



## Issues Brief

# Contribution to Working Session on 'Integrated Risk Management, Ecosystems and Water-Related Risks'

By

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### Rationale

Water-related disasters account for almost 90 percent of the 1,000 most disastrous events that have taken place since 1990 (UNISDR, 2017), and result in multiple casualties and significant damage to infrastructure. While floods are the most frequent disasters, it is expected that by 2050, 40 per cent of the global population will be living in areas that experience severe water stress, particularly in Africa and Asia (The Global Risk Report, 2019).

The demand for water is set to increase in all sectors, while rising temperatures are projected to further increase pressure on limited water resources. Addressing water challenges therefore needs a multi-sectoral and 'systems' approach with specific emphasis on governance arrangements that connect biophysical and social components, and put vulnerable communities-at-risk in centre stage.

Investing in water-related ecosystems is essential to sustain water resources and effective for climate change adaptation and disaster risk reduction. Failure to sustain water flows can cause widespread ecosystem collapse and exacerbate conflicts over access to water and productive land,

which in turn results in local and regional instability and human insecurity, affecting in particular the vulnerable. Water scarcity is an aggravating driver for migration ([IOM 2018 World Migration report](#)).

The continuing uncertainty about the extent of climate change and the severity of impacts suggest the need to enhance resilience of ecosystems vital to water resources such as rivers, swamps, lakes, peatlands and estuaries. These wetlands play a critical role in supplying and regulating the quantity and quality of water and thus function as natural buffers to water scarcity, droughts and floods while providing food, clean water, carbon storage and biodiversity conservation. Notably, we are already losing wetland ecosystems at an alarming rate (64 per cent, [www.ramsar.org](http://www.ramsar.org)) due to unsustainable development.

Integrated Water Resources Management (IWRM) is a process which promotes the coordinated development and management of water, land and related resources in order to maximise economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems and the environment.

Mainstreaming IWRM in DRR and climate change policies and plans can be a systematic solution for preventing and reducing the impacts of water-related disasters and help build more disaster and climate resilient communities and ecosystems.

The Sendai Framework for Disaster Risk Reduction recognises the degradation and loss of ecosystems like wetlands as underlying drivers of disaster risk and encourages countries to strengthen their sustainable use and management for building resilience to disasters. Though the framework doesn't specifically refer to management of water-related ecosystems, the [outcome documents of the 2017 Global Platform](#) in Cancun calls upon leaders and decision-makers to step up their investments in resilience to water related disasters and address underlying drivers of risk, including unsustainable management of land and water resources. Moreover, the Sendai Framework highlights IWRM as an effective way to strengthen resilience against disasters and climate change and achievement of the SDGs.

### **State of Play and Opportunities**

There has been a fair amount of attention for ecosystem-based DRR and adaptation in the global political arena and for ecosystems as important climate buffers in landscapes. A large number of publications have appeared on this topic, most recently '[Nature based Solutions for Disaster Risk Management, World Bank and WRI, 2019](#)'. Though there is now global recognition of ecosystem- or nature-based solutions to reducing disaster risk, climate change and DRR policies, practices and investments that integrate IWRM and nature-based solutions (NBS) are lagging behind.

Instead, risk management and climate adaptation measures proposed by countries and financed by development banks still primarily focus on large scale 'grey' (built) infrastructure which can lead to increasing risks. And there is the risk that Green Infrastructure solutions are interpreted as a

technical solution or merely as an add-on to 'grey' infrastructure schemes. The challenge is to change the paradigm within development, finance and engineering sectors towards working with nature to design effective, sustainable solutions in which an inclusive approach with stakeholders is part of the process.

This paradigm shift in the water sector is urgently needed considering its complex task of securing and balancing water needs for people, industry, food production, urban and rural development, biodiversity and climate change adaptation. At the same time, we are moving towards a more diversified "green" energy portfolio that includes increasing supplies from hydropower and biofuels, energy sources that are all heavily water dependent. Additionally, a continued dependence on conventional 'grey' (built) infrastructure is set to put more pressure on water and wetlands.

To date, only a small number of Nationally Determined Contributions (NDCs) identify the need to protect and restore water ecosystems. The Global Water Partnership concluded that less than a third of the 80 NDCs it analysed embrace IWRM as an approach. The United Nations [Water Development Report 2018 'Nature based Solutions for Water'](#) signals that while nature based solutions are promising and best aligned with the SDG's, investments in these solutions lag behind and attract less than 1 per cent of total investments in water resource management.

In particular, in water scarce areas, vested interests and political decisions have generally focused on food and energy security for urban development. The related role of IWRM including safeguarding, restoration and sustainable management of water-related ecosystems is generally ignored, even though the need for this is signaled in many of the SDG targets. This increasingly leads to reduced water inflow downstream, water scarcity and degradation of water ecosystems which in turn result in conflicts over water, instability and human insecurity, affecting in particular the most vulnerable.

Key challenge is to translate nature-based solutions into concrete field-level action at large scale. Many projects are still at pilot or demonstration scale and are yet to move from proof-of-concept to large scale adoption as a DRR and adaptation strategy. Moreover, many initiatives lack adequate community involvement and incentives to sustain and upscale. For example, conflicts over land ownership seem often not addressed, ecosystem restoration efforts are not integrated in local land use plans or are conflicting with development plans elsewhere in the landscape. There is an urgent need for investments in the enabling mechanisms to overcome such barriers.

## Way Forward

In order to scale up investments in IWRM and nature-based solutions for risk reduction, ***resilient ecosystems should be considered as a pre-condition*** for establishing resilient societies and economies. It should be avoided that ecosystem services are seen (only) as environmental co-benefits.

Integrated Risk Management integrates current and future risks and looks at the wider landscape as a system in which risks originate and become manifest. If well-managed, healthy ecosystems can buffer or mitigate hazards and bring livelihood benefits to communities. Operating at the landscape scale also helps to allow ecosystems to adapt to climatic changes and other drivers, e.g. by establishing ecological corridors or making space for rivers and mangrove ecosystems to move or migrate. All projects aiming to reduce water-related risk should take a **systems approach**; combining in-depth knowledge of ecological features and water systems with socio-economic system and governance context: crucial to identify potential win-win solutions.

Scaling up investments in landscape-scale ecosystem-based DRR requires a multi-layered approach, following the four priorities for action of the Sendai Framework:

- 1) **Address underlying drivers of risk** such as poor water management and degrading wetlands. Consider the key role of wetlands in undertaking risk assessments at the relevant social and spatial scale (land or seascape), specifically when assessing water-related hazards such as floods and droughts
- 2) **Integrate wetland conservation, restoration and IWRM into DRR and climate adaptation strategies.** In particular, integrate these solutions in national water and land-use plans and development and climate adaptation masterplans across sectors, to prevent maladaptation and combine the benefits of ecosystem services with those of other interventions. Other steps could include regulations towards no-net-loss and setting safeguards: plans for major development projects should be prevented from going ahead if they cause ecosystem degradation and increase exposure of most vulnerable people to natural hazards and climate change impacts. As an example, re-design of hydro power infrastructure and review of its operations can open up opportunities for more equal water allocation among stakeholders and ensure environmental flows and resilience downstream.
- 3) **Invest in the sustainable use and management of ecosystems for building resilience to disasters** by 1) maintaining intact ecosystems, e.g. through protected areas planning; 2) sustaining and restoring ecosystems in rural areas, to build community resilience by maintaining provisioning and regulating ecosystem services in support of DRR, sustainable agriculture and retaining a natural resource-base that allows for income diversification; and 3) bringing back ecosystem services in urban and heavily degraded environments, such as sustaining wetland parks, re-creation of flood plains etc.
- 4) **Protecting and rehabilitating ecosystems in post-disaster contexts** for immediate and long-term recovery of peoples livelihoods given the importance of ecosystems and the services they provide to disaster-impacted communities.

Institutional, policy and financial barriers to integrated approaches are very often the main bottleneck to replicate and upscale successful projects. Interdisciplinary and multisectoral collaborations that also include community participation, are key to enable integration as it

facilitates knowledge building and sharing, brokering of solutions and trade-offs, building of partnerships and identification of policy adjustments.

The Water as Leverage programme (<http://waterasleverage.org/>) for example develops innovative, integrated and bankable water solutions to flood prone cities through a fusion of technical, financial, social and cultural expertise and networks including through committed local support by active stakeholder coalitions. It is an example that shows how a relatively small investment can help bring the potential for investments in innovations to scale.

Another example, is the Ecoshape platform ([www.ecoshape.org](http://www.ecoshape.org)) in which government agencies, dredging companies, engineering firms, research institutes, and NGO's, developed the Building with Nature design process and share knowledge and experience from Building with Nature pilots. Their aim is to drive innovation in hydraulic engineering by harnessing the forces of nature to benefit environment, economy and society instead of fighting against nature.

Furthermore, participative learning processes such as '[Water Dialogues](#)' connected to investments such as flood risk management plans, can help to facilitate the introduction and mainstreaming of ecosystem based solutions in adaptation programmes across sectors. These multi-stakeholder dialogues help identify root causes to risk through joint system and problem analysis, innovative solutions and ways to optimise water governance, and potential financial public and/or private arrangements for implementation. Importantly, they build and restore trust among all stakeholders.

Within these 'enabling environment' mechanisms, there should be more recognition and support for the role of civil society to help drive synergies by brokering and facilitating such ecosystem based solutions.