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European Partnership

ATLAS OF WATER-ORIENTED LIVING LABS

2026

Co-funded by
the European Union


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Particularly, Water Europe, Leader of the Pillar D, wishes to acknowledge the invaluable contribution in all the different stages of the development progress of the ATLAS of Water-Oriented Living labs, the Partners of Task D.1 of Pillar D of Water4All.

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Disclaimer: This document reflects the views only of the author, and the European Commission cannot be held responsible for any use which may be made of the information contained therein

INTRODUCTION

In alignment with the mission of the EU co-funded Water4All Partnership and the vision of Water Europe for a Water-Smart Society and Economy, the initiative to produce the ATLAS of Water-Oriented Living Labs (WOLLs) represents a pivotal progress towards fostering collaboration and innovation within the water sector. As part of Pillar D within Water4All, this endeavour aims to create a comprehensive map of WOLLs, both within Europe and globally, underlining their critical role in addressing pressing water-related challenges.

Water Europe, at the forefront of advocating for a Water-Smart Society, supports the transformative potential of Water-Oriented Living Labs in driving sustainable water management practices. Through the publication of the ATLAS and subsequent documentation, Water4All Partnership aims to provide instrumental resources and guidelines for WOLLs to align their efforts to contribute securing water for all.

By establishing a Network of WOLLs, Water4All seeks to catalyse collaborative endeavours that transcend geographical boundaries, uniting stakeholders from diverse backgrounds to co-create a dynamic platform for testing and validating technologies, policies, and business models, contributing significantly to the realisation of a more resilient and sustainable water future.

Embedded in the Water4All Partnership, the ATLAS of WOLLs represents the collective commitment to advancing water resilience and promoting cross-sectoral collaboration. Through strategic initiatives such as these, we work to accelerate progress towards a Water-Smart Society and Economy, where water resources are managed efficiently, sustainably, and equitably for the benefit of all inhabitants of our planet.

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WATER4ALL'S PARTNERSHIP AND ITS STRATEGIC RESEARCH AND INNOVATION AGENDA

The Water4All Partnership was launched in June 2022 to **enable water security for all in the long term by boosting systemic transformations and changes across the entire research** – water innovation pipeline. Co-funded by the European Union through the Horizon Europe Programme, Water4All adopts a stakeholder-inclusive approach in which specific matchmaking activities between problem owners and solution providers are encouraged.

Moreover, and with the purpose of tackling water challenges in a holistic manner, the Water4All Partnership will take a "source to sea" perspective allowing the full recognition of the interconnectedness of upstream and downstream water resources as well as the promotion of integrated and sustainable management practices. Specific objectives of Water4All are:

- Provision of knowledge, methodologies and tools for water management and planning.
- Demonstration and implementation of innovative solutions for the conservation, restoration, regeneration, and best use of water resources.
- Support to European and international policies, strategies and frameworks related to water.
- Improved collaboration in R&I activities.
- Enhanced open access to water knowledge.

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As of May 2026, Water4All will gather 92 partners from 33 countries from Europe and beyond, and representing the whole R&I chain, including national research funders, research performing organisations, associations, and clusters. Water4All is a programme open to the world, which is reflected by the presence of partners from ten non-EU countries (Brazil, Georgia, Israel, Moldova, Norway, South Africa, Switzerland, Tunisia, Turkey and the United Kingdom).

Running for ten years, although some actions will extend till 2034, the programme will support a wide portfolio of multi-national and cross-sectoral activities, from physical and biological sciences to human and social sciences. All these activities have been grouped into different categories, leading to the structuring of Water4All into six different work packages or pillars:

- **Pillar 0** - responsible for the overall management and coordination of the programme.
- **Pillar A** - aimed at defining the strategic orientations of Water4All.
- **Pillar B** - seeking to generate knowledge through the pooling of financial resources from funding agencies participating in the programme.
- **Pillar C** - promoting the uptake of results from research and innovation activities through science-policy interface actions and capacity building.
- **Pillar D** - supporting demonstration activities and enhancing market access for R&I solutions.
- **Pillar E** - dedicated to increasing the visibility and international portfolio of activities.

The overall budget for the decade may attain up to 300 M€, including the EU contribution. Detailed information on the aim of Water4All and its activities can be found at: ***//www.water4all-partnership.eu/***

Water4all's SRIA

As part of the objectives of Pillar A, the Water4All Partnership published its Strategic Research and Innovation Agenda (SRIA) in September 2022. An updated version will be published in May 2026 to reflect emerging and top priorities in water research and innovation.

The SRIA is the main strategic document of the Partnership. It offers a comprehensive understanding of specific areas in which knowledge gaps persist and for which further research and innovation is recommended. Amongst other activities, the contents of the SRIA guide Water4All partners in the definition of annual calls, the development of position papers and responses to public consultations, and the definition of additional activities. The SRIA ultimately aims to influence the content of the calls launched by the Framework Programme.

All the knowledge gaps listed in the SRIA are presented as specific topics and grouped into different themes according to the domain they pertain. The updated Water4All's SRIA identifies five key themes, shown in the **Figure I**. The SRIA also identifies drivers and enablers, as specific factors that may play a major role in the delineation of Water4All's thematic orientations

Figure 1: Water4All's R&I themes, drivers and enablers.

The update process of Water4All's SRIA (Figure II) was initiated soon after the publication of the first version. This process has included a series of activities including consultative workshops, foresight, review of the literature (i.e. peer-reviewed papers and publications from key EU and international organisations), and a public consultation. In addition to considering the views expressed by a wide variety of stakeholders across the research community, policy sphere, and water utilities, Water4All's SRIA is fully aligned with key EU strategies, in particular the European Water Resilience Strategy, to achieve a Water-Smart Society and Economy.

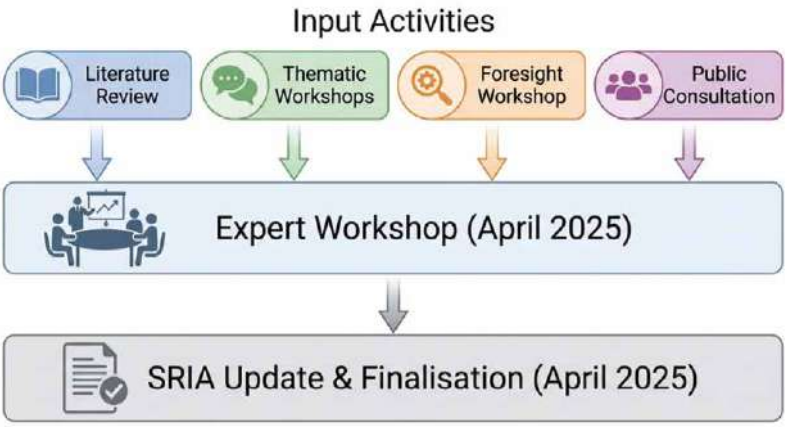


Figure 2: Water4All's SRIA development process.

The main two novelties of the updated SRIA are:

• The inclusion of water research and innovation priorities as identified by a group of experts appointed by Water4All during an expert workshop held in Paris in April 2025.

• The identification of Key Performance Indicators (KPIs) for tracking the implementation of the SRIA. The aim of these indicators is to develop a better understanding of the extent to which Water4All's SRIA drives strategic decisions in partnering organisations, especially in participating national funding agencies.

No more updates are foreseen by the Water4All consortium till the end of the programme. However, Pillar A partners will keep on analysing emerging needs to be tackled by research and innovation activities. To this end, a new task will be launched during the third period of the partnership, starting in June 2026 and till June 2029. Led by research performing organisations participating in Water4All, this new task will allow partners to publish thematic papers in some of the priorities listed in the SRIA. Such papers will be later on widely distributed through our main channels such as the Water4All website, social media, or the newsletter.

WATER EUROPE

Water Europe (WE), established in 2004 as the European Research and Technology Platform (ETP) for water has been set-up as an industry-led technology and innovation platform that represents the whole value-chain of water including industry, academia, research and technology organisations, utilities, equipment manufacturers, infrastructure and service providers, public authorities, and civil society organisations.

As an ETP all Water Europe' activities are guided by its Water Vision **"The Value of Water"** with the ultimate ambition to achieve a Water-Smart Society in which:

- the value of water is recognised and realised to ensure water security, sustainability, and resilience.
- all available water sources are managed so that water scarcity and pollution are avoided.
- water and resource loops are largely closed to foster a circular economy and optimal resource efficiency.
- the water system is resilient against the impact of climate and demographic change.
- all relevant stakeholders are engaged in guaranteeing sustainable water governance.

To realise the transformation into a Water-Smart Society, Water Europe has identified 5 innovation areas:

- Circular Water (loops)
- Multiple Waters (use)
- Digital Water (management)
- Inclusive Water (governance)
- Resilient Water (infrastructure)

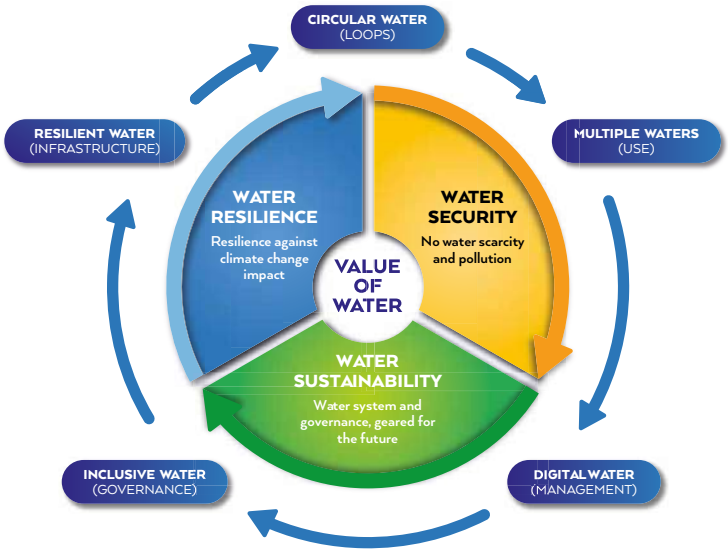


Figure 4: The Water-Smart Society model. Source: Water Europe

To drive the transition to a Water-Smart Society, Water Europe has developed the Water-Oriented Living Lab (WOLL) concept, articulated in a **series of publications**[1].

Water Europe leads with the Innovation Fund Denmark (IFD) Pillar D of Water4All to support demonstration activities and enhance access to the R&I solutions market through Water-Oriented Living Labs to provide dynamic platforms for testing, refining, and deploying, refining and deploy innovative water solutions in real-world environments to achieve a Water-Smart Society.

Water-Oriented Living Labs, as core component of the Water4All initiative, are founded upon the Quadruple Helix principle, embodying a collaborative framework involving government, industry, academia, and civil society. This principle underscores the holistic approach of WOLL initiatives, aiming to address complex water challenges through multi-stakeholder engagement, innovation, and co-creation.

[1]Water-Oriented Living Labs: Definitions, practises and assessment methods Series #1
How to assess and evolve Water-Oriented Living Labs Series#2

WATER4ALL PILLAR D: DEMONSTRATION ACTIVITIES

The **Pillar D – Demonstration activities** of Water4All plays a fundamental role within the Water4All Partnership, serving as the cornerstone for demonstrating innovation in real-world environments. It aligns with the Partnership's overarching vision of advancing water security for all by boosting systemic transformations and fostering the matchmaking between problem owners, solution providers, investors, policymakers and local innovation ecosystems. With this edition of the ATLAS, Water4All closes the second phase of Pillar D activities and prepares the transition towards Phase 3.

During the first two phases, Pillar D laid the foundations for the identification, assessment and engagement of WOLLs, through the development of the ATLAS, the establishment of the WOLLs Network, the definition of a demonstration roadmap, and the support provided to promising candidates with the potential to evolve into WOLLs. Phase 3 will build on these results to consolidate the impact of the WOLLs Network, strengthen long-term engagement, and introduce new activities aimed at capacity-building, clustering, scale-up, financial sustainability and market uptake. .

Pillar D consists of 3 main Tasks:

- **Task D1** in Pillar D aims to establish and maintain lasting engagement with existing operating Water-Oriented Living Labs, fostering collaboration, strengthening peer learning, and overcoming innovation barriers. In Phase 3, this task will further consolidate the WOLLs Network as a dynamic innovation community, continuing the development of the ATLAS as an updated knowledge hub and expanding engagement activities through webinars, workshops, plenary meetings and local events. New activities will also be introduced to support capacity development of WOLLs and follower WOLLs, and to foster clustering among Water4All-funded projects and the WOLLs Network, creating stronger links between research results, real-life demonstration environments and potential users or co-developers of solutions.

- **Task D2** is dedicated to supporting the development of emerging ecosystems with the potential to become WOLLs. Building on the assessment and mapping work carried out in the previous phases, Task D2 focuses on helping follower WOLLs increase their maturity level and prepare for inclusion in the WOLLs Network. In Phase 3, this support will be reinforced through targeted activities and practical guidance for establishment and scale-up. The aim is to accompany follower WOLLs in their transition from pilot or emerging initiatives towards fully established, operational and sustainable WOLLs.

- **Task D3** focuses on connecting WOLLs and innovators with development and investment programmes, while supporting the market uptake and financial sustainability of water-related innovations. In Phase 3, this task will streamline previous activities into a stronger focus on innovative financial mechanisms, sustainable business models, matchmaking opportunities, and the positioning of WOLL-based solutions for wider adoption. Through strategic financial outputs, investment outlooks and market-oriented events, Task D3 will help improve the attractiveness of the water sector and support the long-term sustainability of WOLLs and the innovations emerging from them.

Overall, the transition to Phase 3 marks a shift from foundation-building to consolidation and operationalisation. Pillar D will continue to support the demonstration of innovation in real-life environments, while reinforcing the conditions for long-term impact: stronger WOLL maturity, better connection between local needs and strategic priorities, improved access to knowledge and financial opportunities, and closer interaction between WOLLs, funded projects, and investors. Through this approach, Pillar D contributes to bringing research to the ground, accelerating the uptake of water-smart solutions, and supporting the transition towards a Water-Smart Society and Economy.

Context and WOLL definition

Pillar D within Water4All is focused on creating a comprehensive map of Water-Oriented Living Labs operating not only in Europe but also globally. This initiative serves as an initial step towards establishing a network of WOLLs aimed at fostering synergies and facilitating collaboration within the water sector. The methodology utilised for evaluating the maturity of submitted WOLL candidates relies on a comprehensive assessment tool developed by Water Europe. Water Europe has embraced the Living Lab approach as the central element of its implementation strategy to realise a Water-Smart Society. Following the publication of the first edition of the ATLAS on Water-oriented Living Labs in 2019, Water Europe has released two publications that explore deeper into the WOLL concept and methodology. The first document, "Water-Oriented Living Labs: Notebook Series #1. Definitions, practices, and assessment methods" (Series #1) provides an overview of the history of the Living Labs concept.

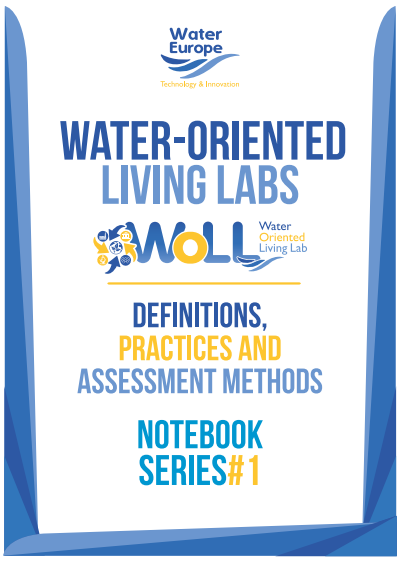


Figure 5: WoLL: Definitions, practices and assessment methos. Water Europe Publication

The second document, "Water-Oriented Living Labs: Water-Oriented Living Lab Notebook Series #2. How to assess and evolve towards a network of Water-Oriented Living Labs" (Series #2) elaborates on a methodology that enables the comparison of WOLLs across numerous attributes and their assessment using a quantitative tool. A third document, in the form of Advanced Guidelines, is currently in preparation and will offer a tailored approach for WOLLs to progress toward WELLs, building upon the WE Vision.

Establishing a shared understanding of what Water-Oriented Living Labs entail is crucial for grasping the significance of innovation demonstrations in real-life contexts.

In the Series #2 publication, Water-oriented Living Labs are defined as "relevant innovation ecosystems that promote the co-creation, testing, and evaluation of innovations in representative real-life environments, with the ultimate aim of realising a 'Water-Smart Society'.

The Living Lab concept is highly relevant to the innovation process leading towards a Water-Smart Society. It removes research and development from laboratories and places it in real-life contexts. This allows for a better understanding of what triggers innovations and which innovations prove successful in different environmental, social, and cultural contexts. A Living Lab is not only a network of infrastructures and services, but also a collaborative ecosystem established to sustain community-driven innovations in a multi-stakeholder context. It offers an effective research methodology for sensing, prototyping, validating, and refining complex solutions in multiple and evolving real-life contexts, which surpass the researcher's perspective." **Water Europe defines WOLLs as "real-life, water-oriented and demo-type and platform-type environments with a cross-sector nexus approach, which involve and commit multiple stakeholders (including water authorities) and provide a 'field lab' to develop, test, and validate a combination of solutions as defined in the WE Vision, which include technologies, their integration as well as combination with new business models and innovative policies based on the value of water"**.

Water-Oriented Living Labs are recognised as a key driver for the future strategic agenda in the water sector. Therefore, it is imperative for WOLLs to adopt a harmonised approach in their establishment and practices, enabling the generation and sharing of innovations and best practices in a coordinated manner to expedite the innovation process aimed at addressing key societal challenges such as pollution and the impact of climate change. The chosen methodology for developing the assessment process for WOLLs is the Living Lab assessment Method known as the 'Harmonization Cube,' tailored to the water sector. This assessment method facilitates coordinated assessment, analysis, synergic development, harmonisation, and networking of WOLL initiatives.

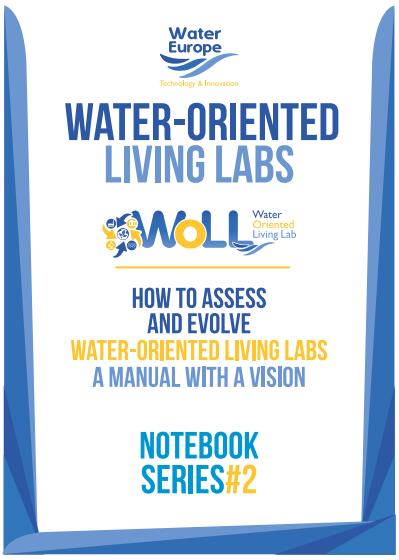


Figure 6: WOLLs assessment Manual Water Europe Publication

Assessment methodology

The methodology outlined in the WE Series #2 publication has been employed to select and evaluate the Water-Oriented Living Labs featured in this Atlas. Based on the Harmonisation Cube, this methodology comprises three steps designed to conduct a comprehensive analysis of WOLLs: **Mapping, Assessment, Evaluation**.

• The Harmonization Cube

What is the Harmonization Cube? It is referred to as the best available methodology today, that brings harmonization of methods and tools in the Living Lab analysis. It provides detailed evaluation criteria for the six foundational elements of any Living Lab: (1) governance, (2) service creation, (3) infra-structures, (4) methods & tools, (5) user involvement and (6) innovation outcomes. The tool determines the measure of the WOLLs' maturity. This assessment method allows for co-ordinated assessment, analysis, synergic development, harmonisation and networking of WOLLs initiatives.

How does this apply to WOLLs? To assess the maturity level of Water-Oriented Living Labs (WOLLs), a customised version of the Cube and a practical tool have been developed. This tool tailors the 3x3=9 evaluation criteria to align with the fundamental requirements of Research, Development, and Innovation in the water sector, referred to as "WOLL metrics." These metrics enable exploration of the landscape and facilitate a detailed examination focused on the water sector. This process is carried out separately for three categories: urban, rural and industrial. The Harmonization Cube proves particularly valuable for evaluating and analysing the six foundational elements, identifying opportunities for development, and fostering a participatory approach.

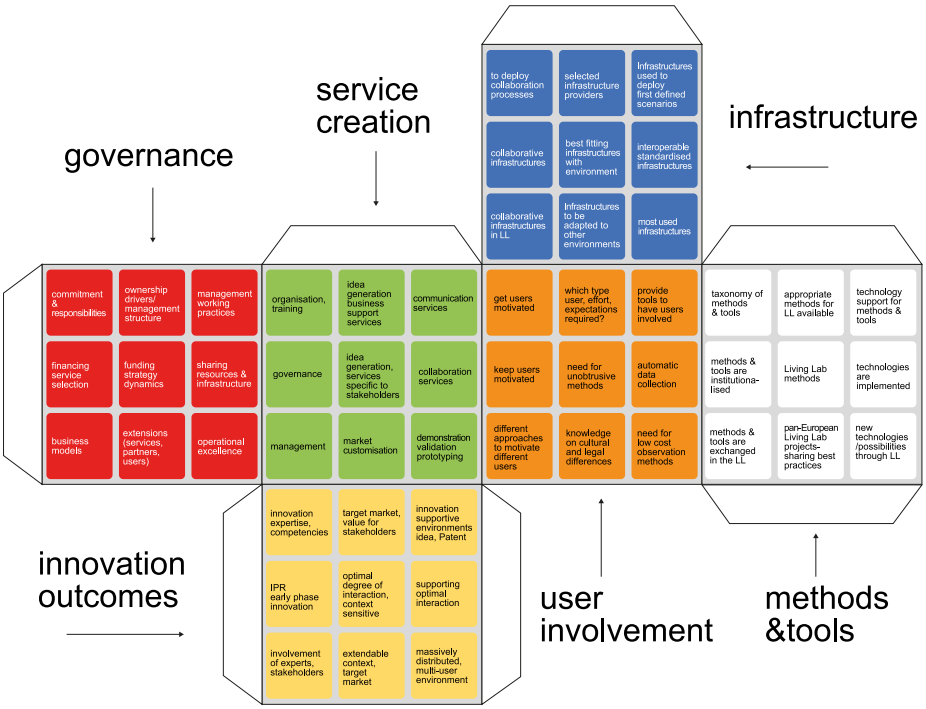


Figure 7: Visualization of the Harmonization Cube.

• The three steps process

STEP 1. MAPPING
The mapping activities consist in compiling two main tools. The first tool involves assessing the potential WOLL's maturity level using the Harmonization Cube model. This model employs a 3x3 metrics evaluation criteria applied to six foundational elements. It aims to derive a percentage score reflecting the WOLL's maturity level.

The second tool comprises a comprehensive documentation and interactive process. This documentation collects essential information about the candidate WOLL, including its name, location, spatial scale, governance structure, perceived maturity level, and specific attributes related to start-ups, sustainability, and scalability. Additionally, it gathers the WOLL's mission, focus areas, organisational settings,it includes a SWOT analysis, and the strategy of the candidate WOLL.

STEP 2. ASSESSMENT
The assessment procedure consists of the examination of four fundamental criteria to determine the candidates' maturity for inclusion as WOLLs. The four fundamental criteria considered during the assessment phase include:

• **Local Territory Connection Assessment:** the candidates must be geographically situated within the territory and must tackle a territorial water challenge.

• **Quadruple Helix Assessment:** Evaluation of the involvement of the quadruple helix actors and the extent of stakeholder engagement.

• **Sustainability Assessment:** Examination of candidates regarding the presence of a stable governance, structured collaboration, and the presence of a long-term strategy, encompassing financial planning and organisational governance.

• **Innovation Demonstration Assessment:** Evaluation of how the potential WOLL showcases innovation within its framework.

STEP 3. EVALUATION
WOLL candidates are deemed suitable for inclusion in the ATLAS when they meet all four fundamental assessment criteria. Based on the evaluation results, candidates meeting the maturity criteria are identified as WOLLs and contextually integrated into the ATLAS of WOLLs, as well as included in subsequent engagement activities of the Network of WOLLs. Candidates that do not meet all four criteria but demonstrate potential for evolution into WOLLs undergo further investigation through a needs analysis and are engaged in additional activities supported by Task D.2 of Pillar D of Water4All. However, candidates failing to meet all four criteria and lacking the foundations for evolving into WOLLs within a reasonable timeframe are no longer considered for further support or investigation.

STRATEGY OF THE NETWORK OF WATER-ORIENTED LIVING LABS

The Network establishment of Water-Oriented Living Labs represents a pivotal moment in the mission of sustainable water management. Born out of the Pillar D of the EU partnership Water4All, the WOLLs Network represents a unified front in the quest for water security, resilience, and sustainability. It embodies the collective commitment of stakeholders from various territories where the members WOLLs are based, including academia, industry, government, and civil society, to address the complex challenges facing water resources locally and scaling up to globally.

The Water-Smart Society entails a paradigm shift in the way the value of water is recognised and realised, water-smart solutions are developed and deployed, and our future society organised and managed regarding water. This shift calls for bold and courageous decisions, investments, changes, and new types of stakeholder partnerships at all levels of society, involving citizens, public authorities at all levels, scientists, industries, and farmers, as well as stewards of the natural environment. This is the concept on which the Water-Oriented Living Lab roots it rationale to support territories in achieving long-term water security.

The strategy of the Network of WOLLs is multifaceted and comprehensive, aiming to address the various dimensions of water management challenges while advancing the vision of a Water-Smart Society to achieve water security for the planet. Key elements of the strategy include:

1. **Creating a collaborative Ecosystem:**
   Central to the strategy of the Network is the creation of a collaborative ecosystem that brings together stakeholders from various WOLLs. By fostering cross-sectoral partnerships and collaboration, the network aims to leverage the collective expertise, resources, and creativity of its members to develop holistic and innovative solutions to water-related challenges. This collaborative ecosystem will serve as a platform for sharing knowledge, exchanging best practices, and co-creating sustainable water management models and solutions.

   To reach a critical mass and effectively call on the European Commission (EC) to address the long-term Research and Innovation (R&I) needs for efficient water management, it's imperative for the Network to represent the entire European Union from the grass-roots level. This representation should encompass diverse geographic, economic, and policy development perspectives. By ensuring representation from various regions and sectors, the Network can accurately reflect the real-life environment and articulate the changes needed to manage water efficiently.

   Through its diverse representation, the Network can advocate for R&I initiatives that address the specific challenges and needs of different EU regions and stakeholders. By uniting stakeholders at the grass-roots level and engaging in collaborative R&I efforts, the Network can drive impactful changes in water management practices and policies. This bottom-up approach empowers local communities and organisations to actively participate in shaping the future of water management in Europe, ultimately contributing to the development of more resilient and sustainable water systems across Europe.

2. **Promoting Knowledge Exchange and Innovation:**
   A cornerstone of the network's strategy is the promotion of knowledge exchange and innovation among its members. Through various platforms such as annual conferences, workshops, and collaborative projects, the network provides opportunities for stakeholders to share best practices, lessons learned, and innovative ideas. These meetings will provide opportunities for stakeholders to discuss progresses, challenges, and opportunities, ultimately enhancing the effectiveness of the collaborative efforts. By facilitating an environment of continuous learning and innovation, the network aims to catalyse the development and adoption of cutting-edge water management solutions.

3. **Advocating for Policy Reform:**
   Another key aspect of the network's strategy is advocacy for policy reform to support sustainable water management practices. By engaging policymakers and government representatives, the network seeks to influence policy decisions and promote the adoption of regulations and incentives that incentivise sustainable water management practices. Through targeted advocacy efforts, the network aims to create an enabling policy environment that supports the implementation of innovative water solutions at scale. To facilitate policy development and regulatory learning at the local level, the network will

establish sandboxes, which are controlled environments where innovative water management practices can be tested under regulatory supervision. These sandboxes provide a platform for experimentation with new approaches to water management while ensuring compliance with local regulations. By leveraging sandboxes, stakeholders can gather valuable insights and data to inform policy decisions and regulatory frameworks.

In addition to sandboxes, the network will produce white papers and position papers to articulate key policy recommendations and insights derived from regulatory learning experiences. These papers will serve as valuable resources for policymakers, providing evidence-based guidance on effective approaches to sustainable water management.

Furthermore, the network will prioritise harmonisation with the EU agenda to effectively influence legislation and regulatory frameworks. By aligning policy advocacy efforts with EU priorities and initiatives, the network can amplify its impact and enhance collaboration with EU institutions and member states. This strategic alignment will facilitate the adoption of harmonised regulations and standards across European countries, driving progress towards sustainable water management goals.

4. Building Resilient Communities:

The network recognises the importance of building resilient communities that are equipped to adapt to the challenges posed by climate change and water scarcity. By focusing on community engagement and capacity building, the network aims to empower local communities to take ownership of their water resources and implement sustainable water management practices. Through initiatives such as community workshops, training programs, and outreach campaigns, the network aims to build a network of empowered and resilient communities committed to safeguarding their water resources for future generations.

5. Leveraging Emerging Technologies and Multiple Waters:

The Water-Smart Society will leverage both the dramatically increased manageability made possible by the emerging cyber-physical environment and 'digital water' technologies, as well as the increased availability of 'multiple waters' to complement freshwater sources. It will also be characterised by much deeper levels of awareness, integration, and collaboration between organisations and citizens.

To support the transition for market uptake of innovative solutions in achieving this vision, Water Market Europe (WME) roadshows will play a vital role. These roadshows serve as platforms for showcasing cutting-edge water technologies, facilitating networking among industry professionals, policymakers, and stakeholders, and providing opportunities for knowledge exchange and collaboration. By participating in WME roadshows, stakeholders can explore and promote innovative solutions that contribute to building a Water-Smart Society. This engagement fosters the adoption of advanced technologies and approaches, driving progress towards sustainable water management practices and the realisation of the Water-Smart Society.

6. Ensuring Human Rights to Water:

In alignment with SDG 6, the Network of Water Oriented Living Labs aims to ensure access to clean water and sanitation for all. By fostering partnerships and collaborations (SDG 17) among stakeholders, including local communities, government bodies, NGOs, and private sectors, we strive to address water-related challenges effectively. Through research, innovation, and community engagement, the Network of WOLLs seeks, fosters, and deploy sustainable solutions that promote water conservation, improve water quality, and enhance sanitation practices. By leveraging partnerships and collaborative efforts, the Network aims to maximise the impact of Water4All initiatives, ensuring that the human right to water and sanitation is upheld, irrespective of identity, location, or socioeconomic status. Through these concerted actions, we contribute to the broader goals of sustainable development, safeguarding public health, and fostering inclusive growth, leaving no-one behind.

[2]Figure 8: SDG 6 is strongly interlaced with many other UN Sustainable Development Goals and indirectly associated with all of them.

[2]United Nations Sustainable Development Goals web site (https://www.un.org/sustainabledevelopment/). The content of this publication has not been approved by the United Nations and does not reflect the views of the United Nations or its officials or Member States.

PROFILES OF THE WATER-ORIENTED LIVING LABS

In the following pages, we present the brief profiles of the 29 selected Water-Oriented Living Labs selected for this edition 2024 of the ATLAS.

These profiles offer insights into the diverse range of initiatives operating across various regions and sectors. Each profile provides a summary of the WOLL's mission, objectives, geographical scope, governance structure, key stakeholders, activities, achievements, and future plans.

Through these profiles, we aim to showcase the innovative approaches and impactful contributions of these WOLLs towards building a sustainable and resilient water future.

CITY OF MECHELEN

Mechelen, Belgium

Geographical scale Municipal
WOLL Type Urban
Year of establishment 2023

WOLL Introduction

The Mechelen 'Water Oriented Living Lab' (WOLL) is rooted in the Dijle valley, a dense urban landscape where water, nature and city life converge. The recent designation of a RAMSAR urban wetland highlights the area's international ecological value and strengthens Mechelen's commitment to protect and restore its water systems while continuing sustainable urban development.

The WOLL aims to enhance urban water resilience by structurally embedding Nature-Based Solutions into public space, governance and everyday urban practice, with citizens as active partners. Streets, squares, parks and riverbanks become testing grounds for depaving, green-blue infrastructure, infiltration areas, adaptive street design and wetland restoration. As a real-life learning environment, the WOLL connects co-creation processes, neighbourhood pilots and knowledge exchange between public authorities, researchers and local stakeholders.

By addressing flood risk, drought and heat stress in a growing city, public acceptance of spatial change and by integrating ecological ambitions into routine planning, Mechelen generates ecological, social and institutional value. Successful pilots are scaled up to inspire other European urban regions facing similar climate challenges.

WOLL Representatives

Alexandra Winderickx
Project manager Climate Adaptation

Patrick Princen
Deputy Mayor of Mechelen

"Through our Living Lab, we transform climate challenges into opportunities. By embedding nature into everyday urban practice, we strengthen resilience, empower citizens and demonstrate how cities can grow in harmony with water."

HERK AND MOMBEEK LIVING LAB

Limburg, Belgium

Geographical scale Regional
WOLL Type Rural
Year of establishment 2023

WOLL Introduction

The Herk and Mombeek Living Lab targets a river basin in the upper part of the larger Demer basin, a region facing climate-related challenges typical for intensively used agricultural catchments in northwest Europe, such as droughts, flooding, and water quality issues. These challenges impact both the natural ecosystem and economic activities, for instance affecting fruit yields due to droughts. Organised by the Architecture Workroom Brussels, the Regionaal Landschap Herk en Mombeek and the river basin coordinator of the Demer basin (CIW/VMM), the Living Lab aims to transform the landscape into a 'sponge' by restoring the natural water system. It brings together regional stakeholders, including governments, farmers, citizens, the nature sector, NGOs, and researchers in a co-design process for measures to address flooding and drought. This social innovation process requires reaching a consensus on risks and societal trade-offs. Over a decade of innovative projects have experimented with different ways to contribute to a more robust water system, culminating in the formal establishment of the Living Lab in 2023. It is the ambition of the Living Lab to learn from these experiences and to combine local knowledge and hydrological and agricultural expertise, towards an impactful transformation of the river basin, enhancing water security, food production, and biodiversity within the river basin.

WOLL Representative

Jan Vanvelk
Demer River Basin Coordinator (VMM)

"Drought periods and flooding are increasingly important challenges for many agricultural regions. Sponge landscapes are an ideal nature-based solution for that. We can only achieve this by a positive collaboration between all rural stakeholders."

PORT OF ANTWERP-BRUGES

Antwerp, Belgium & Zeebrugge, Belgium

Geographical scale Port Area
WOLL Type Industrial
Year of establishment 1997

WOLL Introduction

The Port of Antwerp-Bruges, a global trade hub with an annual throughput of 272 million tonnes, aims to be the world's first port to harmonise economy, people, and climate. Home to 1,400 companies and Europe's largest integrated chemical cluster, it supports 164,000 jobs and generates €21 billion in added value. Prioritising sustainable growth, the port leads in transitioning to a circular and carbon-neutral economy, with a key focus on sustainable water management.

The Water oriented Living Lab (WOLL) at the port focuses on maintaining dockwater levels to ensure ship passage during dry periods, promoting water conservation among industrial users by encouraging the shift from drinkink water to recycled wastewater for industrial processes and cooling, protecting the port against flooding due to heavy rainfall or sea level rise and improving water quality in the docks. These initiatives underscore the Port's commitment to environmental responsibility and the vital role of water in its operations, aligning with its vision of sustainable development and community welfare.

WOLL Representative

Cynthia Pauwels
Programme Manager Water

"The WOLL takes responsibility for sustainable water management in the port area. We cooperate on water quantity management, circular economy and water quality."

WATERCLIMATEHUB FLANDERS

Flanders, Belgium

Geographical scale Regional
WOLL Type Mixed
Year of establishment 2021

WOLL Introduction

The WaterClimateHub is an open innovation ecosystem with a mission to decouple economic growth from regional water scarcity and water pollution.

In Flanders (Belgium) 7 million people live in a small region with a vibrant economy and little resources in the heart of Europe. The Flemish Blue Deal forms the compass for a water resilient Flanders, moving beyond sector-oriented policies and investments to integrated, systemic and solution oriented approaches.

The WaterClimateHub, led by VITO, was initiated by a government agreement under the Flemish Blue Deal in 2021. The WoLL forms an ecosystem where industry, science, and policy innovate together. The value creation and implementation of solutions is enhanced via:

- open innovation shared test infrastructure (Ostend pilot hall and Vegitec)
- high TRL lab to field pilots (digital, engineered and nature-based solutions)
- economic valuation (cost/benefit) and new business models.

We invest in social engagement to boost impact and create long-term partnerships across thematic domains (water, energy, food, chemistry, blue economy, agriculture, nature). VITO accelerates Flanders' systemic approach and international replication of solutions through the knowledge hub VITO Kennispunt Water.

WOLL Representatives

Inge Genné
Program Manager Water and Economy Manager VITO Knowledge Point Water

Karen Vanderstraeten
Program Manager Circular Water Technologies

"Trust between stakeholders is key when establishing a WOLL and takes time to build up together in cooperations where seed money is leveraged to win-win-wins for all the partners."

WATER VALLEY DENMARK

Aarhus, Denmark

Geographical scale National
WOLL Type Mixed
Year of establishment 2021

WOLL Introduction

Water Valley Denmark is a national innovation platform that connects utilities, industries, knowledge institutions, and public authorities across the entire water value chain. The organization facilitates the development, testing, and scaling of new water solutions through Living Lab collaborations, where partners co-create, validate, and accelerate innovations towards real-world implementation and market uptake.

Through challenge-based innovation programmes, international partnerships, and strong links to Danish utilities and test environments, Water Valley Denmark enables companies to move from idea to demonstration and further towards commercialization. Water Living Labs are an integrated part of this approach, providing access to real operational environments where new technologies and digital solutions can be tested, validated, and demonstrated in full-scale infrastructure - with a particular focus on improving resource efficiency, operational optimization, digitalization, and ensuring a sustainable water cycle.

As a non-profit member organization, Water Valley Denmark serves as a neutral ecosystem facilitator and a gateway to Danish utilities and Living Labs, enabling companies, researchers and public actors to co-create, test and validate solutions in real operational environments

WOLL Representatives

Jackie Van Tran Foged
Global Innovation-Water Valley Denmark

Pia Jacobsen
Head of Innovation - Water Valley Denmark

"Water Valley Denmark connects utilities, companies and knowledge institutions to move water innovation from idea to full-scale implementation and global impact"

BLUE ECONOMY MIKKELI CENTRE OF EXCELLENCE

Mikkeli, Finland

Geographical scale Regional
WOLL Type Industrial
Year of establishment 2022

WOLL Introduction

In the heart of Finland, the Blue Economy Mikkeli Centre of Excellence (BEM) is on a mission to redefine water technology and business through the lens of a circular economy. With the City of Mikkeli's robust backing, BEM is on track to claim the title of "the capital of clean water," aligning with South Savo's regional strategy to prioritise water innovation. BEM leverages a dynamic network including LUT University and South-Eastern Finland University of Applied Sciences, offering cutting-edge R&D facilities within Mikkeli's state-of-the-art wastewater treatment plant.

Here, novel technologies and digital services for wastewater treatment and reuse are brought from concept to near-market readiness, in collaboration with industry partners like Operon and Mipro. As part of Finland's InnoCities program, funded nationally and supported by EU development funds, BEM is a beacon for sustainable water management solutions, aiming to influence EU-wide water management practices and legislation. By engaging a wide spectrum of stakeholders, BEM fosters a culture of innovation, driving forward its vision for a sustainable and economically vibrant water sector.

WOLL Representative

Juha Kauppinen
Coordinator of Blue Economy Mikkeli Centre of Excellence

"Together, we are striving for global excellence in the circular economy of water and attracting global expertise and innovation."

FRESHWATER COMPETENCE CENTRE

Rivers Oulanka, Vantaa and Tana, Finland

Geographical scale Regional
WOLL Type Mixed
Year of establishment 2022

WOLL Introduction

The Freshwater Competence Centre (FWCC) is at the vanguard of hydrological and geospatial research in the boreal and subarctic realms, dedicated to unraveling the complexities of water systems from their origins to the sea. As a hub for advancing green and digital transitions in water management, FWCC integrates emerging technologies with traditional knowledge, fostering innovation and education in the water sector. With aspirations to join the European Research Infrastructure Roadmap by 2030 and to craft the first Finnish Living Water Strategic Research and Innovation Agenda by 2025, FWCC is setting the stage for groundbreaking advancements. It offers a robust research infrastructure and a platform for networking and innovation support, aiming to enhance efficiency, attract talent, and stimulate collaboration. Through engagement with a wide array of stakeholders, FWCC is supporting digital representations of water systems, shaping the future of water resource management, and sustainable use of water resources, contributing significantly to global water stewardship efforts.

WOLL Representative

Petteri Alho
Head of Department - University of Turku

"The Freshwater Competence Centre strives to establish itself as the premier hub for scientific research, education, infrastructure development, and the promotion of green and digital transitions in freshwater ecosystems."

HYGLO

Finland

Geographical scale Regional
WOLL Type Mixed
Year of establishment 2023

WOLL Introduction

HYGLO, a Water Oriented Living Lab in Finland, explores the impact of global changes on groundwater resources across ten test sites in varied geological settings, particularly in subarctic and arctic regions. Managed by the Geological Survey of Finland (GTK), HYGLO is a nexus for research on water resource management, groundwater-surface water interaction, and the environmental effects of extreme weather phenomena. This initiative facilitates collaboration with local partners, including water companies, universities, municipalities, and citizen groups, to guide water resources governance. Equipped with advanced monitoring technologies like observation wells and multiparameter sensors, HYGLO sites provide real-time data through LoRaWAN telemetry. This comprehensive approach supports the development of detailed hydrogeological models and aids in understanding phenomena such as flooding, droughts, and changes in groundwater recharge. As a platform for national and international research projects, HYGLO aims to become a leader in generating actionable insights for the sustainable management of groundwater resources, underscoring the importance of collaboration in addressing global environmental challenges.

WOLL Representatives

Kirsti Korkka-Niemi
Research Professor in Hydrogeology - Geological Survey of Finland

Nina Hendriksson
Group Manager, Water and mining Environment Solutions - Geological Survey of Finland

" HYGLO, with its ten test sites, is an intensively monitored and cumulatively studied living lab where innovative, international research can be conducted in multiple projects together with local partners. It offers a research platform to study phenomes connected to global change."

WATER MANAGEMENT INNOVATION

Ruukki, Finland

Geographical scale Regional
WOLL Type Rural
Year of establishment 2017

WOLL Introduction

Water Management Innovation (WMI) Living Lab, operated by the Natural Resources Institute Finland (Luke), is a beacon of innovation for sustainable agricultural water management in northern climates. Focused on the development and testing of environmentally friendly, socially responsible, and economically viable solutions, the research infrastructure with different facilities exemplifies the integration of advanced sensors and data analytics for smart water management. By analyzing real-time data on water quality, quantity, and availability, WMI empowers farmers and businesses to make informed decisions on water use. Luke's Research infrastructure Ruukki demonstrates sustainable water management technologies and organizes field tours and workshops for a diverse audience, including farmers, policymakers, industry professionals, and students. This engagement fosters a shared understanding and adoption of best practices in water management, highlighting WMI's role in advancing sustainable agriculture through innovation and collaboration.

WOLL Representative

Maarit Liimatainen
Senior Scientist

"Agriculture with arctic attitude. Successful and sustainable agricultural water management in the future utilizes catchment scale approach and modern technological solutions."

PIREN-SEINE

Paris, France

Geographical scale Regional
WOLL Type R&D
Year of establishment 1989

WOLL Introduction

PIREN-Seine stands as a collaborative research endeavour aimed at understanding the intricacies of the Seine River ecosystem and its interplay with human society. Anchored by Sorbonne Université and CNRS, this collective unites academia and industry to unravel the river's ecological dynamics through advanced modelling, from microscopic bacteria to the fish populations. PIREN-Seine's comprehensive studies inform simulations that predict the river's ecological and biochemical shifts, facilitating holistic water management strategies for the Seine-Normandy basin. This synergy of public and private stakeholders under PIREN-Seine has enhanced local water knowledge, shaping policy and practice.

By championing transdisciplinary research, PIREN-Seine exemplifies the fusion of science and society, continuously enriching our understanding of aquatic ecosystems and guiding sustainable management practices across the region and beyond, setting a precedent for integrative water research in Europe.

WOLL Representative

Gabrielle Bouleau
Director for Phase 9 (2025-2028)

"PIREN-Seine aims to develop a comprehensive understanding of the Seine socio-ecosystem through an advanced and interdisciplinary (soon transdisciplinary) cooperation between the watershed's main operators and researchers."

Lesvos Water-Oriented Living Lab

Antissa, Western Lesvos, Greece

Geographical scale Municipal
WOLL Type Municipal
Year of establishment 2020

WOLL Introduction

The Lesvos WOLL, located in Antissa, Western Lesvos, is a fully operational circular water management system developed under the HYDROUSA project. It focuses on decentralised wastewater treatment and water reuse in water-scarce island environments, strongly connected to local agricultural needs and rural resilience.

The Living Lab demonstrates nature-based, low-energy solutions, combining anaerobic treatment (UASB), constructed wetlands, and water reuse for irrigation. Operating continuously since 2020, it produces high-quality reclaimed water and supports local production and ecocsystem restoration.

Designed as a modular and open test environment, the WOLL enables the integration and testing of innovative technologies and pilot units under real operational conditions, supported by advanced monitoring systems (e.g. SCADA, sensors, laboratory analyses).

A diverse stakeholder network including (universities, authorities, end users) actively contributes to co-creation and implementation.

Future plans focus on scaling up solutions, strengthening digital monitoring (e.g. SCADA), and expanding replication across Mediterranean regions. Key challenges include seasonal variability, public acceptance, and regulatory alignment. The WOLL contributes to EU policies such as (EU) 2020/741 and the UWWTD recast, creating value through circular economy practices, stakeholder engagement, and climate-resilient water management.

WOLL Representative

Statiris Evangelos
Researcher, Sanitary Engineering Laboratory, NTUA

"Decentralized nature-based solutions can transform wastewater into a resource, supporting resilient agriculture and water security in island regions while reducing energy use and environmental impact."

ATTICA WATER LAB

WATER CONSERVATION & REUSE SYMPRAXIS IN ATTICA REGIONLAB

Lesvos, Greece

Geographical scale Regional
WOLL Type Regional
Year of establishment 2025

WOLL Introduction

With water resources in Attica Region being under significant pressure, Attica Water Lab has been established as a sympraxis of a diverse range of stakeholders - public authorities, industry, hotel associations, water and sewerage utility, academia, civil society – with the mission to promote water reuse and lead the way to sustainable water management. The Living Lab objectives are to support the drafting of the Masterplan of water reuse and its implementation in the complex and challenging case of the Attica basin, as users and enablers of a favourable environment through regulatory and financial provisions and social acceptance. Additionally, promptly responding to water scarcity challenges, stakeholders exchange water conservation best practices and collaborate towards the adoption of resilient, evidence-based approaches. Attica Water Lab fosters an ecosystem demonstrating the valorisation of innovative solutions, such as sewer mining and digital technologies, identifying barriers to water reuse adoption and nurturing synergies at all scales to formulate relevant policy proposals and financial mechanisms. It forms a catalyst for cross-sectoral alignment to enhance the maturity of water networks for long-term water sustainability in Attica and beyond.

WOLL Representative

George Sachinis
Director of Strategy & Innovation Division, EYDAP

"A sympraxis for water sustainability in Attica Region, where key stakeholders collaborate—from planning to implementation—sharing water conservation practices and adopting water reuse methodologies to tackle water scarcity."

VesperX

Nafplio, Eastern Peloponnese, Greece

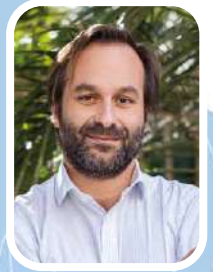
Geographical scale Industrial
WOLL Type Industry
Year of establishment 2021

WOLL Introduction

Climate change has significantly impacted freshwater availability globally and threatens agricultural production globally. The Eastern Peloponnese one of the most significant citrus fruit and olive producing areas in the EU has been traditionally suffering from the effects of water scarcity. Greener than Green Technologies aspirers to move water intensive industries towards adopting circular production models. We develop technologies and methodologies to remediate and reuse industrial water byproduct, while at the same time we allow the extraction, purification and commercial exploitation of valuable compounds traditionally disposed through wastewater. This not only does it improve industrial resilience, it also creates new revenue streams from the commercialisation of such compounds, which often have a very high commercial value in high purity forms.

By adopting novel, circular economy inspired and stakeholder approach business models, our approach will be quickly adopted by the industry and will create new value chains and symbiotic systems between industries, water providers and communities. Compliance to EU legislation and alignment with its strategy on water reuse, further supports our argument for VesperX's success.

WOLL Representative



Dimitri Lossifidis
Co-founder and CEO

"We unlock the value of industrial wastewater, we create new value chains and we build new symbiotic systems, around the circular usage of water."

CANALE REALE RIVER CONTRACT

Brindisi, Italy

Geographical scale Sub-Regional
WOLL Type Mixed
Year of establishment 2021

WOLL Introduction

Facing the dual threats of groundwater overexploitation and salinisation, the Canale Reale river basin represents a critical ecological frontier within the Torre Guaceto natural reserve. The Canale Reale River Contract (CRRC) is pioneering a collaborative approach to sustainable land and water resource management, engaging a broad coalition of stakeholders in a voluntary, negotiated planning process. This initiative seeks not only to protect the fragile coastal wetland ecosystem but also to foster local development through innovative governance models. By marrying public interest with economic, social, and environmental goals, CRRC is crafting new paradigms for regional landscape and agriculture planning. Through its interdisciplinary community, CRRC develops research projects that push the boundaries of traditional water management, advocating for policies and practices that ensure the longevity and resilience of the region's natural resources. This approach underscores the potential for integrated, participatory governance to achieve lasting environmental stewardship and community wellbeing, contributing valuable insights to the broader European discourse on sustainable development.

WOLL Representative

Claudia Campana
CRRC Programme Manager - Apulia Region

"Participatory processes are the only way for a truly shared territorial vision and smooth implementation of measures aiming at more sustainable water management and conservation."

AG-WaMED Val d'Orcia Living Lab

Val d'Orcia, Italy

Geographical scale Regional (Sub-national)
WOLL Type Rural
Year of establishment 2023

WOLL Introduction

Val d'Orcia has a significant agricultural and touristic vocation, being a UNESCO world heritage cultural landscape. The prevalent tree crops - vineyards and olive groves - were typically rainfed, but now they require supplemental irrigation to cope with the changing climate. Val d'Orcia has several small agricultural reservoirs, which are currently mostly underutilized. Their rehabilitation is crucial for providing additional water to be used for irrigation; nevertheless, economic, technical and legislative barriers limit their adoption. The AG-WaMED project aims to propose an integrated and innovative water management framework to tackle this issue also including non-conventional waters in the water allocation. The participatory approach involving all interested stakeholders provides a good basis to explore the use of non conventional water, such as wastewater reuse and rainwater stored in reservoirs which are currently not included in water management plans. The LL aims to address all the challenges related to the use of rainwater reservoirs. The approach applied in AG-WaMED can represent an example of a co-produced water management plan to be replicated in similar realities in Europe and across the world.

WOLL Representative

Elena Bresci
Professor at the University of Florence and AG-WaMED project Coordinator

"Managing water resources in a changing climate requires adaptive strategies also in Italy. Water Harvesting and Small Agricultural Reservoirs represent a sustainable solution, but coordination and enabling policies are necessary."

Tagliamento Living Lab

North-Eastern Italy

Geographical scale Cross-territory (catchment scale)
WOLL Type Ecosystem (mixed)
Year of establishment 2024

WOLL Introduction

The Tagliamento Living Lab (TLL) is a citizen-driven initiative that brings together academic, grassroots and citizen science components and engages members of the local community as co-creators as well as users of innovations. The TLL aims to stimulate collaboration, identify and test integrated actions for the management of the river and connected uses and ecosystems. The engaged actors include universities, research institutes, private citizens, grassroots organisations, municipalities, agricultural actors, international and regional environmental institutions and NGOs. The TLL sets its foundation on the relation between the local communities and the river with its multiple values (environmental, socio-cultural, economic). The main challenges relate to communication and information gaps relating to those values and flood risk management. A platform for network and support, the knowledge hub tagliamento.org answers a critical need to collect formal and informal knowledge on the river through target groups and structured co-design and content co-creation. Future plans include seeking longer-term revenue streams for economic sustainability, and develop, together with these communities, a common pro-vision to leverage the values of the river into a way forward.

WOLL Representative

Anna Scaini
Researcher at the Department of Physical Geography, Stockholm University

"There is a unique bond between the King of Alpine rivers and the local communities. Let´s build a vision to keep the Tagliamento "as pristine as it gets."

VeniVE

Venice, Veneto, Italy

Geographical scale Municipal, Regional
WOLL Type Ecosystem (mixed)
Year of establishment 2024

WOLL Introduction

Born from the experience of the EU-funded H2020 B-WaterSmart project, the VeniVE Living Lab represents a strategic initiative to address innovation and water-smart challenges in the Venice and Veneto region. Its main goal is to unlock the untapped recovery potential in the regional water sector, involving various areas such as integrated water services, agriculture, industry, and urban environments. The primary focus is to maintain the collaborative, multi-stakeholder Community of Practice (CoP) environment created within B-WaterSmart, which supported the Venetian case study on wastewater reuse and sludge valorization. Through this multi-skilled environment, the VeniVE Living Lab aims to identify systemic recovery and valorization solutions and to develop strategic tools that standardize and allow sharing of knowledge, as well as objectively identify challenges and opportunities. Bringing together key territorial organizations-authorities, universities, water sector associations, and end-users, it aims to ensure ongoing dialogue among governance, research, industry, and civil society, and to create the conditions needed for implementing innovative solutions. The VeniVE Living Lab also seeks to foster awareness and promote competency sharing, to enhance decision-making and support rational, long-term planning.

WOLL Representative

Patrizia Ragazzo
Head of EU Project R&D department
Integrated Water Services - Veritas

"Our key goal is to maintain the multi-stakeholder work methodology for allowing dialogue among governance, research, industry and civil society, to create conditions for implementing innovation solutions."

WISE IRRIGATION - WIRRI

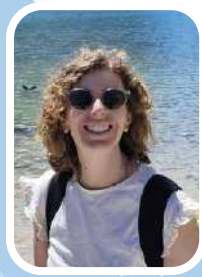
North-eastern Italy

Geographical scale Regional
WOLL Type Rural
Year of establishment 2023

WOLL Introduction

In the agricultural heartlands of north-eastern Italy, WIrri represents a groundbreaking collaboration between academia, the farming community, and a wide spectrum of stakeholders. Spearheaded by researchers from the Universities of Padova and Udine, this initiative seeks to elevate water use efficiency in agriculture through climate-smart solutions. WIrri's approach is deeply collaborative, facilitating a dialogue between researchers and practitioners to co-develop and share innovative practices and technologies. By implementing on-farm demonstrations and On-Farm Experimentation (OFE), WIrri bridges the gap between cutting-edge research and practical application, enhancing technology readiness across diverse agricultural settings. Its network spans the regions of Veneto, Friuli Venezia Giulia, and Emilia Romagna, engaging land reclamation authorities, regional bodies, and companies in the irrigation and agrochemical sectors. WIrri's commitment to inclusive stakeholder engagement underscores its role as a pivotal force in advancing sustainable agriculture practices, with implications that resonate at the EU level and beyond, fostering a collective push towards water-wise farming futures.

WOLL Representative



Vittoria Giannini
Associate Professor in Agronomy and Field Crops - University of Padua

"Irrigation is indispensable to provide food and achieve the Zero hunger target of the 2030 UN Agenda without cropping new lands: better irrigation, less deforestation."

NATIONAL WATER TABLE EWA

Malta

Geographical scale National
WOLL Type Mixed
Year of establishment 2018

WOLL Introduction

The National Water Table EWA serves as a critical forum for advancing the goals of the River Basin Management Plan (RBMP) within the framework of the Water Framework Directive (WFD). Meeting biannually, this platform brings together an array of stakeholders, including government bodies, NGOs, and private sector representatives, to address water management challenges and promote collaborative action towards achieving the WFD's environmental objectives. The initiative plays a vital role in evaluating the progress of the LIFE Integrated Project and other complementary initiatives, ensuring a unified approach to water management across different sectors. Looking ahead, the National Water Table aims to broaden its impact by engaging with more private stakeholders, enhancing cross-sector collaboration, and hosting consultations to tackle key implementation challenges. This evolving forum exemplifies the power of collective engagement in shaping a sustainable water future, reflecting a broader commitment to environmental stewardship and collaborative governance.

WOLL Representative

Rachelle Riolo
Senior Policy Officer (Water)

"The protection and conservation of our natural water resources today is becoming increasingly urgent as our actions today will shape our future. Together through WOLLS, we can contribute to a better future and make this happen."

ÁGUA-MÃE LIVING LAB

Greater Lisbon and West, Portugal

Geographical scale Regional
WOLL Type Urban
Year of establishment 2020

WOLL Introduction

Established in 2020 under the H2020 B-WaterSmart project as a collaborative platform dedicated to testing and scaling innovative solutions for urban water management, the Lisbon Water Smart Living Lab integrated the 2024 European Atlas of WOLLs Living Lab. In 2025, it evolved into the Água-Mãe Living Lab (https://www.aguamae-livinglab.pt/), expanding its scope from a city-based to a regional innovation ecosystem. This progression reflects a strategic maturation process, broadening its territorial reach, strengthening governance, and consolidating its role as a driver of systemic transformation in urban water management and in the water sector.

The founding members — AdTA, Lisbon Municipality and LNEC — define strategic direction and coordinate overall management. The governance model follows the quadruple helix approach, integrating academia, industry, government, and civil society into a structured co-creation framework that promotes experimentation, validation, and scaling of solutions in real operational environments.

The Água-Mãe Living Lab's mission is to promote open innovation in the water sector and to contribute to a water smarter and more resilient society. The Living Lab addresses critical and interconnected water challenges, including climate change impacts such as droughts and flooding, increasing water scarcity, demographic pressures, aging infrastructure, pollution, environmental degradation, and rising operational costs. It also responds to the need to optimize energy efficiency and reduce greenhouse gas emissions associated with water and wastewater transport and treatment, while maintaining rigorous water-quality standards and ensuring safe water reuse. Through integrated governance, digitalization, and cross-sector collaboration, the Água-Mãe Living Lab supports the transition toward water-smart regional development and long-term climate and water resilience.

WOLL Representatives

Rita Lourinho
Head of Innovation – Águas do Tejo Atlântico (AdTA)

Margarida Castro Martins
Municipal Director for Environment, Green Infrastructure Climate and Energy – Municipality of Lisbon

Maria João Rosa
Principal Researcher Head of Urban Water Unit - National Laboratory for Civil Engineering (LNEC)

"Water reuse can help reduce pressure on strategic freshwater resources, support the transition to increased water security, and manage water-related risks through strong, long-lasting partnerships between researchers, technology developers and users."

SOUTH AFRICAN SANITATION TECHNOLOGY ENTERPRISE PROGRAMME (SASTEP)

Pretoria, South Africa

Geographical scale National
WOLL Type Mixed
Year of establishment 2018

WOLL Introduction

SASTEP stands at the forefront of South Africa's efforts to revolutionise sanitation, embodying a vision to reinvent the sanitation industry, create economic opportunities, and establish the country as a global leader in alternative sanitation technologies. Supported by the Water Research Commission, the Department of Science and Innovation, and international partners like the Bill and Melinda Gates Foundation, SASTEP is a beacon of innovation within the national system of innovation (NSI). Its objectives are multifaceted, aiming to showcase local and international sanitation technologies, integrate the emerging sanitation sector into the national economy, and facilitate partnerships between commercial entities and investors. Looking forward, SASTEP aspires to industrialise safe sanitation technologies, fostering industries that not only contribute to the GDP but also ensure access to dignified, environmentally friendly sanitation for all South Africans. This initiative exemplifies a proactive, collaborative approach to addressing sanitation challenges, promising significant impacts on public health, environmental sustainability, and economic development.

WOLL Representative

Akin Akinsete
SASTEP Manager

"SASTEP aims to increase the number of solutions for safe sanitation products and works with partners to advance technologies and innovations from development through demonstration to adoption."

AXARQUIA LIVING LAB

Algarrobo, Málaga, Spain

Geographical scale Municipal
WOLL Type Rural Urban
Year of establishment 2015

WOLL Introduction

The Axarquía Living Lab, in Algarrobo, Málaga, Spain, is a Water-Oriented Living Lab (WOLL) dedicated to sustainable water management in agriculture. Established in 2016 through the RichWater Project (Horizon 2020), it serves as a real-life testing site for reclaimed water use, smart irrigation, and circular water solutions, addressing the region's severe water scarcity challenges.

Stakeholders & Services
The lab collaborates with municipalities, irrigation communities, cooperatives (TROPs), AXARAGUA, the Spanish Association of Tropical Crops, and the Axarquía Rural Action Group. It hosts experimental trials, provides state-of-the-art facilities, and supports collaborative projects, enabling researchers and innovators to test and validate water and irrigation technologies.

Value Creation
- Economic: Supports R&D-driven innovations, enhancing farmers' resilience.
- Environmental: Advances water conservation and ecosystem restoration.
- Social: Promotes sustainable farming and local stability.

Aligned with EU policies (Green Deal, Circular Economy Action Plan, Regulation 2020/741), ongoing projects like BONEX, P2GREEN, and Axarquía Sostenible drive innovation, making the Axarquía Living Lab a model for sustainable agriculture in Europe.

WOLL Representatives

Antonia Lorenzo
CEO and R&D director of BIOAZUL

Rafael Casielles
Project Manager

"Axarquía's Living Lab shows that co-creating water reuse solutions with local actors transforms mistrust into trust, driving sustainable agriculture and resilience in one of Spain's most water-scarce regions."

CATALAN WATER PARTNERSHIP

Girona, Catalonia, Spain

Geographical scale Regional
WOLL Type Mixed
Year of establishment 2008

WOLL Introduction

The Catalan Water Partnership (CWP) epitomises a collective endeavour towards the sustainable use of water, established in 2008 as a non-profit entity uniting a diverse spectrum of stakeholders across the water value chain. This strategic association includes consultancies, knowledge centers, equipment manufacturers, utilities, public entities, end-users, and academic institutions, all dedicated to advancing sustainable water practices. CWP's core offerings encompass SME support, networking, R&D funding access, visibility enhancement, matchmaking, training, cross-sectoral collaboration, support in internationalisation, and specialised working groups. CWP's ambition extends to forming strategic alliances globally to elevate the water sector's stature on the international stage, facilitating the adoption of cutting-edge technologies for water quality and quantity assurance for various end-users. Key future initiatives include bolstering the growth and global competitiveness of the Catalan water industry, fostering innovative and sustainable solutions to meet worldwide water needs, and promoting research, development, and member competitiveness. CWP's strategy is anchored in end-user engagement, leveraging a robust network for international collaboration, emphasising digitalisation and the circular economy, and driving innovation, particularly through SMEs, across borders and sectors.

WOLL Representative

Lucia Gusmaroli
EU Projects & Internationalisation Area Manager.

"Climate change poses increasingly complex water-related challenges: we must seek alliances within the water sector and beyond to overcome shared environmental challenges and achieve a sustainable water management."

DESAL+ LIVING LAB

Las Palmas, Canary Islands, Spain

Geographical scale International
WOLL Type R&D
Year of establishment 2017

WOLL Introduction

In the context of increasing water scarcity, DESAL+ Living Lab® emerges as a key initiative dedicated to the development and validation of sustainable industrial water cycle technologies. By integrating advanced maintenance systems, automation, Big Data, artificial intelligence, and innovative approaches to membrane technologies and pre-treatment processes, DESAL+ Living Lab® stands at the forefront of addressing critical water scarcity challenges within its geographic context.

The lab's strong commitment to the water–energy nexus, circular economy principles, green chemistry, and emerging technologies reflects a holistic approach to sustainable industrial water cycle. As evidence of this, it is worth highlighting the addition to the DESAL+ Living Lab of a globally unique, open-access brine valorization testing facility, offering services and infrastructure for related projects and research. Furthermore, the DESALRO 2.0® plant has received the Guinness World Records certificate for the lowest energy consumption worldwide: 1.79 kWh per cubic meter.

DESAL+ Living Lab® offers a comprehensive portfolio of services, including project collaboration, access to technological data, consultancy, training, and testbed facilities, enabling stakeholders to develop, test, and validate cutting-edge solutions.

Looking ahead, the lab aims to strengthen governance and funding structures, adopting a pan-European perspective while exploring cooperation opportunities in Africa and Latin America. Aligned with the Atlantic Strategy, EU Digital Strategies, and the Sustainable Development Goals, DESAL+ Living Lab® demonstrates a global commitment to innovative and sustainable water management solutions. Beyond addressing water scarcity, its activities contribute to economic value creation and job generation, highlighting the transformative potential of the water cycle sector at both local and global levels.

WOLL Representative

Baltasar Peñate Suárez
Technical coordinator

"A fully equipped public–private research and innovation hub in the industrial water cycle, primarily located in the Canary Islands, open to developing, testing, and validating innovative water management solutions"

SUSTAINABLE DESALINATION LIVING LAB

Almería, Andalucía, Spain

Geographical scale Regional
WOLL Type Mixed
Year of establishment 2022

WOLL Introduction

In the semi-arid landscapes of Almería, Eastern Andalucía, the challenge of water scarcity contrasts sharply with its thriving agriculture and tourism. The Sustainable Desalination Living Lab spearheads efforts to revolutionise the water-energy-food nexus, focusing on decarbonising desalination processes while pioneering circular economy practices through brine valorisation. This initiative harnesses the combined expertise of CIEMAT (Plataforma Solar de Almería) and CIESOL in solar desalination and material recovery from seawater, alongside the Provincial Council of Almería and the Central Board of Users of the Aquifers, incorporating farmers and municipalities for real-world application.

The WOLL is a crucible of innovation, where piloting and demonstrating cutting-edge technologies meet the collaboration of a diverse Community of Practice. This coalition spans academic, industrial, and governmental spheres, ensuring comprehensive stakeholder engagement. Aiming beyond technological advancement, the lab seeks to implement sustainable water resource management strategies, offering added value certifications to bolster the agriculture and tourism sectors. As it eyes expansion, the Sustainable Desalination Living Lab envisions sharing its model and fostering international cooperation with similar regions and Water Oriented Living Labs, positioning itself as a global leader in sustainable desalination solutions.

WOLL Representative

Guillermo Zaragoza
Director

"To improve the water-energy-food nexus, SUSDESA LL aims to implement a strategic management of new sustainable water resources that can be certified as an added value for agriculture and tourism."

ZINNAE

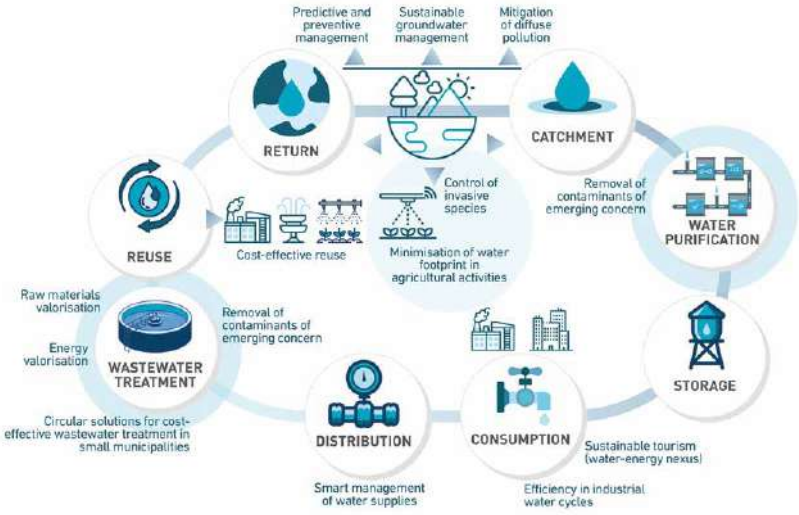
Zaragoza, Aragón, Spain

Geographical scale Regional
WOLL Type Mixed
Year of establishment 2010

WOLL Introduction

ZINNAE, the Cluster for the Efficient Use of Water, is a leading force in advancing water efficiency and in developing solutions that strengthen water security and resilience across rural, urban, and industrial settings. As a non-profit organisation, it promotes the values of the circular economy and a smart, sustainable society, working to boost the innovation capacity of both its members and the wider region.

At the heart of ZINNAE's mission is the creation of a dynamic collaborative ecosystem, fostering cross-regional and cross-border partnerships, and encouraging synergies within the water sector at local, national, and European scales. The organisation builds on a strong multi-stakeholder approach, bringing together academia, industry, businesses, public authorities, and citizens to drive forward water-related innovation.



By supporting water-focused SMEs, strengthening connections among key stakeholders, and identifying funding opportunities for new developments, ZINNAE plays a catalytic role in market uptake and long-term project sustainability. Its commitment to cross-sector cooperation and R&D initiatives significantly contributes to environmental protection, economic collaboration, and the delivery of robust, value-added water management solutions, offering a comprehensive model for sustainable and responsible water stewardship.

WOLL Representative

Marisa Fernández
Cluster Manager

"Our purpose is to facilitate the connection between Q-helix stakeholders and especially between end-users and solution providers to promote the development of innovative and resilient solutions and facilitate their market uptake."

Krycklan Watershed Observatory & Long-Term Laboratory

Västerbotten County, Sweden

Geographical scale Mixed
WOLL Type Mixed
Year of establishment 2026

WOLL Introduction

The WOLL – Water Observatory & Living Lab at Krycklan focuses on understanding hydrological, biogeochemical, and ecological processes in a boreal forest catchment in northern Sweden (Västerbotten County, near Umeå). Its mission is to provide long-term, high-resolution monitoring data and a real-world testing platform for innovative water management, climate adaptation, and nature-based solutions. WOLL links to the territory through the Krycklan catchment's boreal landscape, supporting regional stakeholders and European research networks. Key innovations include automated hydrological and water quality monitoring, IoT-enabled sensors, and AI-driven predictive modelling. Services offered encompass data provision, field-testing of new technologies, collaborative research, and stakeholder co-creation with local water authorities, forestry practitioners and environmental agencies. WOLL at Krycklan will actively participates in European consortia and Water4All initiatives, generating open datasets, co-authored publications, and pilot-tested water management solutions.

The future direction of the WOLL is to strengthen real-time monitoring of hydrological and biogeochemical processes across the water cycle and link these observations to key ecosystem services such as forest productivity and ecosystem resilience. The observatory will function as a real-world testing catchment for innovative monitoring technologies, digital data platforms, and decision-support tools. Through collaboration and co-creation with researchers, authorities, land managers, and other stakeholders, the WOLL will support the development and demonstration of adaptive management strategies addressing water quality, land-use change, and climate impacts. The knowledge generated will contribute to evidence-based policy, support sustainable water management, and provide scalable solutions relevant to other regions in Europe.

The WOLL addresses challenges such as catchment-scale water quality management, ecosystem resilience, emerging technologies for monitoring and climate variability, providing solutions aligned with EU priorities including the Water Framework Directive (2000/60/EC) and the EU Green Deal. Value is created through knowledge transfer, innovation facilitation, sustainable governance, and enhanced policy-relevant insights, while engagement of researchers, industry, policymakers, and local stakeholders ensures actionable outcomes at the European level.

WOLL Representative

Hjalmar Laudon
PI and Head of Department, Forest Ecology and Management, SLU, Sweden

"State-of-the-art monitoring and research platform for understanding the interconnected water, soils, forest, and atmospheric processes and their sensitivity to natural and human perturbation."

BLUEARK

Le Châble,
Verbier - Switzerland

Geographical scale Municipal
WOLL Type Rural
Year of establishment 2018

WOLL Introduction

Nestled in the Swiss Alps' Valais region, BlueArk Entremont emerges as an avant-garde, open-air laboratory focused on pioneering water sector innovation. Born from the collaboration between local municipalities, the canton of Valais, and supported by Altis, an industrial partner, BlueArk is a crucible for start-ups and innovators striving to overcome water and climate change challenges. With a mission to fast-track the development of practical, innovative, and cost-efficient solutions, BlueArk plays a critical role in environmental stewardship and local stakeholder education. This Alpine hub envisions expanding its reach to include other Alpine territories, fostering a broader network of innovation and application. By facilitating pilot projects and new solutions in water management, BlueArk Entremont positions itself as a beacon of inspiration and action in environmental sustainability and community resilience. It stands as a testament to the power of collaboration, bridging local insights with regional aspirations, to address pressing water management issues, underlining the importance of adaptive, forward-thinking approaches in tackling environmental challenges.

WOLL Representative

Laurent Horvath
Deputy director

"BlueArk aims to transform water management with innovative solutions, striving for a sustainable and inclusive future for communities."

WATER CAMPUS LEEUWARDEN

Leeuwarden, The Netherlands

Geographical scale Sub-Regional
WOLL Type Mixed
Year of establishment 2003

WOLL Introduction

Water Campus Leeuwarden stands as a pioneering ecosystem within Europe, dedicated to fostering cooperation among companies, universities, and research organisations in water research and innovation. At its core, it thrives on the synergy between Wetsus, CEW, Water Alliance, and a network that encompasses the City of Leeuwarden, the Province of Fryslan, CIV, and WAC. This collaborative framework has successfully engaged over 300 companies, including SMEs, larger corporations, research entities, and ecosystem actors, all unified in their commitment to water technology advancements.

The campus excels in providing a comprehensive range of support for demonstration, testing, and pilot initiatives, underpinned by living labs that embody the spirit of co-creation within this vibrant water technology community. These labs, strategically located near technical expertise and facilities, are instrumental in exploring the water-energy-food nexus, circular reuse, and the smart management of resources. By maintaining an open ecosystem, Water Campus Leeuwarden facilitates innovations across all technology readiness levels (TRLs), making it a cornerstone for water-related research and development in Europe.

WOLL Representative

Pieter de Jong
EU Representative for Watercampus - Liaison Officer

" The importance of water is increasing. And another part is we hope that through Water4all we can achieve a lot more with the living labs. Long-term collaboration commitment is key."

COLOPHON Editors

Water4All partners

ATLAS Phase 2

Akin AKINSETE (WRC); Helena ALEGRE (LNEC); Anais BALADAH (WE); Ella BUSUTTIL (EWA); Yvan CABALLERO (BRGM); Henry DEBATTISTA (EWA); Esther DIEZ CEBOLLERO (ANR); Marisa FERNÁNDEZ (ZINNAE); María Benito FERNÁNDEZ (ZINNAE); Luisa FERNÁNDEZ SOLER (ZINNAE); Inge GENNÉ (VITO); Isabella GERVASIO (WE); Carlos Mario GOMEZ (IMDEA Water); Pia JACOBSEN (WVD); Vittoria LATERZA (ISPRA); Kristina LAURELL (FORMAS); Philippe LE COENT (BRGM); Jean-François LE GALLIARD (CNRS); Benjamin LOPEZ (ANR); Simos MALAMIS (NTUA); Ana MENDES (UÉvora); Claude MERCIECA (EWA); Jordi MORENO (CEW); Valerie NAIDOO (WRC); Bastiaan NOTEBAERT (VITO); Uchechi OBINNA (CEW); Alfieri POLLICE (CNR); Anna-Kaisa RONKANEN (SYKE); Maria João ROSA (LNEC); Jari SILANDER (SYKE); Catarina SILVA (LNEC); Maria Chiara SOLE (ISPRA); Ulla SPARE (WVD); Osman TIKANSAK (FORMAS); Mamohloding TLHAGALE (WRC); Cintia UVO (SYKE); Katrien VAN HOOYDONK (VITO); Alexandra WINDERICKX (City of Mechelen).

WOLLs

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ATLAS OF WATER-ORIENTED LIVING LABS

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water4all@agencerecherche.fr
www.water4all-partnership.eu
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