

WATER-ORIENTED
LIVING LABS
FOR
A
WATER-SMART SOCIETY



AquaSPICE
Summer School



Andrea Rubini, Director of Operations, Water Europe

2-5 July 2024



WHY WATER?

We all depend on water

2nd

most exploited resource for our economy, society, and environment

90%

of economy depends on water availability

WHY WATER?



WHY WATER?

We will face water scarcity



WE WILL ALL FACE WATER SCARCITY

56%

gap between water demand and supply is expected globally by 2030

WHY WATER?

We will all loose

€5.6

trillion GDP of our economies globally could be eliminated due to water risks

SDGs

All of them require water security, sustainability, and resilience to be achievable

WE WILL
ALL LOOSE



Water is a very complex resource

- It is a....
 - **local** resource
 - **finite** resource
 - **shared** resource

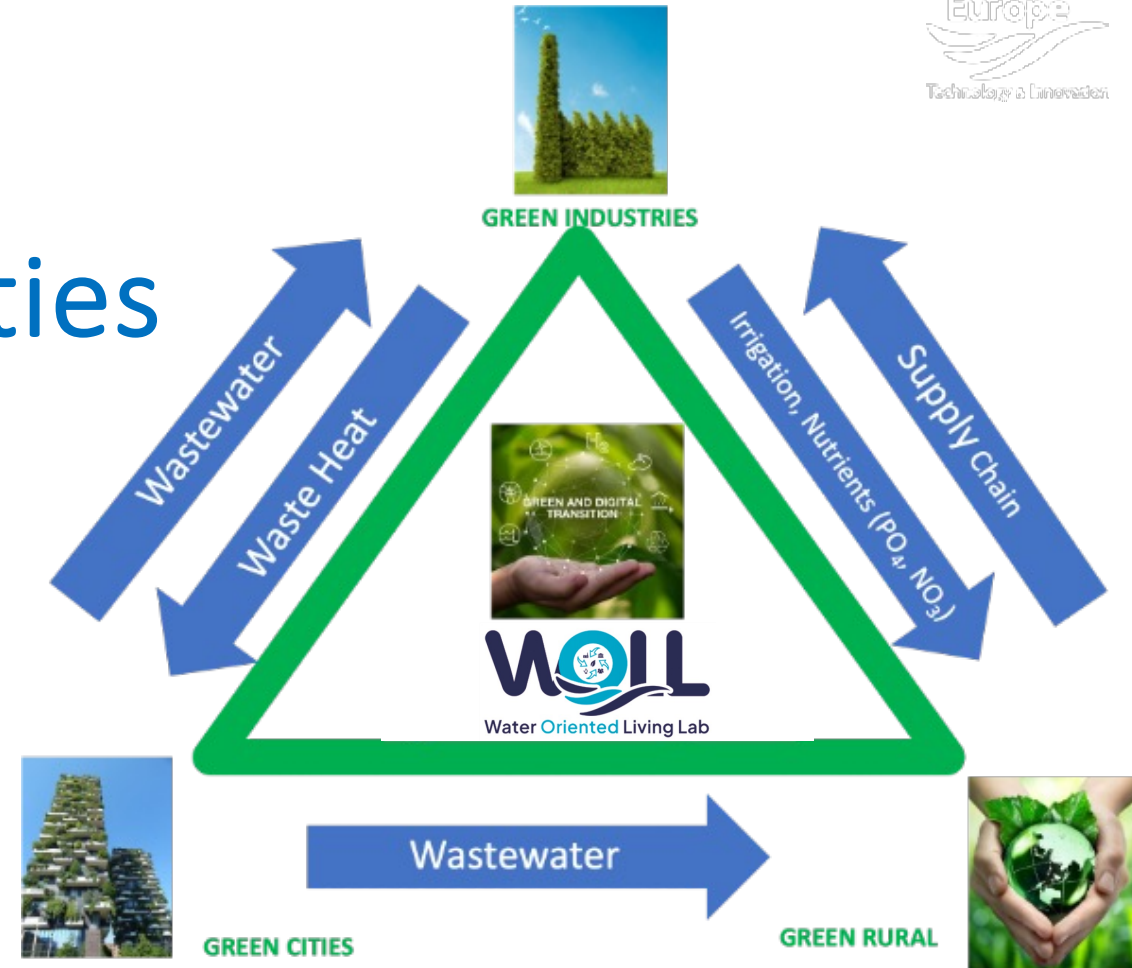
The main challenge hindering progress in water management and stewardship is our **current inability to accurately assess its sustainable use in specific locations.**

Living Labs hold the potential to be the crucial solution to this obstacle.

WE DO HAVE

Key opportunities

- Securing long term **resilience, security** and **sustainability** of **water** for a **Water-Smart Society**
- **Smart investment and governance models** as well as harvesting the **value of and in water**.
- **A holistic water strategy**, centered on the connectivity between water management, water stewardship and innovation using **strong digital transformation**
- **Living labs as the form of collective circular water governance**





We need PARTNERSHIPS to achieve a Water-Smart Society

All current engagement mechanisms are essential, as global societal challenges cannot be addressed individually by each country or sector.

This is reflected in the main theme and targets of SDG 17, which emphasize resource mobilization. The effectiveness of inclusive governance and the complementarity of funding mechanisms provide the essential value in tackling global water challenges.

VALUE OF WATER

A Vision for a Water-Smart Society

A Water-Smart Society is a 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**.

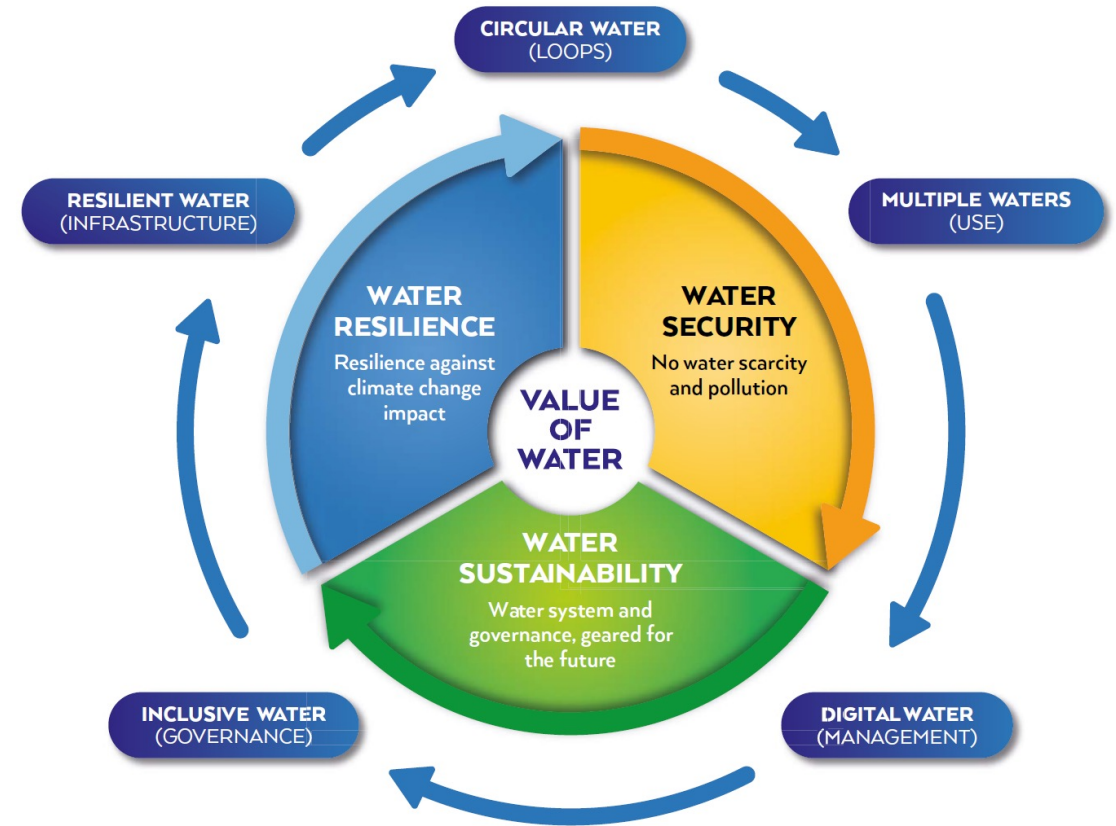
Water Europe Water-Smart Society: 3 key objectives

1. **Water Security**
2. **Water Sustainability**
3. **Water Resilience**



Water-Smart Society 5 innovation areas

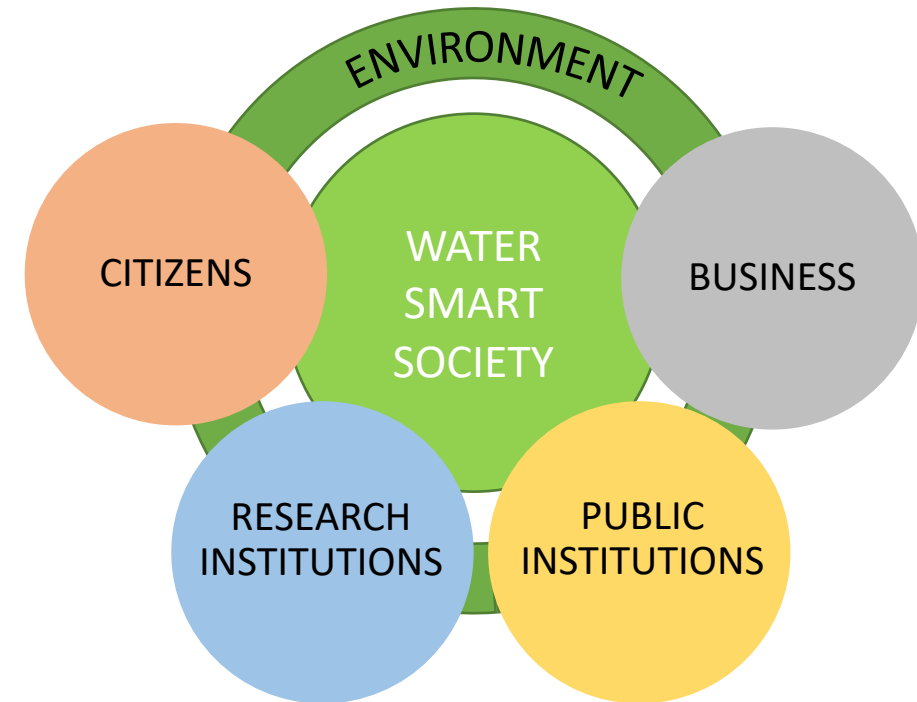
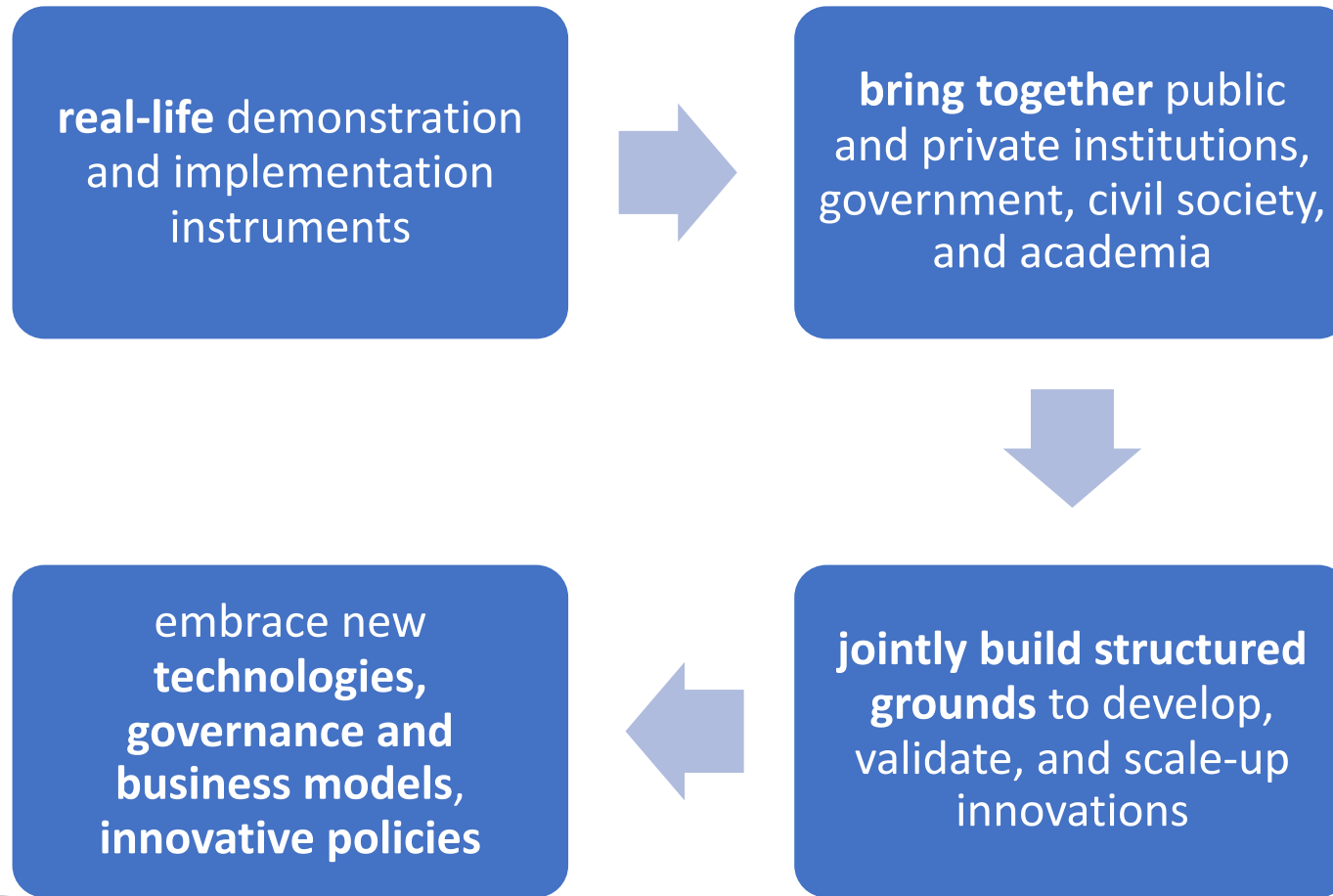
- 1. Circular Water:** circular water system that minimise water losses, captures and exploits the value in water, and fosters a resilient and water-secure system.
- 2. Multiple Waters:** incorporates a wide range of water sources and qualities (fresh groundwater and surface water, rainwater, brackish water, brine, grey water, black water, recycled water) into a water-secure, resilient and sustainable water system.
- 3. Digital Water:** exploits the benefits of the extreme interconnectivity of people, devices and processes, and create capillary networks capable of monitoring the water system, starting at its multiple sources through to the individual end-user, thus generating continuous flows of valuable data for innovative decision-support systems at different governance levels.
- 4. Inclusive Water:** establishes a water system whose governance balances the interests of all stakeholders in its design, management and maintenance.
- 5. Resilient Water:** creates a resilient and reliable hybrid grey and green water system, designed to withstand severe external and internal shocks – such as climate-change induced floods and droughts – without compromising essential functions.



Source: Water Europe

Water-Oriented Living Labs for a **Water-Smart Society**

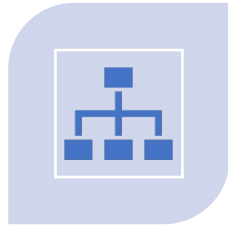
Water-Oriented Living Labs have been defined by Water Europe as follows:



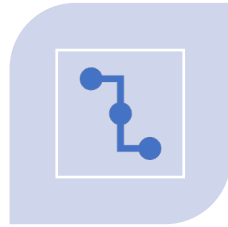
HOW WOLLs CAN ADDRESS WATER CHALLENGES



**STAKEHOLDERS
ENGAGEMENT**



CO-CREATION



**INNOVATION REPLICABILITY,
TRANSFERABILITY,
SCALABILITY**



BOTTOM-UP INNOVATION



EXCHANGE OF KNOWLEDGE



ADAPTIVE INNOVATION



**GOVERNANCE AND BUSINESS
MODELS**



The United Nations World Water Development Report 2023

Partnerships and cooperation for water



Water Europe's **Vision** and its approach were recognised in the [UN Water Report 2023](#) on partnership and cooperation, particularly the **Water-Oriented Living Labs**

Water4All: the EU funded Partnership



WATER4ALL
PARTNERSHIP

Water4All:
Water security for the Planet

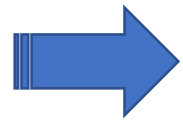


HEU Water4All Partnership

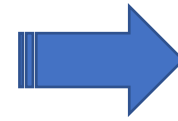
Pillar D Pillar D. Demonstrating Solution efficiency through WOLs



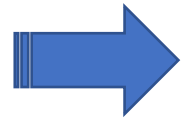
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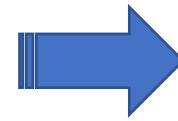
Engaging with existing operating WoLLs and Demos



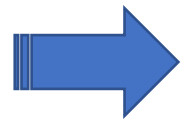
co-development of **practical, cost-efficient and affordable solutions** for replication in different contexts



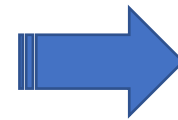
Establishment of new WoLLs and Demo



Enabling **new environments** for facilitating replication.



Engaging with the development/**Investment** programmes



Connecting support and funding from a **combination** of research and innovation programmes

The journey of WOLLs 2019 - 2024

2019

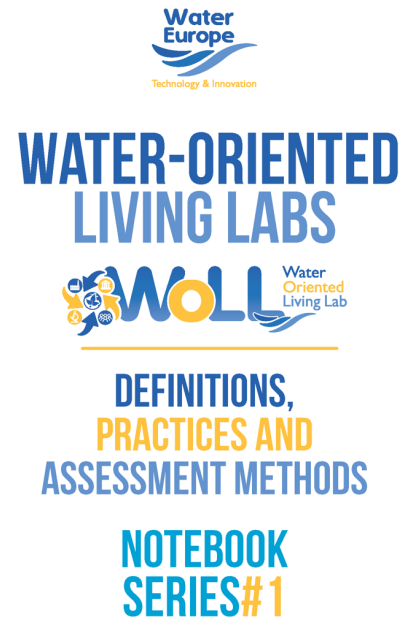
2024



Water Europe
Technology & Innovation

ATLAS
OF THE
EU

WATER
ORIENTED
LIVING LABS



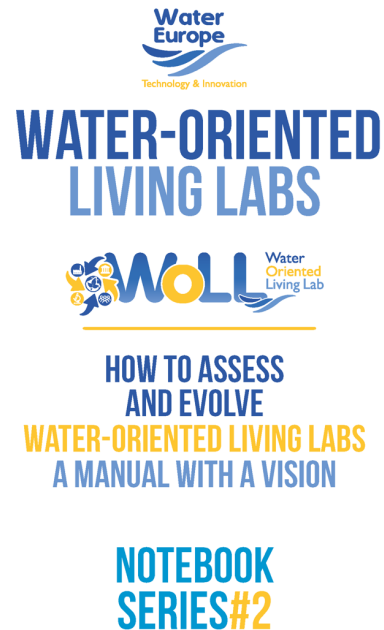
Water Europe
Technology & Innovation

WATER-ORIENTED
LIVING LABS

WOLL Water
Oriented
Living Lab

DEFINITIONS,
PRACTICES AND
ASSESSMENT METHODS

NOTEBOOK
SERIES#1



Water Europe
Technology & Innovation

WATER-ORIENTED
LIVING LABS

WOLL Water
Oriented
Living Lab

HOW TO ASSESS
AND EVOLVE
WATER-ORIENTED LIVING LABS
A MANUAL WITH A VISION

NOTEBOOK
SERIES#2

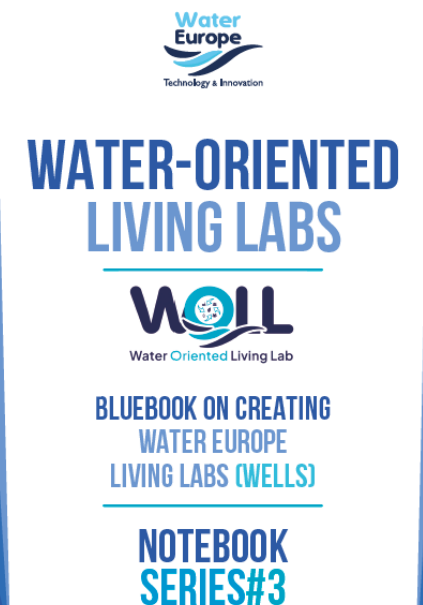


Water Europe
Technology & Innovation

European Partnership

ATLAS OF
WATER-ORIENTED
LIVING LABS
2024

Co-funded by
the European Union



Water Europe
Technology & Innovation

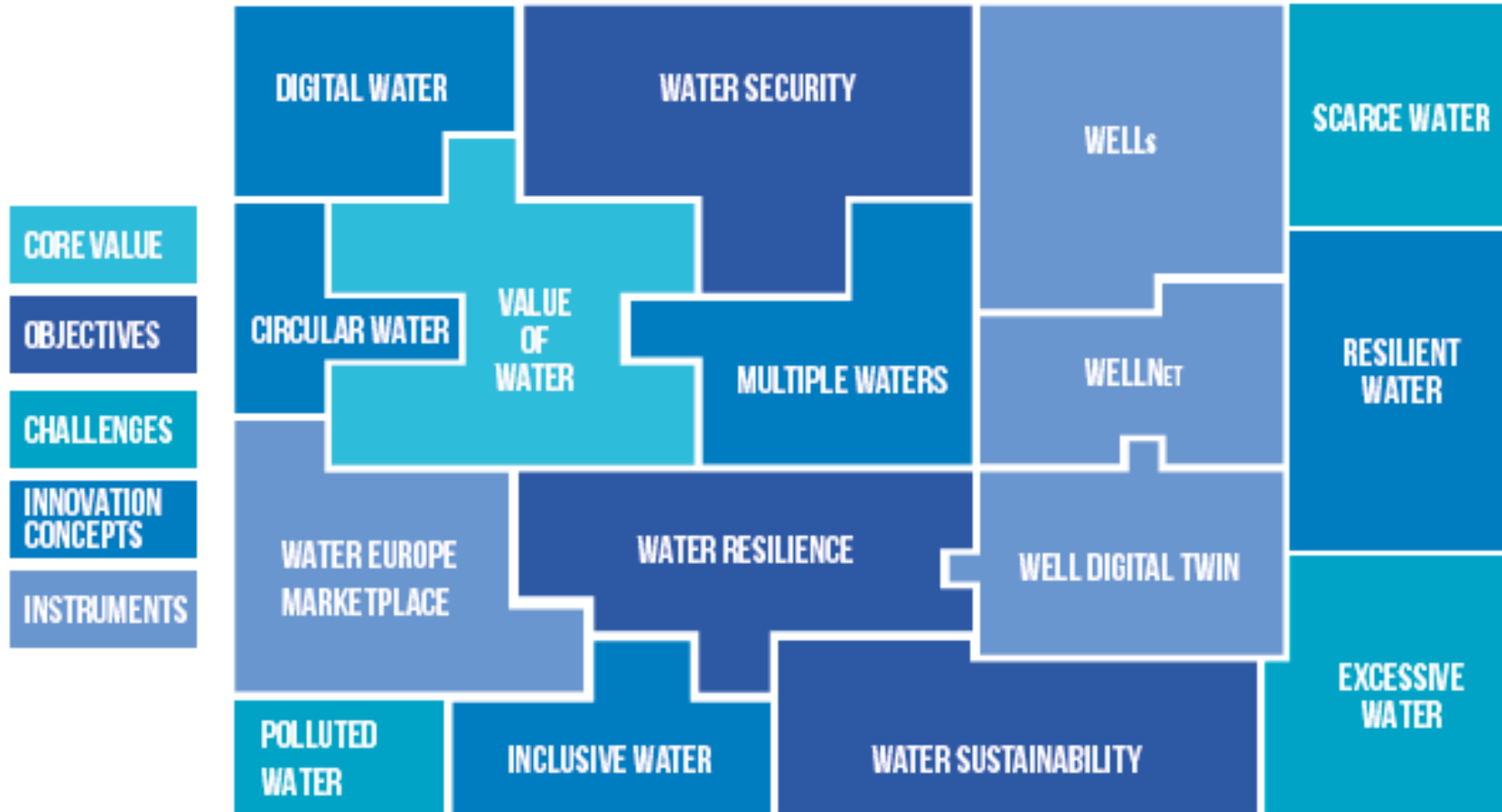
WATER-ORIENTED
LIVING LABS

WOLL Water
Oriented
Living Lab

BLUEBOOK ON CREATING
WATER EUROPE
LIVING LABS (WELLS)

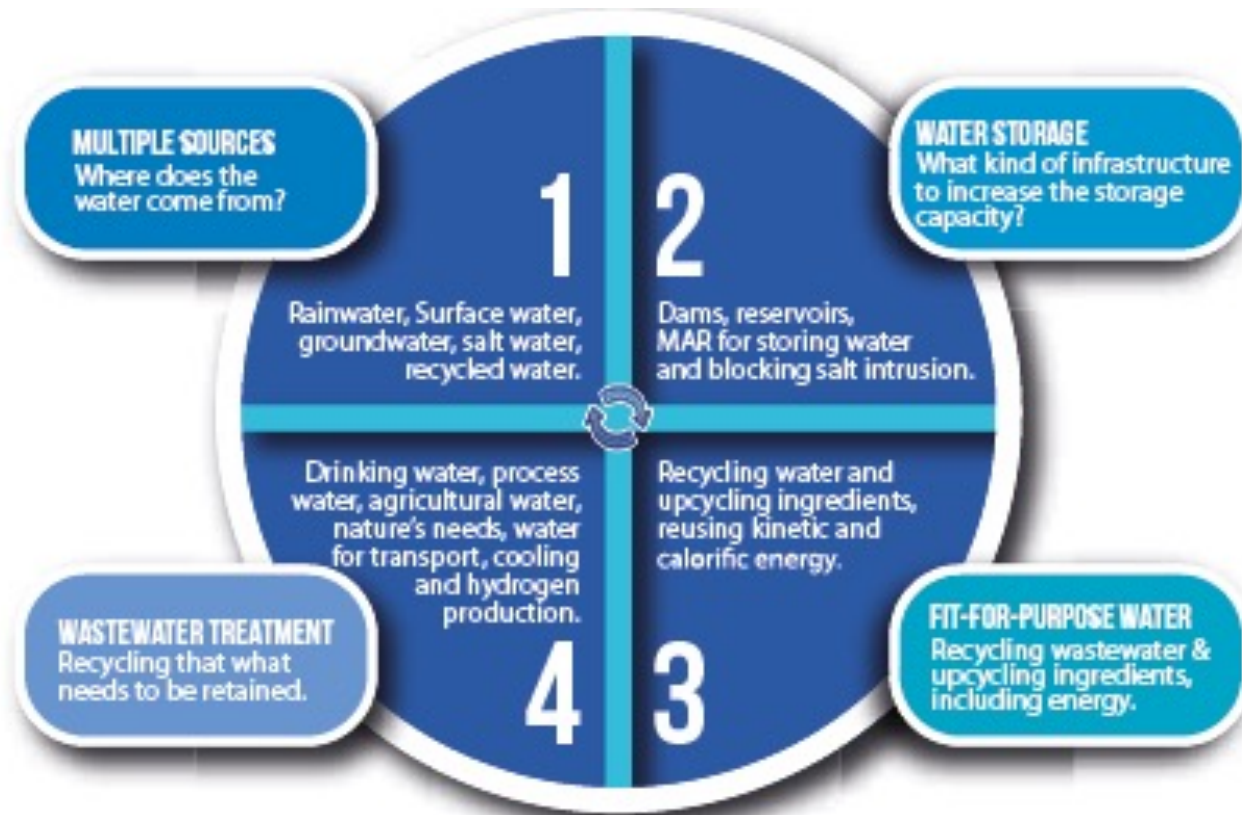
NOTEBOOK
SERIES#3

Assembling the jigsaw puzzle



Realising Water Europe's vision of a Water-Smart Society, at the heart of which is the 'Value of Water' for our society, economy and biodiversity, **in effect presents the considerable challenge of assembling a complex jigsaw puzzle.** A puzzle in which the pieces represent the several objectives, challenges, innovative concepts and special instruments involved. **A systemic approach is needed to solve the puzzle.**

Water Security



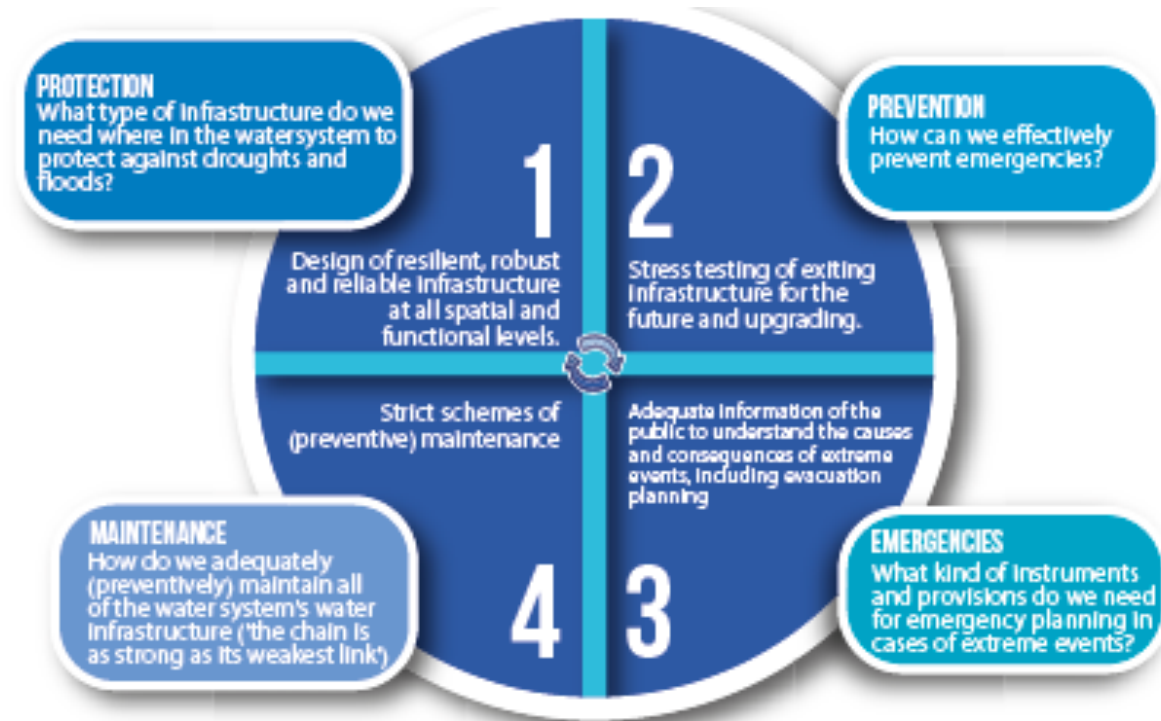
The four critical factors in water security: multiple sources, water storage, fit-for-purpose water and wastewater treatment.

Water Sustainability



Water Sustainability shows four vital aspects for water sustainability: transparency, commitment, participation and instrumentation.

Water Resilience



Water Resilience underscores four critical factors of water resilience: **protection, prevention, maintenance and emergency response.** Although Europe's basic water infrastructure is largely functional, it may prove inadequate in a context of extreme climate fluctuations. Moreover, enhanced maintenance and preparedness, including timely evacuation measures, are imperative to confront escalating environmental challenges.

21 WOLLs Network 2024



The ATLAS OF WATER ORIENTED LIVING LABS

European Partnership



ATLAS OF
WATER-ORIENTED
LIVING LABS



LISBON WATER SMART LIVING LAB



Geographical scale Municipal
WOLL Type Urban
Year of establishment 2020

WOLL Introduction

The Lisbon Water Smart Living Lab represents an ambitious initiative aimed at enhancing the quality of life in Lisbon, in the face of climate change challenges such as droughts, heatwaves, and floods, through innovative green-blue infrastructure solutions. Central to its mission is the enhancement of the city's water-smartness, achieved by optimising water demand/supply management for non-potable uses and fostering water-energy-phosphorus efficiency alongside climate-resilient housing.



This initiative is the brainchild of a consortium led by Lisbon Municipality, with partners including LNEC, Águas do Tejo Atlântico, ADENE, Lisboa e-nova, Baseform, and ICS-UL, alongside a broad community of practice. Lisbon Water Smart Living Lab's strategy encompasses strategic, governance, and social frameworks, along with digital tools and technological solutions, to advance water circularity. Notably, its strategic agenda and the deployment of digital tools for safe water reuse mark significant strides towards sustainable urban water management. Moreover, the establishment of an urban water cycle observatory and the introduction of a climate-readiness certificate for buildings are indicative of Lisbon's proactive approach to engaging stakeholders and ensuring long-term sustainability. With ongoing innovation actions and EU missions, Lisbon Water Smart Living Lab is poised to continue its trajectory towards a water-smart future, serving as a model for urban centers globally.

WOLL Representative



Catarina Freitas
Municipal Director for Environment,
Green Infrastructure Climate and
Energy - Municipality of Lisbon

"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."



WATERCLIMATEHUB



Geographical scale Regional
WOLL Type Mixed
Year of establishment 2021

WOLL Introduction

Established in Flanders, the WaterClimateHub seeks to decouple economic growth from water availability through the integration of cleantech and innovation in the water sector. Funded by a government agreement under the Flemish Blue Deal and an innovation agenda, the Living Lab invests in infrastructure, such as mobile technologies for wastewater treatment and Nature Based Solutions, to boost research, innovation, and economic return. Digital solutions are employed to enhance understanding and management of water challenges, promoting smarter, more flexible control for greater resilience.



The WaterClimateHub emphasises collaboration and trust, partnering with academic institutions and leading organisations to inspire new initiatives. International partnerships are also key, with the Hub strengthening ties with the European partnership 'Water4All', the Fluid Crew, and GSTIC, in support of the 'Sustainable Development Goals'. This collaborative effort between solution providers and water users is pivotal in fostering innovation and addressing global water challenges.

WOLL Representative



Inge Genné
Program Manager Water

"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."

Network of Water- Oriented Living Labs

A unified approach to water security, resilience, and sustainability. Territorial and transboundary collaboration across academia, industry, government, and civil society.

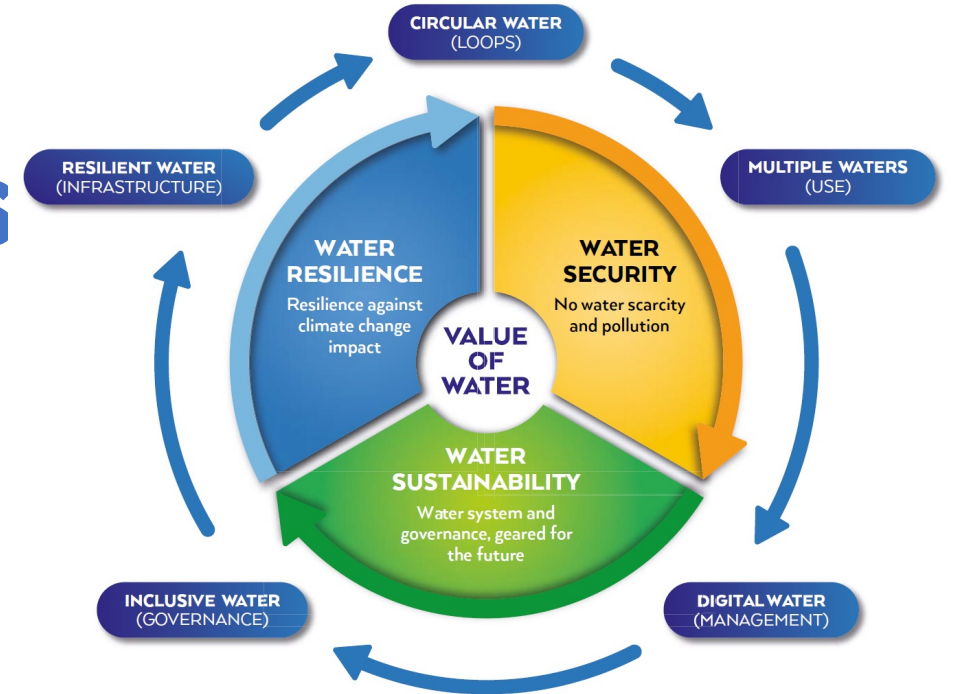


PILLARS of the Network

- **Collaborative Ecosystem:** Uniting diverse stakeholders for innovative solutions.
- **Knowledge Exchange and Innovation:** Facilitating learning and adoption of cutting-edge water management solutions.
- **Deployment:** market up-take of innovative solutions
- **Investment:** Securing funding and resources to enable all aspects of water management initiatives.
- **Policy development:** Influencing sustainable management practices and legislation.

WHAT DO WE NEED TO MAKE IT HAPPEN?

A Transformative Leaders
to achieve a
Water-Smart Society



Thank You



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 [Water Europe](https://twitter.com/Water_Europe)

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