Proposing the IUCN Global Standard for NbS as the main operational framework to implement UNEA Resolutions 5/5 on NbS for supporting Sustainable Development

IUCN Information Paper

Emmanuelle Cohen-Shacham, Angela Andrade, Charles Karangwa, Stewart Maginnis[1]

The purpose of this information paper is to 1) present the **links and complementarity between** the **IUCN Global Standard on NbS and the UNEA Resolution 5/5 on NbS for supporting sustainable development**, explaining how the IUCN Global Standard for NbS is recognized as the best available operational framework to implement the UNEA Resolution; 2) Describe the **work** that **IUCN** has done on **defining** and **implementing NbS** in addressing today's most critical environmental and social challenges.

1- Introduction

1.1 GLOBAL CONTEXT

There is an urgent need to recognize **the interdependence** of the current multiple environmental and socioeconomic **crises** that humanity is facing, as well as **the risk** of losing nature's integrity, and affecting local communities' livelihoods, human rights, and the global and national economies. The climate, biodiversity and other major global societal challenges, as they are articulated in the Sustainable Development Goals (SDGs), are to be addressed in an integrated manner, while acknowledging the central role that nature plays in addressing these interlinked crises.

Biodiversity is fundamental to human well-being, a healthy planet, and economic prosperity (CBD, 2020b). Despite its critical role both for the 2030 Agenda for Sustainable Development and the United Nations Framework Convention on Climate Change (UNFCCC)'s Paris Agreement (CBD, 2020a) and being explicitly highlighted or underpinning multiple SDGs (CBD, 2020a), it is deteriorating worldwide at rates

[1] The authors acknowledge the valuable comments from members of the International Standard Committee (ISC) for the IUCN Global Standard of Nature-based Solutions.

unprecedented in human history (CBD, 2020b). In parallel, despite record temperatures, alarming emissions and intensifying climate risks and impacts, and despite the key role they play in reducing exposure and vulnerability to climate change, mitigation and adaptation efforts are decreasing worldwide, leading to growing climate-related losses and damages (UNEP, 2023a and 2023b). Nature-based Solutions (NbS) includes a broad range of approaches with safeguards, such as those contributing to adaptation and mitigation (IPCC, 2022).

There is **huge interest in NbS** worldwide, indicated through a growing number of **investments**, and the **inclusion of NbS in international and national policy** agreements, emphasizing their importance to address societal challenges.

Recent scientific studies highlight **significant sustainability challenges** associated with the large-scale implementation of land-based carbon dioxide removal, through the use of biomass, considering various social, ecological, and economic dimensions. These challenges encompass preserving biodiversity, avoiding air and water pollution, ensuring food security, and upholding human rights (Dankwa et al., 2024; Deprez et al., 2024).

Significant perils exist for the welfare of local communities and Indigenous Peoples, as well as for the global and national economies, when governmental allocations directed towards NbS projects inadvertently support endeavors lacking robust adherence to rigorous planning and implementation standards, such as those outlined in the Global Standard for NbS. Failure to invest in authentic NbS initiatives could precipitate adverse impacts on the environment, community well-being, and ultimately **jeopardize national economic stability**. In addition, a transition **from top-down to bottom-up** methodologies is imperative, acknowledging and addressing the specific requirements of local communities and contextual nuances.

In the last decade, NbS have gained momentum in research, policy, and practice, as an approach that can help address the major **societal challenges**, while **delivering benefits to biodiversity and human well-being at scale**. The NbS concept is founded on the Ecosystem Approach, its 12 principles adopted at CBD COP5 2004 in Kenya, and the work done on ecosystem-based approaches since 2009 (*e.g.* ecosystem-based approaches to climate change adaptation, EbA and disaster risk reduction, Eco-DRR), but while these were developed to address the main **objectives of the CBD**, the NbS concept's main added value lays in its focus on **addressing the major global societal challenges**, as articulated in the **SDGs**. In the international policy arena, NbS has become recognized and visible (*e.g.* through the Ramsar Convention; UNFCCC; UNCCD - through COP28; CBD - in particular the Kunming-Montreal Global Biodiversity Framework's two targets on NbS). In contrast, NbS represent an opportunity to promote innovation and initiate bottom-up actions that are implemented to address multiple challenges that affect sustainability at the local and territorial level.

The **IUCN Global Standard for NbS** is the **main global operational framework** available and it was **adopted by 128 state and subnational members combined** at the 2021 IUCN World Conservation Congress in Marseille, France (IUCN, 2020a). The Global Standard for NbS aims at setting a common basis of understanding for NbS and providing a robust framework, to

design, assess and implement **effective NbS interventions at scale**, support the formulation **of required policies and enable informed investment/funding decisions in NbS**. It is currently in its implementation phase, and used for these purposes by managers, researchers, policy makers, planners, communities, and donors, at the local, regional, national and global levels, all around the globe. The Global Standard for NbS is **adaptable to the local, regional and national** social, ecological, contexts, and focuses on achieving the major environmental, social, and economic goals in an **integrated** manner, as they were articulated in the United Nations Environment Assembly (UNEA) 2022 Resolution 5/5 on *Nature-based Solutions for supporting sustainable development*. While implementing NbS, it is important to ensure established **safeguards** on important aspects such as human rights, are periodically reviewed in line with the three Rio Conventions - the UNFCCC, the Convention on Biological Diversity (CBD), and the United Nations Convention to Combat Desertification (UNCCD) – and aligned with their respective national processes (*e.g.* Nationally Determined Contributions, National Biodiversity Strategies and Action Plans) and multilateral agreements (*e.g.* Ramsar Convention).

The **Global Standard for NbS** is the most comprehensive and best global operational framework available at the moment, to implement the UNEA Resolution. It is the only one that was developed rigorously, involving international experts from all regions of the globe, in a bottom-up approach, while undergoing two open, public consultations resulting in nearly 800 comments from individuals with diverse sectoral backgrounds, from 100 countries. This Global Standard for NbS is a continuing process that is improved, based on the feedback provided by numerous initiatives implementing it on the ground.

1.2 OBJECTIVES

This document has two main objectives:

1) Present the **links and complementarity between** the **IUCN Global Standard on NbS and the UNEA Resolution 5/5 on NbS for supporting sustainable development**, explaining how the IUCN Global Standard for NbS is recognized as the best available operational framework to implement the UNEA Resolution; 2) Describe the **work** that **IUCN** has done on **defining** and **implementing NbS** in addressing today's most critical environmental and social challenge.

2- IUCN's work on Nature-based Solutions

2.1 FRAMING OF IUCN NBS DEFINITION

Given the growing environmental and societal pressures, and recognizing the role nature can play in addressing these, a clear definition and a comprehensive operational framework for Nature-based Solutions (NbS) was needed. In response to this demand, IUCN developed a definitional and conceptual framework for NbS to frame and clarify what NbS are about. The NbS concept **was founded on the Convention on Biological Diversity (CBD)**'s **Ecosystem Approach** (CBD, 2004) and was inspired by previous work undertaken on different **ecosystem-based approaches** (CBD, 2009 and 2018). While the Ecosystem Approach, as a strategy for integrated management of land, water and living resources, and ecosystem-based approaches, as concrete actions, were developed to primarily address the **main objectives of the CBD**, the NbS concept focuses on addressing the **major global societal challenges**, in line with the SDGs. At the time the NbS concept was framed, the international ambitions of the sustainable development and biodiversity conservation communities focused on the need to provide benefits for people and the broader environment, therefore the **need to address societal challenges took a central place in the NbS definition** (Cohen-Shacham, 2016, Mace, 2014).

Nature-based Solutions were defined as "***actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits***" (Resolution 069, at the 2016 World Conservation Congress (WCC, 2016). According to IUCN the major **societal challenges** that NbS can address, are *ensuring food security, water security, social and economic development, and human health*, as well as *climate change* (through mitigation and adaptation), *disaster risk, biodiversity loss and ecosystem integrity.* To differentiate NbS from a **conservation initiative**, an NbS intervention that addresses biodiversity loss and ecosystem degradation should also address an additional societal challenge. Finally, the IUCN NbS definition was complemented by a series of **eight NbS principles** that were adopted by the IUCN community (WCC, 2016), to help frame and understand more in detail what NbS are and aren't about [See Appendix 1 for list of NbS principles.

2.2 NBS CONCEPTUAL FRAMEWORK AND ITS LINK WITH SIMILAR CONCEPT

NbS are considered by IUCN as an **umbrella type concept** (Figure 1), inclusive for a whole range of ecosystem-based and ecosystem-related concepts that all are based on nature, addressing one or multiple societal challenges, and whose outcomes always benefit biodiversity and human well-being (Cohen-Shacham et al. 2016). These

concepts include for instance Ecosystem-based Adaptation, Ecosystem-based Mitigation, Forest Landscape Restoration, Ecosystem-based Disaster Risk Reduction, Ecological Restoration and Green Infrastructure.

The **IUCN definitional and conceptual frameworks for NbS** were complemented by a gap analysis and in-depth study on principles for ecosystem-based and ecosystem related concepts (Cohen-Shacham et al. 2019), which **served as the basis for the development of the operational framework**, namely **the Global Standard for NbS**.

Figure 1 - Nature-based Solutions is an umbrella concept that builds on Ecosystem Approaches (IUCN, 2020c)

2.3 GLOBAL STANDARD FOR NBS

The Global Standard for NbS was developed in a **two-years, rigorous process,** which included: a. literature review of relevant operational frameworks; b. multiple internal working sessions with experts from environmental, social and economic disciplines in different regions, to brainstorm the major aspects to consider while planning and implementing NbS interventions; c. two extensive public consultations processes to review the Global Standard's text, resulting in nearly 800 comments received from individuals in 100 countries and from various sectorial representations (governmental, intergovernmental, and non-governmental organizations, academy, private sector, as well as Indigenous Peoples organizations and faith organizations in the second public consultation); d. reviewing scientific literature drafting and revising the work, with the strong involvement of experts from multidisciplinary backgrounds.

In July 2020, the Global Standard for NbS was launched and included **three main products**: 1. The main **Global Standard** document, describing the Global Standard's eight criteria and 28 indicators (see 8 criteria in Appendix 2), which cover the most important aspects to take into consideration in the planning and implementation of NbS interventions (IUCN, 2020b); 2. the **Guidance** document for using the Global Standard (IUCN, 2020c); and 3. the **Self-Assessment Tool**. The Global Standard for NbS is **based on the best available science, Indigenous Peoples and Local Communities' knowledge**, as well as on experience from practitioners, and its **two major objectives** are to avoid potential misuse of the NbS concept by setting a **common basis of understanding** for what NbS are; and provide a **robust framework**, for people, communities, and organizations to **design, implement, assess, adapt, improve and upscale strong NbS interventions** (IUCN, 2020b).

2.4 ADAPTABILITY OF THE GLOBAL STANDARD FOR NBS

The Global Standard was written in a well-defined and concise way, to ensure that interventions meeting the criteria are in line with the most important aspects for effective NbS. Nevertheless, its criteria and indicators are also **broad** enough to be **adaptable** to and can be implemented in **different contexts**, and for various spatial and temporal **scales**. For instance, different stakeholders may be using the Global Standard for NbS to plan and implement an intervention, while addressing different types of societal challenges, in different regional contexts, and implementing them in various types of ecosystems (in line with the Global Ecosystem Typology, a hierarchical classification of the worlds ecosystems developed by IUCN, formally recommended for adoption into the international Family of Statistical Classifications by the United Nations Statistical Commission, 2023) (Keith et al. 2020, Keith et al. 2022)). In the urban context specifically, NbS are implemented differently than in other types of ecosystems, and can include the implementation of a whole range of activities (*e.g.* green walls, establishment of community gardens, ecological restoration of urban parks), often referred to as blue and green infrastructure interventions, at different scales within the urban area, while connecting it to the respective hinterland that provides complementary ecosystem services. All activities are to be assessed against the Self-Assessment Tool to ensure that the eight criteria are met. Additional clarifications on the Global Standard for NbS can be found in Appendix 3.

2.5 GOVERNANCE STRUCTURE OF GLOBAL STANDARD FOR NBS

In response to the adoption of Resolution 060 adopted by IUCN members, on the Promotion of the IUCN Global Standard for Nature-based Solutions (IUCN, 2020a), a governance structure, consistent with ISEAL's Codes of Good Practice, was established for the Global Standard for NbS. The International Standard Committee (ISC) is an independent and diverse body, appointed by the IUCN Director General, to act as the guardian of the NbS Standard, ensuring its integrity and development. The

ISC's role focuses on ensuring the general **oversight and safeguarding** of the Global Standard; advising on the **best scientific, traditional and Indigenous Peoples knowledge available**, as well as the most **recent policy developments**, to consider in the further development of the Global Standard; and, based on evidence for its necessity, periodically lead **review process** of the Global Standard for NbS, while receiving input from stakeholders through an open, transparent and inclusive process, compatible with ISEAL's Codes of Good Practice.

2.6 CURRENT IMPLEMENTATION AND USE OF THE GLOBAL STANDARD FOR NBS

Since its launch, and in line with the IUCN Council's endorsement that noted that its application is "an evolving process that will need to be monitored and revised accordingly" (IUCN, 2020a; IUCN, 2020d), the Global Standard for NbS has been in its **implementation phase**. **Planners, researchers, managers, policy makers, donors, investors and communities in most regions of the globe** have been using its Self-Assessment Tool **for different purposes**: to **plan new NbS-type interventions** in specific contexts, while ensuring that all important aspects related to NbS are considered; to **assess existing NbS interventions** that are in progress and improve the aspects that were identified as weaker; to **track** progress of interventions over time; to self-assess whether an intervention **has adhered to the Global Standard**'s 8 criteria. IUCN has been developing capacity building and has been providing support in understanding and implementing the Self-Assessment Tool in different contexts and regions, to increase the number of users with a good understanding of the tool. In addition, for the past two years, IUCN has been collecting users' feedback, and learning from successful NbS case studies, to be incorporated and improve future versions of the Global Standard, by the 2025 World Conservation Congress.

3- Links between IUCN's NbS definitional work and Global Standard, and the UNEA Resolution on NbS

3.1 UNEA RESOLUTION 5/5

The United Nations Environment Assembly (UNEA) adopted 14 resolutions to strengthen actions for nature to achieve the Sustainable Development Goals (UNEP, 2022), among them Resolution 5/5 on "*Nature based-solutions for supporting sustainable development*" in March 2022.

The following table presents the multiple links between the key elements that are mentioned in the UNEA Resolution 5/5, and the IUCN NbS definition, the list of principles and the Global Standard's criteria and indicators. Based on this comparative analysis, the **Global Standard for NbS clearly addresses all key aspects of the UNEA definition for NbS and is the best available operational framework to implement the UNEA Resolution 5/5**.

3.2 LINKING KEY ELEMENTS OF UNEA DEFINITION TO IUCN DEFINITION AND GLOBAL STANDARD FOR NBS

Key elements from UNEA Resolution 5/5 [Full text in Appendix 4]	Links with IUCN work on NbS		
	IUCN Resolution 069 on defining NbS		Global Standard for NbS Criteria / indicators
	NbS definition	8 NbS principles	
Actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems	"Actions to protect, sustainably manage, and restore natural or modified ecosystems"	*P1 on embracing nature conservation	*Ind. 3.1 on assessing the state of the ecosystems *Ind. 3.4 on identifying opportunities to enhance ecosystem integrity and connectivity
which address social, economic and environmental challenges	"that address societal challenges"	*P2 on complementary solutions to address societal challenges	*C1 on societal challenges *Ind. 1.1, Ind. 1.2, Ind. 1.3 on identifying, prioritizing, understanding and benchmark societal challenges
effectively and adaptively	"effectively and adaptively"		*C7 on adaptive management
while simultaneously providing human well-being, ecosystem services, resilience and biodiversity benefits	"simultaneously providing human well-being and biodiversity benefits"	*P5 on maintaining biological and cultural diversity	*Ind. 3.1 on assessing the state of the ecosystems *Ind. 3.2 on identifying and assessing biodiversity conservation outcomes
Scaling up of NbS		*P6 on landscape scale	*C2 on design at scale *Ind. 8.1 on scaling up, scaling out or replication of the NbS

NbS respect social and environmental safeguards in line with the three Rio Conventions […], including such safeguards for local communities and indigenous peoples		*P7 on recognizing and addressing the trade-offs between immediate economic benefits for development, and future production of ecosystems services	*C3 on NbS resulting in biodiversity net gain and ecosystem integrity *Ind. 3.4 on identifying opportunities to enhance ecosystem integrity and connectivity, and incorporating them into NbS strategy *Ind. 5.3 Stakeholders affected by the NbS are involved in all the process *Ind. 6.1 refers to the potential costs and benefits of associated trade-offs of the NbS intervention being explicitly acknowledged and inform safeguards and any appropriate corrective actions *Ind. 6.3 refers to the periodic review of the established safeguards to ensure that mutually-agreed trade-off limits are respected and do not destabilise the entire NbS *C5 on inclusive, transparent and empowering governance processes *Ind. 5.2 on participation based on mutual respect and equality, regardless of gender, age or social status, and upholds the right of Indigenous Peoples to Free, Prior and Informed Consent (FPIC) *Ind. 8.3 on the NbS' contribution to national and global targets for human well-being, climate change, biodiversity and human rights, including the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)
NbS can be implemented in accordance with local, national and regional circumstances		*P2 on site-specific natural and cultural contexts *P8 on policy integration	*C5 on inclusive, transparent and empowering governance processes *Ind. 5.3 Stakeholders affected by the NbS are involved in all the process *Ind. 5.5 when the scale of the NbS extends beyond jurisdictional boundaries, mechanisms are established to enable joint decision-making of the stakeholders in the affected jurisdictions *C8 on sustainable and mainstreamed NbS within an appropriate jurisdictional context

NbS can be managed adaptively			*C7 on adaptive management *Ind. 7.1, Ind. 7.2 and Ind. 7.3 refers to monitoring and evaluation and adaptive management
NbS are among actions that play an essential role in the overall global effort to achieve the SDGs, including by effectively and efficiently addressing major social, economic and environmental challenges such as biodiversity loss, climate change, land degradation, desertification, food security, disaster risks […] social development, sustainable economic development, human health and a broad range of ecosystem services.	"NbS are actions […] that address societal challenge, effectively and adaptively." In addition, according to Resolution 069, the major societal challenges that NbS addresses are climate change, natural disasters, social and economic development, human health, food security, water security, ecosystem degradation and biodiversity loss.	*P2 on complementary solutions to address societal challenges	*C1 on NbS effectively addressing societal challenges *Ind. 1.1, Ind. 1.2, Ind. 1.3 on identifying, prioritizing, understanding and benchmarking societal challenges
NbS can help to stimulate sustainable innovation and scientific research		*P2 on implementing NbS with other solutions to societal challenges	*Ind. 2.2 on integrating the design of NbS with other complementarity interventions, while seeking synergies across sectors
NbS may contribute significantly to climate action, while recognizing the need for analysis of their effects, including in the long term, and acknowledging that they do not replace the need for rapid, deep and sustained reductions in greenhouse gas emissions, but can improve action for adaptation and resilience to and mitigation…		*P7 on recognizing and addressing the trade-offs between immediate economic benefits for development, and future production of ecosystems services	*C6 on equitably balances trade-offs between achievement of its primary goal(s) and the continued provision of multiple benefits *Ind. 8.3 on the NbS' contribution to national and global targets for human well-being, climate change, biodiversity and human rights, including the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)

recognizes the potential of sustainable and environmentally sound bio-based products, innovation and technologies that result from nature-based solutions, when they contribute to sustainable consumption and production and are beneficial to nature and consistent with international commitments and relevant multilateral agreements on biodiversity, climate, environment and sustainable development, while cognizant of the potential associated risks, including for local communities and indigenous peoples			*Ind. 2.3 on designing NbS while incorporating **risk** identification and risk management beyond the intervention site *Ind. 4.1 on identifying and documenting the direct and indirect benefits and costs associated with NbS *Ind. 8.2 on NbS informs and enhances facilitating policy and regulation frameworks to support its uptake and mainstreaming *Ind. 8.3 on NbS contributing to national and global targets for human well-being, climate change, biodiversity and human rights, including the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)
NbS concept is cognizant of and in harmony with the concept of ecosystem-based approaches identified under the CBD and other management and conservation approaches carried out under existing national policy and legislative frameworks and established under relevant multilateral environmental agreements	The framing of the IUCN NbS definition was strongly founded on the CBD's Ecosystem Approach including its 12 principles from 2004 and ecosystem-based approaches used under the CBD since 2009.	*P8 on policy integration	*Ind. 8.2 on NbS informs and enhances facilitating policy and regulation frameworks to support its uptake and mainstreaming *Ind. 8.3 on NbS contributing to national and global targets for human well-being, climate change, biodiversity and human rights In addition, while the IUCN definitional and framework is founded on the CBD's Ecosystem Approach, it is different as aiming at addressing the major societal challenges, whether the Ecosystem Approach is focusing on addressing the CBD's objectives.
the implementation of NbS […], to convene intergovernmental consultations in a transparent, inclusive, regionally balanced manner, striving for gender balance			*C5 on NbS based on inclusive, transparent and empowering governance processes *Ind. 5.2 on Participation based on mutual respect and equality, regardless of gender, age or social status, and upholds the right of Indigenous Peoples to Free, Prior and Informed Consent (FPIC)

3.3 SUMMARY OF IUCN'S WORK TO DATE TOWARD SUCCESSFUL IMPLEMENTATION OF NBS

After spending years developing a solid basis for defining and framing NbS, with a clear definition and list of principles (IUCN, 2016, Cohen-Shacham et al. 2016 and 2019), IUCN has focused its efforts on putting together a **strong operational framework** for NbS. The Global Standard for NbS, with its eight criteria, 28 indicators and Self-Assessment Tool, aims at and has proven to **help the global community in planning, assessing, implementing, improving and upscaling good NbS interventions in various contexts**. Since its launch, researchers working in urban, coastal, forest, wetland, dryland and other ecosystems, as well as managers of large-scale projects on the ground, local communities and Indigenous Peoples have **chosen to adopt this operational framework** to help them reach their objectives of addressing today's most critical societal challenges in their own context, to support sustainable development. **Capacity building** and training focusing on the Global Standard for NbS has been undertaken in different regions and for diverse audiences, in research, policy and practice fora, through multiple online and in person engagements of IUCN. In addition, dozens of **NbS case studies** are being collected and analyzed, aiming at **learning from good NbS practices** experiences, in different regions, ecosystem types, and aiming at addressing different societal challenges, as well as **collecting feedback** that may lead to improving the Global Standard's criteria and indicators. Last, IUCN has had a **major influence** on **policy at national and international levels**, while positioning the NbS concept in multilateral agreements and conventions (e.g. CBD in particular the Kunming-Montreal Global Biodiversity Framework's two targets on NbS, UNFCCC, UNCCD, Ramsar, etc.).

3.4 FUTURE STEPS

To avoid any delay in the implementation of UNEA 5/5 Resolution, and in line with the need for standard and criteria as expressed by the technical note submitted by Cameroon and a group of countries to UNEA 6, it is important to use the **accepted and broadly implemented Global Standard for NbS**, and maintain the momentum established over the last years, while **focusing on further upscaling NbS implementation** to support sustainable development. To achieve this at the **national level**, there is a possibility to **adapt the Global Standard to the national circumstances**, while considering the local enabling conditions.

One additional important next step would be to **increase the ongoing capacity building** of the Global Standard for NbS in all regions, for the public and private sectors, and for local communities. As previously described, IUCN has developed a guideline and a Self-Assessment Tool for facilitating the implementation of the Global Standard for NbS, enabling people, communities and organizations to design, implement, assess, adapt, improve and upscale strong NbS interventions.

Last, there is a need to systematically learn from practical implementation experiences, **assess** existing case studies and continue to **collect feedback** on the Global Standard for NbS, from users in governmental

organizations, civil society, the private sector and communities. Based on this feedback, on case studies' analyses and on the best available science and knowledge, the Global Standard will be **periodically reviewed** according to ISEAL's Code for Good Practice, including an open and transparent consultation with stakeholders.

3.5 CONCLUSION

This document and the previous analysis on the links between the IUCN and UNEA definition and work on NbS showed that all most important aspects mentioned in the **UNEA Resolution 5/5 – in particular its operative paragraphs - are in line with the IUCN definition and Global Standard for NbS, building on, being cognizant of and in harmony with the CBD Ecosystem approach and its 12 principles and CBDs work on ecosystem-based approaches**. These multiple connections strengthen the fact that **the Global Standard for NbS – addressing all three pillars of sustainability - is the only available operational framework to implement UNEA Resolutions 5/5 on NbS for supporting Sustainable Development**, as referred to in its paragraphs 5a and 5b (UNEA, 2022).

List of References

Ampah JD, Jin C, Liu H, Afrane S, Adun H, Morrow D, Ho DT. 2024. Prioritizing Non-Carbon Dioxide Removal Mitigation Strategies Could Reduce the Negative Impacts Associated with Large-Scale Reliance on Negative Emissions. Environmental Science and Technology. DOI: 10.1021/acs.est.3c06866

CBD (Convention on Biological Diversity) 2004. The Ecosystem Approach, (CBD Guidelines) Montreal: Secretariat of the Convention on Biological Diversity. 50p.

CBD (Convention on Biological Diversity), 2009. Connecting Biodiversity and Climate Change Mitigation and Adaptation: Report of the Second Ad Hoc Technical Expert Group on Biodiversity and Climate Change. CBD Technical Series 41. Montreal, Canada.

CBD (Convention on Biological Diversity), 2018. Voluntary Guidelines for the Design and Effective Implementation of Ecosystem-based Approaches to Climate Change Adaptation and Disaster Risk Reduction. CBD/SBSTTA/22/INF/1.

CBD (Convention on Biological Diversity), 2020a. Global Biodiversity Outlook 5 – Summary for Policy Makers. Montréal.

CBD (Convention on Biological Diversity), 2020b. Decision adopted by the Conference of the Parties to the Convention on Biological Diversity. 15/4. Kunming-Montreal Global Biodiversity Framework. CBD/COP/DEC/15/4

Cohen-Shacham E, Walters G, Janzen C, Maginnis S. 2016. Nature-Based Solutions to Address Societal Challenges. Gland, Switzerland: International Union for Conservation of Nature. 10.2305/IUCN.CH.2016.13.en

Cohen-Shacham E, Andrade A, Dalton J, Dudley N, Jones M, Kumar C, Maginnis S, Maynard S, Nelson C, Renaud F, Welling R, Walters G. 2019. Core principles for successfully implementing and upscaling Nature-based Solutions. Environmental Science and Policy 98: 20–29. https://doi.org/10.1016/j.envsci.2019.04.014

Depre A, Leadley P, Dooley K, et al., 2024. Sustainability limits needed for CO2 removal. The true climate mitigation challenge is revealed by considering sustainability impacts. Science: 383 (6682). DOI: 10.1126/science.adj6171

IPCC, 2022. Summary for Policymakers [Pörtner H-O, Roberts DC, Poloczanska ES, et al. (eds.)]. *In*: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Pörtner H-O, Roberts DC, Tignor M, et al. (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 3–33, doi:10.1017/9781009325844.001.

IUCN (International Union for the Conservation of Nature), 2016. Resolution 069 on Defining Nature-based Solutions (WCC-2016-Res-069). IUCN Resolutions, Recommendations and Other Decisions 6-10 September 2016. World Conservation Congress Honolulu, Hawai'i, USA (2016). https://portals.iucn.org/library/sites/library/files/resrecfiles/WCC_2016_RES_069_EN.pdf

IUCN (International Union for the Conservation of Nature), 2020a. Resolution 060 on the Promotion of the IUCN Global Standard for Nature-based Solutions (WCC-2020-Res-060). World Conservation Congress Marseille, France (2021).https://portals.iucn.org/library/sites/library/files/resrecfiles/WCC_2020_RES_060_EN.pdf

IUCN (International Union for the Conservation of Nature), 2020b. Global Standard for Nature-based Solutions. A user-friendly framework for the verification, design and scaling up of NbS. First edition. Gland, Switzerland: IUCN. https://doi.org/10.2305/IUCN.CH.2020.08.en

IUCN (International Union for the Conservation of Nature), 2020c. Guidance for using the IUCN Global Standard for Nature-based Solutions. A user-friendly framework for the verification, design and scaling up of Nature-based Solutions. First edition. Gland, Switzerland: IUCN. https://doi.org/10.2305/IUCN.CH.2020.09.en

IUCN (International Union for the Conservation of Nature), 2020d. Council decision C98/17, 98th Meeting of the IUCN Council, 10-11 February 2020

Keith DA, Ferrer-Paris JR, Nicholson E, Kingsford RT (eds.), 2020. The IUCN Global Ecosystem Typology 2.0: Descriptive profiles for biomes and ecosystem functional groups. Gland, Switzerland: IUCN. ISBN: 978-2-8317-2077-7. DOI:10.2305/IUCN.CH.2020.13.en.

Keith DA, Ferrer-Paris JR, Nicholson E, et al. 2022. A function-based typology for Earth's ecosystems Nature 610, 513–518. DOI:10.1038/s41586-022-05318-4.

Mace GM, 2014. Whose conservation? Science 345(6204): 1558-1560.

UNEA (United Nations Environmental Assembly of the United Nations Environment Programme), 2022. Resolution 5/5 on Nature-based solutions for supporting sustainable development. UNEP/EA.5/Res.5

UNEP (United Nations Environment Programme), 2022, March 2. UN Environment Assembly concludes with 14 resolutions to curb pollution, protect and restore nature worldwide [Press Release]. https://www.unep.org/news-and-stories/press-release/un-environment-assembly-concludes-14-resolutions-curb-pollution

UNEP (United Nations Environment Programme), 2023a. Emissions Gap Report 2023: Broken Record – Temperatures hit new highs, yet world fails to cut emissions (again). Nairobi. https://doi.org/10.59117/20.500.11822/43922.

UNEP (United Nations Environment Programme), 2023b. Adaptation Gap Report 2023: Underfinanced. Underprepared. Inadequate investment and planning on climate adaptation leaves world exposed. Nairobi. https://doi.org/10.59117/20.500.11822/43796

Appendices

Appendix 1: IUCN 8 NbS Principles (IUCN 2016)

To complement the IUCN NbS definition, a series of **eight NbS principles** were adopted by the IUCN community (Resolution 069, at the 2016 World Conservation Congress (IUCN 2016)), to help frame and understand more in detail what NbS are and aren't about. They are to be considered in conjunction with the NbS definition. [See Appendix 1 for list of NbS principles]. The NbS principles are:

- **Principle 1**: NbS embrace nature conservation norms (and principles).
- **Principle 2**: NbS can be implemented alone or in an integrated manner with other solutions to societal challenges (e.g., technological and engineering solutions).
- **Principle 3**: NbS are determined by site-specific natural and cultural contexts that include traditional, local and scientific knowledge.
- **Principle 4**: NbS produce societal benefits in a fair and equitable way in a manner that promotes transparency and broad participation.
- **Principle 5**: NbS maintain biological and cultural diversity and the ability of ecosystems to evolve over time.
- **Principle 6**: NbS are applied at a landscape scale.
- **Principle 7**: NbS recognize and address the trade-offs between the production of a few immediate economic benefits for development, and future options for the production of the full range of ecosystem services.
- **Principle 8**: NbS are an integral part of the overall design of policies, and measures or actions, to address a specific challenge.

Appendix 2: Eight criteria of the Global Standard for NbS (IUCN 2020b)

- **Criterion 1**: NbS effectively address societal challenges
- **Criterion 2**: Design of NbS is informed by scale
- **Criterion 3**: NbS result in a net gain to biodiversity and ecosystem integrity
- **Criterion 4**: NbS are economically viable
- **Criterion 5**: NbS are based on inclusive, transparent and empowering governance processes
- **Criterion 6**: NbS equitably balance trade-offs between achievement of their primary goal(s) and the continued provision of multiple benefits
- **Criterion 7**: NbS are managed adaptively, based on evidence
- **Criterion 8**: NbS are sustainable and mainstreamed within an appropriate jurisdictional context

Appendix 3: Clarifications about the Global Standard for NbS

The Global Standard's eight criteria are equally important, and they all need to be met, for an intervention to be considered NbS (IUCN 2020a and 2020b). The word "global" that is mentioned in the Global Standard for NbS, was chosen as it refers to the universal relevancy of the Standard when planning, assessing and implementing NbS. The Global Standard's eight criteria are equally important, and they all need to be met, for an intervention to be considered NbS (IUCN 2020a and 2020b).

Appendix 4: UNEA Resolution 5.5

Resolution 5/5 on "Nature-based solutions for supporting sustainable development", adopted by the United Nations Environment Assembly on 2 March 2022

"The United Nations Environment Assembly,

Underlining the importance of strengthening actions for nature for implementing the 2030 Agenda for Sustainable Development and the Sustainable Development Goals, the Rio Declaration on Environment and Development, the Convention on Biological Diversity and other biodiversity-related conventions, the United Nations Framework Convention on Climate Change and the Paris Agreement adopted thereunder, the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, the Sendai Framework for Disaster Risk Reduction 2015–2030, the United Nations Decade on Ecosystem Restoration 2021–2030 and the decade of action and delivery for sustainable development 2020–2030; looking forward to the adoption and implementation of an ambitious, balanced, practical, effective and robust post-2020 global biodiversity framework; and noting the Leaders' Pledge for Nature: United to Reverse Biodiversity Loss by 2030 for Sustainable Development,

Welcoming the report by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services entitled Global Assessment Report on Biodiversity and Ecosystem Services1 and the contribution of Working Group I, entitled Climate Change 2021: The Physical Science Basis,2 and Working Group II, entitled Climate Change 2022: Impacts, Adaptation and Vulnerability,3 to the sixth assessment report of the Intergovernmental Panel on Climate Change, and taking note of other relevant reports,

Recognizing the interdependencies between biodiversity loss, pollution, climate change, desertification and land degradation and their interlinkages with human well-being, including health, and the importance of ensuring the integrity of all ecosystems, 1

Recognizing also that a key opportunity for strengthening actions for nature to achieve the Sustainable Development Goals is to enhance cooperation, implementation and the scaling up of nature-based solutions, while ensuring their social and environmental safeguards, given that nature-based solutions are efficient and effective when designed on a context-specific basis to achieve multiple benefits and applied in accordance with the best available science,

Recalling decisions V/6, VI/12, VII/11 and IX/7 of the Conference of the Parties to the Convention on Biological Diversity on the ecosystem approach, and its decision 14/5 on biodiversity and climate change, and recognizing, for the parties to the Convention, the indispensable role of the Convention in the conservation, restoration and sustainable use of biodiversity and in the integrated management of natural resources,

Acknowledging the need for a multilaterally agreed definition of the concept of nature-based solutions, cognizant of and in harmony with the concept of ecosystem-based approaches, and in the light of concerns about the potential misuse of the concept of nature-based solutions,

1. Decides that nature-based solutions are actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services, resilience and biodiversity benefits, and recognizes that nature-based solutions:

(a) Respect social and environmental safeguards, in line with the three "Rio conventions" (the Convention on Biological Diversity, the United Nations Convention to Combat Desertification and the United Nations Framework Convention on Climate Change), including such safeguards for local communities and indigenous peoples;

(b) Can be implemented in accordance with local, national and regional circumstances, consistent with the 2030 Agenda for Sustainable Development, and can be managed adaptively;

(c) Are among the actions that play an essential role in the overall global effort to achieve the Sustainable Development Goals, including by effectively and efficiently addressing major social, economic and environmental challenges, such as biodiversity loss, climate change, land degradation, desertification, food security, disaster risks, urban development, water availability, poverty eradication, inequality and unemployment, as well as social development, sustainable economic development, human health and a broad range of ecosystem services;

(d) Can help to stimulate sustainable innovation and scientific research;

2. Recognizes that nature-based solutions may contribute significantly to climate action, while recognizing the need for analysis of their effects, including in the long term, and acknowledging that they do not replace the need for rapid, deep and sustained reductions in greenhouse gas emissions, but can improve action for adaptation and resilience to and mitigation of climate change and its impact;

3. Also recognizes the potential of sustainable and environmentally sound bio-based products, innovation and technologies that result from nature-based solutions, when they contribute to sustainable consumption and production and are beneficial to nature and consistent with international commitments and relevant multilateral agreements on biodiversity, climate, environment and sustainable development, while cognizant of the potential associated risks, including for local communities and indigenous peoples;

4. Acknowledges that the concept of nature-based solutions is cognizant of and in harmony with the concept of ecosystem-based approaches identified under the Convention on Biological Diversity and other management and conservation approaches

carried out under existing national policy and legislative frameworks and established under relevant multilateral environmental agreements;

5. Requests the Executive Director of the United Nations Environment Programme, subject to the availability of resources and to further support the implementation of nature-based solutions, as defined in the present resolution, to convene intergovernmental consultations in a transparent, inclusive, regionally balanced manner, striving for gender balance, in order to undertake the following:

(a) Compile examples of best practice in nature-based solutions, based on the best available science;

(b) Assess existing and discuss potential new proposals, criteria, standards and guidelines to address divergences, with a view to achieving a common understanding among Member States for the implementation of nature-based solutions, including to support Member States in designing, implementing and evaluating nature-based solutions, building on existing work, initiatives and platforms, as appropriate, and without prejudice to existing efforts and initiatives of and new proposals from individual Member States;

(c) Identify options for supporting sustainable investment in nature-based solutions and share information on bilateral and multilateral sources of finance to enable developing countries to develop and deploy nature-based solutions;

6. Also requests the Executive Director, subject to the availability of resources, to support the intergovernmental consultations, including enabling the participation of developing countries and relevant partners and stakeholders, consistent with applicable United Nations rules;

7. Calls upon Member States and the Executive Director, in collaboration with other relevant United Nations entities, to support the implementation of the present resolution in partnership with local communities, women and youth as well as with indigenous peoples, with their free, prior and informed consent, as their knowledge and methods have proved effective in conserving, restoring and sustainably using biodiversity;

8. Calls upon Member States to follow a country-driven, gender-responsive, participatory and fully transparent approach when designing, implementing and monitoring nature-based solutions."