



Image source: Wetlands International Europe

# **2023 Report on interactive webinar: *Wetland solutions to protect against droughts and floods***



**Wetlands**  
INTERNATIONAL



## Executive summary

The report focuses on the pressing need for wetland solutions to be scaled up as tools for disaster risk reduction (DRR). The session featured prominent speakers who offered valuable insights into the potential of wetlands as nature-based solutions (NbS). Key conclusions drawn from the presentations stress the necessity for enhanced collaboration across sectors and levels of governance. Decision-makers are urged to foster partnerships between international organisations, national and regional governmental agencies, local authorities, civil society organisations (CSO) and research institutes, laying the groundwork for integrated DRR plans and projects that address the multifaceted challenges of floods and droughts, while reducing inequalities.

Financing is identified as a significant barrier to the widespread adoption of wetland-based DRR initiatives. It is imperative that appropriate financing instruments are developed to support these efforts. However, the most crucial takeaway from the event revolves around the human element. The realisation of the socio-economic and ecological functions of wetlands in mitigating short- and long-term hazards within local communities can serve as a driving force for collective action. Fostering social awareness and inclusive engagement is essential for the successful scaling of wetland solutions, ensuring that people at risk and vulnerable groups have equitable access to resources.

## Recommendations for decision-makers:

**Promote cross-sector collaboration:** Decision-makers should facilitate and promote collaboration among international organisations, national and regional governmental agencies, local authorities, CSO and research institutes. This collaborative approach can lead to the development of integrated plans, programmes and projects that address multiple and complex disaster risks and reduce inequality.

**Increase investment in eco-DRR:** Resources and funding should be allocated to support ecosystem-based disaster risk reduction (eco-DRR) initiatives and projects, following successful models like Canada's Natural Infrastructure Fund. Increased investment in wetland restoration is essential to enhance socio-economic and environmental resilience.

**Mainstream wetland solutions:** Priority should be given to develop and fund relevant projects such as the Horizon Europe projects *SpongeScapes* and *SpongeBoost*, which explore and quantify eco-DRR innovation while focusing on regional, national and European-level deployment. Recognise that understanding how wetland solutions can contribute to DRR is essential for well-informed decision making.

**Enhance nature-based climate adaptation ambitions:** Prioritise nature-based climate adaptation efforts by setting higher goals and mobilising increased resources for wetland restoration and ecosystem protection. Emphasise the vital role of wetlands in building resilience against climate change-induced challenges.

**Upscale wetland restoration:** Develop and implement comprehensive funding mechanisms to restore wetlands, drawing from diverse funding sources, including public and private sectors. Enforce climate-resilient legislation and non-legislative action to protect water sources and ensure the scalability of wetland restoration initiatives to boost water resilience.

**Integrate wetlands into DRR plans:** Decision-makers should ensure that NbS are well integrated into DRR plans. Recognising the complementary nature of NbS with traditional grey infrastructure, this integration maximises the reduction of exposure to disaster risks and enhances water resilience.

**Promote whole-of-society approach in governance:** Decision-makers should adopt a whole-of-society approach that reduces inequality and employs mosaic thinking. This strategy builds a network of solutions to enhance overall resilience to climate change and disaster risk. Decision-makers should also emphasise inclusivity, particularly in addressing the needs of people at risk and vulnerable groups.

**Establish International Wetland Partnership Initiatives:** Decision-makers should consider launching international initiatives that focus on sharing wetland expertise and best practices with third countries. These initiatives could involve partnerships between European organisations, public authorities and local stakeholders in third countries. These partnerships would aim to transfer knowledge and relevant resources to support third countries in implementing similar wetland-based solutions for DRR.

# WETLAND SOLUTIONS TO PROTECT AGAINST DROUGHTS AND FLOODS

15:00-16:30 CET 12 October 2023



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Director,  
Wetlands International  
Europe



**Kristin Meyer (Keynote)**  
Programme Management  
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**Dr Ellis Penning**  
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**Paul Brotherton**  
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**Willem Jan Goossen**  
Policy Officer Resilience  
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Change,  
DG Climate Action,  
European Commission

## Introduction

The interactive webinar, *wetland solutions to protect against floods and droughts*, took place on 12 October 2023 on the occasion of the International Day for Disaster Risk Reduction (IDDRR). The session welcomed **64 participants working for international organisations, national governmental agencies, research institute, CSO and businesses from over 20 countries**. The event was organised by Wetlands International Europe. The format of the webinar encouraged the participants and speakers to discuss the critical functions of wetlands and ecosystems for adapting to climate change, mitigating disaster risks, and building resilience.

Climate change, environmental degradation and inequality are the big ecological and social challenges of our time. Natural hazards, such as floods and droughts, have become more frequent, exacerbating inequality by disproportionately affecting vulnerable groups, such as low-income communities and marginalised populations. These groups are often more exposed to disaster risks and lack the resources to cope with disasters, leading to greater economic and social disparities. Additionally, the recovery process may further magnify these inequalities if emergency measures and recovery resources are not distributed in an equitable manner. Frequent disasters perpetuate a

cycle of vulnerability and inequality, the theme of IDDRR 2023.

Against this background, the interactive webinar served as an opportunity to engage in an insightful discussion on the role of wetlands in DRR, prioritising the protection and restoration of wetland ecosystem, which can benefit marginalised and vulnerable communities by ensuring equitable access to common resources like safe water, healthy soil and natural solutions against disasters. Through the compelling presentations by the United Nations Office for Disaster Risk Reduction (UNDRR), Deltares, Wetlands International Europe, and the European Commission, the webinar underscored the importance of NbS for a more resilient future.

The event had several key objectives, including raising awareness about the barriers and enablers in implementing NbS in DRR and climate change adaptation (CCA) strategies, providing practical solutions and best practices to enhance water resilience and reduce inequality, and highlighting the need for international, European and national financing mechanisms to realise tangible transformations.





## Presentations

Image source: UNDRR

### UNDRR: Keynote| NbS for DRR

Climate change, environmental degradation and unsustainable practices are underlying and systemic drivers of disaster risks and reveal challenges in DRR governance. In recent years, extreme climate events have become more frequent, causing physical impacts that are more complex to deal with. These events reduce ecosystems' capacity to recover and provide functions and services that contribute to DRR. Degraded ecosystems may exacerbate risks, reinforcing inequalities and threatening vulnerable groups, especially in developing context where there is a dependency on natural resources.

NbS play a critical role in mitigating physical impacts of disasters, preventing new risks through the multiple DRR functions they provide and strengthening socio-economic and environmental resilience. They can also inform planning and investment, as well as provide benefits for infrastructure resilience. NbS are particularly crucial for water risks and resilience because of the devastating impacts water-related disasters have on people, critical infrastructure, society, the economy and the environment.

UNDRR advocates for [comprehensive disaster risk governance](#) as a key approach to reduce disaster risk and build resilience across levels of governance. Comprehensive disaster risk governance emphasises

Kristin Meyer, Programme Management Officer, UNDRR

NbS play an important role to reduce disaster risks in an inclusive manner. The global policy framework shows strong commitment to connecting DRR to the environmental agenda. Traditional risk management approaches have focused on emergency measures post-disaster or -shock. In recent years, we are seeing a paradigm shift that places greater focus on preventive measures to reduce vulnerability and increase capacity to cope with disaster risks.

integrated and coordinated actions at all levels of society and government, involving multiple sectors, stakeholders and institutions. The approach is closely aligned with the Sendai Framework for DRR, which is the global blueprint for reducing disaster risk and losses.

The Words into Action Guidelines on NbS, highlights the benefits of eco-DRR to enhance social and infrastructural resilience ([UNDRR, 2021](#)). The restoration of wetlands, for example, can help to create a resilient future and should be an integral part of disaster prevention and preparedness.

[Rethinking DRR investment can accelerate the deployment of eco-DRR](#). As mentioned previously,

traditional DRR investment has focused on post-disaster rescue, while alternative DRR investment looks at prevention before a hazard turns into a disaster to minimise the severity of impacts. An example of alternative DRR investment would be Canada's recent [Natural Infrastructure Fund \(Government of Canada, 2023\)](#). This is a financial instrument that increases investment in NbS through a dedicated CAD 200 million, with 10% of the fund allocated to Indigenous-led projects. Canada has also been proactive in knowledge exchange with other countries looking to adapt similar DRR funds and is contributing to the Coalition for Disaster Resilient Infrastructure's Report on Global Infrastructure Resilience ([UNDRR, 2023](#)).





*Image source: Deltares*

### **Deltares| NbS for reducing flood and drought risks: What do we need to take into account?**

Traditionally, DRR plans include distinctive measures for specific types of disasters (e.g., floods, droughts). A [landscape approach](#) in DR challenges the traditional approach by proposing a holistic and integrated strategy that considers response of proposed measures to both floods and droughts events in the entire geographic area, including its ecosystems and built environment. It recognises that disasters often have cascading impacts that affect interconnected systems and view natural environments as effective solutions to reduce disaster risks and enhance preparedness.

In the Netherlands, the national government introduced such an integrated landscape DRR plan known as the Room for the Rivers Programme in 2000. This was a response to the extreme high water events in the 1990s that alerted the Dutch government to better manage higher water levels by creating room for rivers through relocating and improving levees, reshaping floodplains and reconnecting side channels. The Programme had a 20-year timeframe to restore the river's natural flood plain and proactively involve local stakeholders in the decision-making process.

As a knowledge institute, Deltares sees a need to [connect science with policy](#), collecting evidence from real life NbS projects to assess how natural solutions can

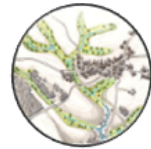
Dr Ellis Penning, Programme Lead NbS, Deltares

An integrated landscape approach that taps into the DRR functions of ecosystems can effectively contribute to preventing disasters. The implementation of the landscape approach must be accompanied by early multistakeholder engagement. National frameworks and local projects can attest to the success of eco-DRR. Nevertheless, scientific evidence is needed to accelerate the deployment of NbS.

mitigate disasters. Deltares is starting a Horizon Europe project, SpongeScapes that aims to collect data and find viable solutions to improve the water retention capacity of landscapes in Europe. While NbS should be a part of DRR plans, they alone cannot address all challenges. Providing quantified evidence helps tell the realistic story on how NbS contribute to reducing risks related to different types and magnitudes of events. Where needed natural DRR solutions should be combined with building codes, zoning schemes, traditional grey infrastructure, as well as early warning systems and evacuation plans to ensure maximum reduction of exposure to disaster risk.

# Natural Sponge Concept in Upstream Catchments

Maximise potential of soils for absorption & infiltration

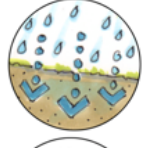


1. **Block drainage channels that speed up surface water**

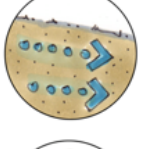
also



2. **Intercept rain with rough vegetation**



3. **Ensure water that reaches the ground can infiltrate**



4. **Hold water in soil & wetlands as long as possible, otherwise re-infiltrate from paved surfaces, fields and slopes**



5. **Slow water that comes to the surface in valley floors with vegetation**

*Image source: Stroming*

## Wetlands International Europe | Wetland solutions to protect against droughts and floods

The case for rapidly restoring “natural sponges” has never been more urgent as Europe experiences the impacts of the climate crisis through an ongoing cycle of extreme weather, droughts, fires and floods. The loss of wetland sponges that absorb, retain and release water slowly is a significant factor in these water-related disasters.

For more than a decade we have researched areas with high sponge potential, including in the upstream valleys of the German Middle Mountains of the Rhine and Meuse River Basins which were the epicentre of the floods in 2021. Drainage channels, impervious surfaces and bare soils in the uppermost parts of these rivers contributed disproportionately to downstream flooding because of lost sponge function.

Despite the recognition in the EU Strategy on Adaptation to Climate Change that NbS such as restoration of the sponge-like function of soils are essential, there is a lack of awareness of the effectiveness of natural sponges among decision makers. Our modelling results are promising for sponge solutions: at the micro-scale, removal of drainage systems in 6% of the area results in a 20-30% lower maximum peak flow, whereas low flow (drought reduction) increases by 10-30%. There are

Paul Brotherton, Freshwater Manager, Wetlands International Europe

Natural sponges are wetland solutions that absorb water and gradually release it over time. The degradation of wetlands has led to the loss of the sponge capacity of the natural landscape, and exacerbated the risk of floods and droughts in Europe. Deploying and upscaling natural sponges offers multiple policy benefits and it recognized as a Nature-based Solution in the EU climate change adaptation strategy.

additional co-benefits to biodiversity and carbon storage, making them true multi-benefit NbS.

What's needed now is to rapidly deploy and upscale natural sponge solutions. Horizon Europe projects, such as Rewet and SpongeBoost, will experiment with innovative sponge solutions to mitigate disaster risks and achieve multiple Green Deal policy goals across Europe. We hope the success of these projects allows the wider DRR community to learn from their implementations and transfer the knowledge to their communities.



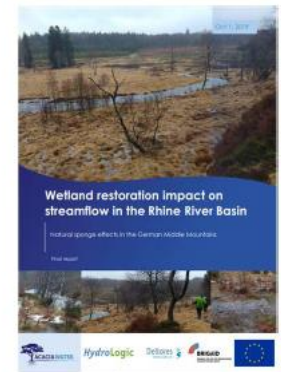
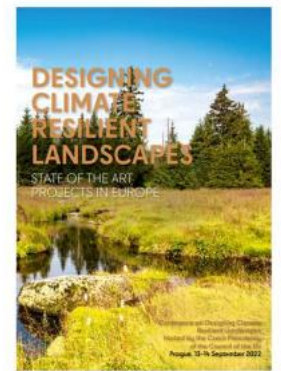


Image source: European Commission

## DG CLIMA| Wetlands and climate adaptation: An EU perspective

A scientific publication by the Joint Research Centre of the European Commission forecasted that water related disasters (e.g., river and coastal flooding) will exacerbate infrastructural damage and human exposure if no adaptation measures are implemented by 2100 ([JRC, 2020](#)). Similarly, the European Environmental Agency also published a report on the urgent need for CCA to reduce damage to ecosystems and their functions on the topics of drought and water scarcity.

Under the European Green Deal Policy Package, many existing and proposed legislations have been introduced. The ongoing [Nature Restoration Law](#) also aims to set binding restoration targets for degraded wetland ecosystems across 27 Member States. Healthy wetlands indicate healthy soil which absorb and release water more efficiently in comparison to degraded wetlands.

In the [EU Climate Adaptation Strategy](#), wetland restoration is an important measure to mitigate droughts and address water security. The European Commission is assisting Member States with the development of national adaptation strategies and plans, drought management and land use plans, as well as developing financial aspects of NbS. In 2024, the European Commission is committed to continue to

Willem Jan Goossen, Policy Officer Resilience and Adaptation to Climate Change, Directorate-General for Climate Action, European Commission

Wetland restoration is integral to the EU's Climate Adaptation Strategy, and the European Commission is supporting Member States to upscale NbS in drought management, land use plans, and financing NbS for faster adaptation.

support authorities in upscaling ecosystem restoration, among other by the deployment of NbS.



## Q&A session

*What are the main enablers to accelerate the deployment of NbS?*

To accelerate the deployment of NbS, researchers are leveraging a set of enablers like multistakeholder approach, enhanced ecosystem management, monitoring and maintenance and raising social awareness to construct meaningful dialogues and kick start a systemic transformation. The Dutch EcoShape consortium, consisting of partners from universities, research institutes, consultants and dredging industry together with water management authorities have identified six enablers from their experiences of implementing NbS to advance towards an integrated landscape approach to reduce disaster risk ([EcoShape, 2020](#)): System Understanding, Multi-Stakeholder Engagement, Maintenance and Monitoring, Institutional Embedding, Business Case and Capacity Building.

In addition to an enabling framework for NbS, there is an urgent need to increase investment to upscale CCA and DRR initiatives. Loans and credits are needed to support regions to find the financial incentive they need to implement NbS and achieve their CCA goals.

*What needs to be addressed to harmonise the environmental and financial demands of different regions and reduce inequality between regions?*

One of the core principles of the European Green Deal is to ensure [a just transition](#) and support regions to realise climate neutrality. However, as shown by multiple flooding and drought events, we have witnessed how climate change can [deepen existing inequalities](#) between socio-economic groups and regions. The most vulnerable groups often most exposed to disaster risks and have the least capacity to reduce their exposure.

Taking cities as an example, urban areas are hit by several climate extremes. Cities need NbS to advance their climate adaptation actions and rebuild ecosystem resilience to store carbon and absorb floodwater. Urban wetlands and green spaces can not only reduce urban heat island effects, but also mitigate the impacts of hazard events. Local governments need to employ a whole-of-society approach, together relevant stakeholders in order to promote coordinated planning that establishes a strong link between climate change adaptation and disaster risk reduction. Particular

attention should be given to minority, disabled and other vulnerable groups to ensure an inclusive environment. This collaborative approach is vital, especially in a world where countries are already actively engaged in addressing these challenges.

One effective strategy in this context is the adoption of an integrated landscape approach. This approach works to bridge the divide between urban and rural areas, employing mosaic thinking to build a network of solutions that enhance overall resilience to climate change and disaster risk. It is through such comprehensive risk governance that we can collectively address and mitigate the growing threats of environmental and climatic challenges.

*What does the European Commission envisage being put in place in terms of finance for NbS, by whom and when?*

The European Commission works with the European Investment Bank to finance NbS, primarily driven by the interests of public authorities that contribute approximately 90% of the investments. The focus lies in assessing both the biodiversity gains and the financial returns associated with these investments. Furthermore, the initiative involves private sector engagement. This engagement is aimed at drawing attention to the importance of wetland ecosystem, particularly its impact on the aquifer, and the necessity to enhance water quality. The common goal is to improve conditions and raise awareness about the significance of wetland projects. Ultimately, the responsibility to implement and realise these NbS rests with public authorities and the involvement of different sectoral representatives.

In order to enable the private financing of NbS and similar environmentally beneficial projects, it's crucial to examine the current regulatory framework closely. This examination should identify areas that can be adjusted or adapted to create more flexible and conducive financial conditions for such initiatives.



*Image source: Wetlands International Europe*

### **Wetlands International Europe| Concluding remarks**

We wish to extend our appreciation to all participants and speakers. The interactive webinar has effectively delved into the core issues that are imperative for the upscaling of wetland solutions in mitigating disaster risks, addressing inequalities, and building resilience in the face of climate change in EU domestic policies and external actions.

One salient conclusion drawn from the research presented is the relevance of wetland ecosystems within the spectrum of NbS. Policies and policy drivers appear to be aligning, and there is a discernible interest from international and European institutions in the potential of wetland ecosystems. However, the critical challenge that we face is the need for extensive scaling, in and outside Europe, as wetlands often remain on the fringes of the European legislative framework.

Foremost among these challenges is the issue of finance. The specific mechanisms and instruments for financing wetland solutions require careful consideration. Yet, the most critical insight gained from the discussions today revolves around the human factor. The understanding and buy-in of local communities, particularly regarding the immediate and long-term benefits of wetlands in mitigating floods and droughts, can serve as a catalyst

Dr Chris Baker, Director, Wetlands International Europe

To scale up wetlands as NbS requires decision-makers to elevate wetlands from the periphery of current policy agenda, address financial barriers and highlight the role of inclusive community engagement.

for collective action. As social awareness spreads, communities become more inclined to find common ground and collaborate effectively.

In the pursuit of influencing decision-makers and promoting wetland solutions as robust disaster mitigation measures, it is evident that collective efforts must be rooted in sound policies and innovative financing. However, the central lesson is the empowerment of individuals and communities, fostering a comprehensive understanding of the critical role of wetlands in reducing disaster risks. The synergy between scientific insights, informed policies, and community-driven initiatives will be the anchor in our future engagement to elevate wetland solutions as a foundational component of disaster risk management.



## Further information

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*Wetlands International Europe is the single network organization in Europe united by the vision of a world where wetlands are treasured and nurtured for their beauty, the life they support and the resources they provide.*