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WP4: Transformation

Short Report of the 3rd Water supply and sanitation Sector Roundtable

By Aqua Publica Europea

The H2020 MERLIN roundtables aim to build a community of practice linking the economic sector representatives with MERLIN scientific and implementation partners. Following a [first](#) and [second](#) roundtable with the Water supply and sanitation sector and [Sector Briefing](#), a third roundtable was held on the 25th of April 2024. This report captures the main discussion points of this roundtable. Findings from this roundtable will contribute to the sectoral strategy and subsequently, to MERLIN's cross-sectoral route-map.

Introduction

The Horizon-funded project '*Mainstreaming Ecological Restoration of freshwater-related ecosystems in a Landscape context: INnovation, upscaling and transformation*' (MERLIN) aims to showcase the benefits and promote the uptake of Nature-based Solutions (NbS) for the restoration of freshwater ecosystems. To achieve this goal, MERLIN focuses on transformative changes within six economic sectors: agriculture, hydropower, insurance, navigation, peat extraction, and water supply and sanitation.

In the Water supply and sanitation sector, NbS are gaining prominence, positioning themselves as credible alternatives to traditional 'grey' (engineering) solutions for addressing issues related to water quality and quantity. However, governance complexities and sources of uncertainty about the effectiveness of NbS hamper their adoption by water operators. The third and final water sector roundtable of the MERLIN project, building upon the work and feedback from previous sessions, convened experts to analyse challenges preventing a greater uptake of NbS in the sector. The insightful discussions that resulted from this and past roundtables will be used to feed into a strategy for the water sector containing actions to tackle these challenges.

The structure of this roundtable was as follows: a general introduction on the MERLIN project and the sector to set the scene; a presentation from SDEA, a water operator member of Aqua Publica Europea (APE), on concrete examples of NbS; a discussion on the three challenges of mainstreaming NbS in the sector, and on the necessary ingredients to tackle them; and finally, a conclusion outlining next steps.

Nature-based Solutions implemented by SDEA

A representative from the *Syndicat des Eaux et de l'Assainissement Alsace-Moselle* (SDEA), the water operator in the Alsace-Moselle region of France, presented several large-scale Nature-based Solutions (NbS) projects they have implemented.

He outlined the key factors contributing to the success of these projects:

- Adopting a multi-stakeholder approach involving close collaboration with farmers, the regional farmer council, local municipal authorities, entities responsible for urban planning, the water agency, and experts (academics, researchers).
- Securing mixed funding from various sources, including subsidies from the water agency.
- Prioritising effective communication.

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Of particular note is the pivotal role played by the French GEMAPI law, which delegated the management of aquatic environments and flood prevention to communes and, in Alsace-Moselle, to SDEA. This legislative shift empowered SDEA to recruit engineers with specialised expertise, contributing to adding NbS in the toolbox of possible solutions.

He concluded by mentioning that partnerships are indispensable for the success of such projects. Each partner must contribute equitably, both in terms of costs and responsibilities. Effective, collaborative communication is also paramount. The inherent multi-stakeholder nature of NbS underscores the necessity of holistic expertise, diverse partnerships, and long-term planning for investments and maintenance.

Roundtable discussion: Challenges of mainstreaming Nature-based Solutions

Challenge 1: The ‘industrial culture’ of water operators

Nature-based Solutions are not typically ingrained in the ‘industrial culture’ or ‘software’ of water operators. Many utilities still lack sufficient knowledge about the potential of NbS. In other words, NbS have not yet become fully integrated into the ‘toolbox’ of water utilities.

- **Lack of knowledge, training, and cultural change:** engineers working for water operators have primarily been trained in engineering disciplines that emphasise compartmentalized approaches to water management. Traditionally, these engineering programmes have not included Nature-based Solutions (NbS), resulting in a workforce that is not fully aware of these approaches. There is also a significant lack of awareness about NbS. Efforts are needed to raise awareness not only among water operators but also among engineering companies and technicians involved in water management projects – despite the potential benefits, NbS courses have yet to generate substantial interest. **Changing these entrenched systems requires not only new knowledge but also a shift in organisational culture to prioritise sustainability and resilience over conventional metrics such as efficiency and cost minimisation.**
- **A shift towards holistic approaches is needed:** there is a growing recognition of the need for a more holistic approach to water management, acknowledging the historical compartmentalization of water-related disciplines. However, this mindset of compartmentalization is slowly evolving, driven by factors such as environmental trends and legal obligations to manage river systems. For example, SDEA has acquired competence in river management and hired engineers competent in this domain, making it possible for NbS to become part of the toolbox. **What falls under the remit of water operators is crucial in determining their capabilities.**
- One speaker noted that ‘industrial culture’ should be changed to ‘engineering culture’, to reflect that it is the traditional civil engineering approach that is hindering the uptake of NbS by the sector.
- **Drivers for change:** the adoption and spread of NbS depend on various factors, including education and training of engineers and technicians (especially younger generations), and local partnerships. **The main driver for change is seen as political support and awareness of the benefits of NbS, especially at local level, which can trigger a multi-stakeholder approach and consequently lead to more integrated and sustainable water management practices** (see also discussion under ‘challenge 3’). Furthermore, having interdisciplinary teams within water operators is crucial for addressing the complex challenges of water management. The shift from a purely engineering culture to one that incorporates environmental engineering principles is key for embracing NbS. Effective implementation of NbS also requires collaboration across disciplines. Engineers, ecologists, urban planners, and community stakeholders must work together, **requiring a new level of communication and cooperation between professions that historically have operated in silos.**

In conclusion, the discussion highlighted the need for a shift in mindset and culture within the water sector to effectively integrate NbS into water management practices. This includes education, training, interdisciplinary collaboration, and strong political support.

Challenge 2: The lack of methodologies for evaluating the effectiveness of NbS

While the costs and performance of ‘grey solutions’ are generally well-known, uncertainties persist regarding NbS.

- **Data availability and the multi-purpose nature of Nature-based Solutions (NbS):** accessing data or developing estimations for NbS projects pose a challenge, especially as a result of their multi-purpose benefits and their contextual nature. NbS often have multiple benefits, which are not always easy to quantify, especially as it would require a multi-stakeholder analytical exercise. For instance, when conducting a cost-benefit analysis, water operators tend to evaluate the effectiveness of NbS against a single set of objectives exclusively related to their needs (for example, water security), whereas NbS can have benefits which go beyond the operation of water utilities (for example, biodiversity). For this reason, the comparison of the effectiveness of NbS against traditional engineering solutions is not an easy exercise. This underscores the necessity of adopting a holistic approach: evaluating NbS effectiveness should encompass multiple objectives and integrate up-to-date climate change scenarios into decision-making frameworks. Achieving this requires collaboration across different sectors and governance bodies. There are also multiple uncertainties regarding the costs associated with NbS, particularly concerning long-term maintenance expenses. **Reassessing our traditional funding models to accommodate the long-term nature of NbS is key.**
- **The need for long-term monitoring and evaluation:** effectively evaluating NbS requires long-term monitoring, a component often overlooked in NbS-related projects. **Many NbS, particularly in the water domain, have not been constructed in such a way that long-term impact and outcomes has been properly assessed.** Without comprehensive monitoring, assessing the long-term effectiveness, the costs of maintenance, and benefits of NbS becomes challenging. While the data exists, greater effort should be invested in its collection. Securing funding for long-term monitoring is crucial to gather meaningful data and establish feedback loops for future projects. **Determining who should fund and oversee this monitoring is a key question.**
- **Standardization of evaluation metrics:** While standardization of construction methods for NbS may not be feasible due to their context-dependent nature, there is a need to standardize the evaluation of NbS performance. This includes developing common metrics for assessing the impact on biodiversity, climate change mitigation, and other factors.
- **Incorporating co-benefits and climate change impact:** as previously mentioned, NbS effectiveness should be evaluated not only based on single objectives, but also considering co-benefits and integrating climate change scenarios into decision-making frameworks to ensure NbS resilience in the face of future challenges. NbS can provide extensive ecological and social benefits, such as biodiversity enhancement, water purification, and recreation spaces, which are often undervalued in economic terms. **Establishing methods to quantify these benefits economically would support stronger business cases for NBS investment.**

Addressing the lack of metrics for evaluating NbS effectiveness requires a multi-faceted approach, including long-term monitoring, standardization of evaluation metrics, and incorporating holistic considerations into decision-making processes.

Challenge 3: The complex governance of NbS

The implementation of NbS at urban scale and even more at larger scale (river basin) requires decisions that typically involve a plurality of stakeholders and of administrative functions. In other words, decisions on NbS implementation cannot be taken by water operators alone; they necessitate coordination with other authorities and stakeholders.

- **A multi-dimensional approach:** NbS require coordination among various stakeholders and policy dimensions, making governance inherently complex. Effective governance involves coordination across different levels, from local to international, ensuring alignment and collaboration for successful implementation. However, achieving this is challenging. Effective governance of NbS also necessitates

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integrated policies across governmental levels and policy areas. Current policies often lack the integration required to support complex, multi-benefit NbS projects, indicating the need for comprehensive policy reform. **Participants agree on a need for a transition to a multi-dimensional approach in resource management and policy, incorporating adequate instruments to measure effectiveness and a multi-dimensional financing approach as well.**

- **Financial considerations:** financing NbS requires tools that accommodate their multi-benefit nature. **Traditional funding models are often inadequate for the multi-benefit, long-term nature of NbS.** Innovative financing solutions, such as green bonds or payment for ecosystem services schemes, require development and broader support from governmental and financial sectors. Moreover, ensuring sustainability for NbS necessitates long-term maintenance and monitoring, requiring ongoing funding and technical expertise, often beyond the lifecycle of typical project funding. **Establishing dedicated funds and technical teams for post-implementation monitoring could address this gap.**
- A few participants noted that, given the nature of NbS (i.e. multi-dimensional public good), it is often public administrations or companies with a public mission which will have to invest in them. Securing private participation can be quite complex and merits further discussion.
- **Interdisciplinary coordination:** coordination between sectors such as water management, urban planning, and agriculture is vital for successful NbS implementation. This requires developing a common language and fostering trust among different stakeholders. It is crucial to strengthen the 'narrative' of NbS and emphasise that with climate change and its exacerbating effects, **NbS are indispensable—we cannot solely rely on 'grey' solutions.** Stakeholder engagement is essential for raising awareness, building consensus, and ensuring that NbS projects align with community needs. Beyond that, multi-level governance is also crucial. All governance layers, from international to European to local levels, must be well connected to each other. Achieving this cohesion requires diligent effort and mutual trust.
- While it's imperative to embrace NbS, one speaker noted that traditional 'grey' solutions will remain indispensable, especially considering the disparities between urban and rural areas, including challenges related to space availability. Thus, a blend of conventional and green solutions is essential.

Addressing the governance complexity of NbS requires coordination, communication, and engagement among stakeholders at multiple levels. It also entails developing financing mechanisms that respond to the multi-benefit nature of NbS.

Conclusion

The third Water supply and sanitation Roundtable of the Horizon MERLIN project underscored the critical need to advance the adoption of NbS within the water sector by addressing educational, methodological, and governance challenges. A coordinated effort among all stakeholders—spanning governments, industries, academia, and communities—is essential to overcome these barriers. The three challenges are clearly interrelated, each influencing and driving the others, a point that emerged clearly from the discussions. The draft strategy we are currently elaborating will certainly address the interconnectedness of these three dimensions.

This report will be circulated to participants to gather their comments and amendments. Aqua Publica Europea will then incorporate the feedback from the discussions into the draft sectoral strategy and brainstorm on actions to address the challenges. The draft strategy will be circulated to participants for further comments.

Please let us know if you have any comments or clarifications to add on this report. Please address your comments to marine.boulard@aquapublica.eu



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