



EXECUTIVE SUMMARY
of the report for the Mid-Term Review of the

SENDAI FRAMEWORK FOR DISASTER RISK REDUCTION

UN Scientific and Technological Community Major Group

Convened by the International Science Council (ISC)



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TO CITE THIS REPORT: International Science Council. 2023. *Report for the Mid-Term Review of the Sendai Framework for Disaster Risk Reduction (Executive Summary)*. Paris, France. International Science Council. DOI: 10.24948/2023.01. <https://council.science/publications/mtr-sendai-framework-disaster-risk-reduction/>

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COVER PHOTO: Marcel Crozet / ILO 18-11-2013

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Executive summary

This report from the International Science Council (ISC) is a contribution on behalf of the Scientific and Technological Community Major Group to the Mid-Term Review of the Sendai Framework led by the UN Office for Disaster Risk Reduction (UNDRR). It is the work of an interdisciplinary expert group in an array of risks as well as governance, physical and social sciences, policy and finance.

The report identifies achievements in disaster risk reduction (DRR) since 2015 under the Sendai Framework, but also highlights key implementation gaps. The report provides guidance to policymakers, funders, researchers, international organizations and other stakeholders who shape the way we assess, value, manage and monitor risks.

Ultimately, its goal is to support the building of a post-2030 governance framework, which integrates risk reduction as a key determinant of sustainable development and accelerates the implementation of the Sendai Framework as well as embedding risk reduction and resilience in other global agendas such as the SDGs, the Paris Agreement on Climate Change and the Global Biodiversity Framework.

The magnitude and impact of disasters on lives, livelihoods and ecosystems are on the rise, setting back hard-won development gains in many parts of the world. These impacts are reducing the ability of nations and communities to cope with future disruptions as new combinations of stressors, including changes in the climate, are occurring faster than projected. Natural and socio-natural hazards are interacting more frequently with technological and biological hazards, and the effects of environmental change is producing more complex risk patterns, including compounding and cascading impacts, creating the possibility of more disasters. These trends are exacerbating known risks, creating new ones or revealing submerged risks. Typically, traditional thinking places disaster risk reduction as an add-on to climate adaptation. However, successful adaptation – and many of the Sustainable Development Goals (SDGs) – will be impossible to achieve without greater capabilities for disaster risk reduction being supported across multiple scales.

In short, risks are outpacing our capacity to anticipate, manage and reduce the impact of disasters as they cascade through people's lives, livelihoods, built infrastructure, environments and socio-economic systems.

The estimated average annual direct economic loss from disasters has increased from circa US\$70 billion in the 1990s to US\$170 billion in the 2010s (UNDRR, 2022). This is almost certainly an under-estimate. Should current trends continue, the number of disasters could increase to 560 each year by 2030, up 40% during the lifetime of the Sendai Framework (UNDRR, 2022). The impact of disasters is more than just their economic impact. Disasters also undermine social and ecological systems and are themselves made worse by the depletion of resilience of these systems.

The quality and availability of information on risk and disasters has increased significantly in the last three decades. The decline in deaths from disasters involving hydrometeorological hazards can be largely attributed to improvements in early warning systems and disaster response capabilities. However, major information gaps remain, including in monitoring and measuring progress against the outcomes of the Sendai Framework (Mizutori, 2020). For example, little data on the indirect or cascading impacts of disasters is available to anticipate abrupt and non-linear changes or understand the potential consequences of disaster events. Moreover, few countries have multi-sectoral approaches, such as integrated water resource management, land use planning and climate adaptation and mitigation strategies, which address the many drivers of risk.

There has also been limited progress in implementing national and sectoral policies through budgetary mechanisms and intersectionality. Land use planning remains fragmented because it is based on political and administrative boundaries which are inconsistent with how cities function, or is not long-term. Such disjointed management causes a lack of coordination between jurisdictions, inequities in the provision of public services, and delays in decision-making.

Funding remains fragmented and sometimes creates perverse incentives by prioritizing short-term post-disaster financing needs over long-term risk reduction. Despite the evidence, tight budget constraints and trade-offs render decision-makers reluctant to invest in reducing the underlying drivers of the social construction of risk or to do

so at a scale necessary to reduce the likelihood of emergent risks. Disaster-related spending remains largely driven by reactive and compensatory investments for post-disaster response. Also, funding mechanisms are too often spread across institutions (or government levels) or are constrained by institutional mandates. There is still a long way to go to advance prospective risk reduction measures which fully incorporate risk reduction into the conception and planning of both public and private investments.

The participation of civil society and science and technology institutions in risk reduction policy making remains limited. The accountability of the public and private sector for their risk management and reduction actions such as the monitoring and enforcement of building codes in some areas is limited. The refusal and delay by some governments to act on COVID-19 recommendations from the science community shows the increasing challenge of mainstreaming science into decision-making.

In summary, it is highly unlikely we will meet the Sendai Framework goals by 2030 given current trends in DRR and the limited progress in meeting other global agreements such as the SDGs, climate and biodiversity targets.

WHAT SHOULD WE DO NOW?

1. There is an urgent need for a sustained focus on building resilience by halting and reversing environmental degradation, restoring depleted buffers and nature's capacity to absorb shocks and adapt to changing conditions. Nature-based solutions can address biodiversity loss and the deterioration of ecosystem services simultaneously, which will help climate change mitigation and adaptation, enhance disaster resilience, and deliver development co-benefits.
2. Displacement, if not anticipated and managed, can have devastating impacts on people and vulnerable social groups. In destination areas, unmanaged population flows lead to overcrowding, social tensions, limited access to services, housing, and livelihoods. In areas of origin, displacement leads to a loss of adaptive capacity, and contributes to insecurity, most acutely among women and children. Anticipating and addressing all the impacts of population movement potentially exacerbated by climate change will be essential to avert, minimize, and address damages and losses.

3. The increasing frequency and magnitude of disasters as well as their cumulative impacts heighten mental health problems which undermine DRR responses and recovery in the long term. Such submerged risks (which are caused by loss of livelihood, trauma, and migration pressures) need to be addressed through health systems which include mental health solutions.
4. Current development paradigms undervalue nature. The focus on short-term returns externalizes the cost of risks to third parties and the environment. The 'predict-then-act' approaches, short-term cost-benefit analyses, the undervaluation of natural and social capital, the invisible or underestimated benefits of prevention, all contribute to embed risk creation and accumulation, undermining sustainable development.
5. There is an urgent need to redesign disaster and risk governance into a multi-sectoral and multi-level model which more effectively serves the global goals of reducing risk and vulnerability, leaves no one behind and which strives for sustainable development. This requires a much stronger focus on territorial risk governance across regions and locales. Different risk drivers are interlinked and manifest themselves in territories where stakeholders coexist with risks everyday. Without robust and consistent territorial governance in regions and at the local level, changes in policies or international commitments will have little impact (UNDRR, 2021a). Territorial governance is more comprehensive and distinctive than risk governance. While risk governance has a sectoral connotation, territorial governance has broader characteristics as a framework that sustains systems and processes such as land-use planning, natural resource management, social and economic development of territories, and the planning and implementation of resilient infrastructure. As such, territorial governance is not specific to the disaster risk management sector, but governance on the drivers of risk as a whole (UNDRR, 2021a). Such a governance model extends well beyond emergency management to encompass vulnerabilities, exposures and contextual sensitivities, as well as the benefits of prospective risk reduction.
6. Improvements in financing arrangements for post-disaster purposes must be accompanied by increased (and flexible) financing for ex-ante risk reduction. This financing must reach the most vulnerable. If not, current trends mean the resources

required for response and post-disaster recovery will continue to rise and global efforts to ensure adequate financing will fall increasingly short of their objectives. Dedicated financing for risk reduction should go hand-in-hand with research, innovation, and learning on ways to use existing capabilities more effectively.

7. The development of better multi-hazard early warning systems (MHEWS) is essential to anticipate and act against future disasters. MHEWS linked to social protection will allow countries to provide better targeted support to the most vulnerable in the event of disasters. These MHEWS must become fully integrated information systems embedded in practice which address the full scope of hazards, how hazards interact temporally and spatially and include reliable and up-to-date risk information including on population vulnerability. Critically, they must be accessible and available to displaced people and those at risk of displacement, so they themselves can take anticipatory action.
8. Improvements in the quality of risk data are crucial. Also, it is critical to broaden the availability of risk data and increase the technical and financial capacity to use data for DRR at national and local levels. We must invest more in information quality and standardization, broadening data sets and the application of effective methodologies in sectoral and land use planning.
9. Disaster monitoring must move beyond assessing event-related damage and loss to address the multi-temporal and multi-scale drivers of risk creation and accumulation. Comprehensive and integrated monitoring of vulnerability is needed. This should include vulnerability assessments and adaptive capacity, as well as the monitoring of resilience, for instance, by integrating disaster-related losses of ecosystems and ecosystem services into systems monitoring.
10. A major challenge is communicating risk, complexity and uncertainty to better inform decision-making. But little work has been done to assess how present efforts in communication are perceived by stakeholders including policymakers. To prevent risk creation, manage disaster risk and build resilience, risk assessments must better understand how existing processes of risk communication are perceived by those affected and those making decisions which affects the lives and livelihoods of others.

11. Sustained transdisciplinary collaborations which bring together multiple perspectives from stakeholders, policy and scientific communities, can play a major role in building understanding, trust and context-specific knowledge and pathways for action. This is especially important in the face of fast-evolving or uncertain evidence. Sadly, there is a lack of enabling capabilities or enough transdisciplinary science professionals available to keep up with the growing demand for risk-based information services which can result in minimizing system complexity and backgrounding the need to foster transformative responses. There is an urgent need to develop a cadre of transdisciplinary professionals who can expand the interface between science, policy and practice and drive use-inspired research. Building such science-policy-practice interfaces is a key part of the capacity and institutional development needed to improve communication and coordination across the knowledge to action continuum.

SUMMARY TABLE OF KEY RECOMMENDATIONS

1. Strengthen territorial level risk governance in regions and at the local level that addresses the drivers of risk across sectors.
2. De-fragment finance to align investment with risk reduction goals at global, regional and local scales.
3. Develop community-led nature-based solutions to enhance the protection of natural buffers that reduce risks and achieve co-benefits for sustainability.
4. Develop multi hazard early-warning systems to anticipate and reduce the impacts of disasters and cascading risks across timescales.
5. Develop integrated information systems to monitor the depletion of natural resources ahead of dangerous thresholds to support anticipatory action and prospective risk reduction.
6. Evolve traditional risk assessment and improve methods for risk identification, mapping and reporting as to increase transparency, and as key inputs for early warning, risk management and infrastructure siting and design.
7. Pilot new ways of communicating risk information and its implications for risk management and sustainable development.
8. Develop a cadre of genuinely transdisciplinary professionals to expand the interface between science, policy and practice.

To see the full report, visit

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