avoided, as it may have a negative impact on the other elements, resulting in partial and short-term solutions. For example, reducing adult mortality caused by unhealthy diets (11 million deaths in 2017) could be achieved by more productive but unsustainable food systems that have a negative impact on biodiversity and water and air quality. The authors of the summary recall that 50 per cent of events of emergence or re-emergence of infectious disease are driven by changes in land use, agricultural practices and activities that encroach on natural habitats and lead to increased contact between wildlife, domestic animals and human.

8. Climate change has important and increasing interactions with all the other nexus elements, resulting in the amplification of direct and indirect drivers of biodiversity decline and the intensification of the interactions between that decline and the other elements. Responses to such changes may also have an impact on the nexus elements. For example, there are important and increasing, yet often overlooked, interactions between climate change impacts and mitigation and adaptation actions on the one hand and the other nexus elements on the other hand.

9. Attaining the Sustainable Development Goals and the targets of the Framework, taking the considerations for the implementation of the Framework (sect. C of the Framework) into account, requires a holistic approach, consistent with a nexus approach, as opposed to a siloed approach. The interlinkages and interdependencies among sectors and systems must be understood and addressed in a holistic manner to develop integrated and adaptive decisions that will maximize synergies and minimize trade-offs.

10. The summary for policymakers contains an analysis of the past trends for direct and indirect drivers of change for each nexus element. An analysis of 186 individual scenarios that consider multiple nexus elements, from 52 studies, reveals six nexus scenario groups or archetypes, with characteristic positive and negative outcomes for biodiversity, water, food, health and climate change. The archetypes represent various, plausible outcomes for the nexus elements and their interlinkages, namely, nature-oriented nexus, balanced nexus, conservation first, climate first, food first and nature overexploitation. The summary also contains a non-exhaustive list of more than 70 evidence-based response options that can be applied in various contexts and implemented in

¹ See www.ipbes.net/nexus-assessment.

² The authors of the summary for policymakers refer to the *Sustainable Healthy Diets Guiding Principles* of the Food and Agriculture Organization of the United Nations and the World Health Organization, in which it is stated that sustainable healthy diets promote all dimensions of individuals' health and well-being; have low environmental pressure and impact; are accessible, affordable, safe and equitable; and are culturally acceptable.

accordance with national legislation and sovereignty and international obligations. The options are grouped into the following 10 broad categories of actions, according to their primary goals:

- (a) Conserve ecosystems;
- (b) Restore ecosystems;
- (c) Manage ecosystems;
- (d) Consume sustainably;
- (e) Reduce pollution;
- (f) Integrate planning and governance;
- (g) Manage risk;
- (h) Ensure rights and equity;
- (i) Align financing;
- (j) Others.

11. The authors analyse the effect of each response option on each nexus element and the feasibility of its implementation. The governance, economic and financial implications of implementing nexus response options are discussed and compared with the costs and likely outcomes of continued “business as usual” approaches. Last, the authors provide insights on how to implement the response options to address effectively the direct and indirect drivers of change of the nexus elements.

III. Summary of the background and key messages of the assessment

12. The Secretariat of the Convention has provided in the present section a summary of the main issues covered in the assessment, for ease of reference. For a more comprehensive overview, readers are encouraged to refer to the summary for policymakers of the assessment.

13. In nexus approaches, it is recognized that challenges under one element are interconnected with challenges under other elements across multiple spatial and temporal scales. By improving the understanding of the interconnections and identifying opportunities for collaboration across sectors and scales, the findings of the nexus assessment can contribute to synergistic and holistic management and governance.

14. The authors of the summary for policymakers emphasize the need to implement multiple synergistic response options, through more integrative, inclusive, equitable, accountable, coordinated and adaptive approaches, and the fact that those options should be adapted to national and subnational circumstances.

15. The authors also call for a transformation in governance and in economic and financial systems. Their analysis tends to show that current systems are not adapted to addressing direct and indirect drivers of change in the nexus elements.

16. With regard to past and current nexus interactions, all indirect drivers studied, except for institutional environmental regulations, have increased or accelerated the impact of direct drivers on nexus elements. Almost all nexus elements follow negative trends because of those drivers, with cascading effects on all nexus elements. Two nexus elements have shown positive trends in the past few years: food quantity has increased, improving human health through greater caloric intake, and advances in health care have also contributed to improvements in human health. The effects of changes in nexus elements are unequally distributed. People in developing countries and lands inhabited by indigenous peoples are more commonly affected by the degradation of nexus elements. Siloed governance and misaligned economic and societal value systems that prioritize short-term

thinking and private financial returns cause negative trends in the nexus elements and exacerbate trade-offs among them

17. With regard to future nexus interactions, all the analysed scenarios aimed at maximizing outcomes in single nexus elements (e.g. “food first”, “climate first” and “conservation first”) have negative impacts across the other elements. Scenarios with benefits that are balanced across the nexus elements achieve multiple global policy goals, whereas scenarios with trade-offs achieve fewer goals. In particular, conserving biodiversity in combination with actions benefiting other nexus elements supports the achievement of sustainability policy goals and reduces many future financial and systemic risks.

18. With regard to response options that address nexus interactions, most impacts of the analysed options are positive across multiple nexus elements, to a greater or lesser extent, often depending on how options are planned and implemented and on enabling factors. A small number of options had no or even negative impacts on other elements. The cost of response options varies greatly. Though additional economic and financial resources are required to assure synergies across nexus elements, their impact and uptake could be amplified by wider reforms to align financial and environmental interests. Last, the implementation of options, together or in sequence, can enhance nexus-wide benefits, as some options can facilitate others or amplify their impacts.

19. With regard to governing the nexus for achieving just and sustainable futures, response options are likely to be most effective when implemented through improved governance approaches across all nexus elements and by focusing on policies, institutions and actions that promote integration, inclusion, equity and accountability, as well as on coordinated and adaptive approaches. Their effectiveness is also improved when they are co-designed by a variety of actors and institutions using processes and approaches that acknowledge and address trade-offs and facilitate and strengthen enabling conditions and synergies. While some actors and institutions across the globe, including indigenous peoples and local communities, already possess capacities for nexus governance approaches, strengthening specific capacities for many others can improve outcomes.

20. The summary for policy markers includes the 12 key messages reproduced below.

Past and current nexus interactions

- Key message A1: “Biodiversity is essential to our very existence, supporting our water and food supplies, our health and the stability of the climate. Biodiversity is declining in all regions of the world and at all spatial scales, impacting ecosystem functioning, water availability and quality, food security and nutrition, human, plant and animal health and resilience to the impacts of climate change. Biodiversity loss and climate change are interdependent and produce compounding impacts and impacts that threaten human health and well-being.”
- Key message A2: “In the past 50 years, global trends in a wide range of indirect drivers have intensified direct drivers of biodiversity loss and caused negative outcomes for biodiversity, water availability and quality, food security and nutrition, and health, and contributed to climate change.”
- Key message A3: “Societal, economic and policy decisions that prioritize short-term benefits and financial returns for a small number of people while ignoring negative impacts on biodiversity and other nexus elements lead to unequal outcomes for human well-being. Existing governance approaches have often failed to account for and address these negative impacts in degrading nature, with the negative impacts disproportionately affecting the well-being of some as compared with others.”

Future nexus interactions

- Key message B1: “Continuation of current trends in direct and indirect drivers will result in substantial negative outcomes for biodiversity, water availability and quality, food

security and human health, while exacerbating climate change. Scenarios that prioritize objectives for a single element of the nexus without regard to other elements (i.e., solely for biodiversity, water, food, human health or climate change) will result in trade-offs across the nexus.”

- Key message B2: “Nexus-wide benefits with positive outcomes for people and nature are feasible in the future, but achieving the highest levels of positive outcomes across all nexus elements is challenging. Scenarios that achieve balanced benefits across the nexus elements tend to include response options that effectively conserve, restore and sustainably use and manage ecosystems, reduce pollution across terrestrial, freshwater and marine realms and support adoption of sustainable healthy diets and climate change mitigation and adaptation.”
- Key message B3: “Scenarios focused on synergies among biodiversity, water, food, human health and climate change have more beneficial outcomes for global policy goals, such as the Sustainable Development Goals. Siloed policy approaches and actions that prioritize a single nexus element limit the achievement of benefits across policy goals.”

Response options that address nexus interactions

- Key message C1: “Numerous highly synergistic response options are already available to actors in multiple sectors for sustainably managing biodiversity, water, food, health and climate change. Response options not typically focused on biodiversity can often have greater benefits for biodiversity than those specifically designed as such. Response options, when implemented at appropriate scales and contexts, provide many benefits to different degrees across the nexus elements, and many are low cost.”
- Key message C2: “Response options can facilitate or impede each other, leading to potential synergies and trade-offs among them. The efficacy of response options in realizing nexus-wide benefits can be enhanced by implementing them together or sequentially, as some response options enable others or amplify their benefits.”
- Key message C3: “Response options can strongly advance global policy efforts, including the Sustainable Development Goals, the Kunming-Montreal Global Biodiversity Framework and the Paris Agreement, to achieve just and sustainable futures. Response options designed to benefit multiple nexus elements support multiple goals and targets across global policy frameworks, strengthening synergies and alignment among them.”

Governing the nexus for achieving just and sustainable futures

- Key message D1: “Transforming current siloed modes of governance through more integrative, inclusive, equitable, accountable, coordinated and adaptive approaches enables successful implementation of response options to manage the nexus elements, and their associated direct and indirect drivers, in an integrated manner, with benefits for people and nature now and into the future.”
- Key message D2: “Gaps in finance to meet biodiversity needs amount to \$0.3 trillion to \$1 trillion per year, and additional investment needs to meet the Sustainable Development Goals most directly related to water, food, health and climate change come to at least \$4 trillion per year. Urgent action to transform values and structures and address the dominance of a narrow set of interests within economic and financial systems can enable increased investments for biodiversity and the other nexus elements.”
- Key message D3: “Nexus governance approaches, decision-making and capacity-strengthening can be enhanced through a series of deliberative steps and actions, informed by diverse evidence. A road map for nexus action can be used by a wide range of actors in multiple sectors to identify problems and shared values in order to work collaboratively towards solutions to help achieve just and sustainable futures aligned with global policy

frameworks. Tools and methods facilitating a holistic understanding of nexus elements can increase knowledge and improve cooperation and decision-making.”

IV. Implications of the nexus assessment for the work undertaken under the Convention

21. The summary for policymakers contains an analysis of the contribution of several response options to the Framework. The authors concluded that response option for addressing multiple nexus elements was possible and they identified potential response options for minimizing trade-offs and maximizing a synergistic implementation across the different nexus elements. The assessment is relevant to the achievement of the objectives of the Convention and the goals and targets of the Framework. The assessment also supports an integrated, sequential, locally and timely adapted use of response options to implement the Framework. It includes specific examples of how the implementation of Targets 1, 2, 10 and 16 will create opportunities for more system-wide changes in governance, values and behaviours, thus facilitating and increasing the effectiveness of some other response options.

22. Parties recognized in the Framework that humanity depends on biodiversity for food, medicine, energy, clean air and water. The Framework sets out a plan for transforming the relationship that societies have with biodiversity by 2030, in line with the 2030 Agenda for Sustainable Development. Pursuing the goals and targets of the Framework and the Sustainable Development Goals will require progress across all nexus elements. A nexus approach is directly linked with the vision of the Framework.

23. All Framework targets relate to multiple nexus elements, making it difficult to draw a complete list of linkages between the Framework and the various nexus elements. A few non-exhaustive examples are listed below:

(a) Targets 1, 2, 3 and 11 include elements related to the preservation of ecosystem functions, such as carbon sequestration, water purification, pollination and soil retention;

(b) Targets 5 and 9, on the use and benefits of wild species, contain elements related to food security and human health;

(c) Target 8 is aimed at reducing the negative impacts of climate change and ocean acidification and increasing resilience;

(d) Target 10 is aimed at enhancing biodiversity and sustainable agriculture, aquaculture, fisheries and forestry.

24. While many Framework targets are not directly related to biodiversity conservation, sustainable use or restoration, several are directly linked with other nexus elements. In addition, in section C of the Framework, on considerations for its implementation, it is stated that the Framework is based on a whole-of-government and a whole-of-society approach. Developing national biodiversity strategies and actions plans through such an approach relies on a coordinated implementation of the Framework within the national policy landscape. The authors of the summary for policy makers provide an analysis of various response options for addressing different nexus elements, including options that address the Framework targets.

25. Other than decision 15/4, a number of recent decisions of the Conference of the Parties are related to biodiversity and specific nexus elements, including decision 16/13 on the mainstreaming of biodiversity within and across sectors, decision 16/19 on biodiversity and health and decision 16/22 on biodiversity and climate change. In addition, the interactions among biodiversity, food, water, health and climate change are referred to in a number of other decisions. For example, in decision 16/15 on sustainable wildlife management, the Conference of the Parties encouraged Parties to promote further research to better understand the links between the use of wild species and zoonotic diseases.

26. The nexus assessment can be used to:

- (a) Build awareness of the interlinkages between the various nexus elements;
- (b) Understand research and data needs for analysing the nexus elements and identifying policy and financing options for promoting synergies across the elements;
- (c) Engage with a wide range of government ministries and other stakeholders, including subnational actors, indigenous peoples and local communities, women, youth and the private sector.

V. Recommendations

27. Recommendations related to the nexus assessment are contained in document CBD/SBSTTA/27/3.
