Water4All
Water security for the planet

European Partnership

GUIDELINES TO ADRESS IMPLEMENTATION GAPS in key EU water directives through AVAILABLE SOLUTIONS AND STRATEGIES

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CONTENTS

LIST OF ACRONYMS

ACRONYM	FULL TITLE
CIS	Common Implementation Strategy
CLE	Commission Locale de l'Eau
CRRC	Canale Reale River Contract
DWD	Drinking Water Directive
INBO	International Network of Basin Organizations
IWRM	Integrated Water Resources Management
NGO	Non-Governmental Organisation
OECD	Organisation for Economic Co-operation and Development
Os	Observatories
PFAS	Perfluoroalkyl and Polyfluoroalkyl Substances
PFJE	Parlement Français des Jeunes pour l'Eau
RBMP	River Basin Management Plan
RI	Research Infrastructure
SAGE	Schéma d'Aménagement et de Gestion des Eaux
SRIA	Strategic Research and Innovation Agenda
TAP	Thematic Annual Programming
UWWTD	Urban Wastewater Treatment Directive
WFD	Water Framework Directive
WISE	Water Information System for Europe
WOLLs	Water Oriented Living Labs
WYPW	World Youth Parliament for Water
Water4All	European Partnership on Water Security for the Planet

ABSTRACT

This document outlines an effort to bridge the implementation gaps in key EU water directives. Building on prior deliverables and mapping exercises, this report consolidates internal and external insights to propose solution pathways, with a strong focus on stakeholder engagement, cross-sectoral collaboration and emerging pollutants like PFAS - Perfluoroalkyl and Polyfluoroalkyl Substances. Water-Oriented Living Labs (WOLLs), central to the Water4All partnership, are instrumental in identifying and piloting potential solutions.

A major portion of the report focuses on tackling the persistent governance gap of stakeholder engagement. We compile insights from the analysis of case studies, one survey and interviews with key informants. Within the Water4All project, we took the example of the Canale Reale WOLL to illustrate how voluntary participation, layered governance structures, hybrid knowledge sharing, and incentive mechanisms can galvanize local actors to participate meaningfully in water management. These insights were enriched by results from a questionnaire distributed during a Water4All workshop within the 2025 Euro-INBO conference, with responses from 37 organizations in 19 countries providing real-world examples of stakeholder engagement in water governance.

In parallel, the French experience with River Contracts and Water Development and Management Schemes (SAGE) was examined as a mature model of institutionalized stakeholder engagement. Insights were also drawn from interviews with an expert from the Rhône-Méditerranée-Corse Water Agency. These reflections fed into the proposal of a comprehensive implementation strategy based on the CoOPLAGE methodology, which promotes an example of transformative, rather than consultative, participation. The strategy can be adapted to a wide range of different contexts and objectives, suggesting participatory modelling, role-playing simulations, capacity building, systematic evaluation tools, and digital platforms as enablers of effective engagement.

The document also delves into cross-sectoral collaboration as a critical governance gap. It outlines integrated water resources management, data interoperability, policy coherence, and innovative platforms like Living Labs and joint transnational calls as pathways to breaking silos between water, agriculture, energy, and policy sectors.

Elements for possible solutions are provided on PFAS contamination as a specific technical gap, having strong implication also on governance particularly under the Drinking Water Directive but also relevant to the Urban Wastewater Treatment Directive and the Water Framework Directive.

Finally, the report explores how ongoing Water4All activities can contribute to address these gaps in ongoing and future phases.

Notwithstanding the complexity of addressing implementation gaps, these guidelines provide both strategic directions and concrete tools, while highlighting that many activities are ongoing and will yield richer insights in subsequent phases of the partnership. An update is planned in the future to incorporate these evolving findings, ensuring the guidance remains relevant and practical for closing policy gaps in water governance across Europe.

INTRODUCTION

Under Water4All Pillar C activities[1], a **Policy Support Working Group** was established to identify research and innovation needs in support of implementing selected water policies and legislations. The task began in 2022 with selecting relevant **thematic policy area** to focus on: Water Framework Directive - WFD, Urban Wastewater Treatment Directive - UWWTD, Drinking Water Directive - DWD.

The second step was to work on a **thematic policy and technical gaps report**, aiming at identifying the needs for the implementation of the selected policy areas.

The work involved analysing inputs from desk studies, a webinar, and interviews to pinpoint main gaps, which were separated in two main categories: **technical gaps and governance gaps**. Technical gaps identified include controlling diffuse pollution, addressing water quantity and climate change challenges, promoting Nature Based Solutions (NBS), improving data collection and usage or monitoring PFAS. Governance gaps highlight the need for cross-sector collaboration, coherence among EU legislations, stakeholders' engagement, adequate financing, and integrating scientific evidence into decision-making (Table 1)[2].

Table 1: Summary table of implementation gaps

	GOVERNANCE GAPS	TECHNICAL GAPS
WFD, UWWTD & DWD	-Need for **cross sectoral** approaches and coordination -Need for **coherence** between policies -Need to integrate **scientific evidence**, via capacity building, knowledge transfer, communication, awareness -Need to develop **stakeholders' engagement** -Proper implementation of **cost recovery** from all water users	-Need for more **data collection, sharing and use**, to produce information and feedback / data-driven measures -Promotion of **Nature Based Solutions** -Water quantity and climate change are new challenges requiring technical solutions (to increase ecosystems resilience, new conditions for implementation, trade-offs) -Controlling **diffuse source pollution** from rural and urban sources
WFD	Need data on **performance, costs and benefits** – on consequence of inaction	-Transboundary & basin issues (upstream/downstream link) -**Accountability and liability**
UWWTD	-Going to circular, integrating **circular economy** technical solutions to make it applicable -**Energy neutrality** -Control at source to prevent pollution in the first place	-Gaps in the implementation of the Extended Produced Responsibility -**Water reuse**: who is paying, acceptance from potential users -Lack of market limiting **N and P reuse**
DWD		**Monitoring of PFAS**
Other	-New initiatives/solutions stemming from the Green Deal are very intensive users of water (for example, digital transition – data centres; energy transition – production of green hydrogen) -Water is still not **properly and transversally addressed** in other sectors' policies **-Lack of clear policy on water quantity**	

This second step is explained in the Water4All *Thematic policy and technical gaps report*[3] published in 2024 (Deliverable D3.7).

[1] Water4All Partnership – Water Security for the Planet - website: https://www.water4all-partnership.eu/
[2] Table 2 (in Chapter 1 below) presents the complete table of gaps.
[3] Water4All European Partnership. Thematic policy and technical gaps report, July 2024 - https://www.water4all-partnership.eu/sites/www.water4all-partnership.eu/files/2024-10/Water4All_D3.7_Thematic%20policy%20and%20technical%20gaps%20report_2024.pdf

In between, a milestone document was produced (Milestone 56 - *Evaluation of mapping studies on innovative solutions to pinpoint effective solutions that can address policy gaps*), scanning the mapping studies carried out in the Water4All partnership, to see if they contain or pinpoint to solutions that can address the previously identified gaps.

This mapping studies focused on national and regional research and innovation activities/initiatives, research infrastructures, financial programs for start-ups, water-oriented living labs, and international agreements.

The first main observation is that, among the different mapping studies analysed, some don't have results yet, and for some other the added value is still too low for the moment. Among the activities for which results were available yet, the major one is the Water Oriented Living Labs (WOLLs), from Water4All Pillar D on demonstration activities, for which some tasks are ongoing, and which can capitalize on past activities.

To better understand which gaps are possibly addressed by the WOLLs, we conducted a cross-analysis between the technical and governance gaps identified in the report and the WOLLs. This analysis (presented in full in the Milestone 56 and available upon request) is provided in Annex 1 and is the basis for the selection of gaps to focus the work on.

This text begins with a chapter presenting the detailed methodology used to select the gaps that are analysed in this document. In the second chapter, we present detailed insights into the stakeholders' engagement governance gap, based on the results of various activities conducted within and outside the Water4All Partnership. The third chapter is dedicated to insights on two other targeted gaps: cross-sectoral coordination (governance gap) and PFAS (technical gap). The next chapter presents the links between the remaining gaps and possible solutions being developed in the Water4All partnership, followed by some observations and conclusions.

1. METHOD

¬ 1.1 Method to select gaps

To work on the guidelines for solutions, choices had to be made, as many gaps had been identified.

Some gaps were targeted to deepen the work on. To select those gaps, we used one of the main results of our mapping studies: the cross-cutting analysis between the technical and governance gaps and the WOLLs. We chose two of the most addressed gaps in the WOLLs (stakeholders' engagement & cross-sectoral collaboration), which are gaps related to governance, as well as a technical gap (PFAS monitoring) that is an issue not explicitly addressed by the WOLLs, yet implicitly present. These gaps are common to the 3 directives (Water Framework Directive - WFD, Urban Wastewater Treatment Directive - UWWTD, Drinking Water Directive - DWD).

The objective was to explain these observations:

-despite the fact that certain topics are identified as directive implementation gaps for years, (see Gaps report), they are still being addressed today, for example in the WOLLs: are they remaining gaps? If so, what are the obstacles to overcome?

-Some other gaps are not much addressed in current studies: Have solutions been found? Is the gap a new one?

Table 2: Main technical and governance gaps to the implementation of EU Water Directives (WFW, UWWTD, DWD). Targeted gaps in the Chapter 2 and 3 of the present report are marked in red

	TECHNICAL	GOVERNANCE
WFD, UWWTD & DWD	Data and monitoring -Data collection: some data already existing need to be collected, real-time data missing... -**Data use to produce information and feedback / data-driven measures** -Emerging stressors not well covered (e.g., climate change)	Cross sector and multi-level **-Need for cross sectoral approaches and coordination** **-Need for coherence between policies.**
	Promotion of **Nature Based Solutions**	Knowledge and engagement **-Lack of capacity building, knowledge transfer, communication, awareness** -Role of social innovation to ensure the technical innovation are understood and available to local people (who manage water on the field) **-Need to develop stakeholders' engagement**
		Financing and Economy -**Proper implementation of cost recovery from all water users** -Miss some funding sources – possible integration of private finance -Need for solutions for socio-economic transitions, to anticipate changes in a long term.
		-Need for evidence-based planning -Capacity Building
	Digital technologies/ Artificial Intelligence and Machine Learning: technical (new topics, to investigate) and governance gaps (related to water consumption)	
		Missing harmonized transboundary strategies or some institutions (ex: Rhône)
WFD	Connect to Green Deal objectives.	Lack of dedicated funding
	Need data on performance, costs and benefits – on consequence of inaction	Transboundary & basin issues (upstream activities /downstream impact). Miss a catchment approach.
	Mainstreaming control at source for all types of pollution (diffuse, point-source, rural and urban sources...)	Timeframe implementation of measures longer than deadlines. No direct relationship between measures and responses.
	Intermittent watercourses: WFD does not take them into account	Accountability and liability
		Capacity and capability of advisors & competent authorities
UWWTD	Going to circular: -Linking circular water efficiency with emerging pollutants challenges	Gaps in the implementation of the EPR.

	TECHNICAL	GOVERNANCE
	-Large scale implementation of circular systems for water and water sludge reuse /develop the potential of wastewater in circular economy (sludge quality, water reuse) -Integrating Circular Economy technical solutions to make it applicable.	
	<u>Energy neutrality</u> -how to further enhance the energy efficiency in urban wastewater treatment plant (UWWTP) and wastewater management -energy neutrality within UWWTPs vs contribution of UWWTPs to energy neutrality at larger scale (for example, municipal)	Barriers limiting N and P reuse: lack of market to use the recovered nutrients
	Control at source: need to mainstream control at source to prevent pollution in the first place in wastewater, wastewater collecting systems and UWWTPs. End-of-pipe treatment in UWWTPs cannot be the only solution to protect water resources from pollution.	<u>Water Reuse</u> Two main challenges: -who is paying for it -lack of acceptance from potential users of reclaimed water
	Limited focus on managing/ controlling the sewer network (even if the new UWWTD includes storm management)	
		Investment gap: financing of all new requirements
DWD	**Monitoring and treatment of new pollutants are missing: PFAS, micro-plastics, etc.** Importance of control at source first (prevention principle).	
	Link between reuse and health risk. But the EU Water Reuse Regulation sets the obligation of a very thorough risk assessment and management.	
OTHER	-Lack of polluter pays principle and control at source in many other pieces of legislation related to activities polluting water resources -There are new initiatives/solutions stemming from the Green Deal that become new and very intensive users of water (for example, digital transition – data centres; energy transition – production of green hydrogen) -Water is still not properly and transversally addressed in other sectors' policies -Lack of progress in reaching environmental objectives: too ambitious environmental objectives? Do we know what is really feasible? -Lack of clear policy on water quantity	

1.2 Method to analyse gaps and propose solutions

For three above-mentioned targeted gaps[4] , we deepened the work with information from beyond Water4All: desk study, interviews, webinars, workshop (Chapters 2 and 3). We put a strong emphasis on stakeholders' engagement, for which we had a lot of information to explore, especially from a webinar with WOLLs and from a questionnaire distributed during a Water4All workshop within the Euro-INBO International conference 2025[5]. As the pool of information to be analysed was different for each of these 3 gaps, an explanation of the tailored working method is given at the beginning of each of these chapters.

For all the remaining gaps identified (Chapter 4), we have established a link with the potential solutions already produced or to be produced as part of the Water4All partnership.

2. INSIGHTS INTO STAKEHOLDERS' ENGAGEMENT - GOVERNANCE GAP

Limited stakeholders' engagement creates systemic barriers that affect all three water directives in specific ways. For the Water Framework Directive, in particular, the emphasis on public participation and consultation in Article 14[6] is difficult to apply without systematic stakeholders' engagement mechanisms. Insufficient stakeholders' engagement hinders the development and implementation of River Basin Management Plans (RBMPs), as local knowledge is important to understand pressures on water bodies and community support is essential for acceptance and effective implementation of measures.

Methodology

The governance gap was first investigated within the Water4All partnership, particularly in the Water-Oriented Living Labs, as described above. The 16 Living Labs where the topic of stakeholder engagement was identified were contemplated to identify possible solutions or lessons learned. Interviews with WOLL representatives conducted under Water4All Pillar D (Activity D 1 - Engaging with existing operating Living Labs) were analysed, enabling the selection of seven WOLLs with potential solutions to share with other partners regarding stakeholders' mobilization. This list was communicated to Water4All Pillar D, which suggested an additional WOLL (Tagliamento), which was not included in the Water4All Atlas of WOLLs released in 2024[7].

The interest and availability of representatives of these WOLLs to share their experiences during the webinar organized on April 15, 2025, by Water4All Pillar C sub-task C1.2, was checked through individual contacts. The Canale Reale River Contract WOLL was selected to give a comprehensive presentation on stakeholder

[4] These gaps are marked in red in the above table.
[5] Euro-INBO International Conference 2025 - https://www.inbo-news.org/events/euro-inbo-2025/
[6] "*Member States shall encourage the active involvement of all interested parties in the implementation of this Directive, in particular in the production, review and updating of the river basin management plans [...]*".
[7] Water4All Atlas of Water Oriented Living Labs, May 2024 - https://www.water4all-partnership.eu/sites/www.water4all-partnership.eu/files/2024-05/Water4All_Atlas%20of%20WOLLs_2024%20.pdf.

engagement and answer questions from the City of Mechelen WOLL and the participants[8]. The insights of this presentation served as a first step for developing guidance on solutions, as presented in this chapter.

This webinar served as a precursor to the Water4All workshop, which was held on May 20, in Parma, Italy, as part of the programme of the EURO-INBO International Conference 2025. The workshop was titled "*Addressing EU Water Directive Governance Gaps: Solutions for Stakeholder Engagement*". The study case of the Canale Reale River Contract (Puglia Region, Southern Italy), presented during the webinar, was shown to this new audience (see presentation in Annex 2), and questions from the Val d'Orcia Living Lab (AG-WaMED Project; Tuscany Region, Central Italy) were addressed. An interactive session allowed participants to share their thoughts on effective stakeholder involvement in response to two questions:

- How do you think stakeholder's engagement can contribute to the WFD implementation?
- Do you know concrete examples of stakeholder's engagement that contributed (or could contribute) to the WFD implementation?

Thirty-seven organizations from 19 countries responded by providing detailed evidence of how stakeholder engagement can address the identified governance gap. These responses are available in Annex 3. The results were analyzed with the support of an AI tool (Perplexity), enabling a comprehensive investigation of results including a systematic exploration of the references indicated by the contributors to the questionnaire. The results, classified into seven categories as potential solutions to the stakeholder engagement governance gap identified in the thematic policy and technical gaps report, will be presented in this chapter, with illustrations from selected examples.

In order to give insights for elaboration strategies, a few projects cited in the responses from the questionnaires were selected and further analysed using the references indicated by the contributors:

- Room for the River Programme (Netherlands)
- UNESCO MAB Po Grande Reserve (Italy)
- Lake Vesijärvi Management (Finland)
- Citizen Science Water Monitoring (Italy and international)
- The experience of River Contracts (Italy)

The analysis and the description, elaborated with support of AI (Perplexity), are presented in Annex 4.

The Italian River Contracts model was inspired by the French experience of River Contracts, the lessons learnt from this French experience were analysed, based on the authors knowledge complemented with desk study with support of AI (Perplexity) for redacting.

To complement this analysis, an interview was realized with Nathalie Sureau-Blanchet, sociologist at Rhône Méditerranée Corse Water Agency's, who coordinated the call for projects "Water and citizen participation" between 2020 and 2024, financing around fifteen projects each year, for a total amount of around one million euros per year. The summary of the interview is reported in Annex 5, and an analysis was realized about the main conclusions in terms of research questions to refine the implementation strategy.

The project "What participatory strategy for local water management with citizens," developed with INRAE and mentioned by the Rhône-Méditerranée-Corse Water Agency, is linked to a comprehensive method called "CoOPLAGE" which brings together most of the solutions encountered during our analyses and places them in

[8] During the same webinar, the Catalan Water Partnership (WOLL) also presented on cross-sectoral collaboration and answered questions from the Tagliamento WOLL and participants. Insights from this presentation will be included in the next chapter of this document.

a general framework. We will present this method as a suggestion for an implementation strategy to engage stakeholders in the implementation of the Water Framework Directive (WFD) and other EU directives.

2.1 Results within Water4All

❖ Canale Reale River Contract Water Oriented Living Lab

The experience of the Canale Reale River Contract (CRRC) WOLL about stakeholders' engagement is presented in Annex 2. This presentation was made during the Water4All workshop on May 20 in Parma, Italy, as part of the EURO-INBO International Conference 2025 .

Operating in a water-scarce coastal basin in southern Apulia (Italy), the CRRC WOLL provides concrete evidence of how stakeholder engagement can be institutionalized through multi-phased governance architecture. The following lessons learned from this experience will serve as a first step for developing guidance on solutions:

1) **Voluntary frameworks foster deep ownership**

When the CRRC was launched, only municipalities, associations, and businesses willing to accept shared responsibilities, participated in the process. For example, local farmers' cooperatives voluntarily committed to water-saving measures because they were co-designed, not imposed. This co-construction resulted in high motivation and commitment.

2) **Multi-Layer Assemblies can translate technical goals into cultural narratives**

The Assembly of the River Community is a public and open governance arrangement, part of the CRRC structure. This Assembly held meetings in public venues and online (during COVID period) where technical objectives, such as reducing groundwater salinization, were discussed alongside local stories. The Green Festival is an important event organized in the framework of the CRRC, where participants went on guided walks along the river and witnessed both pristine and polluted areas. These experiences made the need for restoration tangible and motivated school groups and tourism operators to participate in subsequent planning meetings.

3) **Iterative action plans can encourage adaptive management**

The CRRC's first three-year action plan included a portfolio of projects, including riparian cleanups and trail signposting. After the initial cycle, the CRRC launched a #Call4Ideas, inviting new proposals from the community. One citizen group proposed an ecotourism micro-project, which the technical committee first vetted, but then adopted for the second action plan. This iterative process enabled rapid results and regular course corrections, ensuring the plan remained relevant and inclusive.

4) **Hybrid knowledge production brings science and tradition together**

Researchers from the regional environmental agency analysed hydro-salinity data, and local farmers contributed their historical knowledge of well levels and irrigation practices. This collaboration resulted in a more accurate diagnosis of the causes of groundwater salinization. Additionally, school-led water quality monitoring campaigns provided data integrated into the provincial database, thereby enriching the scientific evidence base and fostering stewardship among youth.

5) **Economic incentives and risk management drive business engagement**

As a result of the CRRC process, industrial parks in flood-prone areas agreed to set aside land for river setbacks. They recognized that these measures would lower their insurance premiums and reduce the risk of business

interruptions. In return, companies could market their participation in wetland restoration as part of their corporate social responsibility initiatives, thereby aligning their business interests with basin-wide environmental goals.

6) Motivational levers pivot on personal benefits rather than abstract climate appeals

The coordinators of the River Contracts shifted the narrative from the abstract concept of climate change to the concrete, local benefits, such as improved farm yields and enhanced recreational spaces. Early projects, such as creating new walking trails and cleaning up riverbanks, produced visible improvements. These quick wins built credibility and encouraged broader participation, including from private actors who recognized the direct value of environmental initiatives.

7) Strong coordination architecture is essential for persistence

A dedicated Responsible Coordinator managed documents, timelines, and stakeholder relations, ensuring continuity despite changes in political leadership. The Technical Committee evaluated proposals for feasibility, and the Assembly of the River Community provided political legitimacy. Progress audits linked funding to deliverables, creating a feedback loop that supported disciplined execution and adaptive revisions.

To elaborate guidance on solutions about stakeholders' engagement for WFD implementation, these insights from the Italian study case of the CRRC were completed by an overview of other examples around Europe, applying a questionnaire to the participants of Euro-INBO conference.

❖ Questionnaire for participants to the Euro-INBO conference: main results

The questionnaire was applied during the Water4All workshop held on May, 20 in Parma, Italy, as part of the EURO-INBO International conference 2025. Thirty-seven organizations from 19 countries responded by providing detailed evidence of how stakeholder engagement can contribute to the implementation of the WFD and other EU water directives. These responses are available in Annex 3. The results of the questionnaire are presented below according to seven categories as potential solutions to the stakeholder engagement governance gap identified in the Gap Report (D3.7), with illustrations from selected examples.

1) Stakeholder support for River Basin Management Plans implementation effectiveness (17 responses)

The most frequently mentioned category of solution illustrates how stakeholder engagement can address implementation challenges directly. Organizations emphasize that meaningful engagement creates a sense of ownership and commitment, transforming policy implementation from top-down mandates into collaborative action.

The *Ministry of Climate in Estonia* provides a compelling example of early stakeholder engagement in River Basin Management Plan (RBMP) updates. "When we had mapped the initial information and data that could be used for this analysis and drawn up an initial proposal for the methodology, we held meetings with the relevant stakeholder representatives and discussed the data we planned to use, the methodology, and invited them to share their data and ideas". This early engagement strategy resulted in stakeholders being "really happy about it, and we received more data as well as good suggestions for improving the methodology".

The *Provincial Environmental Protection Agency in Trento, Italy*, demonstrates systematic stakeholder involvement by activating technical tables between different public administration offices, such as Agriculture, River Management, Environment, and Industry, and by establishing Programme Agreements with various trade associations representing breeders, farmers, and fish farmers. This approach ensures that all relevant sectors contribute to the implementation of the WFD.

2) Local Knowledge Integration (15 responses)

This solution category aims at incorporating place-based knowledge and community insights into water management decisions.

The *Apulia Region of Italy* articulates this principle clearly: "Europe needs the knowledge of the people who have always lived in a specific place, near a river or a lake. They must take into account what are their needs and should valorize their contribution in caring for nature". This recognition of local knowledge as essential rather than supplementary represents a fundamental shift in governance approach.

The *Institute of Meteorology and Water Management (Poland)* provides extensive evidence of successful local knowledge integration through Citizen science engagement activities including educational workshops, 'Aquatic Detectives', Hydromorphological and Biodiversity workshops and training sessions on climate change adaptation combining expert knowledge with local insights to develop effective adaptation measures.

3) Information Sharing and Communication (15 responses)

The *Po River basin Authority (Italy)* demonstrates how systematic information sharing creates positive feedback loops: "Sharing of information at different levels raises awareness and thus improves active response to actions and respect of eventual new regulations". This approach transforms communication from one-way dissemination to interactive dialogue.

The *Program Manager RBO Meuse River Basin (Netherlands)* provides detailed examples of communication innovation: "Complex WFD topics are translated into accessible information using maps, infographics, and online dashboards". These tools make technical water management information accessible to diverse stakeholders, enabling them to meaningfully participate in decision-making processes.

4) Multi-level Governance Coordination (10 responses)

Coordination effectiveness requires both horizontal integration across sectors and vertical integration across governance levels.

The *Ministry of water management (Netherlands)* demonstrates effective multi-level coordination through "regional stakeholder engagement, such as river dialogues on the level of regional government (province/Bundesländer)" and efforts to "stimulate stakeholder organizations in forming representation". This approach creates structured platforms for coordination across governance levels.

The *Lake Vesijärvi Foundation (Finland)* provides an innovative example of how stakeholder engagement can create new governance levels: "Lake Vesijärvi Management plan which has created a third level of planning under the River Basin Management Plans and Programs of Measures. By that a planning level and all the actions from restoration measures to communication activities has become more near and understandable". This demonstrates how stakeholder engagement can generate institutional innovations that improve water governance.

5) Financing and Resource Mobilization (7 responses)

Stakeholder engagement can create mechanisms for mobilizing financial and human resources needed for effective directive implementation.

For example, the *Lake Vesijärvi Foundation (Finland)* demonstrates how engagement "raise[s] up funding resources" and increases "local and regional willingness to fund the actions". This shows how stakeholder engagement can transform financing from a governmental burden to a shared responsibility among beneficiaries.

6) Innovation and Solutions Development (7 responses)

Answers show how stakeholder engagement generates innovative solutions that would not emerge through conventional governance approaches. The *Po River basin Authority (Italy)* provides a specific example where "a research institution involved as a stakeholder" suggested improving "knowledge on groundwater resources through the development of a hydrogeological and flow model of the Po plain aquifers". This stakeholder suggestion was later "concretized in the MIDAS Po project, developed with a group of universities of the Po district".

7) Conflict Resolution and Negotiation (6 responses)

Answers demonstrate how stakeholder engagement can transform conflicts into opportunities for collaborative solutions. The *S.C. AQUAPROIECT S.A. (Romania)* identifies stakeholder engagement as essential for "reducing conflicts - considering that the water resource is used in many areas (agriculture, industry, energy) intelligent management can put all these things together". This approach recognizes that water conflicts often arise from poor communication and inadequate stakeholder involvement rather than irreconcilable differences.

The *Consorzio della Bonifica Renana Blue (Italy and France)* emphasizes the importance of negotiation when stakeholders have "different needs that can also be opposite," requiring processes that "bring expert from different levels to express scientific knowledge" while finding "an equilibrium between environment economy and safety".

Both questions of the questionnaire (How stakeholder's engagement can contribute to the WFD implementation, and concrete examples of stakeholder's engagement) provided the positive experiences presented above, which can contribute as guidance on solutions. Some of the projects mentioned in the questionnaire responses are described in more detail in Annex 4 as inspiration for future projects.

On the other hand, challenges and shortcoming of stakeholders' engagement weren't investigated in this process, and needed further investigation that was realized outside Water4All partnership.

2.2 Results outside Water4All

❖ Lessons learnt from French River contracts

According to the Italian water managers met in the Parma Workshop, the Italian River Contracts model (presented in the end of Annex 4) was inspired by the French experience of River Contracts. It therefore seems interesting to analyse the lessons learnt from this French experience, with the complementary experience of water development and management schemes (SAGE - *Schémas d'Aménagement et de Gestion des Eaux*).

Institutional Framework and Tripartite Governance Structure

The most significant lesson from the French experience is the importance of establishing a balanced tripartite governance structure (including representatives from local governments, from civil society and from State) that ensures equitable representation while maintaining democratic legitimacy. The *Commission Locale de*

l'Eau (CLE), described as a "water parliament", demonstrates how structured stakeholder engagement can be institutionalized[9].

The CLE composition is mandated by the Environmental Code with specific proportions: at least 50% local elected representatives (mayors, regional and departmental councils), at least 25% water users and professional organizations (farmers, industries, NGOs, associations), and at most 25% state representatives. This structure ensures that local actors maintain majority control over decision-making while incorporating diverse perspectives and maintaining state oversight.

Stakeholder Mobilization and Engagement Strategies

Territorial adaptation is a key lesson from the French experience: Each SAGE territory adapts engagement strategies to local contexts. This localized approach ensures relevance and ownership of engagement processes.
The deployment of "animateurs" (facilitators) with specific missions around awareness-raising, communication, and scientific popularization demonstrates the importance of dedicated professional facilitation. These facilitators develop popularization materials and organize actions adapted to different territories and public types through workshops, seminars, and exhibitions.

Long-term Institutional Sustainability

The French model demonstrates how stakeholder engagement can be sustained over time through institutional continuity and legal backing. SAGE processes are backed by regulatory frameworks that give legal authority to stakeholder decisions, ensuring that "decisions in the domain of water must be compatible or made compatible with its provisions"[10]. This legal recognition transforms stakeholder engagement from voluntary consultation to mandatory consideration in water management decisions.

The six-year mandate cycle for CLE members, combined with permanent secretariats, provides institutional stability that enables long-term relationship building and learning[11]. This contrasts with ad hoc consultation processes that lack continuity and institutional memory.

Integration of Technical and Social Knowledge

The French experience reveals the importance of combining technical expertise with local knowledge through structured processes. This integration approach produces "social learning" about water management, including understanding of the diversity of stakes, better acceptance of the different expectations and water uses. The process enables stakeholders to develop shared understanding of complex technical issues while contributing place-based knowledge that enhances solution effectiveness.

Adaptive Management and Continuous Learning

The French experience demonstrates how stakeholder engagement can support adaptive management through iterative cycles of planning, implementation, and revision. SAGE processes include built-in mechanisms for updating when substantial changes, altering the general scheme of the document or having consequences for third parties, must be made.

Conflict Resolution and Consensus Building

The French experience provides evidence of how structured stakeholder engagement can prevent and resolve conflicts through inclusive dialogue and negotiation. The CLE system creates spaces where associations and

[9] https://www.gesteau.fr/partage-experiences/commission-locale-de-leau
[10] https://www.legifrance.gouv.fr/codes/section_lc/LEGITEXT000006074220/LEGISCTA000006176449/
[11] https://www.gesteau.fr/partage-experiences/commission-locale-de-leau

water users can contribute in the thinking and the decision-making, leading to socially more accepted measures.

The consensus-building approach requires sufficient delays in order to allow the different stakeholders to participate meaningfully. This emphasis on time and process quality demonstrates that effective stakeholder engagement cannot be rushed but requires sustained investment in relationship building and dialogue.

Challenges and Limitations

The French experience also reveals important challenges and limitations that provide lessons for other contexts. First, the complexity of multi-level governance can create coordination difficulties. Second, capacity constraints can affect the sustainability of intensive stakeholder engagement, particularly for smaller municipalities and organizations with limited resources. The French model addresses this through technical and financial support from Water Agencies and state institutions, but resource requirements remain significant.

Finally, the French Local Water Commissions (CLEs) rely primarily on institutional representatives and organized interest groups, excluding ordinary citizens. This structure creates power imbalances that can favor agricultural, industrial, and political actors while marginalizing less organized communities. The result is a governance system that may struggle to represent broader social concerns, leading to calls for more inclusive citizen participation in water management decisions, as we'll see with the initiative of the Rhône-Méditerranée-Corse Water Agency presented below.

❖ Interview with Nathalie Sureau-Blanchet – Agence de l'Eau Rhône-Méditerranée-Corse

Nathalie Sureau-Blanchet, sociologist at Rhône Méditerranée Corse Water Agency's, coordinated the call for projects "Water and citizen participation" between 2020 and 2024, financing around fifteen projects each year, for a total amount of around one million euros per year.

The summary of the interview is reported in Annex 5.

The main lessons from the Water Agency confirm the pertinence of the guidance on solutions obtained from inside and outside Water4all presented in the sections above. Taking the analysis a step further, we have identified a number of these solutions as being particularly innovative, or requiring further research.

1) **Sensitive, sensory and artistic experiences as participatory tools**: these kind of innovative tools proved their effectiveness, especially to reach out to remote audiences or to address forward-looking issues such as climate change: artistic approaches help build narratives "out of the box" for the future of territories, which can then be discussed with all stakeholders and feed into decision-making processes. A Europe-wide survey of such experiences would be useful, as well as an analysis of their potential for Stakeholders' engagement and the possibility to articulate them with decision-making processes. a bridge between the world of science and technology, art and culture. More generally the bridge between the world of science and technology, art and culture could be investigated for future projects, in line with the New European Bauhaus initiative[12].

[12] https://new-european-bauhaus.europa.eu/index_en

2) **Ambassadors' status:** their position is sometimes blurred, between "river" ambassadors and ambassadors for the river management structure. Specific experience feedback and social science research programs would be useful to further explore this issue and facilitate the articulation between these ambassadors and decision-makers.

3) **Youth engagement:** Many initiatives exist around the world, such as the World Youth Parliament for Water (WYPW) and the French Parliament of Young People for Water (*Parlement Français des Jeunes pour l'Eau* - PFJE). The potential of these initiatives to engage present and future decision-makers, as well as their ability to implement EU directives, still needs to be evaluated. This could be a relevant subject for future research programs.

4) **Elected representatives' integration into the process.** Integrating elected representatives into the stakeholders' engagement process is essential to avoid separating them from an "advanced" group of stakeholders. It is also an important factor for effectively implementing EU directives. In general, feedback shows that it is important to involve elected representatives from the beginning and formalize a contract with them regarding how the results of stakeholders' engagement will be considered in decision-making processes. However, some experiences show that such an agreement is not always possible. Even so, a well-managed approach to stakehoders' participation can gradually pique the interest of elected representatives and lead them to accept things as the process progresses that they weren't ready to consider at the outset. Researching these cases would help propose mobilization strategies adapted to each political context.

5) **Resource requirements for stakeholders mobilization:** In France, financing from water agencies is essential in helping river managers cover the considerable costs of effectively and structurally mobilizing stakeholders. It would be important to conduct research on the existence and effectiveness of funding schemes for stakeholder mobilization in other European countries.

Many other subjects discussed with the Rhône-Méditerranée-Corse Water Agency would require further research, and these research needs can be specified during the following work programme of the Water4All Pillar C - task C1.2 activity.

❖ Proposal for comprehensive implementation strategy for stakeholders' engagement

This section presents a comprehensive method which brings together most of the solutions encountered during our analyses and places them in a general framework. It's presented as a suggestion for an implementation strategy to engage stakeholders in the implementation of the Water Framework Directive (WFD) and other EU directives.

The method is fully described in the book "Transformative participation for socio-ecological sustainability: Around the CoOPLAGE pathways" Coordinated by Nils Ferrand and Emeline Hassenforder from INRAE[13]. The method is the result of 20 years of collective research involving 50 researchers and 29 practitioners from around the world.

[13] Free download here: https://www.quae.com/produit/1894/9782759239207/transformative-participation-for-socio-ecological-sustainability

1) From Consultative to Transformative Participation

The book provides fundamental insights into how stakeholder engagement must evolve from consultation to transformation. The authors argue that participation must be transformative and that stakeholders must no longer simply be informed, but acquire the capacities to decide, act and adapt autonomously. This transformative approach directly addresses the governance gap on Stakeholders' engagement by creating genuine shared decision-making power rather than superficial consultation.

The CoOPLAGE approach proposed by this method demonstrates how actors model their situation, principles or plans together for sustainable, empowering decision-making and change. This participatory modelling approach moves beyond traditional consultation to create shared understanding and commitment through collaborative knowledge production.

Transformative participation requires enhanced participation of all stakeholders—from citizens to policy-makers—in the decisions that affect our social-ecological systems. This comprehensive approach addresses the governance gap on stakeholders' engagement by ensuring that all relevant actors have meaningful opportunities to influence decisions that affect them.

2) The CoOPLAGE Toolkit: Systematic Participation Engineering

The CoOPLAGE toolkit provides concrete evidence of how participation can be systematically engineered to address governance gaps. The toolkit is an integrated set of tools aiming at supporting most of the participatory decision needs for natural resources management. This systematic approach ensures that stakeholder engagement is comprehensive rather than ad hoc.

Participation engineering involves the design of the decision procedure and rules themselves and includes modelling of the joint situation, framing of shared social justice principles, and simulation (role playing game) of change pathways and policy impact. This comprehensive approach addresses multiple governance gaps simultaneously.

The CoOPLAGE tools cover all stages of a multi-level participating process, from the design of the decision to the social impact assessment. This end-to-end approach ensures that stakeholder engagement is sustained throughout policy cycles rather than limited to specific consultation phases.

3) Participatory Modelling and Simulation Games

The book provides extensive evidence of how participatory modelling can address knowledge integration challenges identified in the gap report. The "Wat-A-Game" chapter demonstrates how stakeholders can select and adapt the most relevant tools for their needs and expectations through participatory modelling, and serious role playing games to explore water usage and sharing. This approach creates shared understanding through experiential learning.

Role-playing games enable stakeholders to experience complex water management trade-offs in safe learning environments. This experiential learning creates deeper understanding than traditional technical presentations.

Participatory modelling enables stakeholders to project themselves into their own case studies and consider possible decision procedures. This approach builds capacity for autonomous decision-making rather than dependence on expert judgment.

4) Multi-scale Participatory Planning

The CoOPLAN process demonstrates how participatory planning can address multi-level coordination challenges identified in the governance gap. This multi-scale approach creates coordination across governance levels through shared ownership of planning processes.

Multi-scale planning requires successive workshops, role-playing games and digital scenario boards that enable communities to map water–energy–agriculture interactions and prioritize measures. This comprehensive approach addresses the complexity of water management while maintaining accessibility for diverse stakeholders.

5) Evaluation and Learning Systems

The research provides crucial insights into how stakeholder engagement processes can be evaluated and improved. The ENCORE-MEPP protocol enables social impact assessment of participatory processes, addressing the evaluation gap identified in many stakeholder engagement initiatives. This systematic evaluation enables learning and adaptation over time.

Evaluation mechanisms include the 'Participation Compass' web app and ENCORE-MEPP social-impact protocol to track inclusion, learning and behavioural change. These tools enable real-time monitoring and adaptation of participatory processes.

Learning systems ensure that participatory processes comprise several decision and action steps with continuous monitoring and social-impact evaluation that make stakeholder processes adaptive and resilient. This systematic approach to learning addresses the sustainability challenges identified in many stakeholder engagement initiatives.

6) Capacity Building and Facilitation

The research emphasizes the critical importance of facilitation capacity for effective stakeholder engagement. The Tunisian experience demonstrates how territorial facilitators, digital platforms and 'participation charters' are critical enablers of sustained engagement. This highlights the professional and institutional requirements for effective stakeholder engagement.

Facilitator training is essential for scaling up participatory approaches. The research provides evidence that professionalising engagement and speeds conflict resolution requires dedicated facilitation budget and systematic capacity building. This professional development requirement addresses the capacity constraints identified in the gap report.

Institutional support for facilitation includes earmarking 1–2% of Programs of Measures budgets for facilitators and digital upkeep and creating legal rooting for participatory processes. This institutional support ensures that stakeholder engagement is sustainable rather than dependent on individual champions.

7) Digital Innovation and Technology Integration

The research provides insights into how digital technology can enhance stakeholder engagement while maintaining participatory principles. The e-CoOPILOT platform demonstrates how agendas, documents, GIS layers and voting modules can be integrated in one portal to maintain transparency and traceability. This digital integration enables more efficient and transparent participatory processes.

Digital tools can support transboundary basins by mirroring the platform across languages to sustain cross-border dialogues. This technological approach addresses the coordination challenges identified in the governance gap while maintaining accessibility for diverse stakeholders.

Technology integration must be carefully designed to enhance rather than replace human interaction. The research emphasizes that digital tools should pair online dashboards with field games to bridge knowledge gaps rather than creating purely virtual engagement.

In conclusion, the COOPLAGE tool offers a modular suite of participatory methods for genuine, structured stakeholder involvement in all stages of water management decision-making. It is adaptable, free to use, and appears to be well suited to the European WFD context where active participation and co-design are required. The applicability of this tool in the context of the European Resilience Strategy will be explored in future activities of the Policy Support Working Group, as well as the existence of other potential tools and how they could be used in the European context.

3. INSIGHTS INTO CROSS-SECTORAL - GOVERNANCE GAP AND PFAS - TECHNICAL GAP

For these two gaps, less information was available than for stakeholders' engagement. We focused the work on desk study, exchanges and interviews.

¬ 3.1 Cross-sector coordination

Cross-sectoral collaboration is a remaining gap, hindering efficient implementation of Water Directives, and beyond. For this gap, we mixed desk study research, inputs from W4A webinars and exchange with Horizon Europe projects.

Cross-sectoral collaboration in water management is the coordinated effort of multiple sectors—such as agriculture, energy, environment, and health—to jointly plan, manage, and use water resources sustainably and efficiently. Cross sectoral collaboration also entails collaboration between the public sector, private sector, civil society, and research and education.

Key solutions for cross-sectoral collaboration in water management include:

- **Integrated Water Resources Management (IWRM):** Promoting coordinated development and management of water, land, and related resources across sectors.

- **Innovative Governance and multi-stakeholders Platforms:** Implementing collaborative models like river basin contracts to engage local actors and integrate multiple perspectives. Facilitate dialogue among government, private sector, civil society, and local communities through multi-stakeholders platforms.

- **Data Sharing and Interoperability:** Ensuring transparent access to water data across sectors to support joint decision-making.

- **Policy Coherence:** Aligning water-related policies across agriculture, energy, environment, urban, and health sectors.
- **Capacity Building:** Training stakeholders on collaborative approaches and water governance.
- **Institutional Coordination Mechanisms:** Establishing inter-agency committees or task forces to synchronize efforts.
- **Incentives and Funding Models:** Providing financial incentives for joint projects and sustainable water use.
- **Legal and Regulatory Frameworks:** Enacting laws that support collaboration and clarify roles and responsibilities.

Within Water4All

Within Water4All, some activities and results support the promotion of cross-sectoral collaboration.

Water-Oriented Living Labs (WOLLs)

The purpose of the WOLLs is to co-develop and demonstrate solutions in real-life settings, by:

- Providing a **shared platform for public authorities, industry, researchers, and citizens** to work together on local water issues.
- Encouraging **interdisciplinary and cross-sector problem-solving**, particularly around sustainable water use, ecosystem services, and water reuse.

For example, WOLL might bring together municipalities, local farmers, and tech companies to pilot precision irrigation solutions that reduce nutrient runoff into rivers.

In a webinar organized 15th April 2025 by sub-task C1.2, the Catalan Water Partnership has shared some of its practices to bring together stakeholders from different sectors: by clustering more than 150 members, they can promote innovation through EU-funded projects, events, showcase of best practices, but also inter-cluster collaboration on different topics. Some examples were highlighted, like the ViWaTec Project (2024), which engaged consulting and engineering firms to identify opportunities for improving water use efficiency in wineries. The project resulted in the publication of a best practices guide and a catalogue of available technologies.

Research Infrastructures & Observatories web platform

The Research Infrastructures & Observatories web platform supports collaboration across different sectors, as it maps freshwater-related Research Infrastructures and Observatories (RI/Os) across Europe and beyond. It is based on continuous mapping, surveys'- driven assessments, identification of research gaps and synergies between existing infrastructures. The platform will enable researchers, policymakers, end-users and stakeholders from various sectors to share knowledge, access data and use facilities in a coordinated way. Promoting the development of such platform will encourage synergies, will minimize duplication and will support evidence-based decisions, thereby enhancing cross-sectoral collaboration on water research and innovation challenges. The platform in its final stage will be of possible utility to fill in other gaps than cross sectoral collaboration (see also paragraph 4.2).

Joint Transnational Calls for Research & Innovation Projects

Joint Transnational Calls aim at funding collaborative R&I projects that address water-related challenges. It fosters **collaboration through r**equiring **multi-country and multi-sector partnerships** (e.g., academia + SMEs

+ public bodies), as well as promoting **integration of industrial, urban, and environmental sectors** (example of the 'Recent theme **"Water for the Circular Economy")**.

- Knowledge Hubs (e.g., on Aquatic Ecosystem Services)

Knowledge hubs aim at consolidating and communicating knowledge across sectors, by bringing together scientists from different projects and sectors to **produce policy briefs and recommendations**, and translating scientific research into **cross-sectoral policy input**, helping decision-makers align water policy with agriculture, biodiversity, and energy.

- Annual Stakeholder Events and Policy Forums

These events facilitate dialogue between research, policy, and practice.

Forums like the one held in October 2024 in Bordeaux and in May 2025 in Parma create opportunities for structured dialogue between governments, basin authorities, NGOs, and the private sector. They also provide feedback loops between national and EU-level policy development.

Outside Water4All

Other tools, solutions, initiatives, and recommendations are useful when addressing the topic of cross-sectoral collaboration in water management.

- Water Information System for Europe (WISE)

WISE is a comprehensive data platform that consolidates information on water quality, quantity, and management across Europe. It serves as a central repository for data relevant to the WFD, facilitating informed decision-making and enabling stakeholders from various sectors to access and share information.

- OECD Guidelines on Water Economics

The OECD provides guidelines for integrating economic considerations into water management under the WFD[14]. These guidelines emphasize the application of the "polluter pays" principle, cost recovery, and financing mechanisms, supporting cross-sector collaboration by aligning economic incentives with environmental objectives

- River Basin Management Plans (RBMPs)

These are the central tools for implementing the WFD. They are developed through extensive public consultation and are valid for six years. RBMPs are used in major international river basins such as the Danube, Rhine, and Elbe, where cross-border and cross-sectoral collaboration is essential.

International River Basin Management

Projects in the Danube, Rhine, and Elbe river basins have demonstrated successful cross-border and cross-sectoral collaboration. For example, the International Commission for the Protection of the Danube River (ICPDR) coordinates actions across multiple countries and sectors, resulting in improved water quality and ecosystem health.

- Common Implementation Strategy (CIS)

The CIS is a collaborative framework established by EU Member States, Norway, and the European Commission to ensure coherent and effective implementation of the WFD. It comprises various technical working groups that produce guidance documents on aspects such as ecological status assessment,

[14] https://www.oecd.org/en/publications/implementing-water-economics-in-the-eu-water-framework-directive_d6abda81-en.html

monitoring, and public participation. These resources support cross-sectoral coordination by providing standardized methodologies and fostering dialogue among stakeholders.

❖ WEFE Nexus approach

The WEFE Nexus approach in water management is a systems-based framework that recognizes and manages the **strong interconnections** between Water, Energy, Food, and Ecosystems. Instead of addressing water issues in isolation, it integrates policies and practices across these sectors to optimize synergies, reduce trade-offs, and ensure sustainability, by:

- Promoting integrated planning: It encourages stakeholders from water, energy, agriculture, and ecosystem sectors to jointly assess needs, risks, and opportunities, leading to more effective and sustainable solutions.
- Facilitating multi-stakeholder engagement, building platforms for dialogue and coordinated action, breaking down traditional silos.
- Supporting evidence-based decisions, by using tools and assessments to analyse interlinkages, helping to balance competing demands and maximize benefits across sectors.

Some specific **tools** are available:

- REWEFe: A tool for rapid, scenario-based assessment of the WEFE Nexus, helping stakeholders visualize synergies and trade-offs (see example with the InnWater project in the following section).
- Nexus Framework (GWP Toolbox)[15]: Guides users through analysing interlinkages and developing integrated management responses.

❖ Horizon Europe projects

- Focus on Governance innovation : GOVAQUA, InnWater, RETOUCH NEXUS

The three Horizon Europe projects GOVAQUA, InnWater and RETOUCH NEXUS are working on innovative governance to promote innovative, multi-level, cross-sectoral and collaborative water governance across Europe.

Their **key messages** and activities on this topic include:

More attention should be paid to **water use and impacts** in the agriculture, industry and energy production sectors and their water-intensive value chains to reach the WFD water status objectives and to advance systemic adaptation to climate change. **Regulation** should be able to impose requirements not only on new, but also on existing activities impacting waters.

Participatory and collaborative approaches between the public sector, private sector, civil society, and research and education support vertical integration across multiple levels of governance and horizon-tal coherence and coordination across policy sectors. Power and capacity of actors, diversity of knowledge systems and coordination across jurisdictional and geographical boundaries are critical factors in their effectiveness. **Social innovation** and digital solutions facilitate data exchange, streamline decision-making, and promote inclusive participation from all stakeholders.

[15] https://www.gwp.org/en/sdg6support/iwrm-support/themes/water--energy--food--ecosystems-nexus/what-is-the-wefe-nexus/

Regulatory mix across sectors

Water allocation mechanisms define who can abstract and use water, how much, and under what conditions. Due to the impacts of climate change, countries and regions should be able to regulate and prioritize water uses in times of water scarcity. For example, Spain and Romania have prepared drought management mechanisms for this purpose, including agricultural water use.

Water should be seen as a key element in the implementation of the newly adopted Nature Restoration Law. Furthermore, **ecological flows** are essential for the aquatic ecosystems to provide ecosystem services and are linked to physical alterations of water, such as water abstraction and the operation of hydropower dams. Regarding the latter, Sweden attempts to bring all existing hydropower permits in line with modern environmental requirements.

Collaborative approaches

Going beyond the mandated participatory planning of the WFD, river contracts (Italy, Belgium, and France), water forums (Ireland), watershed visions (Finland) and the Catchment Based Approach and Catchment Partnerships (the UK), are examples of collaborative multi-stakeholder approaches that engage stakeholders in the given river basins and catchments to set a common vision and work towards shared aims. Alignment and **coordination with public sector processes, clear mandates,** roles and responsibilities between different stakeholders, and sustainable funding mechanisms have been identified as necessary for their success.

Social innovation refers to the design and implementation of innovative solutions which ultimately aim to improve the welfare and wellbeing of individuals and communities. In water governance, social innovation means tackling societal, water-related challenges by combining the technological and non-technological dimensions (governance, capacity building and economic) of innovation. These complementary dimensions cut across organizational, sectoral and disciplinary boundaries. Demonstration and pilot sites and Living Labs are among social innovation methodologies gaining increasing popularity in tackling water governance challenges across Europe

Tools for monitoring and evaluation

In terms of monitoring and evaluation, systematizing knowledge and considering cross-sectoral interactions can help improve water management. For example, more effort is required to **identify indicators and create platforms that allow a frequent flow of information for the public**. This is especially true at smaller scales as disaggregated information regarding water quantity and water quality is still limited or unavailable. Furthermore, understanding the **trade-offs and synergies** among the water, food, energy, and ecosystem sectors can help to fully understand the impact of multiple management decisions. These practices will allow policymakers and the public to make faster and better-informed decisions.

Co-design and application of a range of data and digital solutions that span data collection (citizen science monitoring, IoT, and satellite remote sensing) to the processing, storage, and use of information, support decision making for water resilience. For example, the UK InnWater pilot site (Westcountry) is working a lot

on citizen science, for collecting data as well as raising awareness. In the GOVAQUA project, they developed the Oxford Rivers Portal on water quality in the UK[16].

- Focused on WEFE Nexus: NEXOGENESIS

NEXOGENESIS is a 4-year European collaborative project financed by the European Commission under the H2020 programme. It gathers 20 partners from Europe and South Africa focusing on facilitating the next generation of effective and intelligent water-related policies using artificial intelligence and machine learning to assess policy impacts on the WEFE nexus to suggest new ways to design better, more harmonious policy.

NEXOGENESIS has developed the NEPAT tool, supporting cross-sector water management by using AI to assess policies, simulate impacts across water, energy, food, and ecosystems, and recommend integrated solutions. It helps stakeholders make informed, balanced decisions for sustainable Nexus governance[17].

The project also intends to develop a WEFE Nexus Footprint. A composite indicator, the WEFE Nexus Index, has been established providing a quantitative means to evaluate trade-offs when achieving sustainable development. The WEFE Nexus Index will be updated with stakeholders. A WEFE nexus footprint is crucial as shortcomings have been noted in the monitoring of the sustainability of the Common Agricultural Policy (CAP).

Still, some challenges remain to enable integrated solutions that address water, energy, and food challenges simultaneously. In a Water Europe webinar organised on the 1st July 2025[18], some of such challenges were raised: the need to ensure coherence among policy frameworks, to have more knowledge coproduction across sectors, to focus on governance in water intensive sectors, the need for more awareness on water values within some sectors or the opportunity from the recent Water Resilience Strategy to foster Nexus approach.

3.2 PFAS

Per-and polyfluoroalkyl substances (PFAS) were identified as a technical gap connected firstly with Drinking Water Directive implementation, but also embracing the Urban Wastewater Treatment Directive and Water Framework Directive accomplishment. Going into details of the PFAS topic is complex, for many reasons. PFAS in fact represent a wide amount of substances, nowadays omnipresent and persistent causing serious health and environmental damage. A comprehensive review in support of finding possible solution to some of the technical gaps identified goes beyond the scope of this report. Anyway, to support some reflections and ideas for possible solutions, the present paragraph proposes some key points identified within the interview carried out with Gabrielle Bouleau from the Piren-Seine Water Oriented Living Lab. Some of the inputs derived from this interview, reported in full in Annex 6, can be further investigated looking at specific papers. Table 3 presents the structured synthesis of the various analytical considerations addressed within the interview.

[16] https://oxfordrivers.ceh.ac.uk/
[17] https://nexogenesis.eu/the-nexogenesis-solutions/
[18] https://watereurope.eu/event/water4all-wolls-network-webinar-2-policy-innovation-and-regulatory-sandboxes-for-water-management/

Table 3: Synthesis of main outcomes on PFAS topic

Constrain	How to move forward	To deepen
Difficulties in monitoring PFAS and in setting PFAS thresholds	Investment in developing specific ecological assessment tools, also involving ground waters. Invest in not target methods to detect PFAS. Invest in manager information on the value of not target method. Raise people trust in tap water. Scaling up monitoring through the convergence between ecological and health issues	Dewapriya, P., Chadwick, L., Gorji, S.G., Schulze, B., Valsecchi, S., Samanipour, S., Thomas, K.V., Kaserzon, S.L., Per and polyfluoroalkyl substances (PFAS) in consumer products: Current knowledge and research gaps. Journal of Hazardous Materials Letters, 4, 2023, p. 100086 ss Kwiatkowski C., Andrews, D. Birnbaum L., Bruton T., Dewitt, D. Knappe, M. Maffini J., Miller M., Pelch K., Reade A., Soehl A., Trier X., Venier M., Wagner C., Wang, Z. and Blum A., 2020. Scientific basis for managing PFAS as a chemical class, Environmental Science & Technology Letters, 2020, 7(8), p. 532-543. Jamie C. DeWitt, Juliane Glüge, Ian T. Cousins, Gretta Goldenman, Dorte Herzke, Rainer Lohmann, Mark Miller, Carla A. Ng, Sharyle Patton, Xenia Trier, Lena Vierke, Zhanyun Wang, Sam Adu-Kumi, Simona Balan, Andreas M. Buser, Tony Fletcher, Line Småstuen Haug, Audun Heggelund, Jun Huang, Sarit Kaserzon, Juliana Leonel, Ishmail Sheriff, Ya-Li Shi, Sara Valsecchi, and Martin Scheringer, 2024. Environmental Science & Technology Letters 2024 11 (8), 786-797 DOI: 10.1021/acs.estlett.4c00147 POLICY BRIEFING: Toxic tide rising: time to tackle PFAS. National approaches to address PFAS in drinking water across Europe. EEB, 2023. Meegoda, J.N., Bezerra De Souza, B., Casarini, M.M., Kewalramani, J.A., A Review of PFAS Destruction Technologies, in Int J Environ Res Public Health, 19, 2022, p. 16397 ss.
PFAS treatment (not simply transfer PFAS from one matrix to another)	Development of more effective PFAS degradation and destruction technologies	
Limit end of pipe solution for PFAS	Prevention and prescription to limit PFAS emission. EU regulations acting in a stricter way. Collaboration with industries: incentives to produce less hazardous substances and obligation to provide information for the identification of the chemicals that are put in the market (and emitted)	

4. LINK BETWEEN REMAINING GAPS AND WATER4All SOLUTIONS

In several other pillars and tasks in the Water4All partnership, there are relevant activities with connections to one or several technical and governance gaps. As many activities in the partnership are on-going in phases 2 and 3 of the partnership, we assess that the continuation and finalization of several of these activities will deliver useful insights for the implementation gaps of (some of) the different directives in a later stage. For that reason, we here give an overview of the activities in the partnership that show potential relevance for future guidelines to solutions to some or several of the implementation gaps.

In the Milestone 56 *'Evaluation of mapping studies on innovative solutions to pinpoint effective solutions that can address policy gaps'*, an overview was made of various mapping studies conducted under different tasks and pillars of the Water4All partnership, to see if they can provide solutions to the abovementioned gaps. The mapping of the Water Oriented Living Labs (WOLLs) was the most concrete process and was described earlier in this report.

Some of the other mapping studies have potential to deliver new insights in the future, and they are summarized here. Also, other activities in the partnership, like the joint transnational calls, the knowledge hub, the thematic annual programming (TAP) action, are focussing on topics that are clearly or closely linked to one or more of the three selected directives.

4.1 Mapping and coordination or research and innovation activities

The mapping exercise 'Mapping and coordination of national and regional research and innovation activities/initiatives' (Pillar A, Task A.2) is aimed at developing solid knowledge of the water R&I sector across Europe, e.g. water R&I programmes, funding schemes, funded projects, research infrastructures, mobility schemes, international cooperation. Through a questionnaire, information is collected on the typology of calls and of projects funded, who can apply, and eligible expenses. Of potential relevance for the Pillar C tack C1.2 activities is the information about the relation to the Strategic Research & Innovation agenda - SRIA[19] themes. This potentially will allow to look for research and innovation activities and initiatives with relevance to the implementation gaps of the selected water directives. The SRIA theme 'water for ecosystems and biodiversity' is closely related to the WFD. And the SRIA themes on water and health, and on infrastructures for water have interlinkages with the UWWT and DWD.

4.2 Mapping of water research infrastructures and observatories

A second mapping activity that showed potential for future solutions or interrelations, is the 'Mapping of water research infrastructures (RIs) and observatories (Os)' in Pillar C under Task C.4.1. Subtask C4.1 prepares a comprehensive inventory of RIs/ Os, which can be the basis of assessing the related research and policies' needs and gaps and of identifying the possible synergies. Possible merging of the findings between the subtasks C4.1 and C1.2 will potentially allow to address governance and technical challenges in water resource management. By identifying and categorizing research infrastructures and observatories, the mapping study supports practical solutions and evidence-based policymaking. This synergy not only facilitates the implementation of EU water directives but also ensures long-term sustainability in water management through improved collaboration, data sharing, and stakeholder engagement. Exchanges of knowledge and effective collaboration among all Pillars and Tasks is one of the main goals of the Water4All partnership. The

[19] Water4All Strategic Research and Innovation Agenda (SRIA): 2022-2025 - https://www.water4all-partnership.eu/sites/www.water4all-partnership.eu/files/2023-02/Water4All_SRIA-2022-2025_A4_2311_bd.pdf

platform in its final stage will make Research Infrastructures (RIs) and Observatories (Os) accessible to the widest possible audience, as well as it will facilitate interactions between different actors, policy makers and stakeholders.

4.3 International agreements

Under Pillar E on Internationalisation of the Water4All partnership, a mapping was carried out of existing agreements between EU countries and non-EU countries[20] and of existing water-related programmes managed by international organizations[21].

The main topics identified for project funding within the report on existing International water-related programmes are: sanitation, water use and access to water, climate resilience, groundwater management, and circular economy. Most of these topics have a clear relation with one or more of the selected directives (WFD, UWWTD, and DWD).

A detailed analysis of the correspondence between topic and gaps is described in the Milestone 56. In general, it can be expected that some of the projects, especially the ones acting at a global scale, can possibly provide results inspiring solutions to be applicable also in Europe.

Another important pillar in the partnership that has a clear potential to deliver new insights, also for the implementation gaps in scope of this activity, are the Joint Transnational Calls under pillar B of the partnership.

4.4 Call on hydroclimatic extreme events and management tools

Two Joint Transnational Call launched in the framework of the Water4All partnership have gone through the selection phase and projects are ongoing. The state of play of the Water4All research projects funded through the Joint Transnational Calls is available on Water4All website[22].

The first Joint Transnational Call was launched in 2022 with the scope "*Management of water resources: resilience, adaptation & mitigation to hydroclimatic extreme events & management tool*". The objectives of this first Joint Transnational Call of the partnership are to investigate the spatial variability and underlying processes of the increased number of hydrological extreme events in the last few decades. Water4All's 2022 Joint Transnational Call sought to deliver knowledge, models, approaches, tools and methodologies to better understand hydrological processes at different scales and to respond more efficiently to emerging water issues related to extreme events. The call also addressed innovative governance models, and enhanced participation of stakeholders, communities and society at large in water management issues related to extreme events. Addressing governance required participation and engagement of stakeholders in the problem analysis and the identification of relevant knowledge gaps. The co-design of solutions, and the co-management of decisions related to water required activities in the field of communication, public awareness and education.

The 2022 Joint Transnational Call was implemented by 34 research and innovation funding organizations from 29 countries, with the financial support from the European Commission. At the end of the selection process,

[20] Water4All Mapping of existing agreements with third countries, August 2024 – https://www.water4all-partnership.eu/sites/www.water4all-partnership.eu/files/2024-10/Water4All_D5.1_Mapping%20of%20agreements%20with%20third%20countries.pdf

[21] Water4All Mapping of international water programmes, August 2024 – https://www.water4all-partnership.eu/sites/www.water4all-partnership.eu/files/2024-10/Water4All_D5.2_Mapping%20of%20international%20water%20programmes.pdf

[22] Water4All funded projects - https://www.water4all-partnership.eu/funded-projects

27 excellent RD&I projects were selected for funding with total funding of almost 27 million Euro. The 27 projects are described in this a booklet[23] released in 2024.

4.5 Call on Ecosystem Services

In the second Joint Transnational Call in 2023, the general theme is "*Ecosystem Services*", with aquatic ecosystems as the focus, including inland surface water, groundwater, transitional and coastal water, and having water security on top of the objectives. The selected projects are addressing at least one of the following topics:

- Topic 1. Mapping, monitoring, and assessment for a better understanding of ecosystem services in a context of changes, from local to global change.
- Topic 2. Understanding and predicting multiple pressures (including anthropogenic pressures) - impact – response relationships in ecosystem services through advanced methods and techniques.
- Topic 3. New tools and solutions for a better integration of ecosystem services into the management of water resources.

The kick-off event of the funded projects was held in Montpellier on April 9–10, 2025, and brought together coordinators, experts, funding agencies, and sister initiatives to generate synergies around Water4All and strengthen Europe's commitment to water research, innovation, and sustainability.

The 23 projects are described in a booklet[24] published in 2025. As ecosystem services are closely linked to the objectives of the WFD to bring water bodies in good status, the results of these projects will deliver useful knowledge and insights.

4.6 Knowledge Hub on aquatic ecosystem services

In addition to the research activities in each of the projects funded within the 2nd Joint Transnational Call, a knowledge hub on aquatic ecosystem services has been launched in April 2025. This activity is carried out and followed in the frame of the Pillar C task C1.1.

Knowledge Hubs are scientific networks to translate and transfer research outcomes into applicable recommendations within a defined thematic area.

Water4All Knowledge Hubs serve two primary objectives:

- Facilitating knowledge exchange and collaboration across funded projects to strengthen research impact.
- Ensuring that synthesized research findings become actionable inputs for policymakers and practitioners, supporting evidence-based decision-making.

Because an objective of the Knowledge Hub is to support a direct use of the scientific results foreseen within projects into policy needs, it is expected both KH and solutions mapping can mutually inspire each other.

[23] 2022 Joint Transnational Call Booklet of funded research projects, April 2024 - https://www.water4all-partnership.eu/sites/www.water4all-partnership.eu/files/2024-04/booklet_JTC_2022_W4A_17april24_BR.pdf
[24] 2023 Joint Transnational Call Booklet of funded research projects, April 2025 - https://www.water4all-partnership.eu/sites/www.water4all-partnership.eu/files/2025-04/booklet_JTC_2023_W4A_BR_2025_0.pdf

4.7 TAP on Water for ecosystems and biodiversity

The Thematic Annual Programming (TAP) Action is a tool aimed at fostering collaboration between research project partners. It is described as an "alignment" instrument as it results from the strategic coordination of participating funding agencies.

The general theme of the first Water4All TAP Action is "*Water and Biodiversity*", based on the Water4All Strategic Research and Innovation Agenda Theme II "Water for ecosystems and biodiversity" and encompasses:

- environmental engineering and ecohydrology for ecosystem restoration,
- multiple pressure–impact–response relationships,
- monitoring tools at different scales,
- harmonization of methodologies for evaluation of surface water hydromorphology,
- impacts of hydrological extremes,
- rehabilitation of water bodies.

The Water4All AQUA-WISE TAP Action theme is aligned with the 2023 Water4All Joint Transnational Call on "Aquatic Ecosystem Services". The themes of the TAP Action on "Water and Biodiversity" and the Joint Transnational Call on "Aquatic Ecosystem Services" are complementary. The TAP Action is focusing on those aspects not centrally addressed in the 2023 Joint Transnational Call.

More information on the AQUA-WISE[25] TAP action and expected outputs of this activity can be found on Water4All website.

4.8 Call on Water for circular economy

The 2024 Joint Transnational Call is in the final stage of decision at the moment of finalization of this document. The general theme of the call is "*Water for Circular Economy*". The research & innovation proposals submitted under the Water4All 2024 Joint Transnational Call are required to address at least one of the following themes:

- Topic 1: Enhancement of water circularity in industries.
- Topic 2: Urban water circularity.
- Topic 3: Resource recovery and valorization.
- Topic 4: Economic, environmental and social implications of water reuse and recovered products

Even if it is not clear which projects will be selected, it is plausible that some of them will have a clear link with the UWWT directive. So, it can be expected that new insights on the implementation gaps to this directive will be generated.

[25] AQUA-WISE - https://www.water4all-partnership.eu/joint-activities/tap-action-water-and-biodiversity-aqua-wise

5. OBSERVATIONS

Stakeholders' engagement and cross-sectoral collaboration are particularly wide gaps, which can be found in many situations, since even a technical work often needs collaboration and engagement of stakeholders to be successful. Moreover, cross sectoral collaboration embraces different specific gaps and connected solutions, and collaborative multi-stakeholder approaches are key elements for cross sectoral collaboration.

Key remarks points emerging and representing common possible guidelines for solution can be summarized as follow, also considering that many of the proposed way forward can be strictly linked to the EU Water Resilience Strategy:

- Definition of data sharing policies and continuous data flow to define decision systems and to raise awareness and public involvement in water management (in line with water resilience strategy).
- Setting common vision to reach water resilience in an integrated policy framework.
- Defining clear mandates, roles and responsibilities between different stakeholders.
- Defining sustainable funding mechanisms.
- Investing in early engagement of stakeholders and ensuring inclusivity.
- Investing in the creation of opportunities for engagement among various stakeholders, citizen and policy maker (e.g. policy forum event; green festival).
- Supporting evidence-based decisions.

Demonstration, pilot sites and Living Labs are examples of effective cross-sectoral collaboration, involving different stakeholders and developing practical solutions for sectorial gaps, thus requiring sustained investment and adaptability.

Implementation strategies must remain flexible and support continuous learning and improvement.

6. CONCLUSION

Understanding directives implementation gaps and searching for available solutions is a broad task, since there could be many reasons why a gap exists, as well as many situations on the ground which can't be solved with "one-size-fits-all" solution.

In these guidelines, we tried to give at the same time general advice and key directions to solve gaps, as well as concrete tools and, especially for stakeholders' engagement, a possible implementation strategy.

In our efforts to highlight solutions from within the Water4All, it has to be noted that a lot of activities are still going on, with results to be delivered during phases 2 and 3. An update of these guidelines, planned during phase 3, will allow this document to report more accurately on the solutions developed by the consortium.

ANNEXES

Annex 1: Cross-cutting analysis between the technical and governance gaps and the Water Oriented Living Labs

Annex 2: Presentation of Canale Reale River Contract WOLL

Annex 3: Results of the questionnaire on Stakeholders' engagement

Annex 4: Detailed examples of implementation strategy

Annex 5: Interview with Nathalie Sureau-Blanchet – Agence de l'Eau Rhône-Méditerranée-Corse

Annex 6: Interview with Gabrielle Bouleau – PIREN-Seine

Annex 1: Cross-cutting analysis between the technical and governance gaps and the Water Oriented Living Labs

		Water oriented living labs																		
Technical and governance gaps identified in the Thematic policy and technical gaps report	**TOTAL**	City of Mechelen	Herk and Mombeek living lab	Port of Antwerp-Bruges	Waterclimatehub	Water valley Denmark	Blue economy Mikkeli centre of excellence	HYGLO	Water Management innovation	PIREN-Seine	Canale Reale river contract	Wise irrigation	National water table EWA	Lisbon water smart living lab	South African sanitation technology enterprise programme	Catalan water partnership	Desal+ living lab	Sustainable desalination living lab	ZINNAE	BLUEARK	Water campus Leeuwarden
Capacity building, knowledge transfert, communication, awareness	**16,5**	1	1		1	1	1	1	1	1	1	1	1	1	0,5	1	0,5		1	1	0,5
Stakeholders engagement	**16**	1	1		1	1	1	1	1	1	1	1	1	1		1		1	1	1	
Water quantity and climate change	**14**		1	1				1	1	1	1	1	0,5	1		1	1	1	1	1	0,5
Cross sectorial approaches and coordination	**14**	1	1	1		1		1	1	1	1	1	1	1		1	0,5		1	0,5	
Digital technologies, AI and machine learning	**12,5**				1	1	1	0,5	1	1		1		1	0,5	1	1	0,5	0,5	1	0,5
Circular economy	**10**			1	1	1	1							1		1	1	1	1	0,5	0,5
Water reuse	**10**			1			1			0,5				1	0,5	5			0,5	0,5	
Data collection, sharing and use	**7,5**					0,5	0,5	1	1	1	0,5	1		1		0,5				0,5	
NBS	**7,5**	1	1		1					1	1	1		1						0,5	
Diffuse source pollution (rural & urban)	**5**	1							1	1	1		0,5							0,5	
Capacity and capability of advisors & competent authorities	**5**					0,5				1		1	1			0,5			0,5	0,5	
Accountability and liability	**4,5**	1									1		1			0,5			0,5	0,5	
PFAS monitoring	**4**					0,5	0,5		0,5	0,5	0,5			0,5		0,5				0,5	
Energy neutrality	**3,5**					0,5	0,5										1	1		0,5	

Water oriented living labs

Technical and governance gaps identified in the Thematic policy and technical gaps report	TOTAL	City of Mechelen	Herk and Mombeek living lab	Port of Antwerp-Bruges	Waterclimatehub	Water valley Denmark	Blue economy Mikkeli centre of excellence	HYGLO	Water Management innovation	PIREN-Seine	Canale Reale river contract	Wise irrigation	National water table EWA	Lisbon water smart living lab	South African sanitation technology enterprise programme	Catalan water partnership	Desal+ living lab	Sustainable desalination living lab	ZINNAE	BLUEARK	Water campus Leeuwarden
Coherence between policies	**3,5**									1	1		1			0,5					
Control pollution at source	**3**								1	0,5	1									0,5	
Cost recovery	**2,5**					0,5					0,5					0,5			0,5	0,5	
Lack of dedicated funding	**2,5**															0,5	1		0,5	0,5	
Transboundary & basin issues	**2,5**									1	1					0,5					
Data on performance, costs, benefits and consequence of inaction	**2**								0,5	0,5	0,5									0,5	
Evidence-based planning	**2**										1		1								
Extended Producer responsibility	**1,5**										0,5								0,5	0,5	
Lack of market for N and P reuse	**1**									0,5				0,5							
Water not properly and transversally adresses in other sectors' policies	**1**									0,5						0,5					
Lack of clear policy on water quantity	**0,5**															0,5					
Intensive use of water of Green Deal initiatives/solutions	**0**																				

Legend of the colors:

Blue: WFD, UWWTD & DWD
Green: UWWTD
Yellow: WFD
Purple: DWD
Red: Other

Annex 2: Presentation of Canale Reale River Contract WOLL

contratto di fiume Canale Reale

Water4All
Water security for the planet

CANALE REALE RIVER CONTRACT

WOLL EXPERIENCE ABOUT STAKEHOLDERS' ENGAGEMENT

REGIONE PUGLIA

Speaker: **Arch. Chiara Toziano**
(CRRC program assistant, Apulia Region - Water Resources Section)
Ing. Claudia Campana
(CRRC program manager, Apulia Region - Water Resources Section)
Ing. Andrea Zotti
(Director of the Water Resources Section)

Water-Oriented Living Labs

20/05/2025

"Addressing EU Water Directive governance gaps: Solutions for Stakeholders' engagement"

1

RIVER CONTRACTS

River Contracts *(Codice dell'Ambiente D.Lgs. 152/2006, art. 68 bis)*

A **River Contract** is focused on the definition and implementation of a voluntary and negotiated planning process conceived to pursue the protection, sustainable management of water resources and fluvial environments together with protection from hydraulic risks, while presenting local development.

EU Water Directive 2000/60/CE

EU Habitat Directives 92/43/CE

EU Flood Directive 2007/60/CE

L6WP2 | Contratti di Fiume, comunità che navigano insieme

CRelAMO PA
https://youtu.be/DHjTstDUPuw

2

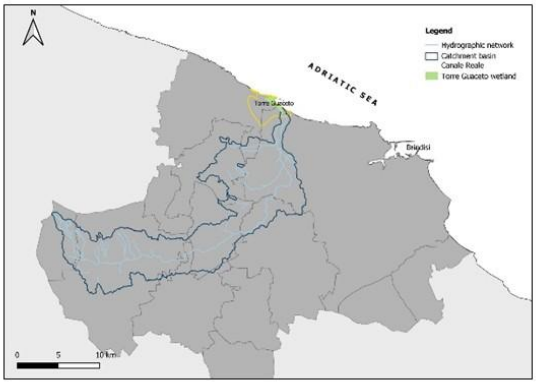
RIVER CONTRACTS AS HUMMINGBIRDS IN CHANGING THE PROCESS

Change in territory vision

Change in territory management

3

CANALE REALE RIVER CONTRACT



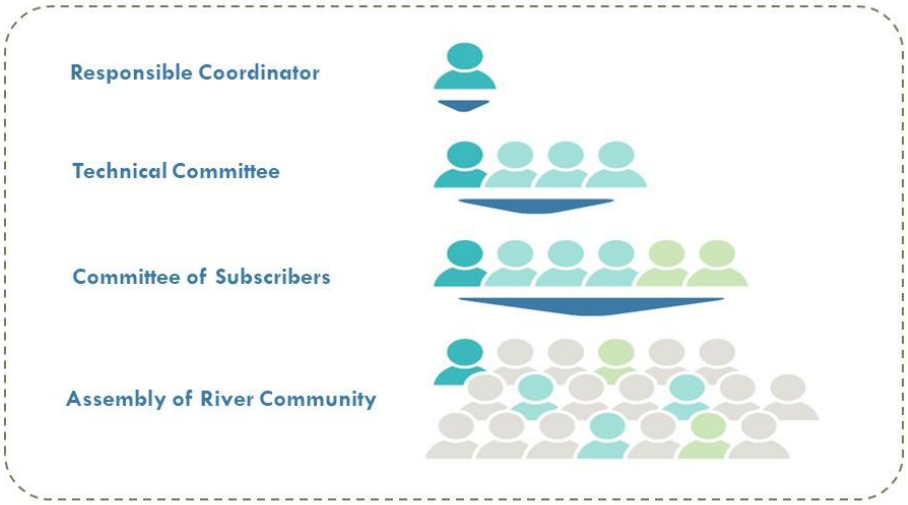
The Canale Reale river basin is a water-scarce coastal area where overexploited land and water resources condition the conservation of coastal wetland ecosystem in the Torre Guaceto natural reserve due to groundwater salinization.

The CRRC is therefore focused on the definition and implementation of a voluntary and negotiated planning process which aims at developing new integrated forms of landscape and regional planning based on multiple stakeholder negotiation.

The CRRC uses innovative instruments to achieve public interest, economic performance, social value and environmental sustainability through the collaboration with several research partners, public institutions and stakeholders.

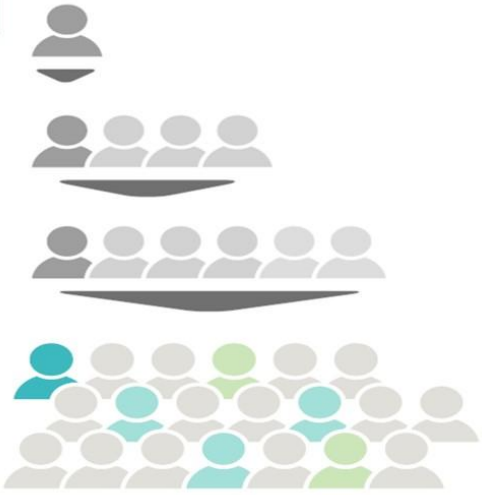
4

THE CANALE REALE RIVER CONTRACT ORGANIZATIONAL STRUCTURE



5

THE ASSEMBLY OF THE RIVER COMMUNITY



Place of the widest involvement of the Community belonging to the territory of the reference basin, where **Participatory Democracy** is developed.

It plays the role of **public, open discussion,** functional to the assumption of participatory decisions.

6

STAKEHOLDER MAPPING

TYPE OF STAKEHOLDER	TYPE OF RESPONSIBILITY					ENGAGEMENT STRATEGY
	MANAGEMENT	LEGAL-REGULATORY	ECONOMIC	SOCIAL	ENVIRONMENTAL	LEVEL OF INTERACTION A = ENHANCEMENT OF INFORMATION EXCHANGE C = IMPROVING THE LEVEL OF COMMUNICATION CC = ACTIVE INVOLVEMENT IN ACTIVITIES PP = POTENTIAL PARTNERS
NATIONAL PUBLIC INSTITUTIONS						
REGIONAL PUBLIC INSTITUTIONS						
LOCAL PUBLIC INSTITUTIONS						
STRUCTURED ORGANIZATIONS						
ORGANIZED LOCAL ASSOCIATIONS AND GROUPS						
OTHERS						

7

CANALE REALE RIVER CONTRACT - PHASES

1) PREPARATION 2) ACTIVATION 3) IMPLEMENTATION 4) CONSOLIDATION

Document of intent
signed on 28/06/2019
- Motivations
- General objectives
- Specific critical issues
- Working methodology

Cognitive analysis
approved on 06/07/2020
- Environmental, social and economic aspects
- Collection of Plans and Programs
- Stakeholders

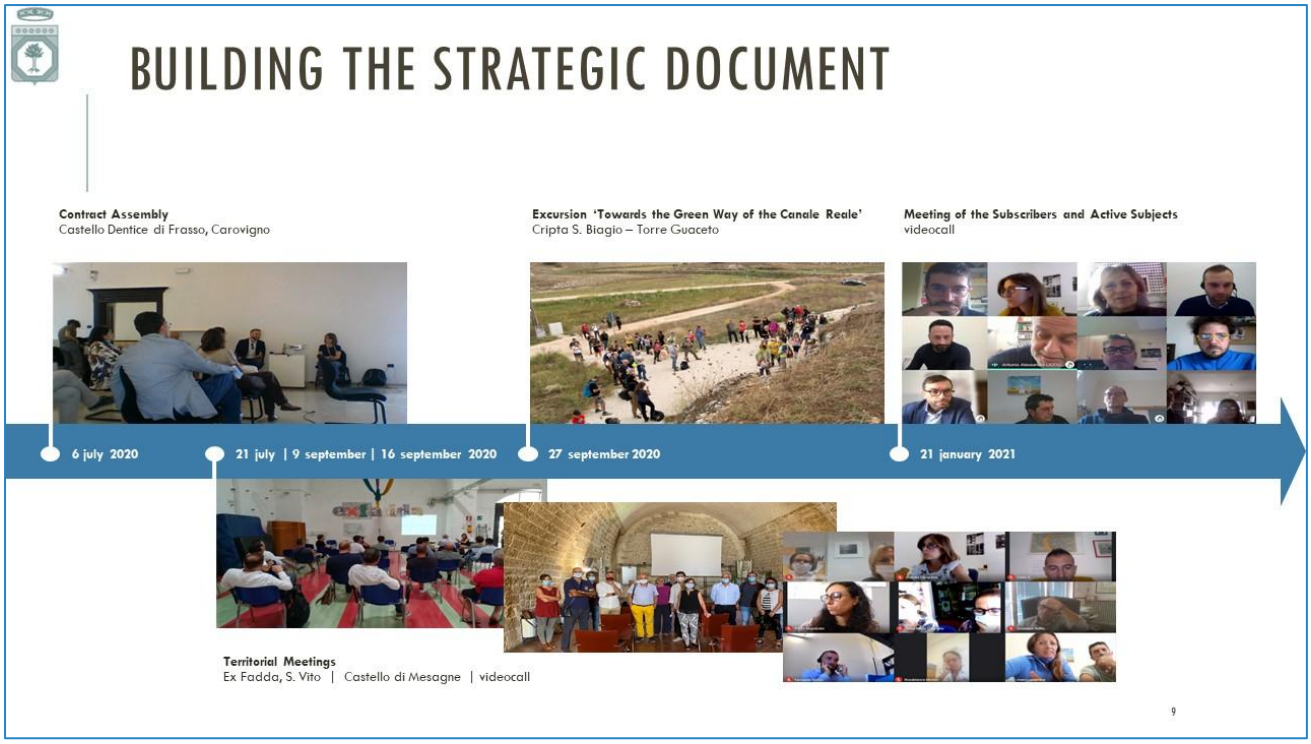
Strategic Document
approved on 22/03/2021
- Medium-long term scenario
- Integrates plan objectives with local development policies

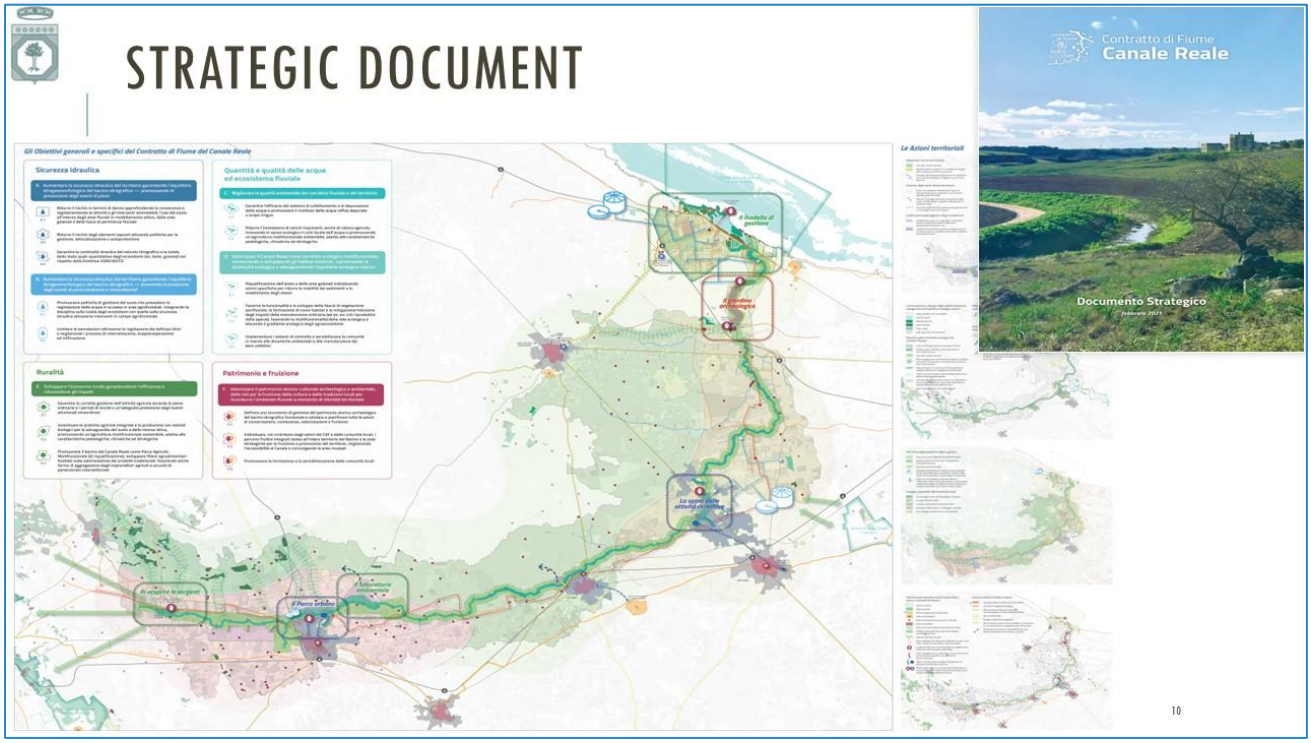
First Action Program
- Objectives for action
- Actors and their obligations
- Implementation times and methods
- Necessary human and economic resources
- Contribution of actions to the directives

Contract Formalization
signed on 15/07/2021
- Contractualizes the decisions shared with the participation
- Defines the specific commitments of the **Subscriber** and their responsibilities

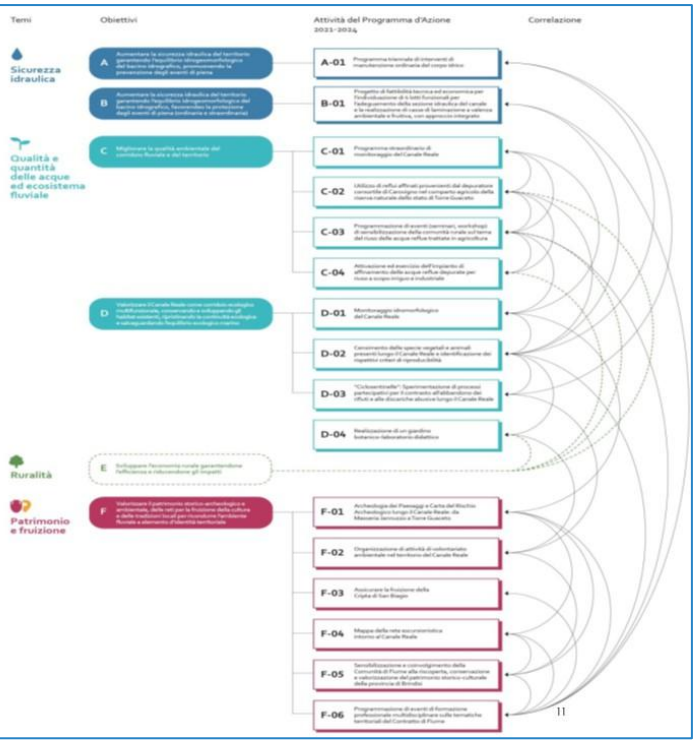
Open and inclusive participatory processes - Information to the public - Periodic control and monitoring system

8


BUILDING THE STRATEGIC DOCUMENT
Contract Assembly
Castello Dentice di Frasso, Carovigno
Excursion 'Towards the Green Way of the Canale Reale'
Cripta S. Biagio – Torre Guaceto
Meeting of the Subscribers and Active Subjects
videocall
6 july 2020
21 july | 9 september | 16 september 2020
27 september 2020
21 january 2021
Territorial Meetings
Ex Fadda, S. Vito | Castello di Mesagne | videocall
9


STRATEGIC DOCUMENT
Contratto di Fiume
Canale Reale
Documento Strategico
10

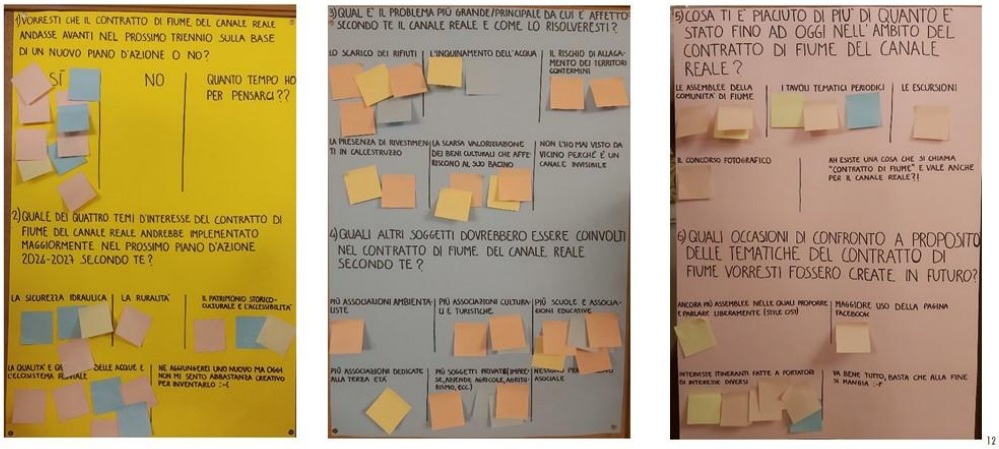
FIRST ACTION PROGRAM 2021-2024



SECOND ACTION PROGRAM - 2024-2027 (1/2)

#Call4Ideas: towards the definition of the 2024-2027 Action Program of the Canale Reale River Contract

The Technical Committee, for the second cycle of the Action Program, has decided to leave the proposal of new Activities to the autonomous initiative of the Subscribers, also to stimulate the creation of new networks and new relationships between the subjects that are already part of the Community.



SECOND ACTION PROGRAM - 2024-2027 (2/2)

#Call4Ideas TIMELINE

END OF JULY 2024
Publication of the call for proposals

30/09/2024
Closure of the call

END OF OCTOBER 2024
Meeting of the Technical Committee

10/12/2024
Assembly of the River Contract Community and presentation of the new Action Program

NOVEMBER
Selection of new Activities and drafting of the Action Program 2024-2027

In our experience, the **limitations** noted at the conclusion of the #Call were mainly three:

- Acknowledgement of a lack of full awareness of the stakeholders involved in the process despite the lapse of time since the start of the process in 2019;
- Lack of participation of farmers and consequent lack of activities specifically dedicated to achieving the goal "E-Rurality";
- Dependence of local stakeholders on institutional hierarchies and the leadership assumed by the Region in its capacity al lead partner.

13

PHOTO CONTEST AND CANALE REALE GREEN FESTIVAL

Two of the winning photos of the photo contest

14

HOW TO KEEP INTEREST HIGH

In our experience, what is **useful to motivate** the different stakeholders is:

- keep interest constantly high through dedicated communication, formal and informal, and through animation of the process by dedicated figures;
- publicly present the results and progress of activities;
- foster the building of a network among adhering parties based on direct exchanges, without the intermediation of the responsible party;
- avoid information asymmetries as much as possible.

15

THANK YOU FOR YOUR ATTENTION

ARCH. CHIARA TOZIANO

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SEZIONE RISORSE IDRICHE

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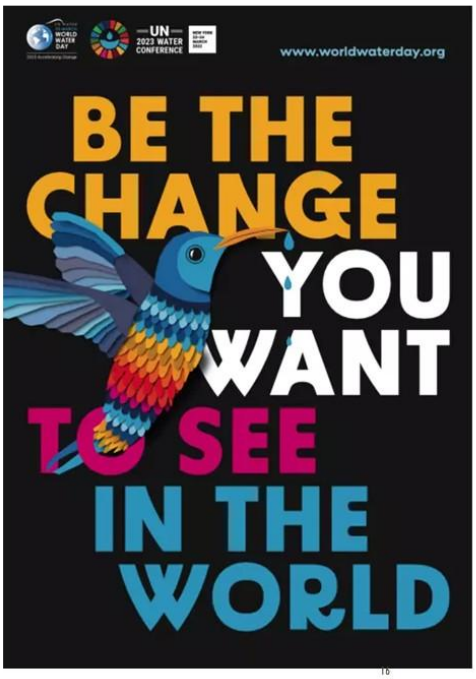
HTTPS://CONTRATTODIFIUMECANALEREALE.IT/



16

Annex 3: Results of the questionnaire on Stakeholders' engagement

Organization(s)	Country(ies)	First question: How do you think stakeholder's engagement can contribute to the WFD implementation?	Second question: do you know concrete examples of stakeholder's engagement that contributed (or could contribute) to the WFD implementation?	Indicate any reference or link of interest
Primature	Guinea	yes, because it is important to share a common vision of water management, and build a shared strategy. The final vision is to have a common view of the water resources	KONKOURE River watershed in the Republic of Guinea. The river hosts 6 power dams. The Government and local communities are experiencing the establishment of water management comity. One these stakeholders will own the best management tools, the ecosystem and the power infrastructures could be safe. Now we are mapping stakeholders and involving potential stakeholders trough a information campaigns.	soges-sa.com
S.C. AQUAPROIECT S.A.	Romania	Given that the Water Framework Directive is based on the responsible and sustainable management of water resources, I believe that some of the following points are essential to consider. Increasing the legitimacy of decisions - the participation of all stakeholders gives transparency to the decision-making process, thus providing high legitimacy to the decision, while making all parties aware. Improving the quality of planning - stakeholders can provide vital information on the areas of interest, thus increasing the understanding of the problems. Having open communication, based on sufficient information, automatically increases the trust in the solutions offered. Reducing conflicts - considering that the water resource is used in many areas (agriculture, industry, energy) intelligent management can put all these things together, thus reducing problems and the time for introduction. Increasing the degree of responsibility and stimulating innovation - through dialogue, interested parties can be empowered, giving them a point of view and making them responsible. This can increase the degree of responsibility and involvement.	In Romania, there is a direct collaboration between private companies and basin administrations that work both at the basin and local level. Attempts are being made to introduce other interesting parties (population/marginalized areas).	

Organization(s)	Country(ies)	First question: How do you think stakeholder's engagement can contribute to the WFD implementation?	Second question: do you know concrete examples of stakeholder's engagement that contributed (or could contribute) to the WFD implementation?	Indicate any reference or link of interest
Ministry of Water Resources and Irrigation	Egypt	It's a must to gather all stakeholders together to assure you will find applicable solutions. Decision makers, water user associations and researchers	In Egypt we legalized water user associations and nowadays it has an important role at the water resources management process.	
Lake Vesijärvi Foundation	Finland	To enable water management actions to take place, to raise up funding resources, to make restauration measures more understandable and acceptable	Lake Vesijärvi Management plan which has created a third level of planning under the RBMP:s and PoM:s. By that a planning level and all the actions from restauration measures to communication activities has become more near and understandable. At the same time local and regional willingness to fund the actions has raised up.	www.vesijarvi.fi
Agence du bassin hydraulique du bouregreg et de la chaouia	Morocco	How can we involve different organizations, knowing that there are always conflicts of use and political issues that slow down the progress of projects and also their financing		
		Stakeholders make possible the implementation of the required actions to achieve the WFD goals.	Divulgation, public participation processes, Conferences, Educative programmes. Types of stakeholders: water users, local authorities, NGO's.	https://www.chsegura.es/es/cuenca/planificacion/planificacion-2028-2033/eventos-de-participacion/jornada_ddii.html https://www.chj.es/es-es/ciudadano/divulgacion/Paginas/Divulgacion.aspx
Po river basin Authority	Italy	Stakeholder's engagement can contribute in different ways. 1) Sharing of information at different levels raises awareness and thus improves active response to actions and respect of eventual new regulations. 2) Stakeholders can give new perspectives and often deepen knowledge on problems/criticalities and suggest different options to solve or reduce the problem/criticalities	During the preparation of the first water management plan a suggestion was given, by a research institution involved as a stakeholder, to improve knowledge on groundwater resources through the development of a hydrogeological and flow model of the Po plain aquifers. After a long time (more than 20 years) this proposal was concretized in the MIDAS Po project, developed with a group of universities of the Po district. The major obstacle to the realization of this suggestion was the lack of financial resources, and the technical difficulties to develop such a model in such a large and complex area.	https://www.adbpo.it/midas-po-nuove-conoscenze-sugli-acquiferi/ https://www.adbpo.it/progetti/progetti-fsc/l3_acque_sotterranee/sviluppo-di-modellistica-idrogeologica-e-delle-conoscenze-di-supporto-al-piano-del-bilancio-delle-acque-sotterranee-a-scala-distrettuale/
Ministry of water management	The Netherlands	- regional stakeholder engagement, such as river dialogues on the level of regional government (province/Bündesländer) - stimulate stakeholder organizations in forming representation	Room for the river programme Netherlands: public consultation and stakeholder engagement on the national level. River dialogues and round tables in Austria for implementing EU directives. River dialogues on the Bundesländer level.	www.ruimtevoorderivier.nl www.flusdialog.at

Organization(s)	Country(ies)	First question: How do you think stakeholder's engagement can contribute to the WFD implementation?	Second question: do you know concrete examples of stakeholder's engagement that contributed (or could contribute) to the WFD implementation?	Indicate any reference or link of interest
Estonian Ministry of Climate / Swedish agency for marine and water management	Estonia/ Sweden	1. Contribute to more effective measures that will be implemented in practice.	1. Stakeholder engagement when mapping the most urgent pressures before designing measures.	
Regione Piemonte	Italy	Fundamental, inescapable.	Attraverso le consultazioni si possono migliorare le azioni dei RBMP'S. Il Terzo ciclo di pianificazione di bacino del Po e il piano di tutela delle acque di Regione Piemonte sono esempi	https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://www.regione.piemonte.it/web/temi/ambiente-territorio/ambiente/acqua&ved=2ahUKEwjczam-67GNAxUj9LsIHVr-KHUQFnoECAwQAQ&usg=AOvVaw1QSJAbi_RyH59Muu9EavCW
Faculty of Sciences Rabat, Mohammed V University in Rabat	Morocco			
FENARIVE	France	One issue is how local stakeholders are restricted in their action by the higher water authorities: they are the ones who have the knowledge of the local issues, so they should be able to act with more liberty at a local scale. This includes the coordination between local water management at a watershed scale and at an administrative one.	To enable more diversity in water governance, one key aspect is to include the youth to the discussion. more and more initiatives are created towards this is several French basins : youth comities are seats in regular comities. The PFJE is one exemple at a national scale. The diversity in water governance comities is key : in French basins comities, We have 40% local elected, 40% various actors and 20% from the administration.	
		Sharing different perspectives, understanding roles of different stakeholders. It can push stakeholders to communicate, even if they are no inclined to it. It can facilitate win-win decisions.	Innovative programme of farmer engagement around Želivka drinking water reservoir. Farmers are getting financial support for using fewer pesticides. Improvement of quality of water and sediments in Elbe river in CZ and DE. Concrete project of removing contaminated sediments from river bank was consulted with IKSE and Czech Nature Conservation Agency.	

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Consorzio della Bonifica Renana Blue	Italy and France	It's necessary to express different needs than can also be opposite. There should be a negotiation. Need to bring expert from different level to express scientific knowledge. The decree should take into account the specificity of local needs. What we think is necessary: to find an equilibrium between environment economy and safety	No we don't	
ADBPO	Italy	It's important phase that it's necessary for the implementation for public participation. In particular for communicate with local communities and align intention and vision in the area of interests.	As ADBPO, we are engaged in many actives that require stakeholders engagement such as in the review and updated of the water management plan and the relative projects, Enza River Contract and also in MAB UNESCO Po Grande.	https://www.pogrande.it/la-riserva-pogrande/ https://www.adbpo.it/contratto-di-fiume-enza-home/ https://pianoacque.adbpo.it/
Apulia Region	Italy	Stakeholders' engagement is very important for the implementation of the WFD because Europe needs the knowledge of the people who have always lived in a specific place, near a river or a lake. They must take into account what are their needs and should valorise their contribution in caring for the nature.	My only experience is with River Contracts, as I showed during my presentation.	https://contrattodifiumecanalereale.it
Parco Lombardo della Valle del Ticino	Italy	They can clearly explain their need and help to determine the right approach. Also the can be a mass diffuser of the directive	Not directly	We will work on Ticino river contract soon
Unibo	Italy	Citizen science projects	Potentially Yes I coordinate many CS group about river monitoring the main problem in Italy is the difficulty to develop collaboration with authorities. We need to scaling up CS at European scale	Www.osservatoriocitizenscience.org
Jucar River Basin Authority	Spain	Their engagement can provide useful information from locals or specific groups for policy makers	Our organization engages municipalities and environmental NGO in the maintenance of rivers to avoid regrowth of alien vegetation species.	Chj.es
Eco-tiras	Moldova	By social networks	Yes, by subbasin committees	Eco-tiras.org
Ohře River Administration	Czech Republic			
General Water Directorate of Watermanagement	Hungary	It is strongly recommended. Most measures have a serious impact on their daily life, and the advantages come later. They have to understand what is happening.	In Hungary, we revitalized an oxbow lakes. Some municipalities want to hinder the process. The local NGO (based on the local community) supported us to implement the projects. In that case it would not be possible without them.	Nature restoration directive from EU

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ADBPO	Italy	Contribute to strengthen the implementation of Article 9 of the WFD, for the estimation and coverage of environmental and resource costs, and to define exemptions 4.7 and 4.5 by defining disproportionate costs through cost-benefit analysis	water use observatory, working groups to define intervention strategies on biodiversity, consultation of agricultural associations, river contracts and MAB reserves in the Po river district	www.adbpo.it https://www.adbpo.it/osservatorio-permanente/ https://www.adbpo.it/approfondimento-perche-il-contratto-di-fiume-valle-dellenza/ https://www.adbpo.it/progetti/biodiversita/progetto-per-la-valorizzazione-della-biodiversita-nel-distretto-del-po/ https://www.pogrande.it/
Po river Basin District Authority (ADBPO)	Italy	Stakeholder engagement is fundamental for WFD implementation and raising environmental awareness The first step in engaging people in the goals of the WFD is stakeholder involvement at various levels and in a bottom-up way. When people are aware of their surroundings and understand the value of the environment and its benefits for our well-being, they feel involved	Yes, one concrete example of stakeholder engagement contributing to the implementation of the Water Framework Directive (WFD) is the participatory governance process developed through UNESCO MaB (Man and Biosphere) Reserves in Italy. These initiatives involve a wide range of public and private actors—local institutions, businesses, citizens' committees, schools, universities, NGOs, and research bodies—working together to promote the sustainable development of river territories and biosphere areas. Key factors for the success of this approach include: - early and inclusive involvement of all relevant stakeholders; - alignment with existing plans and policies; - local knowledge-sharing and capacity-building; - empowerment of communities through education and the promotion of "eco-actors" for local engagement; - a strong coordination structure (e.g., a Coordination Board led by the River Po District Basin Authority) to ensure continuity and coherence in implementation. Another example that is contributing to engage communities and stakeholders in strengthening the connection between water and biodiversity - and thus the implementation of the WFD and Nature Directives for better water quality management - is the "Po River Biodiversity Project", lead by ADBPO (Po River Basin District Authority). This project featured multi-level stakeholder engagement through: - the organization of multidisciplinary thematic working group, bringing together different actors, interests and activities operating in the Po River District. The aim was to jointly identify a future vision for the territory and define the main strategic lines for ecosystem protection, management, and restoration, as well as	References for the first example (Man and Biosphere Reserves): https://www.pogrande.it https://www.unesco.org/en/mab Link of interest if you want to discover more about the "Po River Biodiversity Project": https://www.adbpo.it/biodiversita-po/

Organization(s)	Country(ies)	First question: How do you think stakeholder's engagement can contribute to the WFD implementation?	Second question: do you know concrete examples of stakeholder's engagement that contributed (or could contribute) to the WFD implementation?	Indicate any reference or link of interest
			public tools and business initiatives to support implementation. Participants included experts from academia, institutions, the socio-economic sector, civil society, and agriculture, who collaborated to shape a shared vision for the Po River Basin - An extensive stakeholder consultation via online questionnaire was carried out to gather input from a broad community of stakeholders, including regional and local authorities, municipalities, protected area managers, agricultural organizations, environmental associations, and research centers. The survey was sent via email to around 640 stakeholders across the Po River Basin, and 132 responses were received. The outcomes of these activities were synthesized into two key documents, which serve as declarations of intent: - "Strategies for the protection, management and restoration of ecosystems and the increase of biodiversity in the Po District", and - "Public tools and business initiatives for the implementation of interventions for the protection, management and restoration of ecosystems and for the valorization of Natural Capital in the Po District." These models demonstrate how participatory methods can support sustainable water management while fostering ecological transition and community ownership.	
Fondazione E. Mach - Reseach and Innovation Center	Italy	Stakeholders can provide important feedback on the local needs in terms of water quality and quantity, thus helping to identify appropriate quality indicators. SH's inputs is relevant to identify the HMWBs and the type of alteration and pressures.	Working Group ECOSTAT	
Po River Basin district Authority	Italy	More information about the characterization of the territory and, of well informed and involved, stakeholder can permit an higher implementation of the program of measure (Water Plan Management).	Yes, the participative program of the Plans of the District Authorities.	
Provincial Environmental Protection Agency - Trento	Italy	Stakeholder involvement in WFD implementation is crucial to help to achieve the quality objectives set by the WFD, especially in the identification and implementation of effective and feasible measures to improve the quality of water bodies.	For WFD implementation in the Autonomous Province of Trento, stakeholders were involved by the activation of technical tables between different offices (Agriculture, River management, Environment, Industry, etc) of public administration (e.g. for the analysis of pressures, for the identification of measures, for the Protected Areas Register, etc.) and also Programme Agreements	https://www.appa.provincia.tn.it/Documenti-e-dati/Documenti-tecnici-di-supporto/Piano-di-Tutela-delle-acque-2022-2027#page-content

Organization(s)	Country(ies)	First question: How do you think stakeholder's engagement can contribute to the WFD implementation?	Second question: do you know concrete examples of stakeholder's engagement that contributed (or could contribute) to the WFD implementation?	Indicate any reference or link of interest
			between the Province and various trade associations representing breeders, farmers, fish farmers, etc.	
Nile Water Sector, Ministry of Water Resources and Irrigation	Egypt	Stakeholder engagement is key to successful WFD implementation. It ensures that management plans are locally relevant by involving water users, farmers, industries, and communities. Their input improves decision-making with practical knowledge, builds trust, and helps prevent conflicts. Engaged stakeholders are more likely to support and comply with policies, leading to better implementation. It also encourages innovative, locally adapted solutions for sustainable water management.	Spain – Ebro River Basin Authority: Spain's basin authorities consult with water user associations, agricultural groups, and environmental organizations during the planning phase. This has improved coordination and reduced resistance to regulatory changes. Potential Example – Egypt's Nile Delta: Although not under the WFD, Egypt's efforts to involve farmers and local authorities in managing irrigation and drainage in the Nile Delta could serve as a valuable model for stakeholder engagement in water governance and drought risk reduction, aligning with WFD principles.	
Institute of Meteorology and Water Management, National Research Institute	Poland	Stakeholders such as local communities, farmers, industries, and NGOs can contribute place-based knowledge to improve the design and tailoring of River Basin Management Plans (RBMPs). Their insights ensure that proposed measures are realistic and adapted to the specific environmental and socio-economic context. Engaged stakeholders are more likely to support and implement water protection measures because they feel a sense of ownership. This can increase compliance with WFD objectives, particularly in agriculture and urban planning sectors, where voluntary or semi-regulatory measures are essential. Structured stakeholder dialogue helps mitigate conflicts and find acceptable compromises to all parties, thus supporting social cohesion and ensuring RBMPs are implemented more smoothly. Stakeholders can contribute financial, technical, and human resources and help to develop innovative solutions. Partnerships with academia, businesses, or civil society organisations can support pilot projects and introduce new technologies or approaches to water management. Stakeholders can also participate in monitoring	Since 2018, my Institute has been implementing numerous international projects on the Polish-Saxon border in the Lusatian Neisse catchment area in the Oder river basin. Due to the observed increase in temperature and limitation of water resources, we are conducting projects aimed at adapting to climate change. In these projects, we use numerous activities involving the local community in the process of adapting to climate change, which is also connected with the implementation of the Water Framework Directive. To this end, we organised the following activities: a climatic picnic, study visits, a competition called 'Climate Friendly Municipality', debates in municipalities, waste clean-up actions, outdoor exhibitions on blue and green infrastructure, and educational pathways. In addition, a number of educational workshops were held, including 'Aquatic Detectives', 'Hydromorphological' and 'Biodiversity' workshops. Numerous training sessions on climate change adaptation were also held for local authorities. In addition, numerous low-cost adaptations were carried out in conjunction with residents. Above all, the key success factors were: The successful involvement of diverse groups, including residents, local authorities, farmers, community organisations, scientists, and international partners. This resulted in shared responsibility and greater acceptance of the activities. Additionally, difficult topics such as climate risks and hydromorphological changes were presented in an accessible way. The dialogue was two-way — the community was not only informed, but also listened to and taken into account. This increased trust and acceptance of the measures.	I have provided links to the projects in Polish and German below. http://transgea.eu/home,1.html https://wikt.info/home,1.html https://proadapt.info/home/ https://neymo.imgw.pl/

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		the implementation of activities and indicate the need for modification or adaptation in response to ongoing changes.	Projects proposed concrete, locally relevant actions such as small-scale retention and urban greening. Technical measures were adapted to local needs. Training, workshops and educational activities were provided to help stakeholders better understand the objectives and tools of the Water Framework Directive (WFD). At the same time, stakeholders provided local knowledge that was valuable to the experts. The result was increased competence and independence among communities in acting for the benefit of water.	
Program Manager RBO Meuse River Basin	The Netherlands	How do we engage stakeholders in the implementation of the EU Water Framework Directive (WFD) in the Meuse River Basin in the Netherlands? Stakeholder engagement is essential for the successful implementation of the WFD in the Dutch part of the Meuse River Basin. The Netherlands applies a combination of structured governance, transparent communication, and collaboration at basin level to involve relevant actors. Key elements include: • Structured coordination: Stakeholders are involved through platforms such as the Regional Administrative Consultation on the Meuse (RAO Maas) and the River Basin Council (RBO Maas), facilitated by the Meuse River Basin Programme Office. • Participation at basin level: Joint Fact Finding processes also with neighbouring countries, workshops, and consultations are used to actively engage stakeholders in identifying pressures and developing measures. • Clear communication: Complex WFD topics are translated into accessible information using maps, infographics, and online dashboards. • Integration with broader challenges: Linking WFD objectives to issues such as drought, biodiversity, and climate adaptation helps to	One example is the joint study on nutrient pollution carried out with all relevant stakeholders in the Meuse river basin. Together, we assessed the contribution of nutrient loads to the water system. The Dutch part of the basin was divided into 130 smaller sub-catchments, allowing us to accurately map the sources of nutrient pollution – from agriculture, wastewater treatment plants, cross-border inflows, atmospheric deposition, and urban stormwater overflows. This detailed insight enabled us to design more targeted and effective measures, while also securing broad support from the agricultural sector. Another strong example is the Joint Fact Finding (JFF) process with our neighbouring countries, where we developed joint factsheets for all transboundary water bodies. These included a shared analysis of key pressures, objectives, gaps in achieving good status, and possible measures on both sides of the border. Besides providing a clear picture of the remaining challenges, the process also proved to be a valuable investment in cross-border cooperation — building mutual understanding, trust, and alignment of ambitions. We are committed to continuing this collaborative approach in the development of the 4th River Basin Management Plan.	https://www.programmabureaustroomgebiedmaas.nl/en/programmes-and-reports/

Organization(s)	Country(ies)	First question: How do you think stakeholder's engagement can contribute to the WFD implementation?	Second question: do you know concrete examples of stakeholder's engagement that contributed (or could contribute) to the WFD implementation?	Indicate any reference or link of interest
		create wider support. • Cross-border cooperation: In the transboundary parts of the basin, coordination takes place through the International Meuse Commission and bilateral border water commissions.		
European Centre for River Restoration	The Netherlands	Stakeholder engagement in WFD implementation has some key advantages: Stakeholders, including scientists, policymakers, local communities, and industries, bring different perspectives and expertise, leading to more informed decision-making. When stakeholders are involved, there is a greater commitment to implementing and maintaining water management solutions over time. Open communication fosters trust between governing bodies and the public, reducing conflicts	The Room for the River Project concerning the rivers Rhine and Meuse in the Netherlands concerning the enhancement of flood safety, improving Environmental and landscape quality and ecological restoration benefitted a lot of intensive stakeholder involvement. The total costs of the project was EURO 2.3 billion	For details on the stakeholder interactions in the Room for the River project, you might explore sources like the interview titled "The Dutch make room for the river", which provides firsthand insights into how local communities and regional bodies were engaged from the early stages of the project. https://thewaterooms.org/interview-the-dutch-make-room-for-the-river/
Fondazione per lo Sviluppo sostenibile	Italy	Better stakeholder involvement - with adequate awareness-raising and knowledge-sharing processes - would certainly help implement choices that are currently unpopular and controversial, such as - for example - giving back space to rivers and increasing connectivity.	I don't know of any significant examples. I believe that in the Italian experience there has very rarely been real involvement, in an adequate phase of the decision-making process, but rather simple communication of choices already made.	https://www.freeflowingrivers.eu/home Grill, G., Lehner, B., Thieme, M. et al. Mapping the world's free-flowing rivers. Nature 569, 215-221 (2019). https://doi.org/10.1038/s41586-019-1111-9 AMBER Consortium (2020). The AMBER Barrier Atlas. A Pan-European database of artificial instream barriers. Version 1.0 June 29th 2020. https://amber.international/european-barrier-atlas/ Carr. G. Stakeholder and public participation in river basin management—an introduction WIREs Water 2015, 2:393–405. doi: 10.1002/wat2.1086 Verbrugge, L.N.H.; Ganzevoort, W.B.;

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				Fliervoet, J.M.; Panten, K.; Born, R.J.G. van den 2017. Implementing participatory monitoring in river management: The role of stakeholders' perspectives and incentives https://doi.org/10.1016/j.jenvman.2016.11.035 Junker, B., M. Buchecker, and U. Mu¨ller-Bo¨ker (2007), Objectives of public participation: Which actors should be involved in the decision making for river restorations?, Water Resour. Res., 43, W10438, doi:10.1029/2006WR005584.
Autorità di bacino distrettuale del fiume Po	Italy	Through the insights gleaned from the various stakeholders, a whole range of observations/needs/priorities can be gathered, enabling an integral and inclusive approach.	Through the implementation of district plans (PAI, PGRA, PdGPo, PBI).	https://pianoalluvioni.adbpo.it/ https://pai.adbpo.it/ https://pianoacque.adbpo.it/ https://pianobilancioidrico.adbpo.it/
Po River Basin District Authority	Italy	It can contribute to giving the WFD a more practical and technical approach, helping its implementation in different contexts and areas.	In all the District Plans produced by the District Authority the stakeholders engagement is necessary for their implementation.	https://www.adbpo.it/#piani
Po River Basin District Authority	Italy	I think the contribution that can be made depends on the type of stakeholder, each one can make an important contribution to their own scale of management and based on your knowledge.	Yes, e.g. for the drafting of district plans, which includes activities involving a large and diverse number of stakeholders.	https://www.adbpo.it/#piani
REGIONE PIEMONTE	Italy	A lot	River contracts, lake contracts, wetland contracts	https://www.regione.piemonte.it/web/temi/ambiente-territorio/ambiente/acqua
Ministry of Climate	Estonia	It is vital part of getting measures implemented. Water users are the ones who should implement the measures, so they must be involved, also NGO sector who can help with supplementary measures, catchment communities need to know what's going on so they can contribute and make the community need heard etc.	Our example is not about the implementation itself but updating the RBMP-s for next period which has huge impact on end result of the plan and measures and who has what responsibility and whos aware about it ang how the implementation of measures will end up going. So in Estonia we started with early engagement. One of the first steps when updating the RBMP-s for next period, is review of the impact of human activity on the status of surface waters and on groundwater and analysis of the characteristics of River Basins and Water Bodies. So when we had mapped initial information and	

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			data that could be used for this analysis and draw up initial proposal for methodology, we had meetings with relevant representatives of stakeholders and discussed the data we plan to use and methodology and invited them to share their data and ideas on improving the methodology. Stakeholders were really happy about it and we got more data and also good suggestions for improving the methodology. In this case we gave stakeholders the opportunity to speak up when they could actually change something in the process as for instance the results of the humane impact analysis will lead in later phasis to measures which mean obligations for stakeholders. So we have discussed and argued the data and methodology and analyse results already before the public consultation. This early engagement is a strategy for whole RBMPs 4. period updating process.	
Adbpo	Italy	Experiences and good practices of European district authorities can help to achieve compliance with the WFD also ADBPO	We have already had comparisons with national adb and other bodies that have made us grow in the application of the WFD	
ISPRA and University of Frente	Italy	They can contribute by providing their points of view, their needs and their knowledge of the local territories and peculiarities	In the past there have been positive examples in the methodologic approaches that have been included in the WFD, taking into account the experiences and peculiarities at local level (basin authorities and local authorities)	
		Stakeholders can accelerate the policy to take action and easen the realization of concrete actions	For the problematic of overflows in Brussels some citizens asked the authorities and politics to take action. They talked a lot about it so the action was prioritized	
Adbpo	Italy	In Zena valley near Bologna, Italy, after several floods the local population convinced themselves the solution to the floods would be cleaning the rivers from all vegetation and sediments. They formed associations to pressure the local governments to implement such solutions. The administration made no effort to engage with the associations and proposed alternative solutions that would actually protect and preserve the river ecosystem.	Instead the administrations are capitulating to the requests, even through they are anthetical to the WFD guidelines objectives. Without proper engagement of the local communities it may be impossible to actually implement the WFD without encountering great resistance from the same community we are trying to help.	

Annex 4: Detailed examples of implementation strategy

A few projects cited in the responses from the questionnaires distributed during the Water4All Workshop within the 2025 EURO-INBO Conference are described below, as possible inspiration for other projects. The description was elaborated with support of AI (Perplexity), using the references indicated by the contributors of the questionnaire.

1) Room for the River Programme (Netherlands): Comprehensive Multi-stakeholder Collaboration

The Room for the River programme represents a comprehensive example of stakeholder engagement in water management, directly addressing the governance gap through systematic multi-level collaboration. The programme demonstrates how engaging stakeholders from the outset transforms major infrastructure projects from sources of conflict into opportunities for collaborative innovation.

The programme's stakeholder engagement approach included several innovative elements that directly address governance gaps identified in the Gaps report. Multi-level governance coordination was achieved through systematic involvement of national government, regional authorities, municipalities, and local communities in both planning and implementation phases. The programme used a "Planning Kit" approach that generated 693 proposals for giving more room to the river from diverse stakeholders including central government, provinces, municipalities, individual citizens, environmentalists, sand miners, etc.

Co-creation processes were central to the programme's success, as demonstrated in the Overdiepse Polder project, where stakeholders collaborated to develop innovative solutions that combined flood protection with spatial quality improvements. The research shows that co-creation depends on conditions related to the context, the characteristics of the stakeholders and their relationships, but also on the design and dynamics of the process.

The programme's success in stakeholder engagement is evidenced by its completion within budget and on time, while achieving multiple objectives including flood safety, environmental quality, and economic development. Key principles identified for successful engagement include strong leadership at all levels, acceptance of alternative proposals from stakeholders, inclusive involvement of diverse groups, and transparent information sharing throughout the process.

The programme's impact extends beyond technical implementation to demonstrate how stakeholder engagement can transform governance approaches. As documented in multiple studies, the programme created new forms of collaboration between government levels and established innovative mechanisms for ongoing stakeholder involvement in water management[26].

[26] References: https://www.mdpi.com/2071-1050/12/18/7736; https://www.tandfonline.com/doi/pdf/10.1080/09640568.2016.1140025?needAccess=true; https://www.mdpi.com/2073-4441/11/10/2032/pdf?version=1571136731; https://www.griffith.edu.au/__data/assets/pdf_file/0025/1616407/5.-The-room-for-the-river-programme-in-Netherlands-and-stakeholder-management.pdf; https://northsearegion.eu/media/9648/4-added-value-through-stakeholder-engagement.pdf; https://research.wur.nl/en/publications/stakeholder-initiatives-in-flood-risk-management-exploring-the-ro

2) **UNESCO MAB Po Grande Reserve (Italy): Participatory Governance for Sustainable Development**

The UNESCO MAB (Man and Biosphere) Po Grande Reserve provides an exemplary model of how stakeholder engagement can create integrated governance approaches that address multiple water-related challenges simultaneously. Established in 2019, the reserve demonstrates how collaborative governance can overcome administrative fragmentation and create shared responsibility for water resource protection.

The reserve's governance model directly addresses the stakeholder engagement gap through several innovative approaches. Multi-stakeholder participation includes public and private actors—local institutions, businesses, citizens' committees, schools, universities, NGOs, and research bodies—working together to promote the sustainable development of river territories and biosphere areas. This comprehensive approach ensures that all relevant stakeholders contribute to water management decisions.

Key success factors identified in the reserve's implementation include early and inclusive involvement of all relevant stakeholders, alignment with existing plans and policies, local knowledge-sharing and capacity-building, and empowerment of communities through education and promotion of "eco-actors" for local engagement.

The reserve also maintains a strong coordination structure (e.g., a Coordination Board led by the River Po District Basin Authority) to ensure continuity and coherence in implementation.

The reserve's approach to stakeholder engagement creates multiple benefits that directly address the governance gap. Education and capacity building are achieved through systematic involvement of schools and universities in research and monitoring activities. Cross-sector collaboration is facilitated through business engagement in sustainable development initiatives. Innovation and knowledge sharing occur through the integration of scientific research with traditional knowledge and community insights.

The collaborative agreement between five UNESCO MAB Reserves along the Po River demonstrates how stakeholder engagement can create innovative governance tools capable of supporting sustainable development while overcoming administrative fragmentation. The coordination board works on education and active participation of the new generation, involvement of public and private stakeholders, and identification of "eco-actors" capable of carrying out communication and promotion actions[27].

3) Lake Vesijärvi Management (Finland): Integrated Stakeholder-Driven Restoration

Lake Vesijärvi provides a comprehensive example of how long-term stakeholder engagement can transform degraded water bodies while building sustainable governance systems. The Lake Vesijärvi Foundation, established in 2007, demonstrates how dedicated stakeholder organizations can create a third level of planning under the RBMPs and Programs of Measures that makes restoration measures more near and understandable while raising local and regional willingness to fund the actions.

The lake management approach addresses multiple aspects of the stakeholder engagement gap through systematic integration of diverse stakeholder groups. Strategic partnerships include the city of Lahti, the

[27] References: https://www.adbpo.it/riserve-mab-unesco-po/; https://www.inbo-news.org/wp-content/uploads/2025/06/2025_EURO-INBO_Parma_ResilienceWorkshop_Italia.pptx.pdf; https://www.adbpo.it/riserve-mab-unesco-po/

municipalities of Asikkala and Hollola as well as agriculture, forestry (timber) and fisheries sectors and various companies and businesses involved in financing the lake management activities.

The foundation's strategy demonstrates how stakeholder engagement can create sustainable financing mechanisms for water management. By engaging private and public actors to secure a financial base for water management, the foundation has maintained long-term restoration efforts that have successfully improved water quality in parts of the lake system.

Innovation through stakeholder engagement is evidenced by the foundation's role in testing new restoration technologies and approaches. The lake serves as a demonstration site for innovative measures including combined sand-filter and wetland and algal harvesting, with stakeholder support enabling experimental approaches that inform broader water management practices.

The Lake Vesijärvi case demonstrates how stakeholder engagement can create adaptive management systems that respond to changing conditions while maintaining long-term commitment to water quality objectives. The foundation's approach shows how systematic stakeholder involvement can bridge the gap between scientific research, policy implementation, and community action[28].

4) Citizen Science Water Monitoring: Democratizing Data Collection and Awareness Building

Citizen science initiatives represent an innovative approach to stakeholder engagement that directly addresses the awareness and participation gaps identified in the Gap report. The Osservatorio Citizen Science in Italy demonstrates how Citizens engaged in the promotion of land preservation, particularly freshwater environments can contribute to systematic water quality monitoring and environmental protection.

Community strengthening through citizen monitoring has been documented across multiple contexts, showing how participation in data collection activities strengthen[s] water community organizations and creates Water Committees that can influence water management decisions. Research shows that one practice that strengthens these committees is the generation of collaboration agreements among different types of allies, based on a shared objective.

Key success factors for citizen science stakeholder engagement include systematic training programs, clear data protocols, and integration with formal monitoring systems. The research shows that program volunteers acting as citizen scientists, successfully generated a significant amount of physicochemical and microbiological data that proved invaluable for assessing water quality while also experiencing a notable shift in environmental awareness.

Citizen science initiatives demonstrate how stakeholder engagement can create multi-directional benefits: communities gain knowledge and capacity, scientists obtain broader spatial and temporal data coverage, and water managers receive community support for protection measures. This approach directly addresses the governance gap by transforming passive water users into active water stewards[29].

[28] References: https://vesijarvi.fi/en/front-page/the-strategy-of-lake-vesijarvi-foundation/; https://futurelakes.eu/demo-sites/lake-vesijaervi-finland;
[29] References: https://www.osservatoriocitizenscience.org/; https://pmc.ncbi.nlm.nih.gov/articles/PMC11259256/; https://sbnsoftware.com/blog/what-is-the-role-of-citizen-science-in-water-quality-monitoring/; https://repository.library.noaa.gov/view/noaa/65746/noaa_65746_DS1.pdf

5) River Contracts (Italy): Community-Based Participatory Planning

River Contracts represent a systematic approach to stakeholder engagement that has been implemented across Italy, providing extensive evidence of how participatory governance can address the stakeholder engagement gap identified in the Water4All Gap report. As voluntary-based tools of strategic and negotiated planning, River Contracts contribute to integrated management of water resources, flood risk and local development at catchment and sub-catchment scale.

The strength of River Contracts lies in their prioritization of direct consultation with broad stakeholder groups. Projects under these contracts are carried out through public-private partnerships for better efficiency of implementation and to enable job creation. Collective governance is increasingly associated with successful efforts for sustainable development.

In addition to the Canale Reale River Contract, the Serchio River contract provides another notable example of successful stakeholder engagement, involving more than 270 stakeholders in its planning phase. Key achievements include redefining rules for urban development in harmony with nature and the river and involving farmers in protection of the environment. The contract demonstrates how extensive stakeholder engagement can generate innovative solutions that balance economic development with environmental protection.

Currently, 80 River Contracts have been subscribed of the 200 processes activated through the creation of public-private partnerships in Italy. The contracts have been implemented as measures in River Basin Management Plans of all Basin District Authorities, demonstrating their integration with formal WFD implementation processes[30].

[30] References:
https://sdgs.un.org/partnership-progress/supporting-and-strengthening-participation-local-communities-integrated;
https://www.un-ilibrary.org/content/books/9789210047128s002-c004;
https://riverwatch.eu/sites/default/files/uploads/EuropeanRiversDays/Presentations/River_Contract_summary_rev.pdf

Annex 5: Interview with Nathalie Sureau-Blanchet – Agence de l'Eau Rhône-Méditerranée-Corse

You coordinated the Rhône-Méditerranée-Corse Water Agency's "Water and citizen participation" call for projects between 2020 and 2024. What lessons can you draw from this experience, and what recommendations can you make concerning the stakeholders' mobilization, particularly with a view to WFD implementation?

Each year, around fifteen projects were selected by the jury for this call for projects, for a total amount of around one million euros per year. These projects fall into 3 main categories:

- Participatory approaches that accompany the implementation of a SAGE or river contract and address several water-related issues. They include, for example, the setting up of "citizen sentinels" or participatory observatories, participatory inventories and experimental workcamps, artistic installations or the creation of a citizens' agora. The aim is to create a group of citizens who will participate in decision-making bodies such as local water commissions or river committees.
- Other projects involve citizens in the design of a river restoration and flood control project. An initial phase of listening to citizens' perceptions and expectations is then planned. This is followed by public meetings, participatory workshops to co-construct restoration scenarios, and even serious games to test them out.
- Other projects are a direct response to the strong social demand to "act at one's level" and offer citizens the chance to experiment with new practices: installing rainwater harvesters in their homes, testing new gardening practices, exchanging ideas on different ways to save water, or even thinking about rainwater infiltration.

Every six months, we organize meetings between the winners of the call for projects to enable them to share their experiences. The main lessons learned are as follows:

1) On the theme of participating engineering:

Key features	Areas for improvement
- Diversified participatory tools: sensitive, sensory and artistic experiences - Events appreciated by participants: nature festival, field visits, participative workcamps - Capitalization and valorization of results thought out prior to participation	- Lack of knowledge of the participation process in some communities - Underestimation of HR time - Approaches sometimes too scientific - Ambassadors' status unclear and difficult to coordinate with political bodies

2) On the theme of coordination between stakeholders

Key features	Areas for improvement
- Fruitful collaboration with participation specialists (consultants, CPIE, etc.). - Creation of new forums for exchange between local players and strengthening of links between unions, technicians, elected representatives and citizens.	- Difficulty integrating elected representatives into the process: the link between participation and political decision-making is sometimes distant. - Coordination between partners and services sometimes complicated (communication, technical services...)

3) On the theme of citizens mobilization

Key features	Areas for improvement
- Success when exist support from pre-formed citizens' groups - Support from relay structures: media libraries, youth and cultural centers, associations, etc. - Develop a comprehensive communications strategy	- Unjustified disappointment over the number of participants for almost all projects - Difficulty in reaching diverse populations - Possible communication dysfunction: communication scale ≠ participation scale

Based on the experience of the projects founded by this call, can you suggest implementation strategies and practical advice about stakeholder's engagement?

Implementation strategy depends highly from the context, and my first recommendation would be to involve professionals specialized in public consultation and citizen participation.

The following observations and advice from the funded projects can serve as inspiration for other projects, if relevant:

- Mobilize key groups through trusted intermediaries: Farmers via agricultural chambers; Young people through schools and sports clubs, etc.
- Technical projects must allow room for citizen proposals and be open to change. Integrating citizen input requires a willingness to adapt project objectives and methods.
- Participatory processes introduce uncertainty; results may differ from initial expectations. However, these outcomes are often more deeply rooted in the local context and more sustainable.
- Implementing participatory approaches requires significant time for preparation, facilitation, and follow-up. Hiring a dedicated person to manage participation can be highly beneficial for project success.
- Effective participation demands careful planning and the ability to adapt methods as the process unfolds. Use a variety of engagement tools: conferences, workshops, games, street interviews, etc.
- There is often a mismatch between the time needed for participation and the pace of decision-making. It is crucial to communicate with citizens after the participatory process, as participants are often eager to see concrete actions.

In conclusion, we can observe that projects shaped by citizen participation are more likely to be accepted and anchored in the local area. The process strengthens the legitimacy and relevance of decisions.

Can you give me any reference or complementary information about stakeholder's engagement?

- Between 2016 and 2020, the Agence de l'eau Rhône Méditerranée Corse and INRAE developed a project entitled " What participatory strategy for local water management with citizens?"
  The main results are available here:
  https://www.gesteau.fr/document/quelle-strategie-participative-pour-la-gestion-locale-de-leau-avec-les-citoyens

- On our Webpage about Citizen Participation, you can find links to feedback forms from the Call for project I mentioned in this interview, and information about other projects like a Citizen panel on water issues we organized recently in the context of the 2028-2033 SDAGE (River basin management plan) preparation, or an innovative project about Social and regional benefits of water related projects.
  https://www.eaurmc.fr/jcms/pro_129780/fr/participation-citoyenne

Annex 6: Interview with Gabrielle Bouleau – PIREN-Seine

Which are your Ideas about the future of Urban Wastewater Treatment directive, Drinking Water Directive and Water Framework Directive within PIREN-Seine and where it is needed to concentrate to address GAPS in their implementation?

1. Funding

Different efforts have been implemented in different water services and water suppliers. The new developed standards provide better results for water quality characterization but determine additional cost of water. These additional costs do not correspond to lever of action for diminishing the emissions of these pollutants, and especially PFAS. This results in increasing demanding standard to detect pollutants without being able to reduce pollutants at the source.

Even when pollutants producers are involved in the process to contribute in solving the problem of pollution they usually propose end of the pipe solutions that maintain the possibility of emitting, instead of phasing out those pollutants.

Solution → investment to understand how reducing emission

2. Principles to detect the danger of pollutants

Principle at the basis of DWD → not eco-toxicological principles but precaution principles which require that the sum of different (micro-)pollutants should be below certain limits. The fact is that technology has improved a lot and so the emission of many different micropollutants → this usually results in exceeding the fixed thresholds. For sure the precautional principles is good in theory, but the result is that because thresholds are exceeded, the pump is closed and the network has to be extended, the consumer is convinced that there is a problem and the trust from the consumer goes down (to buying only bottle water to drink).

Possible direction for investment and solutions

- à Use 'not target' methods instead of target methods (these last ones allow only to detect the molecule you are looking for, while not targeted method search for a spectrum of molecules). Ecological and biological methods can be considered among not-target methods.
- à More investment in developing specific ecological assessment tool and invest to convince managers and decision makers that such tools are not disqualifying methods (with respect to pure chemical methods). Moreover: more focus on developing ecological tools for groundwater would be needed.
- à When pollution is determined → going in the direction of investing in prevention (i.e. ban the release of those specific substances) and not investing in ever more refined systems that allow finer detection of substances.
- à Need for scaling up monitoring through the convergence between ecological and health issues.

3. Protection of not contaminated waters

Especially in the context of competition between the CAP (Common Agricultural Policy) and water protection it is very difficult for water managers to have powerful tools to limit the use of fertilisers and pesticides given the amount of investment in securing food**.**

Accordingly more constraints in the use of e.g. pesticides around water uptake are needed also form the European union, in order to limit the emissions.

4. Efficient treatment of PFAS (and other contaminants): what's the problem

To be more efficient in the treatment of PFAS and less energy demanding more land (space) is needed. The less land you have the more energy you need for waste water treatment. This is a GAP. Some reflection is needed on the best use of land you might have (or have not) to manage future treatment plans.

5. Interaction with polluters

There are not interaction with polluters: on one hand within the Piren-Seine there are no chemical industries among partners and on the other hand there is the need to detect more specifically the source of pollution (as they were able to do for microplastics) → too many point sources that have to be identified other than considering the pollution as diffuse source.

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