



LIVING EUROPEAN RIVERS

Nature-based Solutions

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What are NbS? Definitions

NbS are defined by **IUCN** as actions to PROTECT, SUSTAINABLY MANAGE and RESTORE natural or modified ecosystems, which address **societal challenges** effectively and adaptively, while simultaneously providing human well-being and biodiversity benefits.



EU defines NbS as solutions that are **inspired and supported** by nature, which are cost-effective, simultaneously provide **environmental, social and economic benefits and help build resilience**. Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions

BENEFITS FOR PEOPLE AND NATURE

UNEA: actions to protect, **conserve**, restore, sustainably **use and** manage natural or modified **terrestrial, freshwater, coastal and marine** ecosystems which address **social, economic and environmental** challenges effectively and adaptively, while simultaneously providing human well-being, **ecosystem services, resilience** and biodiversity benefits



What are the societal challenges for freshwater ecosystems?



Precipitation deficit has been impacting river discharges widely across Europe, causing water restrictions and **huge losses to biodiversity** as the rivers dry up.



Parts of Italy's largest river, River Po, dried up during the **worst drought in 70 years⁶**. Italy declared state of emergency.



River Loire⁷, in France, dried so much that it could be crossed on foot, with **unprecedented consequences to the river ecology**.



In Germany, rivers including the Moselle, Oder and Neckar saw a rise in toxic algae due to high temperatures in the river, causing more than **100 metric tons of dead fish**.

26. Jul 2022 at 12:06

Extreme drought in more than half of Slovakia

Emergency was declared in 11 municipalities.



The Guardian

<https://www.theguardian.com> › video › 2023 › jan › sev... ⋮

Heavy rainfall causes widespread floods across Europe – video



Heavy rainfall has caused widespread **flooding** in several parts of the continent, including Spain and Serbia.

The Guardian · Jan 20, 2023

How can NbS solve these challenges?

NbS can help manage water resources in the face of changing precipitation patterns and water availability. Examples include **restoring wetlands and floodplains** that act as natural sponges, absorbing excess water during heavy rainfall and slowly releasing it during dry periods. This helps to regulate water flow, reduce the risk of floods, and maintain water availability during droughts.

Healthy and diverse freshwater ecosystems are more resilient to climate change impacts. **Conserving and restoring** natural habitats, such as riparian zones and wetlands, helps maintain the ecological integrity of freshwater systems, making them better able to withstand and recover from the impacts of climate change.

Climate change can exacerbate water pollution issues, such as increased nutrient runoff and harmful algal blooms. NbS can contribute to improving water quality by filtering and purifying water. **Wetlands**, for example, act as natural filters, removing pollutants and excess nutrients from water before it reaches rivers and lakes.

Freshwater ecosystems support a rich array of **plant and animal species**, many of which are vulnerable to climate change impacts. Protecting and restoring freshwater habitats through NbS helps preserve biodiversity and provides refuge for species affected by changes in temperature, water availability, and habitat suitability.



What we can do (and what are the main pillars of NbS)

1. **Protect what we have** – if we have a freshwater ecosystem that is in good state, protect it and make sure that no damage comes to it
2. **Better manage freshwater ecosystems that are in use for their ecosystem services** (water use for households, irrigation for agriculture, groundwater abstraction etc.) Make sure that we use the water in the sustainable way, without depleting the resource
3. **Restore** degraded ecosystems – reconnect rivers with their sidearms and their old floodplains, remove obstacles to make river flow free. If planned properly, it can reduce flood risk, benefit groundwater recharge and increase biodiversity

AND, KEEP IN MIND

NbS for freshwater ecosystems should be implemented **in conjunction with broader climate change mitigation and adaptation efforts**. Combining NbS with policy interventions, sustainable water management practices, and community engagement can enhance the effectiveness and long-term resilience of freshwater ecosystems in the face of climate change. If we want to have a significant impact, we need to **work with all relevant stakeholders on a watershed level** and plan together.



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