NATURE-BASED SOLUTIONS FOR ACCELERATING THE SENDAI FRAMEWORK AND REDUCING SYSTEMIC RISK

PEDRR
Ecosystems for Disaster Risk Reduction and Adaptation

GLOBAL PLATFORM FOR DISASTER RISK REDUCTION

PEDRR NBS ISSUES BRIEF

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Key messages

To accelerate the implementation of the Sendai Framework we need:

1. Monitoring of ecosystem loss under targets C and D strengthens the implementation of Sendai along with robust efficacy and performance monitoring & evaluation of Nature-based Solutions.
2. More cost-benefit analyses to demonstrate the value of Nature-based Solutions and innovative financing modalities.

To holistically address systemic risk we also need:

1. Nature-based Solutions for Disaster Risk Reduction to be part of Sendai Framework Priority area 4 and in humanitarian settings.
2. Whole-society/landscape approach: There is a need for a more integrated cross-sectoral landscape approach at the international, regional, and national levels.

INTRODUCTION

Over the last twenty years, 7,348 major disaster events were recorded, claiming about 1.23 million lives, affecting 4.2 billion people and costing the global economy approximately US$2.97 trillion. Floods (44%) and storms including landslides (28%) are the most commonly recorded disaster types, contributing 22% and 44% respectively to the economic losses (UNDRR & CRED, 2020).

The UN Global Assessment Report on Disaster Risk Reduction (DRR) 2019 (GAR, 2019) highlighted that the rapid changes in ecological and social systems have led to widespread systemic risk. Systemic risk is a concept that assumes a system's perspective and interconnectedness between its economic, societal, and environmental components. This means that failure in one part of the system results in cascading impacts and ultimately failure of the system as a whole (Sweitzer and Renn, 2019).This has become even more evident in light of the COVID-19 pandemic and undeniable in the face of the many disasters brought through the increase in extreme weather events from human-induced climate change (IPCC 2021).

SYSTEMIC DISASTER RISK EMERGES FROM THE INTERDEPENDENT AND INTERCONNECTED NETWORKS OF SOCIAL, TECHNICAL, ENVIRONMENTAL, AND ECONOMIC SYSTEMS.

At the heart of these systemic risks as well as non-systemic disaster risks is our disconnected relationship with nature as well as the strong socio-economic inequalities between and within countries. GAR 2019 acknowledges that in order to coherently deliver frameworks and intergovernmental agreements, there is a need to understand the dynamics of hazards, exposure, vulnerabilities and resilience of both societies and ecosystems. GAR 2019 also recommends taking into account the complex feedbacks and dynamics of ecosystems and going beyond mere conservation and protection of natural habitats, to strategically incorporating risk-based decision-making in the policies, agreements and planning in all sectors. In doing so, natural assets and the ecosystem services they provide will be further strengthened to enable and support community resiliency.

The degradation and destruction of ecosystems has had cascading effects contributing to the emergence of zoonotic diseases such as COVID-19, to increasing climate change impacts, and decreasing adaptive capacities of systems and communities (Pörtner et al. 2021). Additionally, it contributes to increased disaster risk from natural hazards by undermining regulating ecosystem services that stabilise soils, regulate water flow and quality and buffer the impacts of natural hazards (Renaud et al., 2013; Walz et al., 2021). Ecosystem loss and deterioration have lasting impacts on human well-being. Furthermore, combined with the impacts of climate change, these impacts are felt disproportionally by the poor and vulnerable, increasing human insecurity and conflict (Wetlands International, 2017).

ECOSYSTEMS PLAY A CRITICAL ROLE IN REDUCING SYSTEMIC DISASTER RISK THROUGH NATURE-BASED SOLUTIONS

NATURE-BASED SOLUTIONS FOR ACCELERATING THE IMPLEMENTATION OF THE SENDAI FRAMEWORK

The Sendai Framework for Disaster Risk Reduction outlines the critical role of ecosystems in disaster risk assessments (Priority 1), in strengthening risk governance (Priority 2), and in disaster resilience investments (Priority 3). Highlighting poor land management, unsustainable use of natural resources, and degrading ecosystems as underlying drivers of disaster risk, the Sendai Framework urges countries to strengthen the sustainable use and management of ecosystems for building resilience to disasters. The Sendai Framework also calls for greater collaboration between institutions and stakeholders from other sectors and calls for ecosystem-based approaches to be implemented in transboundary cooperation for shared resources, such as within river basins and shared coastlines.

At the sixth session of the Global Platform in 2019, the role of Green and Blue Infrastructure (falling under the umbrella of Nature-based Solutions (NbS)) was discussed as natural assets that enable and support disaster risk reduction. Since then, it has become even more evident that working with nature is crucial to addressing many of the global crises today. Post-covid, there is a need for a green recovery and to build back better and greener after a disaster occurs.

NbS for DRR and climate change adaptation (CCA) are being implemented worldwide and commitment to invest in Nature-based Solutions and biodiversity conservation was affirmed in all of the Regional Platforms for Disaster Risk Reduction held in November 2021.

The inclusion of NbS in national and local DRR and CCA strategies is still rare, however. There are some success stories (see box 1).

To support the implementation of NbS, UNDRR has published Words into Action Guidelines on Nature-based Solutions for Disaster Risk Reduction (UNDRR, 2021). The UN Decade for Ecosystem Restoration (2021-2030) led by FAO and UNEP also provides opportunities for increased use of NbS as a means to enhance ecosystem resilience and disaster risk resilience.

Box 1: Eco-DRR in India National DRR strategy. Source: UNDRR 2020

The National Disaster Management Plan of India (2019) provides a comprehensive mechanism to implement ecosystem-based disaster risk reduction. Implementation of ecosystem-based approaches in river basins, mountainous regions, and coastlines has been defined as one of the objectives of the Plan. The Plan also promotes Eco-DRR as a key means to integrate disaster risk management and addressing environmental change.

Asserting the role of ecosystems in serving as natural barriers that can moderate the effects of a hazard and protect communities the plan highlights the role of ecosystems and appropriate land use in DRR as a key responsibility of both central and state governments toward strengthening DRR governance.

Monitoring Nature-based Solutions in the Sendai Framework Monitor

With the increasing implementation of NbS measures, it is increasingly vital to monitor the risk reduction services provided by these measures. This includes the monitoring of damages and losses to ecosystems and ecosystem services as these are also impacted by climate related hazards such as droughts, floods and storms. Indeed, without monitoring ecosystem loss and damage, understanding and reducing risk will be challenged further and achievements limited as a result (Walz et al., 2021).

Ecosystems which are recognized for their DRR benefits should be considered as critical infrastructure. The Sendai Framework Monitor allows the possibility to report on critical green infrastructure under Targets C and D. The reporting of the area of damaged or destroyed green (and blue) infrastructure would be more meaningful than the sole number of items affected. As such, green infrastructure needs a more clear and applicable definition in the Sendai Framework Monitor and complemented with blue infrastructure (Target D).

The majority of ecosystem services can be considered as basic services that are needed for society to function, such as freshwater supply, wastewater treatment, or services that are relevant for human health and well-being. Against this background, ecosystem services should be integrated into indicator D-8 (disrupted services) and reported in reference to ecosystem losses under green (and blue) infrastructure (monitored by indicator D-4) (Target D). In addition, the reporting of livelihoods lost due to disasters should go beyond crops and livestock and consider other relevant ecosystems and ecosystem services, which provide a basis for livelihoods (Target B).

Currently, no country has reported on green infrastructure in the Sendai Framework Monitor, despite the possibility of doing so under Targets C and D of the Sendai Framework Monitor, and in the custom indicators. Siloed planning and limited collaboration across institutions leading NbS vs DRR-related mandates are one reason for under-reporting. Another reason is the challenge of acquiring data on national ecosystem loss and calculating these for targets C & D. Ways forward to gathering data for ecosystem loss for targets C& D have been suggested in UNDRR 2021.

The use of custom indicators within the Sendai Framework Monitor is another inroad for monitoring and evaluation of Nature-based Solutions projects themselves. Several of the Resilient Cities Indicators can be used for this purpose. However, lack of knowledge on the efficacy parameters (i.e. under what intensity of a hazard does NbS no longer work) and key performance indicators can be challenging (UNDRR, 2021). Nevertheless, for some NbS, these are now relatively well known, especially when it comes to slope stabilisation (e.g. ADPC, 2020).

Monitoring systems for these ecosystems and services are also of interest in other international frameworks, most notably the Convention on Biological Diversity (CBD). Ecosystems and biodiversity have traditionally received the least funding and focus at national, regional, and global levels. The last Conference of the Parties of the United Nations Framework Convention on Climate Change (UNFCCC) has shown that this is slowly changing. Furthermore, some countries have pledged funds for biodiversity conservation, not only to achieve the goals of the CBD but also of the UNFCCC. Thus, stronger links need to be tied between the agendas of biodiversity conservation, climate change mitigation, and adaptation and disaster risk reduction.

MONITORING OF ECOSYSTEM LOSS UNDER TARGETS C AND D STRENGTHENS THE IMPLEMENTATION OF SENDAI ALONG WITH ROBUST EFFICACY AND PERFORMANCE MONITORING & EVALUATION OF NATURE-BASED SOLUTIONS

Funding for Nature-based Solutions

To ensure that the multiple NbS benefits continue to support the reduction of systemic risks in the long-term, innovative approaches are needed - accompanied by the necessary financing. Innovative (blended) financing for NbS for DRR and creating linkages to efforts undertaken for the Convention on Biological Diversity, the Paris Agreement and the SDGs more broadly can create win-win funding outcomes. When inclusive and collaborative landscape vision and governance processes are at the heart of landscape planning aimed at connecting natural, social and economic returns, investments in ecosystems can be recognised as being financially attractive. And vice-versa, business cases for ecosystems can help stakeholders to connect their ambitions across landscapes. Benefits can then be shared, including to the people at risk. Cost-benefit analyses (CBA) would be extremely beneficial and helpful to policy makers in establishing priorities for NbS. Several studies of comparative CBA of NbS across the world show that NbS pays off (UNDRR, 2021). Nevertheless, CBAs are underutilised when it comes to NbS (Vicarelli et al., 2016).

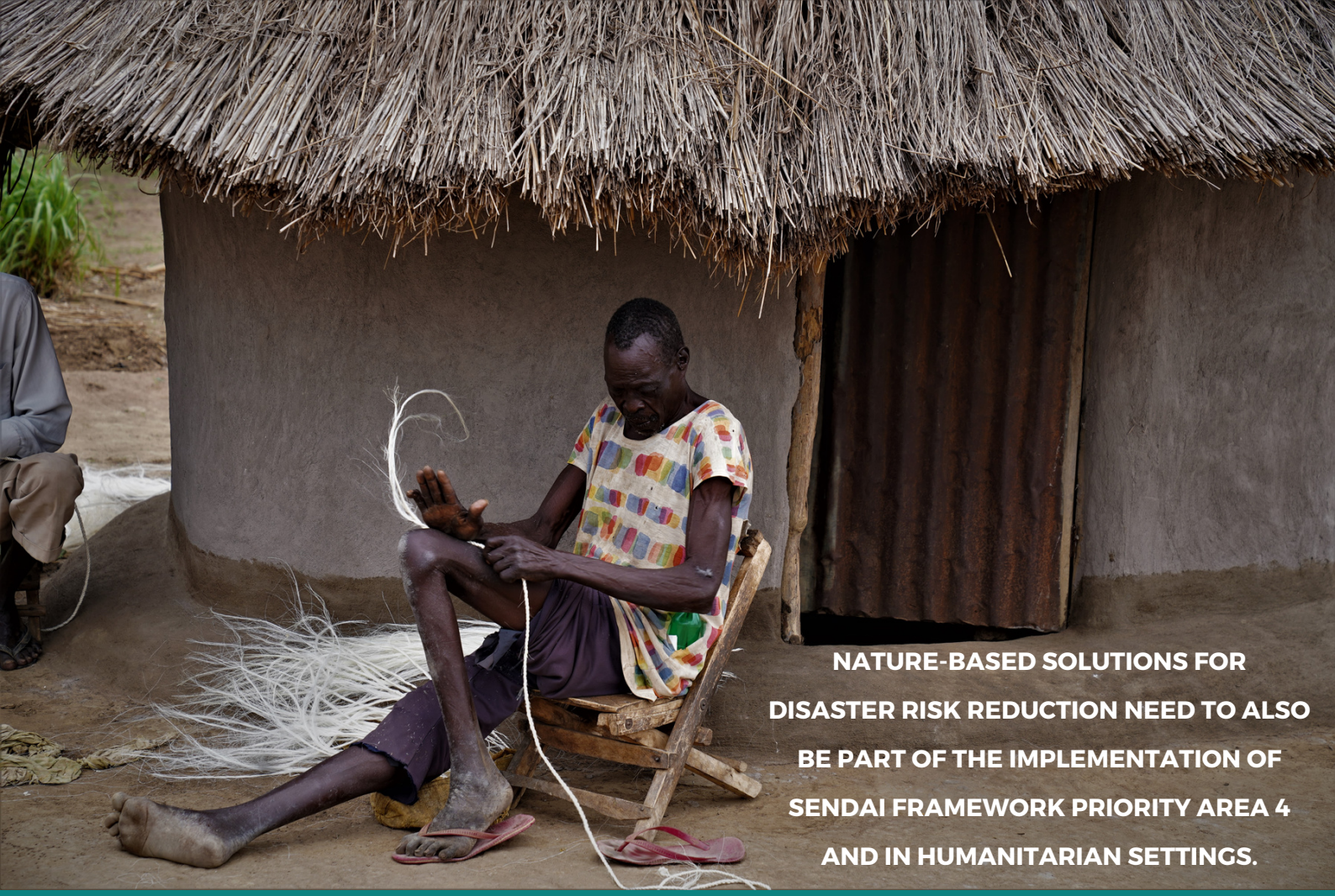
In the private sector, innovative finance solutions such as parametric insurance for NbS are starting to appear on the market. Insurances for an NbS that reduces risks can be insured so that when extreme events damage them while they protect people, payouts help restore the protecting ecosystem (see UNDRR, 2021).

Beyond Sendai: Nature-based Solutions (NbS) to address systemic risk

NbS needs to be considered as part of a holistic national strategy and not as a separate measure. Careful assessments should consider all options (green-blue, grey and soft measures) and understand their limits and trade-offs. For example, there is a growing body of evidence which shows that by incorporating wetlands as natural infrastructure assets which underpin development, rather than building on and draining them, we can enable cooling, better health and well-being for urban and rural dwellers and resilience to extreme weather events. In addition, global outlooks indicate that instead of continued agricultural expansion driving wetland loss, we need to plan a future of sustainable food production that is supported by healthy wetlands and wise use (Convention on Wetlands, 2021).

A paradigm shift will be required towards integrated solutions - where biodiversity and ecosystem services are incentivised and enhanced through connected sectoral policies and investments, rather than ecosystems being the victim of trade-offs between those sectors. This can best be achieved by addressing goals for biodiversity, climate change, regenerative agriculture and revitalising communities at a whole landscape scale.

THERE IS A NEED FOR A MORE INTEGRATED CROSS-SECTORAL LANDSCAPE APPROACHES AT THE INTERNATIONAL, REGIONAL, AND NATIONAL LEVEL TO REDUCE SYSTEMIC RISK



NATURE-BASED SOLUTIONS FOR DISASTER RISK REDUCTION NEED TO ALSO BE PART OF THE IMPLEMENTATION OF SENDAI FRAMEWORK PRIORITY AREA 4 AND IN HUMANITARIAN SETTINGS.

Post disaster and conflict

NbS can provide multiple benefits simultaneously that are particularly relevant for post-disaster and humanitarian contexts; indeed, through improved ecosystem services, NbS can help provide sustainable food and water security alongside health benefits. These benefits are directly tied to the work of key humanitarian clusters, including food security and nutrition; water, sanitation, and hygiene (WASH); and health, as well as other cross-sectoral linkages. The use of NbS in post-disaster and humanitarian contexts can therefore help to enhance the effectiveness and accountability of humanitarian action by addressing social and environmental issues.

However, ecosystems and ecosystems management is currently missing from Sendai Framework Priority area 4: "Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction" (PEDRR 2016) and rarely considered by humanitarian agencies, although there are exceptions.

Further understanding is needed within the humanitarian sector on how best to apply NbS in practice beyond disaster risk reduction, specifically in humanitarian response and recovery operations. For that a paradigm shift is needed from short-term, small-scale humanitarian response operations towards long-term, landscape-scale responses that integrate nature, risk reduction, and affected people into the response strategy (FEBA & PEDRR, 2021). Furthermore, to be effective in reducing further systemic risk, it is necessary to embed ecosystems in building back better and greener.

CONCLUSION

Addressing the systemic risks requires a systemic approach that entails placing nature at the heart of decision making alongside people through:

- The development of inclusive and collaborative landscape visions and multi-level and multi-sector governance processes at the heart of landscape planning, aimed at connecting natural, social and economic returns (including post-conflict or disaster);

- The integration of risk-based decision making in sectoral policies and planning, e.g. agriculture, aquaculture, fishery, aquaculture, (water) infrastructure and forestry; in order to strengthen the incentives for the conservation and restoration of natural assets and the ecosystem services they provide to enable and support community resiliency;

- Mainstreaming holistic approaches to the conservation and sustainable use of ecosystem services and biodiversity that connect actions for water security, climate and development, cutting across disciplines to deliver multiple benefits;

- Robust efficacy and performance monitoring & evaluation mechanisms; and

- Innovative financial solutions to ensure sufficient financing for NbS.

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