



Investing in Nature for European Water Security

The Nature Conservancy (TNC) present the Investing in Nature for European Water Security (INEWS) report. A joint effort of TNC, Ecologic Institute and ICLEI and based on extensive consultation, the report aims to provide a strategic vision for scaling up nature-based solutions for water security in Europe. It draws on existing experiences with catchment-based interventions, identifies limiting factors and formulates concrete recommendations for how to scale them up.

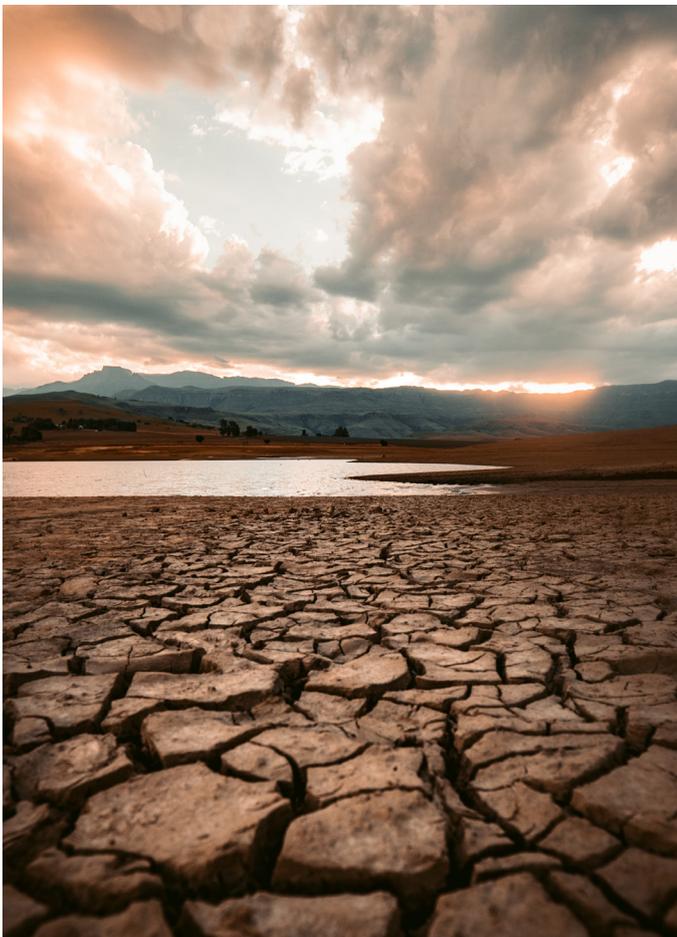
Nature-based solutions are key to boosting European water security

Despite substantial investments and a conducive policy framework, the quality of European freshwaters has not significantly improved since the adoption of the Water Framework Directive (WFD) in 2000. Persistent **water quality issues**, particularly with respect to high nitrates levels, are linked to agricultural run-off from fertilisers and pesticides. Contamination with heavy metals, which takes a long time to reverse, is brought about by industrial activity and burning of fossil fuel, with mercury going up into the atmosphere and coming down into freshwater bodies. Emerging pollutants are a growing threat, including from micro-plastics, antibiotics and endocrine disruptors. These pollutants create dangerous cocktail effects that are difficult to predict and poorly understood. The natural flow of rivers has been heavily modified to respond to economic priorities, for navigation, hydropower production, irrigation and flood risk management.

Other water challenges have significantly increased in the last decades as a consequence of the already visible impacts of climate change. The **risks and likely impacts of flooding** are increasing in Europe, due to modification of water bodies' natural course, the

transformation of natural surfaces into hard, impervious surfaces, increases in population density, floodplain development and land-use change, as well as climate change. **Water scarcity challenges** are no longer the preserve of Mediterranean areas but are affecting Northern Europe as well, due to population and economic pressures compounded by the impact of climate change. Belgium and the South East of England have been amongst the most water scarce regions in Europe for some time. In the last few summers, the river Rhine experienced extremely low flows that called into question its ability to remain navigable over time, whereas Ireland's green pastures were no longer able to provide sufficient cattle feed without the application of fertilisers late in the season, against EU regulations.

All of these factors have contributed to a **rapid decline in freshwater biodiversity**, even more acute in Europe than in other parts of the world. Land and marine biodiversity are also affected by a reduction and degradation of wet habitats and the contamination of coastal areas from watercourses.



What are nature-based solutions for water security?

We define nature-based solutions for water security (NbS-WS) as “actions to protect, sustainably manage and restore natural or modified ecosystems that address water security challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits”.

Relying on NbS-WS can help protect freshwater resources and safeguard nature’s integrity. They can make a significant contribution to reversing the rapid decline in freshwater biodiversity in Europe, adapt to climate change and mitigate its impacts. These solutions are increasingly seen as cost-efficient strategies that need to be mainstreamed in any water resource management strategies.

A range of NbS can be deployed to address water challenges related to surface water quality, groundwater quality, floods and scarcity. Some of these measures entail investments in so-called green infrastructure (e.g., reforestation and building artificial wetlands), while other solutions consist of improved management practices (e.g., agricultural practices leading to reduced fertiliser or pesticides use).

Table 1 - Nature-based solutions for water security: potential solutions and links to water sector challenges

Water challenges >	Surface water quality				Groundwater quality		Floods	Water scarcity		
	Nutrients	Sediments	Pesticides	Other chemicals & emerging pollutants	Nitrates	Pesticides	Upstream watershed	Lower river flows	Lower groundwater levels	Droughts
Nature-based solutions v										
Reforestation/afforestation	○	○	○		○	○	○	○	○	○
Targeted land protection (including forest protection)	○	○	○		○	○	○	○	○	○
Land-use change from farmland to pasture land	○	○	○		○	○				
Riparian buffer strips/Riparian zone restoration	○	○	○				○			
Aquifer recharge	○	○						○	○	○
Reconnecting rivers to floodplains	○	○					○	○	○	○
Establishing flood bypasses							○			
Wetlands restoration/conservation	○		○				○	○	○	○
Construction of artificial wetlands	○	○		○			○			
Ponds and basins	○	○		○	○		○			
IMPROVED AGRICULTURAL PRACTICES:										
Catch crops/Cover crops	○	○	○		○					
Crop rotation	○	○	○			○				
Conservation tillage	○	○			○					
Reduced fertiliser use	○				○					
Alternative plant protection			○			○				
Forestry Best Management Practices (BMP), including forest fuel reduction	○	○			○		○	○	○	

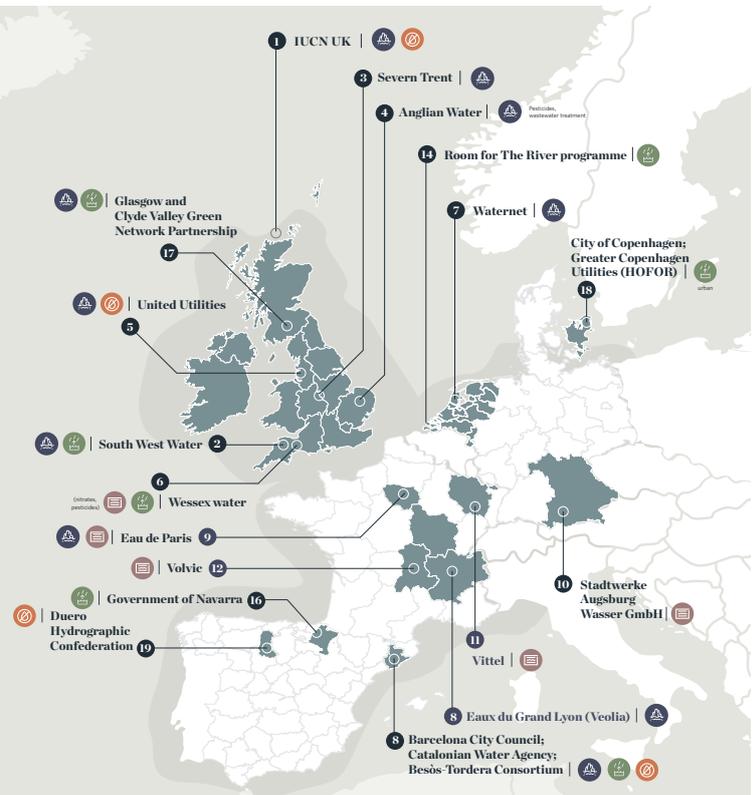
Key Findings in Europe

NbS-WS are mostly funded through public sources in Europe at present. Over the 2014-2020 period, an average of EUR 5.5 billion per year was committed to restoration and conservation of watersheds and to sustainable management activities. An estimated 99 percent of all funding for watershed investment in Europe comes from public funding sources via multiple channels, mostly from the European Union (in the form of CAP subsidies or dedicated grant funds) and from national, regional or local governments. Other substantial public funding for NbS-WS from the EU comes through dedicated grant programmes, such as Horizon 2020, LIFE or Interreg for specific activities. These programmes have gradually invested more in NbS in line with EU policies.

Some European actors have led the way and invested in NbS-WS, including utilities, cities, river basin agencies or large water users, with the support of public funders and regulatory agencies. We documented 19 case studies where these actors have engaged with upstream land stewards and water users to protect water sources, by buying and protecting land, working with farmers and forest managers to support change in agricultural practices or building artificial wetlands to reduce the costs of waste-water treatment.

The majority of NbS-WS that European stakeholders have invested in relate to tackling water pollution challenges. However, to respond to climate adaptation challenges, NbS to address floods and water scarcity are rapidly gaining prominence as well.

Our analysis shows that most projects in Europe are lacking robust quantitative studies on the benefits of NbS-WS. A key issue that has sometimes limited consideration of NbS-WS as



part of water investment programmes is the lack of data on the effectiveness and cost-effectiveness of these solutions, to compare them reliably to grey infrastructure solutions. Collective learning across European countries has been limited, particularly on their potential contribution to addressing water pressures and generating other benefits, including environmental (climate mitigation and adaptation, biodiversity), social (public health and well-being, social cohesion) and economic (including employment or risk reduction).

Examples



UK IUCN Peatland Restoration

The UK IUCN Peatland Restoration programme was established to restore degraded peatland, given its extremely important role in carbon storage and water management. Through restoration and land management activities, as well as awareness campaigns across the country, the programme scope covers 2 million hectares of peatland across the UK.



Eau de Paris, France

Water provider Eau de Paris, in France, has been supporting farmers with financial assistance programmes to help them reduce fertiliser and pesticide use and adopt organic farming practices. Numerous schemes support the transition of farmland to pasture land and compensate the farmer economically for this change.



Navarra, Spain

In the city of Navarra, Spain, the integration of nature-based solutions is used to reduce the risk and effects of flooding. A series of actions based on the protection and restoration of rivers serves as a natural solution to mitigate risks, with focus on the protection of riverbeds and banks.

The report examines key barriers and enabling factors to accelerate investments in NbS-WS in European Member States. Based on a more in-depth review of experiences in five countries (France, Germany, the Netherlands, the United Kingdom and Spain), we found the first four had on the whole more conducive frameworks and at-scale experience with NbS-WS, which Spain is lacking but intends to develop further. In many countries, despite an overall policy framework that is conducive to NbS adoption, acquired behaviours are often the strongest roadblocks to scale, associated with governance barriers and technical, physical or financial barriers.

Key recommendations

Momentum is building to accelerate investments in NbS-WS in Europe. Below are proposed approaches to allow scaling-up NbS-WS further and faster.

1 **VALUE** – Give natural capital the place it truly deserves in resource allocation

Natural capital should be fully taken into account in investment decisions so that NbS-WS can be considered on a comparable basis with grey infrastructure options. Water sector actors should seek to measure the impact of their investment decisions on natural capital and give priority to NbS-WS when they can increase natural capital values.

2 **WORK TOGETHER** – Harness the power of collective action

Investing in NbS-WS generates multiple benefits for multiple parties—but they are often not implemented as no one actor can derive sufficient benefit to justify making the investment. Beneficiaries should work together at the local level (basin or sub-basin) to establish governance and financing structures for joint planning, investment, management and maintenance of NbS-WS.

3 **MOBILISE** – Generate investments through outcome-based blended finance packages

Water-sector investment needs should be packaged in a way that can attract repayable financing, as long as reliable and predictable funding streams exist to repay up-front investment.

This would allow bringing forward investments and prevent further deterioration of water resources and biodiversity. It would also provide access to substantial, liquid and deep financing markets, necessary for scale.

4 **PRIORITISE** – Identify where greatest results can be achieved

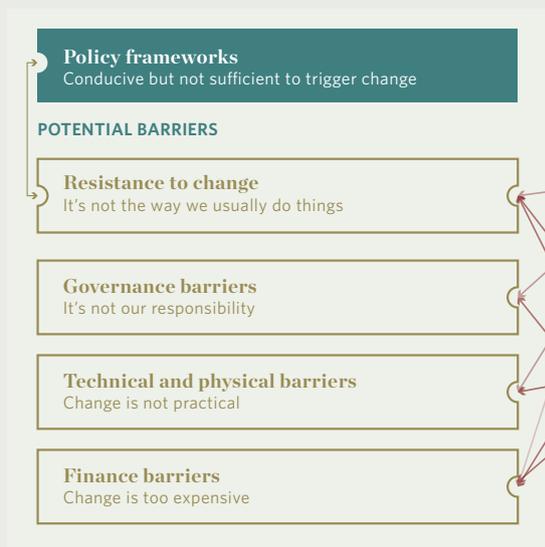
Mobilising a mix of private and public funding and financing requires estimating investment needs, identifying where certain types of NbS-WS can work at landscape scale and building pipelines of investable NbS-WS projects. Building shared pipelines of investable projects should be actively encouraged, including potentially through innovation prizes. A stronger focus is needed on measuring effectiveness and cost-effectiveness on a more reliable basis, to allow comparisons with grey infrastructure solutions.

5 **KNOW YOUR ROLE** – Each type of actor has a role to play to accelerate up-take of NbS-WS in Europe

The report formulates specific recommendations for different actors, ranging from European Union institutions, national and local governments, water service providers, water users (corporations, farmers), public and private financiers, and intermediaries (NGOs, consultancies, academic institutions).

Potential ways to disrupt business as usual to achieve scale

Business as usual



Ways to scale



Contacts:
Sophie Trémolet (sophie.tremolet@tnc.org)
or Anna Favero (anna.favero@tnc.org)

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