



ModULar Tools for Integrating enhanced natural treatment Solutions in URban water CycleS

Foster inclusive governance to deploy nature-based solutions for water treatment

MULTISOURCE is an EU-funded project conducted from 2021 to 2025 that brings together 20 partners from 12 countries to create innovative tools, methods, and business models to support citywide planning as well as long-term operation and maintenance of nature-based solutions (NBS) for water treatment, storage, and reuse in urban areas worldwide. With seven pilots treating a wide range of urban waters, this project delivers new knowledge about enhanced natural treatment solutions (ENTS) and their ability to make cities more resilient to climate change, to remove waterborne contaminants and provide effective risk reduction for chemical and biological hazards.

KEY RECOMMENDATIONS

- Encourage the use of water tariffs for financing above-ground NBS as infrastructure assets for more effective and sustainable stormwater management.
- Encourage cross-sector public partnerships and public-private partnerships for the long-term implementation of NBS.
- Promote context-specific cost-benefit analyses of green and grey water infrastructure options, taking into account local policy goals and synergies, such as benefits of larger green spaces and multifunctional land uses.
- Support community-driven co-management of urban green spaces to better respond to local needs.
- Encourage local authorities, infrastructure planners, and property developers to use evidence and needs-based tools to select water treatment and stormwater management technologies (e.g., the web-based technology selection tool for NBS Nat4Wat).
- Support the deployment of water-oriented living labs in Europe and beyond to facilitate the deployment of NBS for enhanced urban water management.
- Better consider gender aspects in the design, development, deployment, and use of urban green infrastructures.

DISCLAIMER: *The project consortium can be contacted via jaimenivala@inrae.fr to obtain the information subject of this confidentiality framework.*



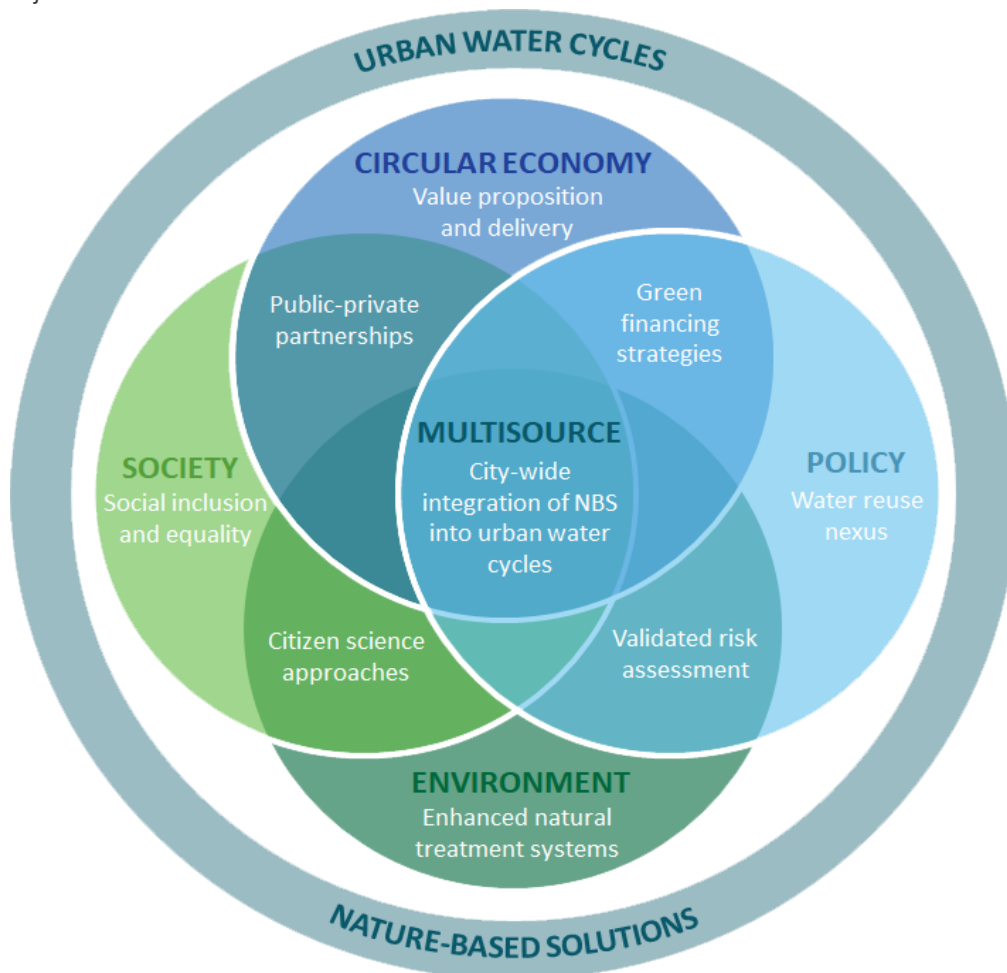
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Context & objectives

This second policy brief¹ gathers the new outcomes of the MULTISOURCE project, fostering inclusive governance to deploy nature-based solutions. Inclusive governance can be defined as “a water system whose governance balances the interests of all stakeholders in its design, management and maintenance” with the objective to create a resilient and reliable hybrid grey and green water system, and hence achieve ultimately a Water-Smart Society².

In the context of the new Urban Wastewater Treatment Directive (UWWTD), which encourages NBS in Europe for urban wastewater management, the MULTISOURCE can provide policymakers with insights, tools, and methods to promote the deployment of enhanced natural treatment solutions (ENTS) to reach their new compliance objectives.

Moreover, the tools and research conclusions of the MULTISOURCE project are valuable for the activities of the Zero-Pollution Stakeholder Platform as well as the EU expert groups – particularly those focusing on the Urban Wastewater Treatment Directive and Floods to provide guidance and best practices to the Member States. Lastly, this policy brief can also inform the European Environmental Agency for its report on just transition and water expected in June 2024.



1. The first policy brief is available here: [Integrated nature-based solutions for water-smart cities, 2023](#)

2. Water Europe, *the Value of Water – towards a Water-Smart Society*, Brussels, 2023. <https://watereurope.eu/publications/>

Institutional barriers that are hindering water and wastewater managers from choosing NBS to mitigate flood risks

Addressing the growing challenges caused by climate change and pollution risks requires innovative approaches. Several institutional barriers frequently hinder authorities and water and wastewater managers from choosing NBS for stormwater management, such as aboveground bioretention, treatment, and infiltration systems, over “grey” solutions, such as stormwater tunnels, despite their greater rigidity and often higher long-term environmental and financial costs. These barriers span a lack of awareness and knowledge of available NBS technologies, entrenched risk aversion and familiarity with “grey” hydraulic structures. Further key obstacles include an insufficient understanding of the financing aspects of NBS, long-term operation and maintenance (O&M) requirements that differ from familiar “grey” assets, uncertain risk and cash flow profiles, decentralized implementation, and land ownership of actors outside of the water sector. NBS projects depend on and affect multiple stakeholders in urban contexts, including municipal departments, property owners, and local inhabitants, underscoring the need for a collaborative approach to tackle pressing water challenges through coordinated efforts. Overcoming these obstacles is crucial for transitioning towards more flexible, resilient, and sustainable urban water management practices.

A knowledge base for local policymakers and water and wastewater managers on urban water treatment and stormwater management

During the first year of the project, the consortium identified several best practices for financing and the O&M of NBS for water treatment. The following recommendations are based on the conclusions of this report³:

- **Encourage the use of water tariffs for financing above-ground NBS as infrastructure assets for more effective and sustainable stormwater management.**
- **Encourage cross-sector public partnerships and public-private partnerships to create viable and sustainable long-term implementation of NBS, with adequate O&M to ensure the provision of intended ecosystem services.**
- **Promote context-specific cost-benefit analyses of green and grey water infrastructure options, taking into account local policy goals and synergies, such as benefits of larger green spaces and multifunctional land uses.**
- **Support community-driven co-management of urban green spaces to better respond to local needs.**

These conclusions highlight the importance of local and regional authorities for mobilising partnerships for deploying such infrastructure.

In 2024, MULTISOURCE delivered its first report on the NBS technology selection tool – Nat4Wat. This knowledge enables local policymakers and authorities to select appropriate solutions for urban water treatment and stormwater management. It is a pivotal asset to make informed choices tailored to specific water scenarios. The project has gathered knowledge on more than 50 types of NBS that provide the basis for the technology selection tool⁴.

In its economic assessment, the MULTISOURCE project concludes that all analysed NBS for water treatment can be economically viable⁵.

3. MULTISOURCE, Deliverable 3.1, *Best Practices for Financing and the Operation & Maintenance of Nature-Based Solutions for water Treatment*, 2021.

4. MULTISOURCE, Deliverable 4.2, *Establishment of an international knowledge base on nature-based solutions and enhanced natural treatment solutions*, 2024.

5. The technologies are treatment wetlands (e.g. free water surface, horizontal flow, vertical flow, and hybrid) and could treat a wide range of polluted water.

Interplay between nature-based solutions & gender⁶

The MULTISOURCE project focuses also on gender equality in the deployment of NBS as such solutions can impact specific segments of the population either positively or negatively. The main conclusion is the importance of five steps in the deployment of NBS to ensure gender equality:

- Gender analysis to identify the required gender-based (or other disaggregated data) targeted actions.
- The inclusion of marginalised groups in the planning stage.
- Develop structures in the implementation stage which are gender equitable and inclusive.
- Required gender-sensitive monitoring and evaluation.
- Set up a gender sensitive budget to carry out all the above steps.

Water-Oriented Living Labs (WOLLS) as a key tool for inclusive cooperation

Through its inclusive and transdisciplinary co-design activities, as well as international cooperation, MULTISOURCE applies core principles of the water-oriented living labs. Thus, the project can provide valuable insights for their further implementation and the iteration of the WOLL concept. MULTISOURCE has released a 15-month snapshot of the implementation of this co-design framework within a host of recent case studies, gathering best practices in a guidance format for local and regional authorities⁷. The main conclusions are as follows:

- **Encourage a flexible framework based on in-person interactions and realistic goals.**
- **Multi-actor collaboration formats, such as Living Labs, are valuable to facilitate the place-based design, deployment, and acceptance of the solutions.**
- **Local or bottom-up approaches to deploy NBS are vital for more sustainable and adaptive water treatment and stormwater management.**

The Water-Oriented Living Labs approach is also a best practice recognised in the UN Water Report 2023⁹ and stands at the core of the [Water4All partnership](#), a funding programme for scientific research in water management.

Water-Smart Society

“A society in which the value of water is recognised and realised, and all available water sources are managed in such a way that water scarcity and pollution is avoided; the water system is resilient against the impact of demographic changes, droughts and floods which are exacerbated by climate change, and all relevant stakeholders are engaged to guarantee sustainable water governance, while water and resource loops are largely closed to foster a circular economy” (Water Europe, 2023)

6. Kalin Ana, *Research paper on the interplay between NBS and gender equality*. MULTISOURCE Deliverable 4.1, 2022, H2020 grant no. 101003527.

7. MULTISOURCE, Deliverable 6.2, *Progress and lessons learnt from the stakeholder engagement in MULTISOURCE pilot locations (midterms)*, 2023.

BOX: Water-oriented Living Labs (WOLLS)

It is a “Water-Oriented, real-life demonstration and implementation instrument that brings together public and private institutions, government, civil society, and academia to jointly build structured grounds to develop, validate, and scale-up innovations that embrace new technologies, governance, business models, and advancing innovative policies to achieve a Water-Smart Society”⁸.

The Water-Oriented Living Labs approach is also a best practice recognised in the UN Water Report 2023⁹ and stands at the core of the Water4All partnership, a funding programme for scientific research in water management. The activities of MULTISOURCE can add value to the preparatory work of this partnership to the next key momentum of the water community, such as the UN Water Conferences or the COPs. This practice is also part of Flagship 7 of the Zero-Pollution Stakeholder Platform of the European Union aiming to achieve a zero-pollution Europe by 2050.

8. Water Europe, *Water-oriented Living Labs; definitions, practices, and assessment methods. Notebook series #1*, Brussels, 2022.

9. UNESCO, *The United Nations World Water Development Report 2023: partnerships and cooperation for water*, Paris, UNESCO, 2023. <https://unesdoc.unesco.org/ark:/48223/pf0000384655>

20 partners • 9 EEA Countries • 3 International Countries

Individual Municipalities	Metropolitan Municipalities	Small and Medium-sized Enterprises (SME)	Non-Profit Organizations	Non-Profit SME	Universities	Research Institutions	Consultancy
GIRONA (ES) OSLO (NO)	CMM (IT) GLYON (FR)	ALCN (AT) IRIDRA (IT) RIETLAND (BE)	FER (SI) WE (BE)	ICLEI (DE)	AU (DK) HCMUT (VT) INSA (FR) MSU (US) UFSC (BR)	ICRA (ES) INRAE (FR) NIVA (NO) UFZ (DE)	IT (FR)

France



Spain



Belgium



Norway



Italy



Germany



Slovenia



Austria



Denmark



Brazil



USA



Vietnam



The overall goal of MULTISOURCE is to, together with local, national, and international stakeholders, demonstrate a variety of about Enhanced Natural Treatment Solutions (ENTS) treating a wide range of urban waters and to develop innovative tools, methods, and business models that support citywide planning and long-term operations and maintenance of nature-based solutions for water treatment, storage, and reuse in urban areas worldwide. The project includes seven pilots treating a wide range of urban waters. Two individual municipalities (Girona, Spain; Oslo, Norway), two metropolitan municipalities (Lyon, France; Milan, Italy), and international partners in Brazil, Vietnam, and the USA will contribute to each of the main project activities: ENTS pilots, risk assessment, business models, technology selection, and the MULTISOURCE Planning Platform. The use of urban archetypes in the Planning Platform will enable users to quickly classify regions (in both developed or developing countries) suitable for the application of nature-based solutions for water treatment (NBSWT) and compare scenarios both with and without NBSWT.



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