

UNDRR submission to the final intergovernmental consultation on nature-based solutions under UNEA Resolution 5/5 Nature-based solutions for supporting sustainable development

Key messages

- The role of nature-based solutions for strengthening resilience and supporting disaster risk reduction is well recognised in international policy fora. Yet, increased efforts and investments are required to include and scale up nature-based solutions as an integral part of disaster risk reduction, including prevention measures.
- The Sendai Framework for Disaster Risk Reduction recognises poor environmental management, unsustainable use of natural resources and ecosystem degradation as drivers of risk. Nature-based solutions are one vehicle to address the systemic nature of risks and contribute towards increased resilience and sustainable livelihoods.
- Nature-based solutions foster comprehensive approaches to risk governance by (i) strengthening collaboration across sectors to produce multiple benefits (i.e. reducing disaster and climate risks, while also reducing biodiversity loss and promoting community resilience), (ii) addressing all dimensions of disaster risk management, namely hazard mitigation, vulnerability and exposure reduction, and (iii) contributing to infrastructure resilience.
- The Sendai Framework for Disaster Risk Reduction provides guidance and entry points for the design, implementation and evaluation of nature-based solutions, in line with its four priority areas. These include, (i) making available and usable data and information for enhanced risk understanding through risk assessments, ecosystem loss monitoring and reporting, (ii) connecting sectoral, climate change and disaster risk reduction planning processes and fostering common planning approaches, (iii) promoting risk-informed investments for greater resilience, and (iv) integrating nature-based solutions into build back better.

Background information on the key messages above in response to the tasks called for in UNEA Resolution 5/5

1. Why nature-based solutions matter for disaster risk reduction

As endorsed by the United Nations General Assembly, disaster risk is a function of hazard, exposure, vulnerability and capacity.ⁱ The loss of biodiversity and degradation of ecosystems are drivers of disaster risk, exacerbating exposure and vulnerability and undermining coping capacity.

Nature-based solutions (NbS) can play a key role in restoring ecosystems and reducing disaster risk, while at the same time mitigating/adapting to climate change, and building resilience of communities. Therefore, we must work *with* nature rather than against nature to address interconnected systemic risks. NbS do exactly that by strengthening sustainable use and management of ecosystems to build long-term resilience and protect people and livelihoods. NbS provide a critical opportunity to enhance coherence in the implementation of national disaster risk reduction, climate change mitigation and adaptation, biodiversity and natural resource management strategies at country level.

Investments in nature-based solutions and/or hybrid measures (those using a mix of NbS and hard infrastructure) can provide multiple benefits, including disaster risk reduction and increased resilience as well as additional environmental, social and economic benefits. They can be applied at all phases of disaster risk reduction and are efficient and cost-effective, supporting long-term resilience. Thus, NbS can play a critical role in achieving such risk reduction and contribute to prevention. To take full advantage of the opportunities offered by nature-based solutions, risk-informed investments should consider all relevant sectors and properly value the multiple benefits offered by these solutions. In addition, public-private partnerships and blended financing approaches could be designed to incentivise and further de-risk investments in nature-based solution interventions, thus supporting the mobilisation of additional resources in this area.

The post-disaster recovery period presents a particularly valuable opportunity for the application of NbS as recovering countries and communities embark to build back better - to reduce disaster risk, build resilience and invest in sustainable development through the recovery process. NbS in recovery can offer pathways to building back better utilising green approaches. They can address immediate recovery needs, such as restoring livelihoods, local economies, as well as bring cultural benefits, while also addressing long-term resilience and sustainability objectives. NbS can be a part of an inclusive recovery when they engage and empower communities, value and learn from local, indigenous and traditional knowledge, and build capacities of local organizations.

2. Nature-based solutions for disaster risk reduction have been recognized internationally

The role of nature-based solutions for disaster risk reduction is already well recognized across a number of intergovernmental policy processes. It is important to reconcile, build synergies and align these processes. In the context of disaster risk reduction, the Sendai Frameworks for Disaster Risk Reduction 2015-2030 provides a key entry point to advance nature-based solutions for disaster risk reduction. A number of prominent international policy processes and how they promote nature-

based solutions in the context of disaster risk reduction and resilience building are highlighted below:

i) UN Environment Assembly

OP1 of UNEA Resolution 5/5 defines nature-based solutions. It emphasizes resilience as one of the benefits of implementing nature-based solutions:

- “[...] while simultaneously providing human well-being, ecosystem services, **resilience** and **biodiversity benefits** [...]”.

OP1(c) further clarifies that nature-based solutions are among the actions that address:

- “[...] major social, economic and environmental challenges, such as [...] **disaster risks** [...]”.

ii) Sendai Framework for Disaster Risk Reduction 2015-2030

The Sendai Framework for Disaster Risk Reduction 2015-2030 recognizes and promotes the role of ecosystems and the environment as crosscutting issues through its four priority areas for action to prevent new and reduce existing disasters. It further acknowledges that environmental degradation can cause hazards, including due to poor environmental management, unsustainable use of natural resources and ecosystem degradation. It also recognizes that disasters can have impacts on the environment. The Sendai Framework calls for greater collaboration between institutions and stakeholders from other sectors as well as for ecosystem-based approaches to be implemented in transboundary cooperation for shared resources, such as within river basins and shared coastlines.

Central to the Sendai Framework is the management of existing risks, and the prevention of new risks by implementing measures that will reduce vulnerabilities and exposure. Investments in risk reduction efforts will accelerate achievement of the Sustainable Development Goals and contribute towards the Paris Agreement, the Kunming-Montreal Global Biodiversity Framework and Sendai Framework targets.

The recent midterm review of the Sendai Framework 2015-2030 reiterated these linkages between disaster risk reduction, climate change, biodiversity loss and risks faced by different sectors, such as those related to water, health, agriculture, the humanitarian sector etc.

OP26 of the UN General Assembly Political Declaration of the High-level Meeting on the Midterm Review of the Sendai Framework (A/Res/77/289) adopted in May 2023, explicitly calls on States:

- “[...] to strengthen **comprehensive disaster risk governance**, taking into account their national circumstances, needs and priorities, including by: [...] (g) **Promoting nature-based solutions, ecosystem-based approaches, among other approaches, for disaster risk reduction at all levels and across all phases of disaster risk reduction and management to restore, maintain and enhance ecosystem functions and services for protection from natural hazards, and to contribute towards increasing the resilience of biodiversity, supporting sustainable livelihoods and building community resilience.**”

As the custodian agency of the Sendai Framework and related SDGs, UNDRR is uniquely placed to advance the inclusion of a risk-lens into the humanitarian, environmental, climate and development fields. Key opportunities to build synergies with the goals of the Sendai Framework are highlighted in section 4 below.

iii) Paris Agreement

The Paris Agreement was among the treaties adopted in 2015. Its core objective is to limit temperature increases to well below 2°C and limit the increase to 1.5°C relative to the pre-industrial era. In so doing, it would increase the ability to adapt and reduce threats to social and economic processes that sustain livelihoods, such as food production. Ecosystems are crucial to this objective, and feature prominently in Article 7 on adaptation, and Article 8 on loss and damage associated with climate change. With respect to the former, ecosystems are necessary in meeting the overall global goal on adaptation to, inter alia, strengthen **resilience** and reduce vulnerability. In Article 8, resilience of ecosystems was among the areas for cooperation and facilitation among countries in **reducing the risk of loss and damage**.

iv) Kunming-Montreal Global Biodiversity Framework

The Kunming-Montreal Global Biodiversity Framework (GBF) adopted in December 2022 during the 15th Conference of the Parties to the Convention on Biological Diversity (CBD), emphasizes the role of disaster risk reduction in Targets 8 and 11. The GBF's four long-term goals (until 2050) and 23 action-oriented global targets (until 2030) provide a strong foundation for living in harmony with nature, while enhancing nature's contribution to people, including the prevention of and protection from disasters by reducing exposure and vulnerability and increasing resilience. The two targets mention nature-based solutions as one measure to achieve this:

- *“Target 8: Minimize the impact of climate change and ocean acidification on biodiversity and increase its **resilience** through mitigation, adaptation, and **disaster risk reduction actions**, including through **nature-based solution** and/or ecosystem-based approaches, while minimizing negative and fostering positive impacts of climate action on biodiversity.”*
- *“Target 11: Restore, maintain and enhance nature's contributions to people, including ecosystem functions and services, such as regulation of air, water, and climate, soil health, pollination and **reduction of disease risk**, as well as **protection from natural hazards and disasters**, through **nature-based solutions** and/or ecosystem-based approaches for the benefit of all people and nature.”*

v) Water Action Decade

The midterm comprehensive review of the implementation of the International Decade for Action, “Water for Sustainable Development”, 2018–2028, concluded with the UN 2023 Water Conference that was held in New York in March 2023. Apart from plenary debates, the conference included five interactive dialogues that proposed a number of game changers. Interactive Dialogue 3 focussed on “Water for Climate, Resilience and Environment: Source to Sea, Biodiversity, Climate, Resilience and Disaster Risk Reduction”. The corresponding concept paper (A/CONF.240/2023/6) highlights nature-based solutions as a key game changer to address water-related climate and disaster risks, including through disaster risk reduction strategies. In their statements, numerous Member States referenced the Sendai Framework and underscored the importance of increased synergies between intergovernmental processes and global agendas, particularly with regards to the implementation of the Paris Agreement, the Sendai Framework and the Kunming-Montreal Global Biodiversity Framework. The following key message emerged from the interactive dialogue:

- *“Nature-based solutions and green-grey infrastructure approaches can provide important contributions and co-benefits for **climate, biodiversity and disaster risk reduction.**”ⁱⁱ*

vi) **G20 Working Group on Disaster Risk Reduction**

Under the G20 Presidency of India, the G20 Working Group on Disaster Risk Reduction was established. It focusses on integrating risk reduction measure into public and private policies and investments and increasing the resilience of economies, societies and natural systems. One of the priority topics of the working group are nature-based solutions and ecosystem-based approaches for disaster risk reduction. The outcome documentⁱⁱⁱ adopted in July 2023 in Chennai includes **recognition of nature-based solutions and ecosystem-based approaches for disaster risk reduction** and acknowledges that their effective implementation depends on **an integrated approach with climate change adaptation, biodiversity protection, conservation, and sustainable use**. The outcome document further outlines a number of actions and recommendations, including:

- *“a. Promote the **application of effective nature-based solutions and ecosystem-based approaches** in regional, national, and local disaster risk reduction policies and strategies; disaster preparedness, recovery, rehabilitation, and reconstruction strategies; climate change adaptation plans and national biodiversity strategies and action plans, as well as disaster resilient infrastructure project appraisals.”*
- *“e. Promote **partnership, education and training, and exchange of knowledge, experiences, lessons learned and good practices** among G20 members and other countries, partners, and stakeholders, including local communities.”*

3. Nature-based solutions as a basis for integrated approaches – good practices

Nature-based solutions support and are supported by integrated and comprehensive approaches to risk governance. These can be divided into three prominent areas:

1) Nature-based solutions reduce disaster and climate risks

Nature-based solutions are well placed to support comprehensive risk governance because their implementation requires collaboration across sectors and produces multiple benefits. From a disaster risk reduction perspective, they support a systemic risk approach that arises from an increasingly complex and evolving risk landscape. In addition, ecosystem services are critical for disaster recovery and help enhance community resilience. The Canadian Climate Resilient Built Environment Initiative is one example, where nature-based solutions are considered for flood mitigation, delivering both climate and biodiversity benefits, while reducing the impacts of climate-related disasters.^{iv} Another example pertains to the climate change policy 2018-2028 of the Cook Islands. The policy includes green investments as one priority for the development of standards and procedures.^v

2) Nature-based solutions provide a potent vehicle for disaster risk management in all its dimensions

Nature-based solutions help address all dimensions of disaster risk reduction, namely hazard mitigation (e.g. mitigating flooding and enhancing soil moisture conservation), vulnerability reduction (e.g. livelihood diversification and protection) and exposure reduction (e.g. risk-informed land-use planning). At the same time, nature-based solutions support a shift from reactive measures that focus on the disaster event to prevention and long-term resilience building. The recovery plan after the floods in Pakistan is one example, where the damage to ecosystems was recognized and nature-based solutions included as one action in rehabilitation and build back better. Three areas were included in Pakistan's recovery and reconstruction plan: (i) ecosystem-based restoration and adaptation in vulnerable landscapes and watersheds, (ii) pollution reduction and waste management, and (iii) strengthening environmental governance.^{vi}

3) Nature-based solutions have a key role to play in resilient infrastructure

Nature-based solutions have an important role to play with regards to increasing the resilience of infrastructure. The importance of green infrastructure is recognized in the Sendai Framework Targets C and D, both of which allow countries to voluntarily report losses of ecosystems. Considering nature-based solutions in the context of resilient infrastructure further provides opportunities for design innovations and facilitates the reduction of disaster impacts, while contributing to national climate and biodiversity/nature conservation commitments and targets. For instance, the United States of America have made nature-based solutions an integral part of their critical infrastructure toolkit.^{vii} Another example is Canada's Natural Infrastructure Fund that invests CAD 200 million in nature-based solutions.^{viii} Relatedly, the UNDRR Principles for Resilient Infrastructure^{ix} and corresponding handbook^x, promote the implementation of NbS for disaster risk reduction, including ecosystem-based disaster risk reduction and ecosystem-based adaptation.

4. Supporting the design, implementation and evaluation of nature-based solutions – opportunities and existing tools, guidelines, criteria, etc.

1. Data and information for enhanced risk understanding through, risk assessments, ecosystem loss monitoring and reporting

Data and knowledge on the interaction between environmental degradation, climate change and disaster risk reduction is still lacking. Nature-based solutions have opened a discourse on understanding impacts on, and losses and damages to natural infrastructure as one way to enhance risk-understanding and benchmark the effectiveness of resilience measures that consider nature as an integral part of a disaster risk reduction intervention. Although, governments already have the option to report ecosystem losses under Sendai Framework Targets C and D, no country has yet reported. A new generation loss and damage database as well as improved methodologies for accounting for economic and non-economic environmental losses in post disaster needs assessments (see also point 4 below) could provide a key entry point for understanding adaptation limits of ecosystems (e.g. the limits of nature-based solution interventions) as well as provide data for benchmarking and planning prevention measures, including nature-based solutions. UNDRR is already making efforts to this end.

2. Nature-based solutions as a connector for strengthened comprehensive risk governance and management

As indicated in section 3 above, nature-based solutions can serve as a connector between sectoral, climate change and disaster risk reduction planning processes. Two approaches are particularly relevant – ecosystem-based adaptation and ecosystem-based disaster risk reduction. Both address cross-cutting hazards, and require comprehensive risk management that ensures alignment between national climate goals, local disaster risk reduction strategies and sector policies, including those related to environmental resources (e.g. water) and biodiversity. In this regard nature-based solutions not only facilitate coordination across policy areas, but also cooperation and partnership between relevant actors.

In the context of climate and disaster risk planning, UNDRR is already working with countries on comprehensive risk management. Through the roll-out of the Comprehensive Risk Management Approach (CRM) technical assistance is being delivered at national level with the objective to enable countries to develop a shared understanding of disaster and climate risk and plan better for the short-, medium- and long-term through a continuum of disaster risk reduction and climate change adaptation plans. The CRM strategy is supported by a range of resources developed by UNDRR and its key partners, including (i) a thought leadership course: *Synergizing disaster risk reduction and climate change adaptation*, (ii) Promotion of synergy and alignment between Climate Change Adaptation and Disaster Risk Reduction in the context of National Adaptation Plans (DRR4NAPs), (iii) Technical Guidance on Comprehensive Risk Assessment and Planning in the Context of Climate Change, and (iv) a new Toolkit on nature-based solutions for comprehensive risk management.^{xi}

In addition to including nature-based solutions in CRM, UNDRR is making efforts to increase synergies between the implementation of the Sendai Framework and the Kunming-Montreal Global Biodiversity Framework with a particular focus on Targets 8 and 11. There are several opportunities with regards to national planning approaches and the updating of National Biodiversity Strategies and Action Plans (NBSAPs), such as considering mutually supportive indicator frameworks that build on existing data and information, strengthened national coordination between biodiversity and disaster risk reduction actors and investments for multiple benefits.

3. Risk-informed investments for greater resilience

Nature-based solutions are cost-effective and provide environmental, social and economic benefits and build resilience. Failure to act on ecosystem rehabilitation is costing USD 20 trillion to the global economy in lost ecosystem goods and services.^{xii} Many benefits of nature-based solutions for disaster risk reduction are non-monetary and thus hard to quantify. However, compared to grey infrastructure options, green infrastructures have significantly higher returns on investment and provide multiple co-benefits over a longer duration.^{xiii} In many cases, the co-benefits make a strong business case for investing in nature-based solutions to build resilience. For example, besides the USD 80 billion per year in avoided losses from coastal flooding, mangrove forests contribute as much as USD 40-50 billion annually in non-market benefits associated with fisheries, forestry, and recreation.^{xiv}

To support risk-informed investments, the President of the General Assembly (PGA) H.E. Csaba Kőrösi, called on Member States to establish a facility for de-risking the financial system, which would promote the integration of disaster risk reduction into the decisions of financial institutions. The de-risking facility, under UNDRR's leadership, would allow for collaboration through lending,

debt support, financing streams, and grants, particularly for countries facing the most severe economic challenges. The facility could also support policy development and capacity building on de-risking investments in all countries while mobilizing much-needed financing for disaster risk reduction, and initiate reforms that ensure disaster risks are accounted for, priced, and disclosed in economic, financial, and investment decisions. In particular for nature-based solutions for resilience, considering long-term benefits and co-benefits in investment assessments, financial mechanisms that bundle nature-based solutions as portfolios, blended finance mechanisms, and resilience bonds could be suitable mechanisms to channel risk-informed investments.

4. Nature-based solutions for preparedness and build back better

Post disaster needs assessments and recovery plans, such as those prepared in response to the Pakistan floods in 2022, are important tools to capture data on the impacts on ecosystems. They can provide insights into the potential for nature-based solutions to support a green recovery, rehabilitation and reconstruction after a disaster, thus promoting building back better and long-term resilience. Yet, more needs to be done to promote the inclusion of detailed information on environmental considerations into post disaster needs assessments and recovery planning. UNDRR in collaboration with UNEP and other partners is in the process of reviewing the environmental module of post disaster needs assessments to provide additional guidance towards a green recovery.

In addition, following the Midterm Review of the Sendai Framework, nature-based solutions for reducing disaster risk and building resilience, as well as leveraging resilient blue, green, and grey infrastructure, will be valuable elements for the General Assembly consultations on programmes of action for landlocked developing countries and small island developing States.

Sources, case studies and further information:

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- UNDRR, 2020, Ecosystem-Based Disaster Risk Reduction: Implementing Nature-based Solutions for Resilience, United Nations Office for Disaster Risk Reduction – Regional Office for Asia and the Pacific, Bangkok, Thailand; available from: <https://www.undrr.org/publication/ecosystem-based-disaster-risk-reduction-implementing-nature-based-solutions-0>
- Comprehensive disaster and climate risk management: <https://www.undrr.org/comprehensive-disaster-and-climate-risk-management-crm>
- Monitoring Sendai Framework Targets C-5 and D-4 “Protective infrastructure and green infrastructure should be included where relevant.”: <https://www.undrr.org/monitoring-sendai-framework>
- Global Assessment Report on Disaster Risk Reduction; available from: <https://www.undrr.org/gar>

- UNDRR, UNEP, FAO & UNOPS, 2023, G20 Working Paper: Increasing the application of ecosystem-based approaches to disaster risk reduction, India; available from: <https://g20drrwg.preventionweb.net/2023/g20-documents>
- A compendium of good practices prepared for the G20 Working Group on Disaster Risk Reduction (forthcoming)
- UNDRR, 2022. Principles for resilient infrastructure. UNDRR, Geneva, Switzerland; available from: <https://www.undrr.org/publication/principles-resilient-infrastructure>
- Sendai Framework Midterm Review: <https://sendaiframework-mtr.undrr.org/> ; Political Declaration: <https://sendaiframework-mtr.undrr.org/media/88232/download> ; summary of the Risk Reduction Hub on “Working with Nature for Resilience”: <https://www.undrr.org/news/summary-report-17-19-may-2023-high-level-meeting-midterm-review-sendai-framework>
- www.PreventionWeb.net - is a dedicated knowledge platform for disaster risk reduction. It showcases good practices, including on nature-based solutions.
- Partnership for Environment and Disaster Risk Reduction (PEDRR) network and website: <https://pedrr.org/>
- Secretariat of the Convention on Biological Diversity (2019). Voluntary guidelines for the design and effective implementation of ecosystem-based approaches to climate change adaptation and disaster risk reduction and supplementary information. Technical Series No. 93. Montreal, Canada; available from: <https://www.cbd.int/doc/publications/cbd-ts-93-en.pdf>

ⁱ https://www.preventionweb.net/files/50683_oiewgreportenglish.pdf

ⁱⁱ Summary of Proceedings of the President of the General Assembly, available from: <https://sdgs.un.org/conferences/water2023/documentation>

ⁱⁱⁱ The outcome document and chair’s summary is available from: <https://g20drrwg.preventionweb.net/2023/g20-documents>

^{iv} See the voluntary national reports to the midterm review of the Sendai Framework by Canada: <https://sendaiframework-mtr.undrr.org/2023/mtr-sf-submissions-and-reports#voluntary>

^v UNDRR (2023), Status Report on Target E 2023, United Nations Office for Disaster Risk Reduction (UNDRR).

^{vi} Government of Pakistan (2022). Pakistan Floods 2022: Post-disaster needs assessment - <https://www.undp.org/pakistan/publications/pakistan-floods-2022-post-disaster-needsassessment-pdna>

^{vii} See the voluntary national reports to the midterm review of the Sendai Framework by the United States: <https://sendaiframework-mtr.undrr.org/2023/mtr-sf-submissions-and-reports#voluntary>

^{viii} <https://www.undrr.org/news/canadas-success-harnessing-nature-infrastructure-resilience>

^{ix} <https://www.undrr.org/publication/principles-resilient-infrastructure>

^x <https://www.undrr.org/publication/handbook-implementing-principles-resilient-infrastructure>

^{xi} <http://collections.unu.edu/view/UNU:9218>

^{xii} [UNDP, Issues Brief on Nature-Based Climate Solutions, 2020](#)

^{xiii} [UNDRR, Ecosystem-Based Disaster Risk Reduction, Implementing Nature-based Solutions for Resilience, 2020](#)

^{xiv} [Adapt now: a global call for leadership on climate resilience, Global Center on Adaptation, 2019](#)