Water Europe

Technology & Innovation

ATLAS OF THE EU WATER ORIENTED LIVING LABS


Water
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Intro

Water Europe

This Atlas of EU Water-oriented Living Labs is a living document that has been developed by Water Europe's Vision Leadership Teams with the support of PNO Consultants between 2018 and the first half of 2019.

Water-Oriented Living Labs (WoLLs) are a key tool for the implementation of Water Europe's Water Vision "The Value of Water" to promote systematic innovations in the water system that are needed to achieve a Water-Smart Society. The identification methodology included the direct consultation of the Water Europe's Working Groups, followed by a public consultation.

Water-Oriented Living Labs (WoLLs) are defined as: "real-life, water oriented and demo-type and platform-type environments with a cross-sector nexus approach, which have the involvement and commitment of multi-stakeholders (including water authorities) and a certain continuity, and provide a "field lab" to develop, test, and validate a combination of solutions as defined in the SIRA, which include technologies, their integration as well as combination with new business models and innovative policies based on the value of water."

The mapping exercise has resulted in the identification of 105 WoLLs across Europe, which have been categorised by country and the use-context of a living lab (i.e. agricultural, urban, industrial, and ecosystem) following and applying the rationale of Water Europe Water Vision and its Strategic Research and Innovation Agenda (SIRA).

European Network of Living Labs (ENoLL)

The European history of Living Labs traces its roots to the Scandinavian cooperative and participatory design movement of the 60s-70s, the European social experiments with IT in the 80s, and the Digital City projects of the 90s. During the 90s, the digital city concept took hold in Europe and elsewhere, referring to several digital initiatives undertaken by cities, especially related to digital representations of the city, digitally related economic development and urban regeneration initiatives and the provision of internet access for citizens. By the early 2000, consistent European Union (EU) policies would lead to the Finnish Presidency launching the European Network of Living Labs (ENoLL) on the 20th of November 2006.

Living lab communities has had a significant impact on European innovation policy, which is shifting further from linear research and innovation activities to open innovation. Not only have these recommendations shaped the research agenda of Horizon 2020, but have also inspired the provisions for RDI within Cohesion Policy and Territorial Cooperation Programmes for 2014-2020, particularly through the Smart Specialisation Strategies defined for all EU Regions and Member States, most of which are also providing the implementation framework for the EU Digital Agenda at local level.

Additionally, living labs provide new opportunities to enable a bottom-up policy coherence, starting from the needs and aspirations of local and regional stakeholders, creating a bridge between European policies and programmes, including Horizon 2020, Smart Specialisation, the Urban Agenda, Cohesion Policy, and so forth. This is particularly apparent in developing policy and practice around the concept of 'smart cities' where strategic initiatives supported by the FP7/ICT Future Internet Experiment Facility and Experimentally driven Research (coordination and support actions) and the CIP ICT-PSP (open innovation, user experience and living labs theme / Smart City and open innovation/Smart city portfolio) supported and contributed to the development of multiple cross-border experiments with Living Labs mainly in the urban context.

Specific calls in different sections of the Horizon 2020 work programme directly recommend living labs as innovation and experimentation instrument in particular in areas related to smart cities, urban innovation, mobility and international cooperation. The potential for societal and innovative development through co-creation in all sectors of society is widely recognised and the current socio-economic context, despite many difficulties, provides for manifold opportunities to fully exploit it.

Living Labs can combine European vertical specialisation domains (health, smart cities, education etc.) with horizontal and territorial specialization and are resolute to build and strengthen the European Open Innovation ecosystem that enables the internationalisation of SMEs creating a pan-European experimentation environment supporting the realisation of the European Digital Single Market. In this context ENoLL joined forces with Water Europe in order to map and work together on water living labs related context and reach out to an international innovation ecosystem platform for big impact.

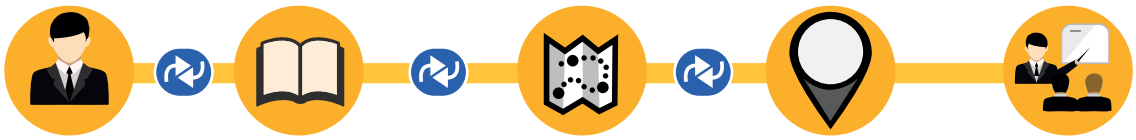
In general, we can conclude that Living Labs and Living Lab projects have specific characteristics that facilitate value creation for innovation processes and enable internationalisation activities.

Contents

Chapter 1:

the mapping process. The following pages describe the mapping process of the WoLLs that engaged the Water Europe Cluster Vision Leaders, the Working Groups Leaders, the Members and the strategic stakeholders of the water sector.

MAPPING PROCESS • Phase 1



Project start	Interviews with Water Europe Cluster Leaders	Secondary data collection, review and analysis	Mapping of Water Living Labs	European Water Living Labs	Presentation of interum results (Water Europe Cluster and Working Group Workhop Days)
Input Activity	Interview inputs from the Water Europe Cluster Leaders	Data inputs on living labs and water sector innovations	Identified Water Living Labs in Europe	List of candidate European Water Living Labs	Feedback from Cluster and WG Leaders on interum resutls
Input Activity	Final interview summary report → Shared definition of Water Living Labs	Secondary data produced on living labs, R&D collaboration in water supply chains → Water Living Labs mapping criteria	European Water Living Labs were mapped and subjected to Water Europe Living Lab Criteria	15 candidate European Water Living Lab setting	Reformulated concept definition: Water oriented Living Labs (WoLLs) → 2nd phase mapping strategy

MAPPING PROCESS • Phase 2

Project start	Interviews with Water Europe Working Group (Co-) Leaders	Secondary data collection, review and analysis	Assessment of mapped Water-oriented Living Labs (WoLLs)	European Water-oriented Living Labs (WoLLs)
Input Activity	Interview inputs from the Water Europe Group Leaders	Secondary literature review and data collection	Assessment list of Water-oriented Living Labs (WoLLs)	Final list of candidate Water-oriented Living Labs (WoLLs)
Input Activity	Interview summary report → Updating the list of Water-oriented Living Labs (WoLLs)	Secondary data produced on (S)LTERs, natural catchment ares, demo sites, clusters and living labs → Updating the areas of Water-oriented Living Labas (WoLLs)	European Water-oriented Living Labs (WoLLs) were mapped and subjected to Water Europe Living Lab Criteria	105 Water-oriented Living Lab (WoLLs) research settings identified

Chapter 2:
Water Oriented Living Labs: the definition of a new dimension of the Water Smart Society

2.1 • Living Labs Concept • Background

Living labs are defined as "user-centred, open innovation ecosystems based on a systematic user co-creation approach in public-private-people partnerships, integrating research and innovation processes in real-life communities and settings". (ENOLL, 2013).

Living Labs in Europe

Cross-border cooperation across living labs have been strengthened by ENoLL/ Nordic, NordForsk, Central European IberNoLL, and LL4WIDE.

Between 2006-2011, many living labs related FP7-financed research projects documented living-lab set-up strategies by experimentation: CoreLabs, CLOCK, Collaboration@Rural, CoSpaces, Ecospace, Labornova, WearIT@Work, OpenFutures.

Main Characteristics of European Living Labs

- Not separate legal entities, but entities hosted by commercial or non-commercial bodies.
- Collaborates with users who are mostly located in urban areas, not with communities.
- Operates on a project basis, without involving prolonged engagement with communities.
- Technological readiness of living labs is low to high maturity; whereas, commercial maturity of innovation in development is lower.
- Embedded in real and/or realistic environments, with 'in-vivo' monitoring of experimentation setting.
- Lack of standardization in organizing user involvement.
- Operational difficulties, i.e. network efficiency, sustainability, engagement with diversified community of users, fragmented service providers.

Living Labs Principes

Openness
- cross-fertilization, different levels of openness, and collaboration

Distributed
- distributed knowledge base, transparent distribution of values

Influence
- involvement of competent partners and domain experts

Continuity
- trust building and context-unique knowledge over projects and innovation cases

Realism
- testing and evaluation in users' real-world environments

Value
- economic value of innovation outcomes and activities and 'value in-use' concept

Sustainability
- viability of a living lab

Empowerment of users
- motivation and creative ideation capabilities of user communities

Spontaneity
- spontaneous interaction, reaction, and ideation

2.2 • the Water Europe definition of Water-oriented Living Labs (WoLLs)

WoLLs are real-life, water oriented and demo-type and platform-type environments with a cross-sector nexus approach, which have the involvement and commitment of multi-stakeholders (including water authorities) and a certain continuity (good chance to continue to their existence), and provide a "field lab" to develop, test, and validate a combination of solutions as defined in the SIRA, which include technologies, their integration as well as combination with new business models and innovative policies based on the value of water.

2.3 • The shared definition of European Water-oriented Living Labs (WoLLs)

- **Demo-type and platform-type research and innovation settings, with context specific needs and enabling conditions**
- **Water-oriented interventions with a cross-sector nexus approach in real-world and/or realistic environments**
- **Proactive learning and innovation ecosystem with R&D continuity and reproducibility**
- **Open and local multi-stakeholder governance structure with democratic control systems**

2.4 • Water-oriented Living Labs (WoLLs) Mapping Characterisation 1

GEOGRAPHICAL SCOPE

Cross-territory
Territory
Neighborhood
Islet
Building

Strategic Interest Water Europe Clusters

Urban, Industrial. Rural
Water Europe SIRA Key Components (Value of Water, Water treatment, Hybrid grey – green infra etc.) Water Europe Innovation concepts (Digital Water, the Value in Water etc)

NETWORKED VALUE CREATION

MISSION-ORIENTED ECOSYSTEM-BASED

Living labs supporting context research and co-creation

Living lab – platform: intermediary innovation arena and outreach statement (e.g. multi-stakeholder collaboration and knowledge-sharing and networked logic of value creation).

Living lab – transformative agent: transition management in innovation development.

INDIVIDUAL PROJECT-BASED

Living labs as extensions to test-beds

Living lab – project: innovation management (e.g. test and validation studies of testbed applications).

2.5 • Water-oriented Living Labs (WoLLs) Mapping Characterisation 2

Who drives the initiative? Market position

Solution providers - driven

Solution providers-driven living labs (short-term and project-based): Companies launching living labs to collect data on test-users of new products and services and to develop their businesses.

Objective: Strategic R&D activity with preset objectives.

Organization: Network forms around a solution provider, who organizes action.

Action: Solution provider guides information collection from the users to achieve preset goals.

Outcome: New knowledge for product and business development

Lifespan: Short

Public (water) authority driven

Public (water) authority-driven living labs (long-term and transformative): Public sector actors launching projects that pursue social innovation and improvements.

Objective: Strategy development through action

Organization: Network forms around a region or a funded project.

Action: Information is collected and used together and knowledge is co-created in the network.

Outcome: Guided strategy change into a preferred direction

Lifespan: Short/medium/long

Public-private partnership driven

PPP-driven living labs (short-term project based or long-term transformative): Public and private organizations launching living labs to co-develop new products, services and solutions by providing their network based on their portfolio and assets.

Objective: Operations development through increased knowledge

Organization: Network forms around a PPP organization(s).

Action: Information is collected for immediate or postponed use; new knowledge is based on the information that PPP partners gets from the others.

Outcome: New knowledge supporting operations development

Lifespan: Short/medium/long

Citizens driven

Citizens-driven living labs (long-term transformative or project-based): Citizens communities launching living labs to solve users' problems and develop a community of interest in the long-term.

Objective: Problem solving by collaborative accomplishments.

Organization: Network initiated by citizens are rather bottom-up and may lack formal coordination mechanisms.

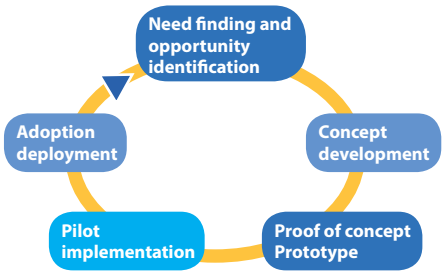
Action: Information is not collected formally and builds upon users' interests; knowledge is utilized in the network to help the user community.

Outcome: Solutions to users' everyday-life problems.

Lifespan: Long

2.6 • Water-oriented Living Labs (WoLL) Mapping Characterisation 3

TECHNOLOGICAL DEVELOPMENT PHASE SUPPORTED BY LIVING LABS



LIVING LABS SERVICE OFFERINGS

- Project preparation services
- User development methods
- Online focus groups
- Prototype creation
- Need finding
- Commercialization
- Innovation and development services for companies Usability testing

- Pilot and innovation environment
- Prototype testing
- Service concepts
- Networking
- Meeting place
- Living lab methods
- Project management services
- Product development services

MATURITY LEVEL OF LIVING LABS

Preparation of living labs Development (LEVEL 1)

- Stakeholder involvement
- Vision building
- User community building
- Innovative scenarios and use cases
- Requirements analysis and definition of services

Limited scale experimentation based on user experience (LEVEL 2)

- Mock-up development
- User experience and idea generation
- Limited applications development and testing based on ideas
- Limited user interaction and user experience
- Integration of tools
- Limited proof of principle experimentation at reference laboratory
- New concepts and ideas

More extensive application development and field experimentation (LEVEL 3)

- Experimentation and validation with users
- Full-scale software development
- Integration of tools and services
- Sound methods for extended testing and validation
- LL field trials preparation and initiation
- Training and demonstration capabilities

User-led co-creation and living lab business model operation (LEVEL 4)

- LL field trials extended to full user experience
- Experimentation with new ways of collaboration
- Evaluation of LL as innovation environment and impact on rural development
- Functioning LL business model and innovation system
- LL as Service provision to stakeholders

2.7 • Water-oriented Living Labs' mapping selection criteria, assessment, classification & mapping

CRITERIA:

- Do they have a clear water mission?
- Do they have real-life or semi-real life test facilities?
- Involvement of local/regional water authority and government in combination with other stakeholders (industry, farmers, research institutes, consumer associations)?
- Credible continuity of the living lab?
- Is it an open-test environment?

ASSESSMENT • 1

Organizational development of R&D and extent of open R&D collaboration in water supply chain networks directly impact on the development of 'living lab ways' of organising water science R&D activities.

- **Flow of information on R&D needs at two levels:** basin level and operation level
- **Organisational settings that are specific to water supply chain composition and that can act as 'operators' to facilitate' living lab ways' of organising water science R&D:** dams, purifying centres, waste collecting centres, water recycling centres.
- **Different R&D needs in water demand zones** (e.g. agricultural demand zone, urban demand zone).
- **Problems of pattern and scale in socio-ecological research**
- **Evolving research trends and technologies with focus on types of water use** (i.e. surface water, drinking water, wastewater, surface water, recycled water).

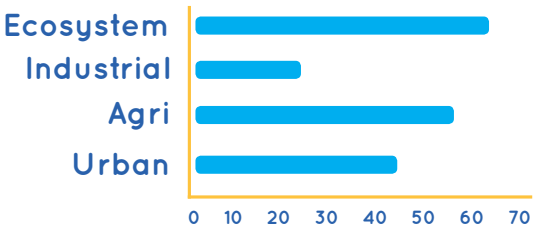
ASSESSMENT • 2

There is no one single water problem type. Therefore, different types of sustainable water-oriented living labs co-exist, owing to the context-specific factors affecting the emergence of water problem types

- **Water treatment plants, sludge facilities, and dams,** which provide testing facilities for different types of water use, act as 'modular living labs', where water technology providers, water utility sector representatives, and municipal authorities cooperate to solve water problems that emerge from the abstraction, distribution and application processes of water resource.
- **Catchment partnership initiatives** (e.g. catchment partnership programmes) and territorial innovation labs perform as small-scale multi-stakeholder ecosystem research sites, facilitating strategic innovation actions in catchment areas (e.g. catchment sensitive farming issues).
- **Long-term ecosystem research sites (LTER sites),** mostly managed by public research institutes, help to clearly define the problem of scale and ecosystem in alignment with local habitat type and form of land use and provide an ecosystem-defined user collaboration space for multi-stakeholder water research initiatives.
- **Urban living labs, long-term socio-ecological research platforms, water user initiatives in urban areas, and action labs** transform city neighbourhoods at different watershed levels into technical research regions and facilitate multi-stakeholder cooperation on water issues.
- **Water research centres (hosted by public research institutes, universities, and research centres), water clusters, and hydrological open-air laboratories** perform as 'facility-type living labs', which aim to advance the state-of-the-art in water related scientific research and technologies in close cooperation with water utility sector, municipalities, and other research sites, by providing experimental research sites, testing infrastructures, and research infrastructure PPPs.

CLASSIFICATION

Classification of (identified) European Water-oriented Living Labs (WoLLs) by water demand zone



Out of **105 water-oriented living lab research sites (in 92 organizational structures), 12** are network platforms; **26** are living lab project-platforms, and **67** are living lab research platforms.
71 water living labs have the maturity levels of between **2.5** and **3.** The water-oriented living labs have various organizational forms: **action lab, association, cluster, experimental catchment, urban lab, water treatment plant, research platform, and network platform.** The geographical scale of the majority of living labs is **sub-regional.**

CLASSIFICATION

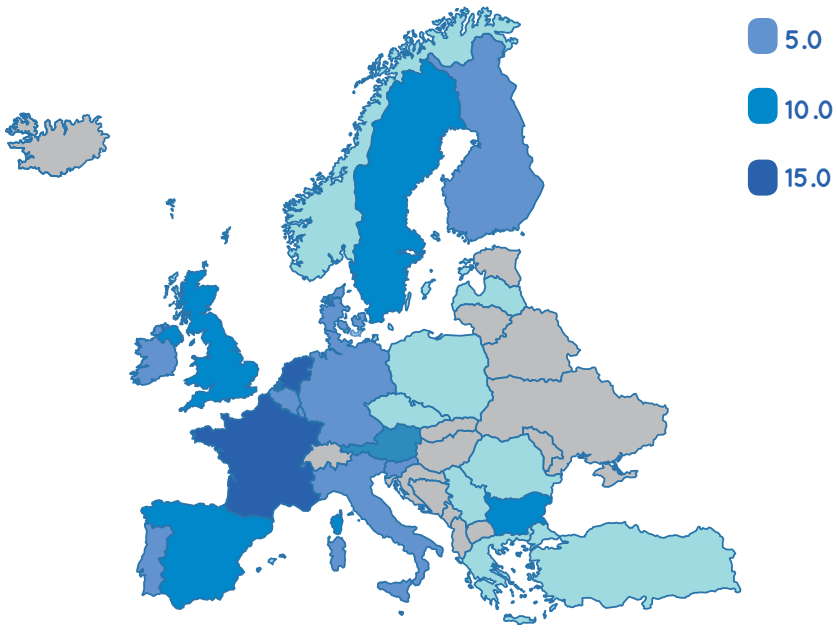
Mapping: European Water-oriented Living Labs (WoLLs)

Over 200 RDI settings were identified in **24 European countries** through two rounds of direct consultation with the Water Europe Cluster Leaders and Working Group Leaders and additional secondary data research.

Each RDI setting was assessed against the Water Europe Living Labs criteria. In total, 105 water-oriented living lab research settings met the Water Europe Living Labs assessment criteria.

The majority of Water-oriented Living Labs are located in Denmark, France, Italy, Netherlands, Spain, and UK.

European Water-oriented Living Labs (WoLLs)



Chapter 3:
Inventory of the European Water-oriented Living Labs (WoLLs)

LANDSCAPE LAB

AUSTRIA

Website: https://zgis.at/landscape-lab/
Contact info: Hermann Klug (Head of Research Group, Landscape Lab)
Hermann.Klug@sbg.ac.at (+43 0662 8044 7561)

URBAN • AGRI

- Located the west of the **Mondsee catchment** close to the city of Salzburg.
- Founded in **2013**.
- **Organizational coordinator**: Interfaculty Department of Geoinformatics – Z-GIS at the University of Salzburg
- **Multi-stakeholder involvement**: Local Government, University, Research Institute, Public Authorities

LANDSCAPE LAB

Geographical scale	Sub-regional
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Need finding Concept development and testing Adoption deployment
Maturity level of living lab	Level 2.5
Living lab service offerings	Living lab methods Need finding
Strategic Interest Water Europe Clusters	Value of Water , Value in Water
Sustainability of living lab	Yes

Objectives

- **Integration of measurements, analysis, and modelling of natural resources** by taking into account GIScience and spatial-temporal analytical tools. **There are nine measurement stations, measuring atmospheric, hydrological, and pedological parameters, in the Mondsee catchment area**: Meindbauer (i.e. main station, which collects and measures sensor data from nine measurement stations), Nockstein, Forsthuber, Stabauer, Knollbauer, Plainfelderbach, Hansenbauer.

Network partnership base

- **The Landscape Lab site**, located at the west of the **Mondsee catchment** close to the city of **Salzburg**, is considered as one of the **long-term ecosystem research areas** in Austria, recognized by the Austrian LTER network. In the Mondsee catchment area, ecosystem monitoring and data sampling activities have been undertaken in the context of a multi-stakeholder approach including: **Research Institute for Limnology, Mondsee of the University of Innsbruck, and the Institute for Water Ecology, Fisheries, and Lake Research of the Federal Agency for Water Management**.

Finance

- The Landscape Lab site does not require external financing; however, it took part in two externally-funded projects: **ESMERALDA** (H2020 Funding Programme, CSA type of H2020 projects; 2015-2017); and, **SMART** (New Zealand Ministry of Science and Innovation).

Projects

- **SMART (2011-2017)**: Identification, development, application, validation and optimization of novel methods for accurate, rapid, and cost-effective characterization and mapping of New Zealand's aquifer systems. (Funding source: New Zealand Ministry of Science and Innovation).

- **ESMERALDA (2015-2017)**: Mapping and assessment of ecosystems and their services are core to the EU Biodiversity Strategy. (Funding source: Horizon 2020 Programme).

AGRICULTURAL RESEARCH AND EDUCATION CENTRE (AREC) RAUMBERG-GUMPENSTEIN RESEARCH SITES

AUSTRIA

Website: https://www.raumberg-gumpenstein.at
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AGRI • ECOSYSTEM

- Located in the **Styrians Enns Valley**
- Founded in **1956**.
- **Organizational Coordinator**: Agricultural Research and Education Centre (AREC) Raumberg-Gumpenstein
- **Multi-stakeholder involvement**: Local Government, University, Research Institute, Public Authorities

AREC RAUMBERG-GUMPENSTEIN RESEARCH SITES

Geographical scale	Sub-regional
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Need finding Concept development and testing Adoption deployment
Maturity level of living lab	Level 2.5
Living lab service offerings	Living lab methods Need finding Consulting for sustainable land management and environment Project Development and Management
Strategic Interest Water Europe Clusters	Value of Water , Value in Water
Sustainability of living lab	Yes

Objectives

- **Provision of a large variety of agricultural and environmental impact assessments** wit specific focus on grassland ecology, plant sociology, site specific greening, floristic biodiversity, preservation of nature, soil health, lysimetry, climate and its consequences, cultural landscape, animal husbandry, animal health and welfare, organic agriculture, biodiversity of farm animals, energy- and nutritient-flows in agriculture and quality of food.

Network partnership base

- **The Agricultural Research and Education Centre (AREC) Raumberg-Gumpenstein**, located in the Middle of Austria, is the **largest federal institute of the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management**. The Styrian Enns Valley is directly affected by flooding and debris flows, surface runoffs, intensive grass land management and high land consumption for industry and trade. While offering a high expertise in dissemination of know-how for scientists, farmers, practitioners, decision makers, stakeholders and the local population, the Raumberg-Gumpenstein Research & Development works on future-oriented innovation projects for practical research projects in cooperation with national and international research organisations and companies.

Finance

- Project finance and government funding.

Projects

- **CAMARO-D (Interreg Project)**: Cooperating towards Advanced Management Routines for land use impacts on the water regime in the Danube river basin.
- **MONITOR**: Hazard Monitoring of Risk Assessment and Risk Communication .
- **BE-NATUR**: Better Management and Implementation of Nature 2000 Sites.
- **Gewässer-Zukunft/Water-future**: Reduction of nutrient inputs into surface waters in the cultural landscape of the Bavarian and Austrian foothills of the Alps.
- **Seenland-wirtschaft**: Sustainable agriculture in the EU-regional lake landscape.
- **LUBIO**: Land use, climate change, and biodiversity in cultural landscapes: Assessing feedbacks and promoting land-use strategies towards a viable future.
- **Power Streams**: Self-purification capacity of streams under the pressure of increasing nutrient pollution.

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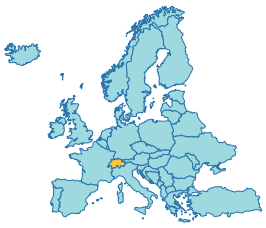
HYDROLOGICAL OPEN-AIR LABORATORY (HOAL) PETZENKIRCHEN

AGRI • ECOSYSTEM



- Located in the **western part of Lower Austria**.
- **Organizational coordinator**: Vienna University of Technology and Federal Agency for Water Management of the Federal Ministry of Agriculture, Forestry, Environment, and Water Management
- **Multi-stakeholder involvement**: Local Government, University, Research Institute, Public Authorities

HOAL PETZERNKIRCHEN

Geographical scale	Sub-regional
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Need finding Concept development
Maturity level of living lab	Level 2
Living lab service offerings	Living lab methods Need finding Consulting for sustainable land management and environment Project Development and Management
Strategic Interest Water Europe Clusters	Value of Water , Value in Water, Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

Objectives

- **Researching** water flow and transport processes (e.g. runoff generation mechanisms, pollution transport), involving sourcing of sediments, controls of spatial soil moisture patterns in small catchments, flow paths of nutrients and microbial water safety management.
- **Fostering** cooperation across the disciplinary boundaries via organizing research through joint groups and joint research questions.

Network partnership base

- **The Hydrological Open Air Laboratory in Petzenkirchen** is, under the guidance of Peter Strauss and Gunter Bloschl, operated jointly by the **Vienna University of Technology** (TU Wien) and the Federal Agency for Management of the **Federal Ministry of Agriculture, Forestry, Environment, and Water Management** (BMLFUW). Furthermore, the Institute for Land and Water Management Research, located close to the HOAL, facilitates experimental research set-ups.
- The HOAL has 6 core collaborators: **Austrian Institute of Technology, European Network of Hydrological Observatories, Helmholtz Centre for Environmental Research, International Atomic Energy Agency, Interuniversity Cooperation Center Water & Health, University of Natural Resources and Life Sciences, Vienna**.

Finance

- The HOAL and the research are supported by the **TU Wien, the Federal Agency for Water Management, and the Austrian Science Fund through the Vienna Doctoral Programme on Water Resource Systems** and a number of projects.

VOGELSBERG OPEN AIR LIVING LAB

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AGRI • ECOSYSTEM

- **Project period**: 2018-2022
- **Total budget**: EUR 14 696 502
- **EU funding**: EUR 12 257 343
- **Funding**: EU Framework Programme for Research and Innovation H2020 Project Coordinator: Alma Mater Studiorum – Universita di Bologna
- **Multi-stakeholder involvement**: Companies, water technology centers, water authorities, municipalities, and public research organisations

OAL VOGELSBERG

Geographical scale	Territory (rural- and regional-levels
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Public-private partnership-driven
Technology development phase supported by living lab	Concept development Adoption deployment (demo cases)
Maturity level of living lab	Level 1-2
Living lab service offerings	Technology innovation support Support for innovation management process
Strategic Interest Water Europe Clusters	Hybrid Grey-Green infrastructure
Sustainability of living lab	Yes

Objectives

- **Integration of measurements, analysis, and modelling of natural resources** by taking into account GIScience and spatial-temporal analytical tools. **There are nine measurement stations, measuring atmospheric, hydrological, and pedological parameters, in the Mondsee catchment area**: Meindbauer (i.e. main station, which collects and measures sensor data from nine measurement stations), Nockstein, Forsthuber, Stabauer, Knollbauer, Plainfelderbach, Hansenbauer.

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Finance

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- **ESMERALDA (2015-2017)**: Mapping and assessment of ecosystems and their services are core to the EU Biodiversity Strategy. (Funding source: Horizon 2020 Programme).

BruSEau – BRUXELLES SENSIBLE A EAU

BELGIUM

Website: http://brusseau.be/les-approches/
Contact info: 154 rue du College, 1050, Bruxelles (+32.498.59.15.50)

URBAN

- Located in **Brussels, Belgium**. Initiated in **2016**.
- **Organizational Coordinator**: Water user association – EGEB ('Etats-Généraux de l'Eau à Bruxelles')
- **Multi-stakeholder involvement**: Water user association, public research and innovation institute, architectural/spatial planners

BruSEau

Geographical scale	City
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Citizen-driven
Technology development phase supported by living lab	Need finding Concept development Adoption deployment
Maturity level of living lab	Level 1.5
Living lab service offerings	Community-building Co-design and ideation Networking
Strategic Interest Water Europe Clusters	Hybrid Grey-Green infrastructure Digital Water Value of Water
Sustainability of living lab	Yes

Objectives

- **Set up** a series of technical research regions that allow to infiltrate, evaporate, and slow down water, by networking private plots, roads, public spaces and creating new urban rivers and 'water islands'.
- **Reduce** flood risks, river pollution by ameliorating urban landscape and biodiversity.
- **Organize** meetings with focus on the themes of water and floods; explorative walks in the Molenbeek valley in Jette; workshops in order to map observed problems and solution proposals

Network partnership base

- The project (2016-2019), funded by Innoviris, develops and combines **three living lab approaches** for improving future decision-making in the water, sewage, and waste sectors: technological, architectural, and community-building. From the technological standpoint, inhabitants are asked to place 'WaterCitySense' measuring devices in their daily living environment, enabling to measure the quantity of water. The New Urban River, on the other hand, brings attention to the importance of new architectural design elements for creating alternative trajectories for the sewerage and drainage systems.

  The project is active in **four locations at two watershed levels**. One watershed level covers part of the Senne river and the Commune de Forest. There are two 'hydrological communities', consisting of inhabitants living in the North and South of Forest. The second watershed covers Molenbeek, where two other hydrological communities of inhabitants living in Jette and Ganhoren. In these four locations, inhabitants are encouraged to diagnose, co-create, and propose solutions to minimize the risk of floods in Brussels. The BruSEau shares the solutions developed by the inhabitants with the public authorities and water operators in Brussels.

  The project team, led by EGEB, is composed of seven project partners: associations, whose objective is to promote water in the city and the role of the inhabitants around the water related issues, researchers (HYDR, VUB, LIEU, ULB), architectural offices (Lattitude, Arkipel), and specialists in hydrological measurement equipment (Ecotechnic).

Finance

- The research project is supported by the 'Co-create – Living Labs' call for projects launched by Innoviris, the Brussels Institute for Research and Innovation

DE WATERGROEP - DE BLANKAART WATER PRODUCTION CENTRE (WATER TEST NETWORK INTERREG PROJECT)

BELGIUM

Website: http://www.nweurope.eu
https://corporate.dewatergroep.be/en/de-watergroep/infrastructure/de-blankaart
Contact info: Charlotte Boeckaert (cb@vlakwa.be) (+32 56241261)

INDUSTRIAL • URBAN

- **Project period**: 2018-2021
- **Total budget**: EUR 6.05 m
- **EU funding**: EUR 3.63 m
- **Funding Programme**: Interreg North-West Europe Programme
- **Project Coordinator**: Scottish Partner
- **Multi-stakeholder involvement**: Companies, water technology centers, water authorities, municipalities, and public research organisations

DE BLANKAART WATER PRODUCTION CENTER

Geographical scale	Sub-regional
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Pilot implementation and testing Adoption deployment
Maturity level of living lab	Level 3
Living lab service offerings	Innovation and development services Pilot and innovation environment Prototype testing
Strategic Interest Water Europe Clusters	Value of Water, Value in Water, Digital Water, and Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

Objectives

- **Development of a pilot installation** for research into an alternative approach to conventional surface water treatment. The testing facility is available for SMEs to test technology for treating surface water into drinking water and testing technique for treating wastewater from the ion exchange process. T**esting facility includes**: fully equipped test hall; laboratory for standard water analysis, accredited labs for a broad range of chemical and microbiological parameters, and on-site support.

Network partnership base

- In the context of the **Interreg Water Test Network project**, under the coordination of **Scottish Water, 8 organisations (James Hutton Limited, DVGW Water Technology Centre, VITO NV, Centre of Expertise Water Technology, French Geological Institute, Water Board Vallei and Veluwe, Enterprise Ireland, and Scottish Enterprise)** are collaborating in the effort to establish a transnational network of testing facilities that can be used by SMEs in North-West Europe to test, demonstrate, and develop new products for the water sector.

  De Blankaart Water Production Centre (i.e. concrete reservoir built in 1972) is part of the De **Watergroep's water production and storage infrastructure network** (i.e. Evergem, Harelbeke, Eisden, and Ieper). At Blankaart, De Watergroep produces drinking water based on surface water from the Ijzer and polders of the Blankaart region. In the period 2015-2023, **De Watergroep** is planning the complete renovation of the reservoir, the water treatment and sludge treatment facilities.

Finance

- De Blankaart Water Production Centre is part of the **De Watergroep**.

BELGIUM

VEG-i-TEC (WATER TEST NETWORK INTERREG PROJECT)

Website: http://www.nweurope.eu
https://corporate.dewatergroep.be/en/de-water-groep/infrastructure/de-blankaart
Contact info: Dr. Imca Sampers (vegitec@ugent.be) (+32 56 24 12 11)

INDUSTRIAL • AGRI

- Project period: 2018-2021
- Total budget: EUR 6.05 m
- EU funding: EUR 3.63 m
- Funding Programme: Interreg North-West Europe Programme
- Project Coordinator: Scottish Partner
- Multi-stakeholder involvement: Companies, water technology centers, water authorities, municipalities, and public research organisations

UGENT CAMPUS KOORTRIJK VEG-i-TEC RESEARCH AND EXPERTISE CENTRE

Geographical scale	Sub-regional
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Pilot implementation and testing Adoption deployment
Maturity level of living lab	Level 3
Living lab service offerings	Innovation and development services Pilot and innovation environment Prototype testing
Strategic Interest Water Europe Clusters	Value of Water, Value in Water, Digital Water, and Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

Objectives

- **Provide** testing facilities for applied research, training and demonstrations for the vegetable and potato processing industry (from harvested product to packaged product) and water treatment with specific focus on the six water types: surface water (river Leie), freatic groundwater (12 m), rainwater, tap water, vegetable processing process water, and vegetable processing waste water.
- **Setting up** a living lab for food companies, in order to stimulate, realize and implement innovation.

Network partnership base

- In the context of the **Interreg Water Test Network project**, under the coordination of **Scottish Water, 8 organisations (James Hutton Limited, DVGW Water Technology Centre, VITO NV, Centre of Expertise Water Technology, French Geological Institute, Water Board Vallei and Veluwe, Enterprise Ireland, and Scottish Enterprise)** are collaborating in the effort to establish a transnational network of testing facilities that can be used by SMEs in North-West Europe to test, demonstrate, and develop new products for the water sector.
- The **VEG-i-Tec** was founded as research and expertise centre by the **living lab UGent Campus Kortrijk**.

Finance

- ERDF, H2020, Interreg funding programmes and university funding.

BULGARIA

LONG-TERM ECOSYSTEM RESEARCH (LTER) SITES – BULGARIA

Website: https://deims.org/network/bulgaria-lter-bulgaria
Contact info: Svetla Doncheva, Institute of Biodiversity and Ecosystem Research, BAS, (sbrat@abv.bg)

AGRI • ECOSYSTEM

- Located in Cape Galata, Varna Bay, Koketrays, Sand Bank, Petrohan, Yundola, Srebarna, Sozobol Bay, Mesta river, and Livingston Island.
- Organizational coordinator: Multiple
- Multi-stakeholder involvement: Local Government, University, Research Institute, Public Authorities

LTER BULGARIA RESEARCH SITES

Geographical scale	City
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Need finding Concept development Pilot implementation and testing
Maturity level of living lab	Level 1.5
Living lab service offerings	Living lab methods Need finding
Strategic Interest Water Europe Clusters	Value of Water Value in Water Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

Objectives

- The Long-term Ecosystem Research (LTER) network of Bulgaria has **seven experimental research sites**, established according to the LTER criteria and managed by a site coordinator. The research sites are: **Forest sites** (Petrohan, Yundola); Wetland (Srebarna); Marine sites (Black-sea macro site); Costal zone (Sozopol Bay); Freshwater body (Mesta river); and, Antarctica (Livingston Island – Bulgarian Antarctic research station).

Network partnership base

- The LTER-Bulgaria has a multi-stakeholder approach, gathering various types of organisations: **National Science Fund, Ministry of Environment and Waters, Research Institutes** (i.e. Central Laboratory of General Ecology, University of Forestry, Institute of Oceanology, and Sofia University).

Site Management and Finance

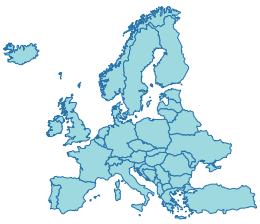
- **Petrohan**: The University of Forestry (Sofia) manages a field station with facilities and buildings. The research projects are funded both by the university, MES, and MOEW. (Contact person: Prof. Dr. Nadka Ignatova, Nadka_ignatova@abv.bg, +359 2 91907/351)
- **Yundola**: The University of Forestry (Sofia) manages the experimental watershed study site "Bazenishki Dol", with experimental station "Prof. Boyan Biolchev" exists for 40 years. It has laboratories and basic laboratory facilities. (Contact person: Dr. Elena Rafailova, University of Forestry, erafailova@yahoo.com, + 359 2 90907 (256))
- **Srebarna**: Central Laboratory of General Ecology (CLGE) BAS has a research laboratory with only basic field equipment and a living house. (Contact person: Assoc. Prof. Dr. Luchezar Pehlivanov, lzp@ecolab.bas.bg, + 359 2 8718195)
- **Black sea – Macrosite**: The research site is managed by the Institute of Oceanology (BAS). Marine biology and ecology laboratory in Institute of Oceanology; IO-BAS has all laboratories with facilities and Chemical and Biological laboratories on board of R/V Akademik – Research ship with laboratory. (Contact person: Dr. Kremena Stefanova, stefanova@io-bas.bg)
- **Sozopol Bay**: The Central Laboratory of General Ecology (BAS) has a field research station with labs and basic equipment for field work. The research projects are funded by the NSF, MOEW, and EC. (Contact person: Dr. Ventzislav Karamfilov, vkaramfilov@ecolab.bas.bg, + 359 2 8722154)
- **Mesta River**: The Central Laboratory of General Ecology (BAS) has not field research infrastructure in this site; however, the research projects undertaken in this site were funded by the EC, NSF, and MOEW. (Contact person: Dr. Emilia Varadinova, CLGE-BAS, emilia.Varadinova@gmail.bg, + 359 2 8718195)
- **Livingston Island**: The Central Laboratory of General Ecology (BAS) has the Bulgarian Antarctic Research station with laboratories. The research projects have been undertaken in the area of the Bulgarian Antarctic Station since 1995 (Contact person: Assoc. Prof. Dr. Nesho Chipev, CLGE-BAS, chipev@ecolab.bas.bg, + 359 2 8718195)

CYRUS

Website: http://www.nireas-iwrc.org/
Contact info: info@Nireas-iwrc.org (+357 22 89 35 27)

NIREAS INTERNATIONAL WATER RESEARCH CENTER, SCHOOL OF ENGINEERING, UNIVERSITY OF CYPRUS

URBAN • ECOSYSTEM



- Located at the **School of Engineering, University of Cyprus, Nicosia, Cyprus**.
- Established in **2011**.
- **Organizational coordinator**: School of Engineering, University of Cyprus, Nicosia, Cyprus
- **Multi-stakeholder involvement**: Local Government, University, Research Institute, Public Authorities

NIREAS INTERNATIONAL WATER RESEARCH CENTER

Geographical scale	City
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Need finding Concept development Pilot implementation and testing
Maturity level of living lab	Level 3
Living lab service offerings	Living lab methods Innovation and Development services Pilot and innovation environment
Strategic Interest Water Europe Clusters	Value of Water, Value in Water, Hybrid Grey-Green Infrastructure, Digital Water
Sustainability of living lab	Yes

Objectives

- **Advancing** the state-of-the-art in water related scientific research and technologies, with specific focus on water quality (i.e. monitoring and treatment), water supply and urban water treatment, socio-economic analysis of water-related issues.
- **Strengthening** public awareness of water related issues.
- **Establishing** infrastructure in support of its scientific mission, with permanent offices and state-of-the-art laboratories.

Network partnership base

- The **NIREAS – International Water Research Centre** – is the **first water research centre in Cyprus**. The research centre collaborates with municipalities, such as the **Larnaca Municipality**. The NIREAS have **four lab complexes**: **Gaia** (Laboratory for Environmental Engineering); **SRL** (Subsurface Research Laboratory); **Eupalinos** (Construction Engineering and Water Networks Management Laboratory); and, **UCY-CompSci** (Computational Science Laboratory). The **equipment** includes: analytical equipment; microbiology equipment; bench-scale reactors; pilot-scale reactors; membrane bioreactor; ultrafiltration unit; working water distribution network scaled models; computer clusters.

Finance

- **The NIREAS International Water Research Center** is co-financed by the European Regional Development Fund and the Republic of Cyprus through the Research Promotion Foundation and the University of Cyprus.

Projects

- **ANSWER (H2020-MSCA-ITN-2015)**: Antibiotics and mobile resistance elements in wastewater reuse applications: risks and innovation solutions
- **NEREUS (COST Action ES1403)**: New and emerging challenges and opportunities in wastewater reuse
- **StARE (EU JPI on Water Challenges)**: Stopping antibiotic resistance evolution
- **MEDOLICO (I-B/2.1/090)**: A Mediterranean cooperation in the treatment and valorization of olive mill wastewater
- **I-WEB**: Integrating Water Cycle management: building capability, capacity, and impact in Education and Business
- **GAPS (KOULTOURA/VENS/0412/24)**: Closing Gaps of Knowledge with respect to Advanced Chemical Oxidation Processes for the Removal of Contaminants of Emerging Concern.

LONG-TERM ECOSYSTEM RESEARCH (LTER) SITE – RIMOV RESERVOIR

CZECH REPUBLIC

Website: https://deims.org/ef2ae321-6e94-4170-9616-9a54f529643c
Contact info: Petr Znachor, Site Manager (znachy@hbu.cas.cz)

AGRI • ECOSYSTEM

- Located 20 kilometer away from the **Malse river**.
- Recognized as **national LTER site** in 1997.
- **Organizational Coordinator**: Institute of Hydrobiology (Biology Center CAS)
- **Multi-stakeholder involvement**: Local Government, University, Research Institute, Public Authorities

ŘIMOV RESERVOIR LTER

Geographical scale	Sub-regional
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Need finding Concept development Pilot implementation and testing
Maturity level of living lab	Level 1.5
Living lab service offerings	Living labs methods Need finding
Strategic Interest Water Europe Clusters	Value in Water Value of Water
Sustainability of living lab	Yes

Objectives

- **Contributing** to experimental work and field research, such as physical, chemical, and biological data on pelagic organisms (e.g. protists, zooplankton, phytoplankton, and bacteria); abundance and species composition of fishes.

Network partnership base

- The **National LTER site – Rimov Reservoir** – has a multi-stakeholder approach, gathering various types of organisations. The Rimov Reservoir site was constructed between 1971 and 1978 and recognized as one of the national LTER site in Czech Republic in 1997.
- The research studies benefited also from the **well-equipped labs** in the city of **České Budějovice** and the **construction of a field station at the dam** in 1994.

Site Management and Finance

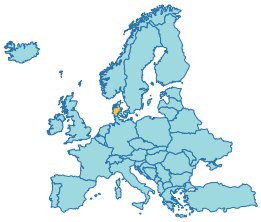
- **The Institute of Hydrobiology (Biology Center CAS)** is managing the field site.
- The Institute of Hydrobiology (HBU) is one of the institutes associated in the biological heart of the Academy of Sciences of the Czech Republic in the Czech Budejovice.

CALL COPENHAGEN

DENMARK

Website: http://www.callcopenhagen.dk
Contact info: Roskildevej 211-213, 2500 Copenhagen

URBAN • AGRI



- Located in **Greater Copenhagen's** climate change adaptation cluster, **Denmark**.
- **Founded on 31 May 2017**.
- **Project initiator**: HOFOR (Greater Copenhagen Utility)
- **Multi-stakeholder involvement**: Utility companies for the Greater Copenhagen, private sector, and city of Copenhagen

CALL COPENHAGEN

Geographical scale	City
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Public authority driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation
Maturity level of living lab	Level 2
Living lab service offerings	Idea generation, Idea selection Partnership building and demo use cases
Strategic Interest Water Europe Clusters	Value of Water, Smart Cities, Digital Water, Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

Objectives

- Establish a regional climate adaptation living lab focusing on both technology, governance, and citizen involvement, with central actors, networks of living labs and innovations hubs in the Greater Copenhagen area.
- Locally support systemic climate adaptation solutions with a core infrastructure and smart monitoring and controls systems.
- Improve water management capacity by redesigning cities to handle water locally.
- Develop solutions-oriented active collaborations:
  - Municipalities and utilities, providing access to projects and demonstration opportunities;
  - Companies, providing innovative technologies and competencies with high-up - scaling potential.

Network partnership base

- A project, owned by HOFOR (Greater Copenhagen Utility) and ran in cooperation with the three co-founding members – City of Copenhagen, Capital Region of Denmark, Greater Copenhagen Utility (HOFOR), and Biofos (Greater Copenhagen Wastewater) and with 36 active partners.

Energy & Water Living Lab functions as a facilitator for idea generation, idea selection, partnership building and showcasing demo cases.

The steering committee is formed by representatives of the four founding partners and representatives of the Danish Water and Wastewater Association and the Confederation of Danish Industry.

Finance: No in-kind contributions; external financing.

Projects

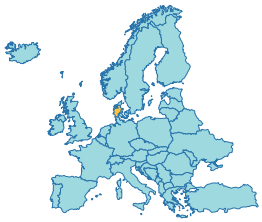
- "Climate Adaptation – on the Other Side of the Fence": Project, funded by the Danish Water Sector's Development and Demonstration Program and in alignment with the Copenhagen Cloudburst Plan, aims to develop and test participatory planning methods for local climate road project – climate streets – to retain water and reduce the load in the sewer system

ENERGY & WATER GREEN COPENHAGEN LIVING LAB

DENMARK

Website: http://energiogvand.dk/en
Contact info: Roskildevej 213, 2500 Copenhagen

URBAN • ECOSYSTEM



- Located in **Valby, Copenhagen, Denmark**.
- **Organizational Coordinator**: Public-private partnership (Municipality of Copenhagen and HOFOR Utility Company)
- **Multi-stakeholder involvement**: Utility companies for the Greater Copenhagen, private sector, and city of Copenhagen.

ENERGY & WATER

Geographical scale	City
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Adoption deploinment Concept development Pilot implementation and testing
Maturity level of living lab	Level 2
Living lab service offerings	Data collection, Pilot project Product co-design and prototyping Networking
Strategic Interest Water Europe Clusters	Value of Water Value in Water Smart Water Treatment
Sustainability of living lab	Yes

Objectives

- **Perform** as mediator and facilitator of co-creation processes between stakeholders and citizens.
- **Develop** educational partnerships based on the UN concept of Education for Sustainable Development with focus on energy- and water-supply, climate mitigation and adaptation, citizen involvement and climate adaptation in Greater Copenhagen.
- **Support** local climate adaptation solutions in dense city areas with focus on citizen involvement and multi-functional solutions that contributes to a sustainable city development).

Network partnership base

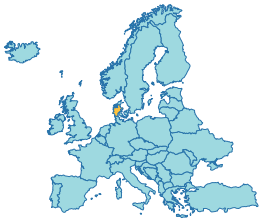
- It is a **public-private partnership** between the Municipality of Copenhagen and HOFOR and allows for multiple partnerships.
- It has **three facilities**:
  - Science center for education
  - Collaboratorium for citizen-driven innovation in climate adaptation
  - HOFOR showroom for knowledge sharing on utility and climate adaptation
- The living lab uses a range of **collaborative tools**, such as data collection, co-designing process, pilot project and product prototyping.
- The living lab performs a set of **networking activities**:
  - **Link** educational sector with utility companies and environmental governance.
  - **Identify** thematic areas lacking educational programmes.
  - Idea generation, selection and partnership building.
  - **Link** citizens with test centers, businesses, NGOs, utility companies through demonstration cases.

COPENHAGEN NORTH HARBOUR LIVING WATER LAB

DENMARK

Website: http://vandibyer.dk/
Contact info: Ulrik Hindsberger, Center Head, (uhi@teknologisk.dk) (+45 722202085)

URBAN • ECOSYSTEM



- Located in the **North Harbor area of Copenhagen**
- **Organizational Coordinator**: Vand I Byer ('Water in Urban Areas') strategic partnership
- **Multi-stakeholder involvement**: Utility companies for the Greater Copenhagen, private sector, and city of Copenhagen.

LIVING WATER LAB

Geographical scale	City
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Pilot implementation Adoption deployment
Maturity level of living lab	Level 2.5
Living lab service offerings	Data collection Pilot project Product co-design and prototyping Networking
Strategic Interest Water Europe Clusters	Value of Water, Value in Water, Smart cities, Hybrid Grey-Green infrastructure
Sustainability of living lab	Yes

Objectives

- **Development of a smart city area**, where companies and research institutions can co-develop innovative water solutions.
- **Contributing to the climate-sustainable and sustainable cities** through value-creating water management.

Network partnership base

- **The Copenhagen North Harbor Living Water La**b, was initiated by the **Vand I Byer** ('Water in Urban Areas') strategic partnership, which was founded in 2010. From the end of 2014, Water in Urban Areas has transformed from a strategic partnership to an innovation network for climate change adaptation and innovation. The Water in Urban Areas consists of knowledge institutions, government agencies, utilities, and private companies (**tetra-helix structur**e).

Finance

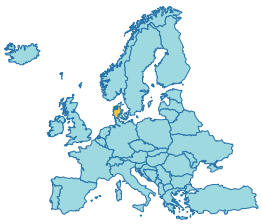
- There **are projects** focusing on: online monitoring of water quality and real-time monitoring of water distribution network; waste water systems – feasibility study on strategy for using secondary water in cities; and, waste water systems – development of cleaning technology for the recovery of road runoffs.

WATER PROJECT ACTION LAB VESTER HJERK (SKIVE)

DENMARK

Website: http://www.geus.dk/
Contact info: geus@geus.dk (+45 38142000)

URBAN • AGRI



- Located in the **Municipality of Skive**.
- **Organizational coordinator**: Geological Survey of Denmark and Greenland
- **Project duration**: 2017-2019
- **Multi-stakeholder involvement**: local communities, municipalities, universities, local waterworks

ACTION LAB VESTER HJERK (SKIVE)

Geographical scale	City
Value creation type	Mission-oriented ecosystem-based – living lab as platform Individual project-based – living lab as project
Market positioning	Public-authority driven
Technology development phase supported by living lab	Concept development Pilot implementation and testing
Maturity level of living lab	Level 2.5
Living lab service offerings	Data collection Pilot project Product co-design and prototyping Networking
Strategic Interest Water Europe Clusters	Value in Water Smart rural
Sustainability of living lab	Yes

Objectives

- In the context of the **H2020 Project 'WaterProject'**, the consortium (VITO, ILVO, EWP, EFBW, CSIC, ECOLOGIC, GEUS, INAGRO, PGI, Teagasc, Universita Cattolica, De WaterGroep, ARPAE, Parc Agrari Baix Llobregat, Aigues de Barcelona, KU, ITP, ZUT, Glanbia, Wexford County Council, Ulster University, Agricultural Catchments Programme, Lambo Lidgjord, Skive Commune, and VMM), aims to develop new solutions and tools in 7 action labs where water pollution from intensive agriculture may affect the quality of the water from drinking water production.

Network partnership base

- In this project, the **Action Lab Vester Hjerk** was initiated by the Geological Survey of Denmark and Greenland. **The Action Lab Vester Hjerk**, located in Denmark, collaborates with **GEUS** (Geological Survey of Denmark and Greenland), **Copenhagen University** (UCPH), **Skive Municipality** (SK), and **Landbo Limford** (LL).
- **The Action Lab Vester Hjerk** is located in the north-western part of Denmark, where the local waterworks **Vester Hjerk** (in the municipality of Skive) supply the local community with drinking water purely based on groundwater. The capture zone of the waterworks has been identified as nitrate vulnerable zone and since the 1980s the nitrate concentration has been steadily increasing. The main agricultural activity in the areas is cereal production by conventional farming and livestock.

Financial

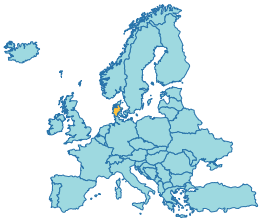
- External funding and maintained by the Geological Survey of Denmark and Greenland.

DHI BALLAST WATER TREATMENT PLANT

DENMARK

Website: https://ballastwater.dhigroup.com/
Contact info: Torben Madsen, Vice President (tma@dhigroup.com); Gitte I. Petersen, Head of Department (gip@dhigroup.com)

INDUSTRIAL



- Located at the **Hundested Harbor**.
- **Organizational Coordinator**: DHI A/S (independent test organization)
- **Multi-stakeholder involvement**: Danish Maritime Authority, Danish Natural Agency, Danish ship-owners, DHI A/S (independent test organization)

DHI BALLAST WATER TREATMENT PLANT

Geographical scale	City
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Solution providers-driven
Technology development phase supported by living lab	Concept development Pilot implementation and testing
Maturity level of living lab	Level 3
Living lab service offerings	Data collection Pilot project Product co-design and prototyping Networking
Strategic Interest Water Europe Clusters	Value of Water, Value in Water, Smart cities, Hybrid Grey-Green infrastructure
Sustainability of living lab	Yes

Objectives

- **The DHI A/S Ballast Water Centre** provides the following testing services: pilot testing of ballast water management systems or components; type approval testing at land-based test facility in Denmark; operation and maintenance testing; shipboard test; whole effluent toxicity tests; human and environmental risk assessments; consultancy assistance related to basic and final approval applications; performance testing of filters and other components; and CFD validation tests in full scale experiments.

Finance

- Fee-for-service (testing facilities) and corporate funding (by DHI A/S)

Projects

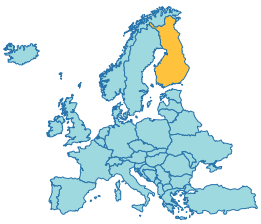
- **DESMI Ocean Guard**, i.e. a company established by A.P. Moller – Maersk A/S, DESMI A/S, and Skjolstrup & Gronorg ApS, combines **UV treatment and ozone injection** to remove organic materials from water. DESMI Ocean Guard tested this treatment method at DHI's advanced test facility at Hundested Harbor.

KALASATAMA URBAN LAB

FINLAND

Website: https://ballastwater.dhigroup.com/
Contact info: Torben Madsen, Vice President (tma@dhigroup.com); Gitte I. Petersen, Head of Department (gip@dhigroup.com)

URBAN • ECOSYSTEM



- Located in **Helsinki**.
- **Organizational coordinator**: Forum Virium Helsinki – City of Helsinki innovation company
- Founded in **November 2018**.
- **Multi-stakeholder involvement**: Local communities, City of Helsinki, Kalasatama interest groups, citizens

KALASATAMA URBAN LAB

Geographical scale	City
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Pilot implementation Adoption deployment
Maturity level of living lab	Level 3
Living lab service offerings	Data collection Pilot project Product co-design and prototyping Networking
Strategic Interest Water Europe Clusters	Value of Water Value in Water Smart cities
Sustainability of living lab	Yes

Objectives

- **Contributing** to the development of **R&D project**s, with specific focus on integrated infrastructures, smart living solutions, and climate-friendly innovations in collaboration with city service providers, businesses, researchers and citizens.
- Buying small pilots that provide new innovative services for residents and can be tested in real life setting **(Smart Kalasatama's Programme for Agile Piloting)**.

Network partnership base

- Kalasatama Urban Lab is undertaken by the Forum Virium Helsinki-City of Helsinki innovation company. In the context of the Smart Kalasatama district development project of the city of Helsinki, the Kalasatama Urban Lab has been developed as a co-creation space and test environment, where developers can meet and design solutions for use in an urban setting. Smart
- Kalasatama has 32 network partners. Smart Kalasatama is coordinated by Forum Virium Helsinki, an innovation unit within the Helsinki City Group.
- Its steering committee consists of members representing City of Helsinki (Planning Department, Environment Centre) and Forum Virium Helsinki.

Finance

- Funded by the **innovation fund of the City of Helsinki**.

Projects

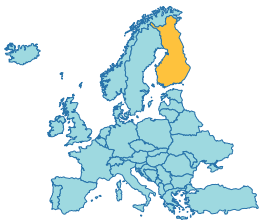
- **Smart city services and future solutions**: new forms of housing, health and wellbeing centre, tower blocks, shared electric new forms of vehicles, co-created senior house, future school, HIMA smart metering, waste collection system, smart lighting and edible park, carbon-neutral smart zoo, DIAK Kalasatama, Abattoir – Pop-up Factory, Suvilahti, Solar Park, Surf Park, Fisuverkko, Smart Grid, Internet of Things and My Data, and Agile Piloting.

HMA-LTSER HELSINKI METROPOLITAN AREA PLATFORM (LAHTI PILOT AREA)

FINLAND

Contact info: Jussi Kulonpalo
(jussi.kulonpalo@Helsinki.fi)
(+358 294 124583)

URBAN • INDUSTRIAL • ECOSYSTEM



- Located in the **City of Helsinki**.
- **Organizational coordinator**: University of Helsinki
- Founded in **2006**.
- **Multi-stakeholder involvement**: University of Helsinki, Helsinki University of Technology under the Urban Studies Network, cities (e.g. Espoo, Helsinki, Lahti, and Vantaa)

HMA-LTSER HELSINKI METROPOLITAN AREA PLATFORM (AND LAHTI PILOT AREA)

Geographical scale	City
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation
Maturity level of living lab	Level 2.5
Living lab service offerings	Data collection, Pilot project Product co-design and prototyping Networking
Strategic Interest Water Europe Clusters	Value of Water, Value in Water, Hybrid Grey-Green Infrastructure, Digital Water
Sustainability of living lab	Yes

Objectives

- **Establish** a joint long-term research environment for selected urban sites and themes with specific focus on the interrelationship of ecological, socio-political and economic changes in urban environments and the policy implications of these developments. The platform has **three thematic focus areas:** ecosystem services and biodiversity; urban growth and economy; and, land use patterns and neighborhoods.

Network partnership base

- **The HMA-LTSER is a Finnish long-term socio-ecological research network (FinLTSER) site.**
- **The HMA-LTSER research site** is managed by a site manager from the **University of Helsinki.** Its partner network comprises the University of Helsinki, Helsinki University of Technology, Cities of Espoo, Helsinki, Lahti, and Vantaa, Helsinki Metropolitan Area Council (YTV), Vesijarvi Foundation, the Association of Finnish Local and Regional Authorities (Kuntaliitto), and other local and regional public bodies in the HMA.

Finance

- Funding from **Academy of Finland, Maj and Thor Nessling Foundation, China Scholarship Council, Smart & Clean Foundation, Helsinki-Uusimaa Regional Council, Kone Foundation, Jenny and Antti Wihuri Foundation, Paljat-Hame Regional Fund, Societas pro Flora et Fauna Fennica.**

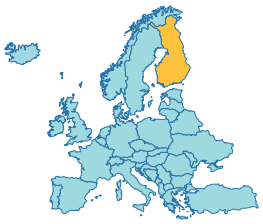
Projects

- **The City of Lahti** is the pilot ground where the aim is to study changes in land use, socio-economic development, and environmental outputs (e.g. those measured in urban run-off waters, soil and biodiversity) in selected urban areas representing different patterns and densities of land use.

OPEN-AIR LIVING LAB – LAKE PURUVESI (FINLAND)

FINLAND

AGRI • ECOSYSTEM



- **Project period**: 2018-2022
- **Total budget**: EUR 14 696 502
- **EU funding**: EUR 12 257 343
- **Funding**: EU Framework Programme for Research and Innovation H2020.
- **Project Coordinator**: Alma Mater Studiorum – Universita di Bologna
- **Multi-stakeholder involvement**: Companies, water technology centers, water authorities, municipalities, public research organizations.

OPEN-AIR LIVING LAB – LAKE PURUVESI

Geographical scale	Territory (rural- and regional-levels)
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Public-private partnership-driven
Technology development phase supported by living lab	Concept development Adoption deployment
Maturity level of living lab	Level 1.5
Living lab service offerings	Technology innovation support Support for innovation management process
Strategic Interest Water Europe Clusters	Hybrid Grey-Green infrastructure
Sustainability of living lab	Yes

Open air living labs

- **Location**: Lake Puruvesi, Finland
- **Hydro-meteorological risks**: Flood
- **Existing NBS**: Green, blue/grey/hybrid
- **Intended NBS**: Green, blue/grey/hybrid
- **Network partnership base**: Statuary authorities, local government, residents, land owners/managers, business, cultural associations
- **Innovation**: Monitoring/modeling, market development
- **Economic assets**: Tourism, recreation, biodiversity, manufacturing industries, agriculture/fishery, cultural heritage
- **Links to EU initiatives**: Natura 2000, WFD, EU-LIFE, other projects
- **Major strategies to maximize impact**: Replication, dissemination, exploitation, capacity building.

FRANCE

Website: https://www.lit-gca.com/
Contact info: https://www.lit-gca.com/contactez-nous/

LABORATOIRE INNOVATION TERRITORIAL (LIT) GRANDES CULTURES EN AUVERGNE

URBAN • ECOSYSTEM

- Located in **Auvergne, France.**
- Founded in **November 2018.**
- **Organizational Coordinator:** Céréales Vallée, Cooperative Limagrain, Inra, Istea, la Chambre d'Agriculture Auvergne-Rhône-Alpes, VetAgro Sup, ARVALIS-Institut du végétal
- **Multi-stakeholder involvement:** citizens, clusters, research centers, local government, and associations

LABORATOIRE INNOVATION TERRITORIAL

Geographical scale	Sub-regional
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Pilot implementation Adoption deployment
Maturity level of living lab	Level 2.5
Living lab service offerings	Living lab methods User development methods Networking, Need finding Pilot and innovation environment
Strategic Interest Water Europe Clusters	Value of Water Value in Water
Sustainability of living lab	Yes

Objectives

- **By applying living lab innovation method to the field of agriculture, enhance** citizen involvement in the creation of products and services, co-creation and experimentation in real conditions, and collaboration opportunities with users, researchers, public institutions, and businesses.

Network partnership base

- The **Laboratoire Innovation Territorial (LIT) grandes cultures en Auvergne** was created by **Céréales Vallée, Cooperative Limagrain, Inra, Istea, la Chambre d'Agriculture Auvergne-Rhône-Alpes, VetAgro Sup, ARVALIS-Institut du végétal.**
- The **LIT** federates a **network of actors** within the fields of agronomy, precision farming, environmental data mining, agro-ecology, namely 3rd INRA Center in France, Agronomic Campus of VetAgro Sup, the competitiveness clusters (Cereals Valley and Terralia), 3 agronomic platforms, Minalogic Competitiveness cluster, Laboratory of excellence Imobs3, Agrotechnopole, the ViaMeca competitiveness cluster, and Environmental Research Federation of CNRS.

Finance

- The **LIT** regularly organizes events to involve the citizens of the territory and creates synergies with **the Acadie Lab (Canadian living lab)**, which aims to restore the agro-ecosystems of the Acadie River watershed in Quebec. Furthermore, the LIT created collaborations with **PA4All (Serbia), AgroLiving Lab (Finland), and WirelessInfo Living Lab (Czech Republic).**

FRANCE

Website: http://www.ecolab.omp.eu/bvea
Contact info: Jean-Luc Probst (CNRS senior scientist, Director of ECOLAB) (jean-luc.probst@ensal.fr) (033 05 34 32 39)

OZCAR – RI AURADE EXPERIMENTAL CATCHMENT

URBAN • ECOSYSTEM

- Located in **Aurade, Midi-Pyrenees**
- **Project initiator:** AZF-Grande-Paroisse
- **Set up in 1982.**
- **Organizational Coordinator:** ECOLAB (since 2000)
- **Multi-stakeholder involvement:** Research centers, farmer associations, and companies

ENERGY & WATER

Geographical scale	City
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Adoption deploinment Concept development Pilot implementation and testing
Maturity level of living lab	Level 2
Living lab service offerings	Data collection, Pilot project Product co-design and prototyping Networking
Strategic Interest Water Europe Clusters	Value of Water Value in Water Smart Water Treatment
Sustainability of living lab	Yes

Objectives

- **Conducting** applied research to understand nitrate and phosphate concentrations in the stream in order to reduce the losses of N and P from mineral fertilizer application.

Network partnership base

- The **Aurade Experimental Catchment** is an international field site of the Critical Zone Exploration Network (CZEN), e.g. a field site of the **French Research Infrastructure OZCAR and it is a site of the French LTSER ZA PYGAR 'Zone Atelier Pyrenees-Garonne' and a regional platform of Research and Innovation Midi Pyrénées. Its partner network comprises CESBIO, GEODE, CERTOP, EDB, and ADBX, REBX/CEMAGREF de Cestas, AAA, and GPN Agriculture.**

Finance

- The **OZCAR – RI Aurade Experimental Catchment site** is managed by the ECOLAB (Functional ecology and Environment Laboratory), of the CNRS. The ECOLAB is in charge of the hydrochemical survey within the framework of an agreement signed with the **local farmer association GAGT.**

TERRE & CITE, PLATEAU SACLAY

FRANCE

Website: https://terreetcite.org/
Contact info: https://terreetcite.org/contact/

AGRI • URBAN • ECOSYSTEM

- Located on the **Plateau de Saclay**
- **Organizational Coordinator**: Terre & Cite
- Founded in **November 2018**.
- **Multi-stakeholder involvement**: Entrepreneurs/farmers, associations, civil society, and territorial collectives

TERRE & CITÉ

Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based – living lab as platform and transformative agent Individual project-based – living lab as project
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation
Maturity level of living lab	Level 2
Living lab service offerings	Living lab methods User development methods Networking, Need finding Pilot and innovation environment
Strategic Interest Water Europe Clusters	Hybrid Grey-Green Infrastructure, Value in Water
Sustainability of living lab	Yes

Objectives

- **Promote and develop** high-quality agricultural practices on the Plateau de Saclay and its valleys, while preserving and enhancing the natural heritage associated with the Plateau de Saclay and maintaining the balance between rural and urban areas.

Network partnership base

- **Terre & Cité** is an association that is located on the Plateau de Saclay, in the south-west of Paris.
- The Association is managed by its **Board of Director**, representing entrepreneurs/farmers, associations, civil society, and territorial collectives.
- The organization has a **strong partnership network**. Some of the organisations that the Association collaborates are as follows: Caisse des Dépôts, Agence de l'Environment et de la Maitrise de l'Energie (Direction Régionale Ile-de-France), Ministry of Food, Agriculture, and Forestry, Ile-de-France Région, Agence des Espaces Verts, INRA Ile-de-France, Groupe d'expertise et de conseil intergouvernemental sur l'évolution du climat, University of Paris-Saclay, Department of Essonne, Paris Saclay Urban Community. Furthermore, the organization is a partner of the CAUE 91.

Projects

- Organization of annual participatory forums
- **Regional Research and Innovation Projects (2016-2020)**: PSDR AGRIGE, PSDR PROLEG, PSDR DYNAMICS, Map of Soils, ORACLE.
- **Projects related to environment and natural/cultural/built heritage protection**: Planting trees and hedges with the agricultural establishment TECOMAH, development of the Landscape Photographic Observatories (OPP).
- **Support actions in the field of agri-food projects**: Establishment of a slaughterhouse on the farm of Charles Monville; the creation of a bakery on the Vandame farm; development of production capacity of the Viltai dairy farm; and, organization of a crowdfunding campaign for the honey farm of Bel Air.

DREAM Eau & Milieux FRENCH COMPETITIVENESS CLUSTER

FRANCE

Website: http://www.poledream.org/
Contact info: http://www.poledream.org/contact/

AGRI • ECOSYSTEM

- Located in **Orléans**.
- **Project initiator**: Multiple
- Founded in **2010**
- **Multi-stakeholder involvement**: citizens, clusters, research centers, local government, and associations

DREAM EAU & MILIEUX

Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based – living lab as platform Individual project-based – living lab as project
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Pilot implementation Adoption deployment
Maturity level of living lab	Level 2.5
Living lab service offerings	Networking Pilot and innovation environment Project preparation services Prototype testing
Strategic Interest Water Europe Clusters	Value in Water, Value of Water Water Treatment
Sustainability of living lab	Yes

Objectives

- **Promoting** collaborative R&D projects in the field of environmental technologies metrologies for water and environment.

Network partnership base

- **DREAM Eau & Milieux** is the **French competitiveness cluster for the Water and Environment sector**. Although it is located in the region of **Central-Val-de-Loi**re, it also operates throughout the Loire-Bretagne basin. The cluster has more than 90 companies. At national scale, following the merger with the other two national centres (AQUA-VALLEY and HYDREOS), the DREAM Eau & Milieux cluster increased its membership outreach; whereas, while being part of the **France Water Team**, the DREAM Eau & Milieux has an international impact in the water sector.

Finance

- Membership fee, external RDI funding (from various funding agencies), and national government funding.

Projects

- Please consult the **catalogue of member projects** supported by the **DREAM Eau & Milieux** (link).

FRANCE

Website: https://www.plateformes-pivots.eu/
Contact info: http://www.poledream.org/contact/

PLATFORMS FOR REMEDIATION AND INNOVATION IN ENVIRONMENTAL METROLOGY (PRIME)

URBAN • INDUSTRIAL

- Located in **Orléans**.
- **Organizational Coordinator**: (BRGM) French Geological Survey
- Founded in **2010**
- **Multi-stakeholder involvement**: citizens, clusters, research centers, local government, and associations

PRIME

Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based – living lab as platform Individual project-based – living lab as project
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Pilot implementation Adoption deployment
Maturity level of living lab	Level 3
Living lab service offerings	Networking Pilot and innovation environment Project preparation services Prototype testing
Strategic Interest Water Europe Clusters	Value in Water, Value of Water Water Treatment
Sustainability of living lab	Yes

Objectives

- **Promoting** applied research in the fields of environmental metrology, including fate and treatment of pollutants (pesticides, nitrates, arsenic, emerging pollutants) in the subsoil, retention of chemical elements by clay barriers, stability of waste materials affected by weathering.

Network partnership base

- The network partners of the PRIME are as follows: **CNRS, INRA, Universite d' Orléans, AnteaGroup, Region Centre-Val de Loire, Ministere de l'Enseignment Superieur et de la Recherche, Le Studium (Loire Valley – Institute for Advanced Studies), DREAM Eau & Milieux.**

Finance

- The PRIME platform has been initiated by the **French Geological Survey (BRGM)** in the context of its PIVOTS Programme (platforms for innovation, development and optimization of environmental technologies). It is one of the six public-private research platforms in the Centre-Val de Loire Region.

Projects

- **The PRIME test facility** offers experimental pilots of various sizes and constituents materials (glass, steel, plastic) for developing and testing tools and processes in the field of water monitoring and water treatment for organic micropollutants and trace elements. The test facility has the equipment to conduct experiments at the centimetre to decimetre scale (reactors and columns) through to the scale of a metre or more (columns and tanks).
- **Some projects** include the simulation of underground water circulation to test (e.g. passive sensors, samplers); migration and fate of contaminants through fragmented or consolidated (rocks) solid matrices under unsaturated, saturated conditions, and implementation and validation of remediation tools and processes at different scales up to the industrial pilot

ZONE ATELIERS, CNRS INSTITUTE FOR ECOLOGY AND ENVIRONMENT (INEE)

FRANCE

Website: https://www.cnrs.fr/en/institutes/inee-ecology-environment.html

AGRI • ECOSYSTEM

- Located in **Bassin du Rhône, Mosenne, Loire**.
- **Organizational Coordinator**: CNRS Institute for Ecology and Environment (INEE)
- Founded in **November 2001**.
- **Multi-stakeholder involvement**: citizens, research centers, universities, local government, and associations

ZONE ATELIERS

Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based – living lab as platform and transformative agent Individual project-based – living lab as project
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation
Maturity level of living lab	Level 2.5
Living lab service offerings	Living lab methods User development methods Networking, Need finding Pilot and innovation environment
Strategic Interest Water Europe Clusters	Value of Water Value in Water
Sustainability of living lab	Yes

Objectives

- **Observe, experiment, and model** the past and present, in order to understand how ecosystems and anthroposystems work and predict their evolution by using a number of research instruments: ecotrons, ecological research stations, long-term socio-ecological research sites (Zones ateliers), Human-Environment Observatories, and global ecology databases. The research areas of INEE are: biodiversity, evolution, adaptation, human impact on the environment, ecosystems' feedback on global change, coastal and marine environments (interactions and processes), functional ecology, analysis and management of ecosystem services.

Network partnership base

- The **CNRS Institute for Ecology and Environment (INEE)** established Zone Ateliers in 2001.
- The **Zone Atelier Bassin du Rhône (ZABR)** has a strong partner network, comprising Agence de l'Eau Rhône Mediterranee Corse, Grand Lyon, Région Occitaine, ARC, EDF, and LTER Europe. The ZABR is based at Campus Lyontech la Doua. Project portfolio: link (Website: http://www.graie.org/zabr/index.htm, Contact info: 04 72 43 61 61)
- The **Zone Atelier Loire** observes the hydrosystem of the region, including its watershed dynamics and the co-evolution of Loire's hydrosystem and local society. The scientific management of the Zone is managed by a steering committee, representing INSA-Loire Valley Center, CNAM, and University of Angers. The ZAL is a member of eLTER and iLTER networks. Project portfolio: link (Website: http://www.za-loire.org/?lang=fr, Contact info: http://www.za-loire.org/spip.php?page=auteur&id_auteur=1&lang=fr)
- The **Zone Atelier Mosenne**, managed by a scientific community (CNRS, INRA, ANSES, and University of Lorraine) develops solutions for the protection of water resources in the region of Lorraine. Project portfolio: link (Website: https://zam.univ-lorraine.fr/, Contact info: Sylvie Dousset, LIEC, University of Lorraine, sylvie.dousset@univ-Lorraine.fr, +33 0 3725212)

LTSER ZONE ATELIER ENVIRONMENTALE URBAINE (ZAEU) (STRASBOURG)

FRANCE

Website: https://zaeu-strasbourg.eu/
Contact info: https://zaeu-strasbourg.eu/contact/

URBAN • ECOSYSTEM

- Located in **Strasbourg, France**
- Founded in **2010**.
- **Organizational Coordinator**: CNRS Institute for Ecology and Environment (INEE)
- **Multi-stakeholder involvement**: Private companies, research and training organisations, territorial organisations.

LIVING WATER LAB

Geographical scale	City
Value creation type	Mission-oriented ecosystem-based – living lab as platform and transformative agent Individual project-based – living lab as project
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation
Maturity level of living lab	Level 2
Living lab service offerings	Living lab methods User development methods Need finding Pilot and innovation environment
Strategic Interest Water Europe Clusters	Hybrid Grey-Green Infrastructure, Value in Water, Value of Water
Sustainability of living lab	Yes

Objectives

- **Define** how to facilitate an harmonious development according to the city needs without badly impacting the natural and agricultural systems around. The objectives of the Urban Environmental Workshop Zone are to deepen the knowledge collected in the Alsatian territory and to develop actions to strengthen their acquisition, analysis, modelling and representation in order to understand the effects of the urbanization.

Network partnership base

- The **CNRS Institute for Ecology and Environment (INEE)** established Zone Ateliers in **2001**. The **Eurometropole of Strasbourg** is a close partner of the ZAEU: local authorities participate to the research experimentations. Six working groups are dealing with natural systems in order to better understand the urban ecosystem (biodiversity, hydrology, air and climate, urban metabolism) and the socio system (social and economic dimensions of the society and the individuals, groups behaviour and values, politics strategies).
- The **ZAEU Strasbourg** has two experimental sites: **Ile du Rorhschollen, Ostwaldergraben**. Furthermore, it has a solid research network comprising 13 laboratories: BETA-UMR7522, DynamE – UMR 7367, E3S 0 EA1342, ICUBE – UMR 7357, AMUP, IPHC – DEPE – Radiochimie, GESTE, CAMB – UMR 7199, GMGM – UMR 7156, LHyGes – UMR 7517, ICPEES – UMR 7515, and LIVE-UMR 7362.

PLATEFROME-EAUX, UNIVERSITE DE POITIERS

FRANCE

Website: http://www.univ-poitiers.fr/recherche/plateformes-technologiques/plateforme-eaux/plateforme-eaux-818421.kjsp
Contact info: Bertrand Gombert (Bertrand.gombert@univ-poitiers.fr) (+33 05 49 36 62 77)

URBAN • INDUSTRIAL

- Located at the Universite de Poitiers
- Organizational Coordinator: Universite de Poitiers
- Multi-stakeholder involvement: Utility companies, research institutes, universities, local authorities.

PLATEFORME-EAUX

Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based – living lab as platform and transformative agent Individual project-based – living lab as project
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation
Maturity level of living lab	Level 2.5
Living lab service offerings	Living lab methods User development methods Need finding, Networking Pilot and innovation environment
Strategic Interest Water Europe Clusters	Grey-Green Infrastructure, Value in Water, Value of Water
Sustainability of living lab	Yes

Objectives

- Develop a well-functioning technology platform, allowing pilot-scale developments in the following field: treatment of water intended for human consumption; decontamination of industrial effluents before discharge or for reuse; and, networked water distribution.

Network partnership base

- The Plateforme-Eaux offers testing equipment and access to the equipment of the UMR CNRS Universite Poitiers allowing 7285m pilot-scale development in the field of water treatment (e.g. water treatment, decontamination of industrial effluents, and networked water distribution). The testing equipment includes: equipment for studying the treatment of depollution by oxidation (photolysis, photocatalysis, Fenton, photo-Fenton, ozonation, oxidation, ionization); equipment for adsorption depollution studies, equipment for biofilms treatment studies, equipment for water membrane treatment studies, and access to the analytical equipment of the 'Waters, Organic Chemistry, Health' team of the IC2MP Chemistry Institut.

Projects

- The Plateforme-Eaux offers the following services: training in analytical techniques; study of the nature of membrane clogging; study of the control of the quality of rainwater by solar photocatalysis; study of the influence of car wash waxes for the recycling of vehicle washing plant effluents; support for the implementation of water treatment tests by catalytic ozonation for the depollution of industrial effluents; industrial wastewater treatment tests of different types; realization of tests on a hydraulic bench; and, validation of a biofilm development measurement sensor.
- The platform has developed collaborative projects with BKG, CRITT Chemistry-Industry-Environment, EVHeO, RESE, Technavox, Veolia, and Watercycle.

ASSOCIATION RECHERCHE COLLECTIVITES DANS LE DOMAINE DE L'EAU

FRANCE

Website: http://www.arceau-idf.fr/
Contact info: info@arceau-idf.fr

URBAN • ECOSYSTEM

- Located in **Paris, France**
- **Organizational Coordinator** : Eau de Paris, EPTB Seine Grands Lacs, CD 93, CD 94, SIAAP, Syndicat Marne Vive, and Ville de Paris
- **Multi-stakeholder involvement**: Local authorities, Service Practitioners, and Research Laboratories

ARCEAU IdF

Geographical scale	City
Value creation type	Mission-oriented ecosystem-based – living lab as platform and transformative agent Individual project-based – living lab as project
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation
Maturity level of living lab	Level 2.5
Living lab service offerings	Living lab methods User development methods Need finding, Networking Pilot and innovation environment
Strategic Interest Water Europe Clusters	Grey-Green Infrastructure, Value in Water, Value of Water
Sustainability of living lab	Yes

Objectives

- **Valorising** experimental research and innovation in the fields of watershed management, rainwater pollution, and land-use planning.

Network partnership base

- In **2013 the Association Recherche Collectivités dans le domaine de l'EAU (ARCEAU IdF)** was created as non-profit organisation, by local authorities, service practitioners, and research laboratories in the region of Ile-de-Paris. Its **founding members are: Eau de Paris, EPTB Seine Grands Lacs, CD 93, CD 94, SIAAP, Syndicat Marne Vive, and Ville de Paris**. It has two founding partners: CD 92 and MGP. The Association has a Board of Directors, Advisory Board, and an office. The organizations who provide managerial support in the context of this organisational structure are as follows: ARCEAU IdF, Ville de Paris, CEREMA, SIAAP, ARCEAU-IdF, SEPIA Conseils, Agence ATM, CNRS, LEESU, IRSTEA, LADYSS, AgroParisTech, ASTEE, EPTB Seine Grands Lacs.

National projects

- Knowledge management of the PIREN-Seine Research program (Interdisciplinary Research Program on Water and Environment in the Seine basin); Knowledge management of the Cosmet'eau Research project (Changes in the Personal Care Product Consumption Practices: from Whistle-blowers to Impacts on Aquatic Environments); VALOSHS knowledge management project (Knowledge Management of the Results Produced by Social Sciences and Humanities Teams on Urban Micropollutants in Aquatic Environments); and, Communication of the MOCOPEE project (Modelling, Control and Optimization of the Wastewater Treatment Processes).

International Projects

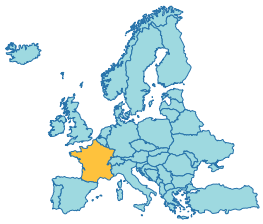
- ARCEAU-IdF is involved in the creation of a Megacities Alliance on Water and Climate, in partnership with UNESCO-IHP, SIAAP, ICLEI, and with the help of the Global Alliances for Water and Climate (GAfWaC), the Metropolis of Greater Paris and the French Ministry of Ecology and Solidarity based Transition.

AQUA VALLEY FRENCH COMPETITIVENESS CLUSTER

FRANCE

Website: http://www.pole-eau.com/
Contact info: Caroline ZNIDAH (administration@aqua-valley.com, +32 04 34 88 34 43)

URBAN • AGRI • ECOSYSTEM



- Located in **Montpellier, France**.
- **Organizational Coordinator**: Aqua Valley
- **Multi-stakeholder involvement**: Local authorities, Service Practitioners, Research Laboratories, Water Companies

ARCEAU IdF

Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based – living lab as platform and transformative agent Individual project-based – living lab as project
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation
Maturity level of living lab	Level 3
Living lab service offerings	Living lab methods User development methods Networking, Need finding Pilot and innovation environment
Strategic Interest Water Europe Clusters	Grey-Green Infrastructure, Value in Water, Value of Water
Sustainability of living lab	Yes

Objectives

- **Identify and mobilize** water resources, concerted management of resources and uses, and reuse of water from all sources.
- **Increase** the competitiveness of its member companies by providing access to these new markets and promoting their international development.

Network partnership base

- The **Aqua-Valley competitiveness cluste**r federates a network of 250 members mainly located in the regions of **Occitaine, Pyrenes-Mediterranee and region Sud**, Provence-Alpes-Cote d'Azur, The Aqua-Valley is one of the co-founders of the 'France Water Team', which is the network of 3 water competitiveness clusters and regional clusters.
- France Water Team is a network gathering around 450 French water companies and research institutions with the aim of identifying potential partners and projects; setting up collaboration on specific RDI projects; and finding the relevant product and service for your project.

Finance

- Membership fee, external RDI funding (from various funding agencies), and national government funding.

GERMANY

Website: https://www.geo.fu-berlin.de/en/v/iwm-network/index.html
Contact info: Dr. Stefan Thiemann (IWM Expert GmbH) (Stefan.Thiemann@iwm-expert.eu) (+49 0831 61057840

FREI UNIVERSITAT BERLIN, DEPARTMENT OF EARTH SCIENCES, INTEGRATED WATERSHED MANAGEMENT NETWORK

ECOSYSTEM

- Located in **Berlin, Germany**.
- **Organizational Coordinator**: University of Siegen and Frei Universitat Berlin.
- **Founded in 2004**.
- **Multi-stakeholder involvement**: Higher education institutions and water companies

WATERSHED MANAGEMENT NETWORK

Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based – living lab as platform and transformative agent Individual project-based – living lab as project
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation
Maturity level of living lab	Level 2.5
Living lab service offerings	Project development services User development methods Need finding, Networking Pilot and innovation environment
Strategic Interest Water Europe Clusters	Value in Water Value of Water
Sustainability of living lab	Yes

Objectives

- **Develop** capacity-building efforts (at academic, institutional, and local levels) for integrated watershed management.
- **Promote** applied research to support the ongoing transformation of water sector.

Network partnership base

- The **Integrated Watershed Management Network was established b the University of Siegen and Freie Universitat Berlin** with the aim of developing and implementing a region master's programme 'Integrated Watershed Management' at all partner universities in Eastern Africa: Kenyatta University (Nairobi, Kenya), University of Dar es Salaam (Dar es Salaam, Tanzania), Makere University (Kampala, Uganda), Sokoine University of Agriculture (Morogoro, Tanzania), Arba Minch University (Arba Minch, Ethiopia). Today, the network is a consortium of higher education institutions and companies that are located in Asia and Africa.

Finance

- Funding from **DAAD**.

Projects

- The **Integrated Watershed Management Network** has living lab projects in Africa and Asia, e.g. Krom Antoines catchment (South Africa), Thirirka catchment (Kenya), Upper Mefou sub-catchment (Cameroon), Manafwa sub-catchment (Uganda), and Ukok river catchment (Kyrgyzstan).

GERMAN WATER PARTNERSHIP

GERMANY

Website: https://www.germanwaterpartnership.de/en/home/index.htm
Contact info: +49 30 300199-1220 (info@germanwaterpartnership.de)

URBAN • AGRI • INDUSTRY • ECOSYSTEM

- Located in **Berlin, Germany**.
- **Organizational Coordinator**: German Water Partnership
- **Multi-stakeholder involvement**: Network of trade associations, public companies from the water sector, and institutions

GERMAN WATER PARTNERSHIP

Geographical scale	Territory (sub-regional level) Cross-territory (network-level)
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Need finding and opportunity identification
Maturity level of living lab	Level 1.5
Living lab service offerings	User development methods Networking, Need finding Pilot and innovatioingn environment
Strategic Interest Water Europe Clusters	Value of Water Value in Water
Sustainability of living lab	Yes

Objectives

- **Strengthen** the position of German water industry and research in international markets.

Network partnership base

- The **German Water Partnership** is a network that brings public companies from the water sector, trade associations, and institutions. It builds on a three-pillar principle of partnership between local and German water management companies, regional capacity building and resource-efficient water management technology. **The network is managed by the governing body, in cooperation with the board of directors, which consists of 15 people**.
- It has more than **350 members**, including international corporations such as **Siemens and Merck and scientific institutions such as the Institute for Urban Water Management of the Technical University of Braunschweig**.
- **The initiative is supported by the five federal ministries:** Ministry of Environment, Ministry of Research, Ministry of Development, Ministry of Business, and the Foreign Office. The German Water Partnership has six working groups: operation and education, financing, water management, innovation and scientific cooperation, water and energy, and water 4.0.

Finance

- **Cooperation agreements** (e.g. German Society for International Cooperation, Russian Society for Water and the European Water Partnership).

Projects

- **The German Water Partnership** has implemented many projects in the developing countries, e.g. development of a sanitary water supply network in the Zaatari refugee camp, solar-powered drinking water supply for a hospital in the Gambia, and development of sustainable structures at a Georgian water utility.

GERMAN WATER CENTRE

GERMANY

Website: https://www.tzw.de
Contact info: http://www.tzw.de/kontakt/
(+49 721 9678-0)

URBAN • AGRI • INDUSTRY • ECOSYSTEM

- Located in **Karlsruhe, Germany.**
- **Organizational Coordinator**: DVGW e.v. (German Gas and Waterworks Association)
- Founded in **1859**.
- **Multi-stakeholder involvement**: Water utilities, companies, public authorities and universities

GERMAN WATER CENTRE

Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based – living lab as platform and transformative agent Individual project-based – living lab as project
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation
Maturity level of living lab	Level 2.5
Living lab service offerings	Project development services User development methods Need finding, Networking Pilot and innovation environment
Strategic Interest Water Europe Clusters	Value in Water Value of Water
Sustainability of living lab	Yes

Objectives

- **Performing** close-to-application research and **providing** scientific advice in the fields of water chemistry, water technology, microbiology, site management, groundwater and soil, material testing, corrosion, and distribution systems.

Network partnership base

- **TZW: DVGW-Technologiezentrum Wasser – German Water Centre is part of DVGW** e.v. (German Gas and Waterworks Association). It is a non-profit independent organization, with more than 150 employees.
- **The TZW was established from the DVGW-Research Institute at the Engler-Bunte Institute of the University of Karlsruhe in 199**4. The TZW is located in Karlsruhe in the southern part of Germany. The Heinrich-Sontheimer-Laboratory and the department of material testing are situated in a waterworks of the Stadtwerke Karlsruhe, a local supplier of drinking water.
- **TZW cooperates with water** utilities, companies, public authorities, and universities. TZW develops solutions for all areas of national and international water management issues. The German Water Centre is a central partner of international associations in the catchment areas of the rivers Rhine, Danube, and Elbe and a member of the Global Water Research Coalition (GWRC).

Finance

- Subsidy from the **DVGW, German Ministry of Research and Education, the European Union**

Projects

- The **TZW has a project portfolio** in the fields of resource management, environmental biotechnology, chemical analysis, microbiology, water treatment, assessment, distribution network, household installation, material, management, waste water and water cycle.

OPEN-AIR LIVING LAB – UNESCO BIOSPHERE RESERVE ELBE VALLEY, GERMANY

GERMANY

AGRI • ECOSYSTEM

- **Project period**: 2018-2022
- **Total budget**: EUR 14 696 502
- **EU funding**: EUR 12 257 343
- **Funding**: EU Framework Programme for Research and Innovation H2020. Project Coordinator: Alma Mater Studiorum – Universita di Bologna
- **Multi-stakeholder involvement**: Companies, water technology centers, water authorities, municipalities, public research organizations.

ELBE VALLEY

Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based – living lab as platform and transformative agent Individual project-based – living lab as project
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Adoption deployment
Maturity level of living lab	Level 1.5
Living lab service offerings	Technology innovation support Support for innovation management process
Strategic Interest Water Europe Clusters	Hybrid Grey-Green Infrastructure,
Sustainability of living lab	Yes

- **Location: UNESCO Biosphere Reserve Elbe Valley, Germany**
- **Hydro-meteorological risks: Flood**
- **Existing NBS: Green**
- **Intended NBS: Green, blue/grey/hybrid**
- **Network partnership base: Statuary authorities, local government, land owners/managers**
- **Innovation: Co-design, deployment, co-benefit**
- **Economic assets: Biodiversity, agriculture/fishery, cultural heritage**
- **Links to EU initiatives: Natura 2000, WFD, EU-LIFE, other projects**
- **Major strategies to maximize impact: Upscaling, replication, dissemination**

OPEN-AIR LIVING LAB – SPERCHEIOS RIVER

GREECE

AGRI • ECOSYSTEM

- **Project period**: 2018-2022
- **Total budget**: EUR 14 696 502
- **EU funding**: EUR 12 257 343
- **Funding**: EU Framework Programme for Research and Innovation H2020.
- **Project Coordinator**: Alma Mater Studiorum – Universita di Bologna
- **Multi-stakeholder involvement**: Companies, water technology centers, water authorities, municipalities, public research organizations.

OPEN-AIR LIVING LAB

- **Location: Spercheios River, Greece**
- **Hydro-meteorological risks: Flood, drought**
- **Existing NBS: Unsystematic**
- **Intended NBS: Green, blue/grey/hybrid**
- **Network partnership base: Statuary authorities, local government, resident (land owners/managers), business, research institutions, civil protection and cultural associations**
- **Innovation: Deployment, monitoring/modeling, KPI, co-benefit**
- **Economic assets: Tourism, recreation, biodiversity, manufacturing industries, agriculture/fishery, cultural heritage**
- **Links to EU initiatives: Natura 2000**
- **Major strategies to maximize impact: upscaling, replication, dissemination, exploitation, and shifting policies**

OPEN AIR LIVING LAB - SPERCHEIOS RIVER

Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based – living lab as platform Individual project-based – living lab as project
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Adoption deployment (demo cases)
Maturity level of living lab	Level 1.5
Living lab service offerings	Technology innovation support Support for innovation management process
Strategic Interest Water Europe Clusters	Hybrid grey-green infrastructure
Sustainability of living lab	Yes

ACTION LAB WEXFORD COUNTY

IRELAND

Website: https://www.teagasc.ie/
Contact info: info@teagasc.ie

AGRI • ECOSYSTEM

- Located in the **south-east of Ireland**.
- **Organizational Coordinator**: Teagasc (Agricultural Catchment Programme)
- **Project duration**: 2017-2019
- **Multi-stakeholder involvement**: local communities, municipalities, universities, local waterworks

Objectives

- In the context of the **H2020 Project 'WaterProject'**, the consortium (VITO, ILVO, EWP, EFBW, CSIC, ECOLOGIC, GEUS, INAGRO, PGI, Teagasc, Universita Cattolica, De WaterGroep, ARPAE, Parc Agrari Baix Llobregat, Aigues de Barcelona, KU, ITP, ZUT, Glanbia, Wexford County Council, Ulster University, Agricultural Catchments Programme, Lambo Lidgjord, Skive Commune, and VMM), aims to develop new solutions and tools in 7 **action labs** where water pollution from intensive agriculture may affect the quality of the water from drinking water production. The objective of action lab is to assess the efficacy, uptake, and implementation of mitigation measures to protect water resources in a rural agricultural environment.

Network partnership base

- In this project, the **Action Lab Wexford County** was initiated by the Geological Survey of Denmark and Greenland. The Action Lab Wexford County, located in Wexford County, collaborates with the Teagasc (Agricultural Catchment Programme), Ulster University, Wexford County Council, and Glanbia Ingredients Ireland.
- The **Action Lab Wexford County**, located in the south-east of Ireland, is focused on farmland within County Wexford. The catchments are part of the River Basin District Management Plan Ireland and belong to the Owenavorragh and Slaney River. In this area, the drinking water resources are threatened by nutrients, pesticide residues, and microbials and pharmaceuticals.

Financial

- External funding and maintained by the Teagasc (Agricultural Catchment Programme).

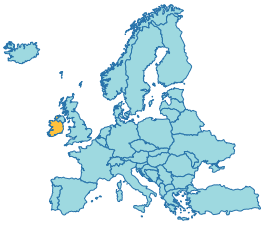
ACTION LAB WEXFORD COUNTY

Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based – living lab as platform Individual project-based – living lab as project
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Pilot implementation
Maturity level of living lab	Level 1.5
Living lab service offerings	Data collection Pilot project Product co-design and prototyping Networking
Strategic Interest Water Europe Clusters	Value in Water, Water treatment
Sustainability of living lab	Yes

OPEN-AIR LIVING LAB – DODDER RIVER

IRELAND

AGRI • ECOSYSTEM



- **Project period**: 2018-2022
- **Total budget**: EUR 14 696 502
- **EU funding**: EUR 12 257 343
- **Funding:** EU Framework Programme for Research and Innovation H2020.
- **Project Coordinator**: Alma Mater Studiorum – Universita di Bologna
- **Multi-stakeholder involvement**: Companies, water technology centers, water authorities, municipalities, public research organizations.

OPEN-AIR LIVING LAB – DODDER RIVER

Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based – living lab as platform Individual project-based – living lab as project
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Adoption deployment (demo cases)
Maturity level of living lab	Level 1.5
Living lab service offerings	Technology innovation support Support for innovation management process
Strategic Interest Water Europe Clusters	Hybrid grey-green infrastructure
Sustainability of living lab	Yes

OPEN-AIR LIVING LAB

- **Location: Dodder River, Ireland**
- **Hydro-meteorological risks: Flood**
- **Existing NBS: -**
- **Intended NBS: Green, blue/grey/hybrid**
- **Network partnership base: Statuary authorities, local government, land • owner/-managers, research institutions**
- **Innovation: Monitoring/modeling**
- **Economic assets: Agriculture/fishery, cultural heritage**
- **Links to EU initiatives: Other EU projects**
- **Major strategies to maximize impact: -**

OPEN-AIR LIVING LAB APULIA

ITALY

Website: www.irsa.cnr.it
Contact info: Dr. Alfieri Pollice (Alfieri.pollice@ba.irsa.cnr.it)
(+39 080 5820531)

AGRI • ECOSYSTEM

- Located in the **Apulia Region (South-Eastern Italy)**
- **Organizational Coordinator**: IRSA CNR (Dr. Alfieri Pollice)
- **Multi-stakeholder involvement**: Water utilities, companies, public authorities and higher education institutes

APULIA LIVING LAB

Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based – living lab as platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Pilot implementation Adoption deployment
Maturity level of living lab	Level 2.5
Living lab service offerings	Living lab methods Need finding Prototype co-creation and testing Pilot and innovation environment
Strategic Interest Water Europe Clusters	Value in Water, Value of Water
Sustainability of living lab	Yes

Objectives

- **Increase** water availability by promoting and integrating the adoption of alternative resources such as treated wastewater reuse; **Decrease** the competition for water during the dry season and the illegal exploitation of existing (groundwater) resources; **Contrast** the seawater intrusion into groundwater and the lowering of the water table through the infiltration of treated municipal effluents; **Explore** appropriate and sustainable governance solutions for water management for agriculture.

Network partnership base

- **IRSA CNR** (research institute), **AQP** (large regional utility), **Regional government and agencies** (Regional agency for technology and innovation, Regional environment agency, Regional agency for agriculture and irrigation), municipalities, farmers organizations, SMEs. The following municipalities in Apulia have hosted (or are hosting) water reuse activities involving their respective wastewater treatment plants: Acquaviva delle Fonti, Castellana Grotte, Noci, Stornarella (industrial site), Fasano, Trinitapoli, Cerignola, Taranto. The Apulia Living Lab offers different demo sites where reuse of treated municipal wastewater for irrigation is already applied or in preparation, with different technological and organizational settings (e.g. privately owned, participated).

Finance

- Funding from the European Commission, National and Regional projects.

Projects

- **2018-20 Regional project "ECO-LOOP** - Sustainable use of treated wastewater in agriculture".
- **2016-18 Water JPI (Waterworks2014) project "MEPROWARE** - Novel methodology for the promotion of treated wastewater reuse for Mediterranean crops improvements".
- **2013-16 EC FP7 project "DEMOWARE** - Innovation & demonstration for a competitive and innovative European water reuse sector".
- **2012-15 EC FP7 project "WATER4CROPS** – Integrating biotreated wastewater reuse and valorisation with enhanced water use efficiency (WEF) to support the Green Economy in EU and India".

LAGOON OF VENICE' LONG-TERM ECOSYSTEM RESEARCH (LTER) SITE

ITALY

Website: www.irsa.cnr.it
Contact info: Davide Tagliapietra, Researcher at the ISMAR Institute of the National Research Council and LTER 'Lagoon of Venice' Site Manager (davide.tagliapietra@ismar.cnr.it) (+39 041 2407920)

AGRI • ECOSYSTEM

- Located in the **Lagoon of Venice, Italy**
- **Organizational Coordinator**: Institute of Marine Sciences (ISMAR), National Research Council (NRC)
- Founded in **1966**.
- **Multi-stakeholder involvement**: Water utilities, local authorities, public institutes and higher education institutes

LAGOON OF VENICE LTER

Geographical scale	Sub-regional
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Pilot implementation Concept development Adoption deployment
Maturity level of living lab	Level 2.5
Living lab service offerings	Living lab methods, Need finding Prototype co-creation and testing Pilot and innovation environment
Strategic Interest Water Europe Clusters	Value in Water Value of Water
Sustainability of living lab	Yes

Objectives

- **Promote** applied research with specific focus on the following research areas: survey of physical, chemical, and hydrological environmental variables, contamination of water and sediment, ecology and distribution of phyto- and zoo-plankton, phyto- and zoo-benthos, biodiversity, and fishing.

Network partnership base

- The **Italian Long-term Ecological Research Network** includes terrestrial, freshwater, and marine ecosystems distributed throughout Italy. The Lagoon of Venice Long-term Ecosystem Research (LTER) Site applied research in the field of the ecological effects of the major pressures acting on the system, including which the input of nutrients from agricultural and urban sources, industrial activity and port (Porto Marghera, Venice Maritime Station, the commercial port in Chioggia), the release of pollutants accumulated in sediments, the intense traffic ships and smaller boats, the morphological trivialization.

Finance

- The **Lagoon of Venice** Long-term Ecosystem Research (LTER) Site has been managed by Davide Tagliapietra, Researcher at the Institute of Marine Sciences (ISMAR) Institute of the National Research Council (NRC).

'LAGO DI TOVEL' LONG-TERM ECOSYSTEM RESEARCH (LTER) SITE

ITALY

Website: www.irsa.cnr.it
Contact info: info.tovel@fmach.it

AGRI • ECOSYSTEM

- Located in the **Apulia Region (South-Eastern Italy)**
- **Organizational Coordinator**: Fondazione Edmund Mach (Centro Ricerca et Innovazione)
- Founded in **1995**.
- **Multi-stakeholder involvement**: Water utilities, companies, public authorities and higher education institutes

LAGO DI TOVEL LTER SITE

Geographical scale	Sub-regional
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Pilot implementation Adoption deployment
Maturity level of living lab	Level 3
Living lab service offerings	Living lab methods Need finding Prototype co-creation and testing Pilot and innovation environment
Strategic Interest Water Europe Clusters	Value of Water, Value in Water,
Sustainability of living lab	Yes

Objectives

- **Conduct** innovative science by sharing and interpreting high resolution sensor data in order to understand, predict, and communicate the role and response of lakes in a changing environment..

Network partnership base

- Since **1995** the Tovel lake is part of an ongoing long-term limnological study conducted by the **Fondazione E. Mach (FEM)** at S. Michele all'Adige TN, that includes temperature profiling, chemical and biological data taken at monthly intervals during the ice-free period and occasional winter sampling. FEM is well equipped for limnological field work with dinghy with electrical motor, multi-parameter probe, fluoroprobe, underwater quantum sensor, Eckman dredge, plankton nets, water sampling bottles, etc. Laboratory facilities include microscopy (bright field, phase contrast, interferential, fluorescent, inverted microscopes and stereoscopes) with image analysing software, a wet lab and a fine chemistry lab for nutrients and major ions in water as well as organics by ion chromatography and liquid chromatography-Mass Spectrometry (LC-MS).
- The '**Lago di Tovel' LTER** is also a member of **GLEON** (The Global Lake Ecological Observatory Network). Its core network partners are LTER-Europe, NETLAKE, Fondazione Edmund Mach (Centro Ricerca et Innovazione), Parco Naturale Adamello Brenta (PNAB), GLEON, Mountain Chalet Tovel, Albergo Lago Rosso, APT Val di Non, Comune di Tuenno

Finance

- Sponsored by **Cassa Rurale Tuenno Val di Non**, which is a Rural Cooperatives Credit Union.

ITALY

OPEN-AIR LIVING LAB - PO VALLEY (ITALY)

AGRI • ECOSYSTEM

- **Project period**: 2018-2022
- **Total budget**: EUR 14 696 502
- **EU funding**: EUR 12 257 343
- **Funding**: EU Framework Programme for Research and Innovation H2020.
- **Project Coordinator**: Alma Mater Studiorum – Universita di Bologna
- **Multi-stakeholder involvement**: Companies, water technology centers, water authorities, municipalities, public research organizations.

- **Location: Po Valley, Italy**
- **Hydro-meteorological risks: Flood, storm surge, and drought**
- **Existing NBS: Unsystematic**
- **Intended NBS: Green, blue/grey/hybrid**
- **Network partnership base: Statuary authorities, local government, land owners/-managers, business, research institutions, civil protection and cultural associations**
- **Innovation: Definition, co-design, deployment, monitoring/modeling, KPI, market development, co-benefit**
- **Economic assets: Tourism, recreation, biodiversity, agriculture/fishery, cultural heritage**
- **Links to EU initiatives: WFD, EU-LIFE, other projects**
- **Major strategies to maximize impact: upscaling, replication, exploitation, shifting policies**

OPEN AIR LIVING LAB – PO VALLEY

Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based – living lab as platform and transformative agent Individual project-based – living lab as project
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Adoption deployment (demo case)
Maturity level of living lab	Level 1.5
Living lab service offerings	Technology innovation support Support for innovation management process
Strategic Interest Water Europe Clusters	Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

RESERVOIR OF RIGA HYDROPOWER STATION ON THE RIVER DAUGAVA

LATVIA

Website: http://www.hydrolab.lu.lv
Contact info: Assoc. Prof. Dr. Gunta Springe, Head of Laboratory (gunta.springe@lu.lv)

AGRI • ECOSYSTEM

- Located in the **town of Salaspils**.
- Founded in **1974**.
- **Organizational Coordinator**: Laboratory of Hydrobiology (Institute of Biology, University of Latvia)
- **Multi-stakeholder involvement**: Utility companies, public authorities and higher education institutes

Objectives

- **Foster** applied research activities in the field of water and sediment chemical composition, planktic (bacteria, zooplankton, algae) and benthic (bacteria, protozoa, benthic invertebrates) communities.
- The **main research topics are**: complex hydrobiological and hydrochemical studies of rivers, lakes, and reservoirs in Latvia; biodiversity studies in the freshwater hydroecosystems; flows of nutrients, natural organic matter and pollutants and their impact on the ecosystems of Latvian freshwater.

Network partnership base

- The **Riga Hydroelectric Power Plant** was put into operation in 1974. In order to build Riga HES, a dam was constructed across the Daugava River through the middle of Doles Sala, half of which has since been flooded to make room for Riga Reservoir. The reservoir is a source of tap water for the majority of Riga residents. The power plant, operated by Latvenergo (i.e. state-owned electric utility company), is used as a compensation plant for TEC2 thermal power plant to regulate voltage in electrical networks and to compensate the power deficiencies.
- Its **collaboration networ**k includes: UL Faculty of Geography and Earth Sciences; UL, Faculty of Biology; Ministry of Environmental Protection and Regional Development, Department of Environmental Protection; Latvian Environment, Geology, and Meteorology Centre; Centre for Environmental Policy in Lithuania; EAWAG (CH); Okland University.

Finance

- **The research** site is managed by the **Laboratory of Hydrobiology**, which is a structural unit of the Institute of Biology (University of Latvia).

RESERVOIR OF RIGA HYDROPOWER

Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based – living lab as platform and transformative agent Individual project-based – living lab as project
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Pilot implementation Adoption deployment
Maturity level of living lab	Level 1.5
Living lab service offerings	Living lab methods Need finding Prototype co-creation and testing Pilot and innovation environment
Strategic Interest Water Europe Clusters	Value in Water, Value of Water
Sustainability of living lab	Yes

NETHERLANDS

Website: https://www.wetsus.nl/home
Contact info: info@wetsus.nl (+31 058 284 30 00)

WETSUS CENTER OF EXCELLENCE FOR SUSTAINABLE WATER TECHNOLOGY, WATER CAMPUS DEMONSTRATION SITES

URBAN • AGRI • INDUSTRY

- Located in **Harlingen, Leeuwarden, Glimmen, and Noardburgum in the Netherlands**.
- **Organizational Coordinator**: Delft University of Technology and Stichting Green Village.
- **Multi-stakeholder involvement**: Private organizations, public research and innovation organizations, water companies

WETSUS CoE

Geographical scale	Sub-regional
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation
Maturity level of living lab	Level 3
Living lab service offerings	Innovation programme development Prototype co-creation and testing
Strategic Interest Water Europe Clusters	Value of Water, Value in Water, Hybrid Grey-Green Infrastructure, Digital Water
Sustainability of living lab	Yes

Objectives

- **Development** of applied research and innovation programmes for the development of sustainable water treatment technology with a strong focus on five thematic areas: waste water treatment and reuse, sensoring of micro/nano pollutants, reuse of components and production of energy, new water sources, and sustainable water supply.

Network partnership base

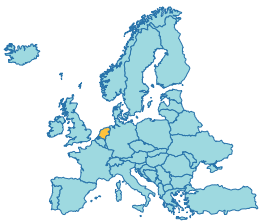
- **Water Campus has five demo sites**: Municipal waste water treatment technologies (Wetterskip Fryslan); Hospital waste water treatment technologies (Antonious Hospital); Desalination technologies (Wetsalt); and, Sensor technologies (SenTec). The Wetsalt demosite is located at a salt factory and offers testing facilities for technologies for the sustainable desalination of sea water, surface water, and waste water. Technologies can be used to generate energy from water. The Wetsalt is an initiative of Wetsus and ESCO/Frisia Zout. (Contact person: Heleen Sombekke - heleen.sombekke@wetsus.nl) At the municipal wastewater treatment plant of the city of Leeuwarden, companies can develop innovative and sustainable wastewater purification technologies. The demosite is an initiative of Water Board Fryslân (Wetterskip Fryslân) and Wetsus. The demonstration site drinking water Noardburgum of Vitens is a location to test, demonstrate, and scale-up innovative technologies in the field of (drinking) water treatment. The site was commissioned in 2011. (Contact person: Wilbert van de Ven - wilbert.vandeven@vitens.nl) SenTec is a sensor test centre with facilities to test, validate, and further develop newly developed sensors for a range of water qualities. SenTec is established at the premises of the Waterlaboratorium Noord (WLN) in Glimmen. This demonstration site was opened in 2010. (Contact person: Hilde Prummel - h.prummel@wln.nl) The demosite at the Antonius Hospital can be used for testing, demonstrating, and scaling p of new technologies for treatment of hospital wastewater. (Contact person: Heleen Sombekke - heleen.sombekke@wetsus.nl)
- Its core research network comprises **22 universities and research institutes, 81 companies, 29 platform members, 5 demonstration sites**

NETHERLANDS

Website: https://dairycampus.nl/en/Home.htm
Contact info: CJAM (Kees) de Koning, Dairy Campus Manager (+310317 483039) info@dairycampus.nl

DAIRY CAMPUS (WATER TEST NETWORK INTERREG PROJECT)

AGRI • ECOSYSTEM



- Project period: 2018-2021
- Total budget: EUR 6.05 m
- EU funding: EUR 3.63 m
- Funding: Interreg North-West Europe Programme
- Project Coordinator: Scottish Partner
- Multi-stakeholder involvement: Companies, water technology centers, water authorities, municipalities, and public research organisations

DAIRY CAMPUS

Geographical scale	Sub-regional
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Pilot implementation Adoption deployment
Maturity level of living lab	Level 3
Living lab service offerings	Innovation and development services Pilot and innovation environment Prototype testing
Strategic Interest Water Europe Clusters	Digital Water Value in Water, Value of Water Hybrid grey-green infrastructure
Sustainability of living lab	Yes

Objectives

- Dairy Campus is the national innovation and research centre for dairy in the Netherlands, part of Wageningen University. The facility has several barns with dairy cows. The testing facilities include Bio-Digester and manure storage (digested manure), manure storage, wet land for household waste water, separate storage for cleaning & disinfection water from milking parlour, 24/7 operation of the centre; main office building with offices and meeting rooms, and facilities to be used on project plan and agreement.

Network partnership base

- In the context of the Interreg Water Test Network project, under the coordination of Scottish Water, 8 organisations (James Hutton Limited, DVGW Water Technology Centre, VITO NV, Centre of Expertise Water Technology, French Geological Institute, Water Board Vallei and Veluwe, Enterprise Ireland, and Scottish Enterprise) are collaborating in the effort to establish a transnational network of testing facilities that can be used by SMEs in North-West Europe to test, demonstrate, and develop new products for the water sector. The Dairy Campus has been created on the former site of Nij Bosma Zathe. The Dairy Campus has been managed by CJAM (Kees) de Koning. The Dairy Campus comprises ten dairy houses with specific focus on: animal feed and efficient feeding; environment; manure processing; grass and soil; grazing systems; raising youngstock; precision agriculture and sensor use; housing and floors; sustainable breeding; working life; and water flows on a dairy farm. Its core partner network comprises Wageningen University, LTO Nederland, FrieslandCampina, Nordwin College, Provinsje Fryslan, van hall Larensten, University of Groningen, and Gemeente Leeuwarden.

Finance

- The Dairy Campus has its own innovation programme (2014-2022), co-financed by the collaboration 'Samenwerkingsverband Noord Nederland (SNN)'.

Projects

- Amazing Grazing 2.0
- On farm measurement of enteric methane emission
- The internet of dairy farming
- Feed Earn
- International Symposium on Dairy Cattle Nutrition 2017

WATER APPLICATION CENTRE (WATER TEST NETWORK INTERREG PROJECT)

NETHERLANDS

Website: https://www.waterapplicationcentre.com/
Contact info: Antje Hagendorf, Managing director WAC, antje.hagendorf@waterapplicatiecentrum.nl
06-12851405

URBAN • INDUSTRY

- **Project period**: 2018-2021
- **Total budget**: EUR 6.05 m
- **EU funding**: EUR 3.63 m
- **Funding**: Interreg North-West Europe Programme
- **Project Coordinator**: Scottish Partner
- **Multi-stakeholder involvement**: Companies, water technology centers, water authorities, municipalities, and public research organisations

WATER APPLICATION CENTRE

Geographical scale	City
Value creation type	Mission-oriented ecosystem-based – living lab as platform and transformative agent Individual project-based – living lab as project
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation and testing
Maturity level of living lab	Level 3
Living lab service offerings	Innovation and development services Pilot and innovation environment Prototype testing
Strategic Interest Water Europe Clusters	Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

Objectives

- The **Water Application Centre** is a fully-equipped application centre where, businesses, knowledge institutions, and other organisations can conduct experiments (or have them be performed) in the area of water technology. The **testing facilities** include: research hall with research infrastructure consisting of (technical) gasses, water, electrical equipment and standard instruments (including process meters, pumps, etc.), furnished with tables, flumes, and acid and safety cabinets, chemistry laboratory with infrastructure consisting of (technical) gasses, water, electrical equipment and standard instruments (including process meters, ICP – metal analysis, TOC, spectrophotometry, fluid chromatography, and turbidity), microbiological laboratory with standard instruments such as RT-PCR, electrophoresis, ELISA, internet, assistance from students and teachers water technology, permits, and plug and play.

Network partnership base

- In the context of the **Interreg Water Test Network project**, under the coordination of **Scottish Water, 8 organisations (James Hutton Limited, DVGW Water Technology Centre, VITO NV, Centre of Expertise Water Technology, French Geological Institute, Water Board Vallei and Veluwe, Enterprise Ireland, and Scottish Enterprise)** are collaborating in the effort to establish a transnational network of testing facilities that can be used by SMEs in North-West Europe to test, demonstrate, and develop new products for the water sector.
- The **Water Application Centre** is a collaborative partnership with the Hogeschool VHL and the Water Alliance. In the context of the partnership, Hogeschool VHL offers various educational courses in which water (technology) plays a prominent role and Water Alliance brings public and private market parties, governments and knowledge institutions together around water technology in the Netherlands. The Water Application Centre Foundation consists of a Board of Supervisors, a director and support personnel for (technical) execution and management.

Finance

- The **Water Application Centre** is co-funded by the European Regional Development Fund and by the Ministry of Economic Affairs, via the Regional 'Peaks in the Delta' Cluster.

WATERCAMPUS LEEUWARDEN

NETHERLANDS

Website: http://www.watercampus.nl
Contact info: Centre for Expertise in Water Technology, Oostergoweg 9, 8911, MA Leeuwarden
+31.58.2100919 | info@cew-leeuwarden.nl

URBAN • AGRI • INDUSTRY • ECOSYSTEM

- Located in **Leeuwarden, Netherlands.**
- Established on 1 **January 2003.**
- **Project initiator:** Non-profit partnership (Wetsus, CEW, and Water Alliance)
- **Multi-stakeholder involvement:** Companies, water technology centers, water authorities, public research organizations.

WATERCAMPUS LEEUWARDEN

Geographical scale	City
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation
Maturity level of living lab	Level 3
Living lab service offerings	Enabling facilities sharing, Support of knowledge transfer, Support for IPR,Support for access to the European and International market
Strategic Interest Water Europe Clusters	Value of Water, Value in Water, Hybrid Grey-Green Infrastructure, Digital Water
Sustainability of living lab	Yes

Objectives

- **Create** a network of European companies and universities which cooperate in water research and innovation.

Network partnership base

- Water Campus Leeuwarden, co-managed by the Wetsus, CEW, and Water Alliance, has three partners: the City of Leeuwarden, the Province of Fryslan, Centre for Innovative Expertise Water (CIV), and Water Application Centre (WAC). **200 companies are involved in the WaterCampus Leeuwarden, of which 130 are SMEs, 70 are larger companies, 20 are research organizations, universities, and technology centres, and 15 are ecosystem actors.**
- The WaterCampus Leeuwarden provides support for demonstration, testing, and pilot projects. The **living labs are a component of the open ecosystem of the WaterCampus**, which is a co-creation community for water technology, active in all the TRLs. The living labs are in close vicinity to the WaterCampus Leeuwarden, where technical expertise and labs are present. Samples can be analysed in the lab and pilots at a lower TRL and with more specific needs or IP protection can also be offered and containerized working spaces within the Water Application Center at the WaterCampus Leeuwarden.
- In terms of the **usage context of living labs**, the different usages are: drinking water (DWP), waste water treatment (WWTP), salt water (desalination, blue energy), hospital waste water (pharmaceuticals, antibiotic resistance), dairy campus (manure, nutrients). The WaterCampus Leeuwarden has **five demo sites in the province of Frysla**n and can support any TRL, TRL 1-9. Wetsus is active in TRL1-5; CEW is active in TRL 5-7, and demonstration sites – living labs are used at the highest levels. The intermediate are mostly tested in the Water Application Centre. TRL 8-9 can be supported at Living Labs.

NETHERLANDS

Website: www.vallei-veluwe.nl
Contact info: +31 55 527 2911

WASTEWATER TREATMENT & RESOURCE RECOVERY CENTRE, APELDOORN (WATER TEST NETWORK INTERREG PROJECT)

URBAN • INDUSTRY

- **Project period**: 2018-2021
- **Total budget**: EUR 6.05 m
- **EU funding**: EUR 3.63 m
- **Funding**: Interreg North-West Europe Programme
- **Project Coordinator**: Scottish Partner
- **Multi-stakeholder involvement**: Companies, water technology centers, water authorities, municipalities, and public research organisations

WWTRR APELDOORN

Geographical scale	City
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation
Maturity level of living lab	Level 3
Living lab service offerings	Innovation and development services Pilot and innovation environment Prototype testing
Strategic Interest Water Europe Clusters	Value of Water, Value in Water, Hybrid Grey-Green Infrastructure,
Sustainability of living lab	Yes

Objectives

- **At the Wastewater Treatment & Resource Recovery Centre**, SMEs can test innovative processes and technologies in the field of wastewater treatment, biogas treatment and utilization, and recovery of raw materials from wastewater. The testing facilities include: pre-treatment, aerobic treatment, clarifier, struvite reactor, demon (highly loaded de-ammonification process), thermal hydrolysis reactor, digestion (anaerobic), sludge dewatering, research room with basic laboratory equipment, basic office facilities, Internet, power, plug and play, assistance from operators, permits for communal wastewater treatment and (industrial) sludge digestion.

Network partnership base

- In the context of the **Interreg Water Test Network project**, under the coordination of Scottish Water, 8 organisations (James Hutton Limited, DVGW Water Technology Centre, VITO NV, Centre of Expertise Water Technology, French Geological Institute, Water Board Vallei and Veluwe, Enterprise Ireland, and Scottish Enterprise) are collaborating in the effort to establish a transnational network of testing facilities that can be used by SMEs in North-West Europe to test, demonstrate, and develop new products for the water sector. The Wastewater Treatment and Resource Recovery Centre has a NuReSys struvite reactor to produce fertilizer from phosphate in the sludge, and a TurboTec thermal pressure hydrolysis installation to boost the production of biogas.

Finance

- The **Wastewater Treatment & Resource Recovery Centre** was modernised by the Regional water board Vallei-Veluwe to utilise more energy and raw materials from municipal waste water. The modernisation project was realised by a consortium formed by GMB and Imtech.

NETHERLANDS

Website: https://www.livinglabfryslan.frl/
Contact info: info@livinglabfryslan.frl

NATURE INCLUSIVE LIVING LAB, FRISLAND

AGRI

- Located in
- Established in September 2016.
- Project initiator: Kening fan e Greide
- Multi-stakeholder involvement: Agricultural business sector, branch organizations, education, knowledge institutions, retail, healthcare, financial institutions and social organizations

NATURE INCLUSIVE LIVING LAB

Geographical scale	Sub-regional
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Need finding
Maturity level of living lab	Level 2
Living lab service offerings	Living Labs Methods Innovation and development services Pilot and innovation environment Prototype testing
Strategic Interest Water Europe Clusters	Digital Water Value in Water, Value of Water Hybrid grey-green infrastructure
Sustainability of living lab	Yes

Objectives

- In September 2016 the Living Lab Fryslan started as a spin-off of Kening fan e Greide, in close collaboration with various organisations and farmers. The Province of Friesland has taken the initiative to support a 'Living Lab for nature-inclusive agriculture'. The Phase 2 was introduced in October 2018. While the Phase 1 was focusing on awareness of nature-inclusive agriculture and activation of projects; the Phase 2 is focusing on finding revenue models for farmers, connecting education to the practical knowledge obtained from the project undertakings.

Network partnership base

- The Nature Inclusive Living Lab (Friesland) represents a number of stakeholders: Provinsje Fryslan, Olterterp consultation, Collective consultation, Agricultural Youth Fryslan, Frisian Environment Federation, OBN, Hogeschool Van Hall Larenstein. The Advisory Board represents stakeholders including agricultural business sector, branch organizations, education, knowledge institutions, retail, healthcare, financial institutions and social organizations.

Projects

- Birds and Prosperity; Smart Land Use; Naturally Milking 2050, Recovery models MIL at area level, Milk of the future
- The core project partners of the living lab have been the Louis Boulk Institute, CLM, Alterra, Stichting Natuurlijk melken (HVHL, WUR, Noorderlandmelk, LL), KBF (3 regions) (NFW, the Empty Middle, ELAN), FMF (Province, TBO's, LEI, WUR and others), De Skâns, LL, HVHL, EM Agriton BV.

VP DELTA FIELD LABS

NETHERLANDS

Website: https://www.vpdelta.nl/en/fieldlabs
Contact info: Marjan Krejins (m.s.kreijns@tu-delft.nl), (06 18635619)

URBAN • AGRI • INDUSTRY • ECOSYSTEM

• Located in **Hague, Rotterdam, Delft, and Dordrecht, in the Netherlands.**
• **Organizational Coordinator**: VP Delta
• **Multi-stakeholder involvement**: Companies, water technology centers, water authorities, public research organizations.

VP DELTA FIELD LABS

Geographical scale	City
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation
Maturity level of living lab	Level 3
Living lab service offerings	Enabling facilities sharing, Support of knowledge transfer, Support for IPR,Support for access to the European and International market
Strategic Interest Water Europe Clusters	Value in Water, Hybrid Grey-Green Infrastructure, Digital Water
Sustainability of living lab	Yes

• The **VP Delta (Dutch Water Innovations)** has established 10 field labs in Hague, Delft, Rotterdam, and Dordrecht, which are accessible testing environments in which start-ups and other innovative companies meet knowledge partners, potential buyers, and users.

• **Field labs are grouped into three categories**: Urban Delta, Smart Delta, and Safe Delta. There are three safe delta field labs: Flood proof Holland (for temporary flood defenses and dike sensors), Aqua Dock (for floating architecture and climate adaptive architecture), Scheveningen Port (for outer-dike urban development and coastal zone management). Inno-port Scheveningen Port was opened in 2016 and it is the test location for the Ocean Cleanup project. The VP Delta and Den Haag municipal council are developing a field lab for entrepreneurs where innovations in coastal zone and water management and the spatial development of coastal areas can be put through their paces, perfected and marketed. The field lab also hosts research into recreational water activities. The **Flood Proof Holland**, launched in 2013, is a field lab where entrepreneurs are testing and demonstrating a range of innovations, including temporary flood defenses: modular systems and flexible constructions which can be transported, mounted and put to use quickly. The **Aqua Dock** is an initiative of Rotterdam municipal council, the Port of Rotterdam Authority, and the Rotterdam University of Applied Sciences. Aqua Dock is part of the RDM Rotterdam campus, and it puts water plots ready for construction at the disposal of entrepreneurs and researchers so that water-based solutions for delta cities can be researched, from floating farms to hotels. Aqua Dock also welcomes innovators from the maritime sector who work with floating constructions. Apart from safe delta labs, there are three urban delta field labs: **Blijdorp Zoo (for urban water quality management); Climate adaptation (for urban solutions); and, civil engineering briefs (for innovations in weak soil management)**. Last but not least, there are four Smart delta field labs: Water innovation in horticulture and efficient water management in horticultural areas; Waterlab (citizen science and education in collaboration with Science Centre); SensorDijk (for smart measuring and monitoring); and, SmartPolder (for the water system as a source of sustainable energy).

STRIJP-S EINDHOVEN

NETHERLANDS

Website: https://www.dommel.nl/
Contact info: 0411 618 618

URBAN • INDUSTRY

• Located in the **Strijp-S area of Eindhoven.**
• Founded in **2015**.
• **Project initiator**: Waterboard De Dommel
• **Multi-stakeholder involvement**: Private organizations, public research and innovation organizations, Municipality of Eindhoven, water authorities

STRIJP-S EINDHOVEN

Geographical scale	City
Value creation type	Mission-oriented ecosystem-based – living lab as platform and transformative agent Individual project-based – living lab as project
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation
Maturity level of living lab	Level 2.5
Living lab service offerings	Innovation programme development Living Lab methods
Strategic Interest Water Europe Clusters	Value in Water Value of Water
Sustainability of living lab	Yes

Objectives

• In **2015 the Waterboard De Dommel** initiated a living lab on Strijp-S to test new ideas for the integration of a WWTP in the area. The basis for this living lab is a new type of treatment for the production of clean water, resources, and energy, with the aim to combine multiple functionalities such as recreation, agriculture, and the production of new materials.

Network partnership base

• The development of a living lab on Strijp-S is in line with the future scenario for Eindhoven: 'Safe and pleasant living in Eindhoven 2050', developed by the municipality of Eindhoven. The Strijp-S area of Eindhoven, well connected to three large nature areas (i.e. **De Karpen, Genneper Parken, and Landelijk Strijp**), also hosts a large-scale urban rehabilitation project of a former industrial park.

• In this region, the **Strijp-S BioMakery**, developed in partnership with Waterboard De Dommel, City of Eindhoven, Province of Noord-Brabant, M.J. Oomen riool-en betontechniek, will be the first decentralized Dutch wastewater treatment and recycling facility and will be part of a large open innovation development centre for urban circular solutions. The facility will be modular and flexible in design, capable of expanding in size and functionality. Integration of this wastewater treatment plant in public green space will result in ecosystem services (e.g. reuse of purified water in bioswales, retention areas, infiltration areas, and fountains).

ROTTERDAM BLUE CITY LAB

NETHERLANDS

Website: http://www.bluecity.nl/bluecity-lab/-bluecity-lab/
Contact info: Maasboulevard 100, Rotterdam (info@bluecity.nl) [+31 (0)10 307 22 47]

URBAN • ECOSYSTEM

- Located at **Maasboulevard in Rotterdam, Netherlands**. Initiated in **2012**.
- **Open Innovation Platform**.
- **Multi-stakeholder involvement**: Municipalities, water-sector-related innovative companies.

ROTTERDAM BLUE CITY LAB

Geographical scale	Sub-regional
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Public authority driven
Technology development phase supported by living lab	Need finding Concept development and testing
Maturity level of living lab	Level 2
Living lab service offerings	Networking, Systems analysis Scenario building, Acceleration potential mapping
Strategic Interest Water Europe Clusters	Value of Water , Value in Water Hybrid Grey-Green infrastructure
Sustainability of living lab	Yes

Objectives

- **Accelerate** circular models for city or region-wide uptake using the method 'Acceleration Potential Mapping', systems analysis at local and regional scales, scenario building.
- **Deliver** a procedure identifying acceleration potential and diffusion pathways.
- **Build linkages** to other innovative practices, from circular economy companies in Rotterdam harbor, to peri-urban farming initiatives.
- **Develop** a framework to integrate the analysis of material flows, closed-loop commodity models and assessment of their diffusion potential does not exist.

Network partnership base

- It is an **innovation platform**, providing co-creation spaces and co-working, events, meetings, lectures, hackathons, and space for experimentation.
- The Blue City Lab, located at Maasboulevard in Rotterdam, provides business support, network access, and educational programmes (e.g. lectures, workshops) in the field of circular economy and business

NORWEGIAN NATIONAL CENTRE FOR CLIMATE ADAPTATION

NORWAY

Website: https://climate-adapt.eea.europa.eu/ Contact info: https://climate-adapt.eea.europa.eu/contact-footer

AGRI • ECOSYSTEM

- Located in **Trondheim, Norway**.
- Founded on 31 May 2017.
- **Organizational Coordinator**: SINTEF and NTNU.
- **Multi-stakeholder involvement**: Business partners, public builders and property developers, producers of construction materials, research centers and universities.

NORWEGIAN NCCA

Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based living lab as transformative agent
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation
Maturity level of living lab	Level 2.5
Living lab service offerings	Data collection Pilot project Research and innovation development
Strategic Interest Water Europe Clusters	Value in Water Value of Water Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

Objectives

- Facilitate close cooperation between R&D performing companies and prominent research groups in the context of the realization of the SFI Klima 2050, which aims to reduce the societal risks associated with climate changes and enhanced precipitation and flood water exposure within the built environment.

Network partnership base

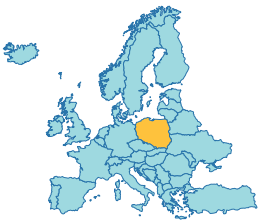
- The Research Council of Norway has announced the establishment of 17 new centres for research-based innovation (SFI). The host institution of SFI Klima 2050 is SINTEF, and the centre will be directed in cooperation with NTNU. SINTEF and NTNU cooperate within a team of BI Norwegian Business School, Norwegian Meteorological Institute (MET Norway), and Norwegian Geotechnical Institute (NGI).
- The business partners represent important parts of Norwegian building industry, e.g. consultants, entrepreneurs, and producers of construction materials: Skanska Norway, Multiconsult AS, Mestergruppen Bolig, Norgeshus AS, Saint-Gobain Byggevarer AS, Isola AS, and Spenncon AS.
- The centre also includes public builders and property developers: Statsbygg, Statens vegvessen, Jernbaneverket of Avinor AS. Norwegian Water Resources and Energy Directorate and Finance Norway.

THE CITY OF LODZ LONG-TERM ECOSYSTEM RESEARCH (LTER)

POLAND

Website: http://www.switch.unesco.lodz.pl/
Contact info: Dr. Iwona Wagner
(e-mail: iwwag@biol.uni.lodz.pl)

URBAN • ECOSYSTEM



- Located in **Lodz, Poland**.
- Founded in **2002**.
- **Organizational Coordinator**: President of the City of Lodz and City Offices
- **Multi-stakeholder involvement**: Companies, water technology centers, water authorities, public research organizations.

CITY OF LODZ LTER

Geographical scale	City
Value creation type	Mission-oriented ecosystem-based – living lab as platform Individual project-based – living lab as project
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Need finding Concept development Pilot implementation and testing
Maturity level of living lab	Level 2.5
Living lab service offerings	Living Labs methods Innovation and development services, Pilot and innovation environment, Prototype testing
Strategic Interest Water Europe Clusters	Digital Water, Value of Water, Hybrid Grey and Green Infrastructure
Sustainability of living lab	Yes

Objectives

- Promote applied research in the following areas: influence of city planning on quality and quantity of water resources; ecosystem services in urban area; and, ecohydrological processes in urban catchments.

Network partnership base

- Lodz has a network of numerous but small water courses and is located in the hills that constitute the first order watershed between the largest Polish rivers, the Wisła and the Odra. The LTER is strongly focused on implementations in the area of integrative city revitalization, water management, and restoration of rivers. The platform consists of two big demonstration - implementation areas with monitoring system for discharges and water quality, however based on learning-alliance group of stakeholders it is linked to many data sources on environmental monitoring, biodiversity, economy, societal information.
- In the City of Lodz LTER site, the research collaboration for open RDI has been established by the President of the City of Lodz, City Offices including City Office for Urban Planning, City Office for Environment Protection and Agriculture, City Forest Department, Department of Strategy and Analysis, Department of Town-Planning and Architecture.
- There are 18 small streams flowing through Lodz. The Sokolowka River flows across the northern part of Lodz and is supplied with about 50 stormwater outlets. The middle and lower section of the river valley has maintained patches of meadows, wetlands and forests (seminatural environment). The ecohydrological river rehabilitation took part in three projects: EU SWITCH project (GOCE 018530), EHREK (LIFE08 ENV/PL/000517), Blue-Green Network (City of Lodz).

Project

- FP6 SWITCH: http://www.switchurbanwater.eu/
- National Life+ project: Ecohydrologic rehabilitation of recreational reservoirs "Arturówek" (Lodz) as a model approach to rehabilitation of urban reservoirs. EH-REK LIFE08 ENV/PL/000517: www.arturowek.pl
- Blue - Green Network for management of environmental sites and improvement to water resources for functional and spatial management of city's resources.
- EU Life + GPPinfoNET: The Green Public Procurement Information Network: http://www.gppinfonet.it

SULEJOW RESERVOIR LONG-TERM ECOSYSTEM RESEARCH

POLAND

Website: http://en.ekorob.pl/
Contact info: Katarzyna Izydorczyk (e-mail: kizyd@biol.uni.lodz.pl)

ECOSYSTEM

- Located in Sulejowski reservoir and **Pilica river floodplain, Netherlands**.
- Established in **1980**.
- **Organizational Coordinator**: Department of Applied Ecology, of the University of Lodz.
- **Multi-stakeholder involvement:** Companies, water technology centers, water authorities, public research organizations.

SULEJOW LTER

Geographical scale	City
Value creation type	Mission-oriented ecosystem-based – living lab as platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Need finding Concept development Pilot implementation and testing
Maturity level of living lab	Level 2.5
Living lab service offerings	Innovation and development services Pilot and innovation environment Prototype testing
Strategic Interest Water Europe Clusters	Value in Water, Value of Water, Hybrid Grey and Green Infrastructure
Sustainability of living lab	Yes

Objectives

- **The Platform** comprises two sites: the Sulejowski Reservoir and the Pilica River floodplain. The Pilica River is a major river feeding the Sulejow Reservoir, and is a left-side tributary of the largest Polish river - Vistula. The research was conducted in the experimental floodplain of the Pilica River valley, located in the middle section of the river, upstream of the eutrophic Sulejow Reservoir. The Sulejow Reservoir was established in 1973 for multiple uses, with drinking water supply to the city of Lodz (agglomeration of about 1 million people), flood protection and recreation being the most important. In 2004, the water company operating the drinking water facility ('Sulejow-Lodz' - Water Supply Systems Waterworks and Sewage Company) stopped the water abstraction from the reservoir intake and switched to wells. There is a number of sampling sites located on the reservoir and three of them are permanent since 1980s, serving as a source of data on water chemistry. The research activities undertaken in the area of Sulejow LTER are focused on the ecosystem trophic structure dynamice and biotic interactions; Pilica river floodplain research (enhancing nutrient retention in floodplai.

Network partnership base

- In the **Sulejow LTER** site, the collaboration network for RDI comprises Province Office in Lodz, Marshal Office in Lodz, President of Piotrkow Trybunalski, Municipal and Commune Office in Przedborz, Municipal and Commune Office in Sulejow, Municipal and Commune Office in Wolborz, Municipal and Commune Office in Lask, Elected Chair of the Kurnedz Village, Agrotouristic Foundation "Kraina Kugla". The LTER site is managed by the Department of Applied Ecology, of the University of Lodz.

Project

- **ENVEUROPE**: Environmental quality and pressures assessment across Europe: the LTER network as an integrated and shared system for ecosystem monitoring. EU Project, LIFE + Environment Policy and Governance, LIFE08 ENV/IT/000399. Duration time: 2010-201.
- **EKOROB**: Ecotones for reducing diffusion pollution.EU Project, LIFE + Environment Policy and Governance, LIFE08 ENV/PL/000519.
- **Role of mycorrhizal plants of Pilica** river floodplain communities in reduce of nutrients transport on land/wate-recotone, 3PO4G 020 24.
- **The analyse of spatial and temporal dynamics of hydrological and microbiological** determining sedimants quality in the Sulejow Reservoir in aspect of their agricultural usage, 2PO4G 120 27
- **Bioaccumulation and distributio**n pattern of persistent organic pollutants in the Pilica River basin: An ecohydrology approach. Grant No MIRG-CT-2006-0311106
- **A Long-Term Biodiversity, Ecosystem and Awareness Research Network ALTER-Net. ALTER-Net** is a 'Network of Excellence' funded by the EU's 6th Framework Programme. Contact No: GOCE-CT-2003-505298 (2004-2009)
- Implementation and development of ecohydrology concept in West Polesie transboundary MAB Biosphere Reserve . Project in cooperation **UNESCO IHP ? UNESCO MAB, M. Zalewski, K. Krauze, A. Trojanowska (2005-2006)**
- COST ACTION: Denitrification in agriculture, air and water pollution. FP6 European Concerted Research Action designated as COST Action 856 (2002-2006)
- NATO/CCMS Pilot Study: Use of Landscape Sciences for Environmental Assessment. Pilot Study of NATO Science for Peace and Security Programme (2001-2006)

SLOVENIA - EXPERIMENTAL WATERSHEDS

SLOVENIA

Website: http://www.inweb.gr/workshops2/Workshop_Thessaloniki_June_08/presentation_pdf/Slovenia_2.pdf

AGRI • ECOSYSTEM

- Located in **Dragonja, Reka, and Glinscica, Slovenia**.
- **Organizational Coordinator**: University of Ljubljana, Chair of Hydrology and Hydraulic Engineering.
- **Multi-stakeholder involvement**: Water utilities, companies, public authorities and higher education institutes

EXPERIMENTAL WATERSHEDS

Geographical scale	Territory (sub-regional level) Cross-territory (network-level)
Value creation type	Mission-oriented ecosystem-based – living lab as platform and transformative agent
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Adoption development Concept development Pilot implementation
Maturity level of living lab	Level 2.5
Living lab service offerings	Living lab methods Need finding Prototype co-creation and testing Pilot and innovation environment
Strategic Interest Water Europe Clusters	Value in Water Value of Water
Sustainability of living lab	Yes

Objectives

- The experimental watersheds are used for scientific research and provide support for the water management.

Network partnership base

- Slovenia set up three experimental watersheds. In the **Dragonja experimental watershed**, the studies are focused on the afforestation of the watershed in a Mediterranean climate. On the **Reka river**, the water balance in a partly karstic area is examined. On the Glinscica stream the implications of the urban environment are studied.
- The experimental watersheds have been equipped with modern measuring equipment for precise measurements of precipitation, intercepted precipitation, erosion and water quality. The site coordinator is the **University of Ljubljana, Chair of Hydrology and Hydraulic Engineering**.

ZINNAE – URBAN CLUSTER FOR EFFICIENT USE OF WATER

SPAIN

Website: https://www.zinnae.org
Contact info: Marisa Fernandez, Zinnae Cluster Manager, mfernandez@zinnae.org [+34976306161 ext. 237]

URBAN • AGRI • INDUSTRY • ECOSYSTEM

- Located in **Saragossa, Aragon, Spain**.
- Established on **22 April 2010**.
- **Organizational Coordinator**: Non-profit organization (ZINNAE – Urban Cluster for Efficient Use of Water)
- **Multi-stakeholder involvement**: Companies, water technology centers, water authorities, public research organizations.

ZINNAE CLUSTER

Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based – living lab as transformative agent
Market positioning	Public-private partnership-driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation and testing
Maturity level of living lab	Level 2.5
Living lab service offerings	Spatial concept planning Innovation management Product/services test and validation activities
Strategic Interest Water Europe Clusters	Digital Water Hybrid Grey-Green Infrastructure Value of Water
Sustainability of living lab	Yes

Objectives

- **Promote** an efficient and sustainable use of water in Saragossa as well as an associated energy consumption in urbanized areas, together with public and private actors; become an international collaboration, knowledge and innovation referent for an efficient and sustainable water use in urbanized areas as well as a driver of quality employment for Saragossa; transform the city of Saragossa into a laboratory to experiment with new products and services for an efficient use of natural resources in green areas.

Network partnership base

- The ZINNAE – Urban Cluster for Efficient Use of Water – is a non-profit organization, working in the fields of **industrial and municipal water treatment, water efficiency for green buildings, smart irrigation, and smart monitoring for water efficiency**. The ZINNAE cluster gather public and private organizations of the water sector in Aragon. The cluster has **40 active partners**, of which the majority are SMEs. The **Ebro river Basin Authority**, the first basin organization of Spain and Europe, and the City Council of Zaragoza, are part of the ZINNAE Cluster. ZINNAE cluster is a member of OXAL, a national Action Group funded by the **National Rural Plan 2014-2020 for innovation in wastewater treatment in agro-food industries**.

Projects

- **ZINNAE Cluster's** water project portfolio consists of the following projects and participations: Digitalization of Agroindustry to optimize water management – DIGICAT; SMAG: Analytical software for municipal water infrastructures; SENSODES: Critical sensoring needs in water and wastewater treatment processes in the industry; service design for discharge real time control and alarms; identificacion de proyectos para el impulse de la industria 4.0 el sector del agua; energy in water; INNO-DROP; EXPO PERU; WE@EU: Water Efficiency in European Urban Areas; FiTWATER; SIGMA-R; PROMOVER; Test-bench for water saving products; Parque Zero.
- **Parque Zero**: Started in 2011 and led by the founding partner of the ZINNAE Cluster – Grupo Raga, it is a collaborative platform initiative for the implementation of a green urban area as a platform to experiment with products and services that are efficient in the use of natural resources. The objectives of the project Parque Zero are: reformulate the criteria in the design and maintenance of green spaces; efficient use and recovery of water; generation and consumption of clean management energies; closure of biogeochemical cycles. The Parque Zero supported, since its inception, test and validation activities of pilots: test of irrigation technology with a focus on extreme weather and conditions (RAINBIRD); test of xerogardening species adapted to extreme water (SOPESENS); validation of biological control of plagues with no affectation to citizen in commercial districts (HIDROBIOLOGY); and validation of irrigation filters to optimize irrigation efficiency (HUNTER).

ZARAGOZA WATER COMMISSION, ARAGON (SWTICH PROJECT – LEARNING ALLIANCE)

SPAIN

Website: http://www.switchurbanwater.eu/cities/10.php Contact info: Javier Celma, AYTO, (unidadambiente@ayto-zaragoza.es)

URBAN • INDUSTRY

- **Project period**: 2006-2011
- **EU funding**: EUR 14.75 m
- **Funding**: H2020 Programme
- **Multi-stakeholder involvement**: Companies, water technology centers, water authorities, municipalities, and public research organisations

ZARAGOZA WATER COMMISSION LEARNING ALLIANCE

Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based – living lab as transformative agent
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Adoption deployment Concept development Pilot implementation and testing
Maturity level of living lab	Level 2.5
Living lab service offerings	Data collection Pilot project Product co-design and prototyping Business plan/market strategy
Strategic Interest Water Europe Clusters	Value of Water, Value in Water Digital Water
Sustainability of living lab	Yes

Objectives

- By adopting a demand-led approach, SWITCH has been able to speed up the process of identification, development, and uptake of solutions related to urban water management.

Network partnership base

- SWITCH is a project for promoting an efficient use and management of water among the citizens. It is included in the 6th Framework Programme of the European Union and headed by UNESCO-IHE (Institute for Water Education). The objective of this project is the development, application and demonstration of solutions that can contribute to the implementation of projects for a sustainable and efficient management of water in the "city of the future". SWITCH project has been developed from 2006 to 2011 with a European funding of 14.75 million euros. SWITCH Project (Managing Water for the City of the Future) groups **32 institutions of 4 continents** for developing new proposals in the management of water. **The demo cities** are: Zaragoza, Spain; Hamburg, Germany; Birmingham, United Kingdom; Lodz, Poland; Tel-Aviv, Israel; Alexandria, Egypt; Accra, Ghana; Beijing and Chongqing, China; and Belo Horizonte, Brazil. **The participation of Zaragoz**a focuses on the field of the management of water demand in cities.

The Ecology and Development Foundation, with the municipality support, initiated the **Zaragoza Water Saving City** programme in 1996. Since then, the **city of Zaragoza, the Zaragoza Water Commission (Ecology and Development Foundation, the Foundation for a New Water Culture, and the San Valero Foundation)**, businesses, and local residents collaborate in order to identify realistic and acceptable water conservation measures. In the context of the EU-funded project SWITCH (Sustainable Water Management Improves Tomorrow Cities Health), the Zaragoza Water Commission established a multidisciplinary learning alliance, which consists of the following members: River Basin Organism, Zaragoza University, Infrastructure Department of Zaragoza Municipality, Finance Department of Zaragoza Municipality, Public Health Institute of Zaragoza Municipality, Local Agenda 21 of Zaragoza Municipality, Zaragoza Business Confederation, Engineers Association, Pharmaceutical Association, User and Consumer Association, UGT and CCOO Trade Union. The aim of the learning alliance is to find novel ways to reduce both network leakages and the consumption of domestic, municipal, and industrial water by water reuse.

Finance

- H2020 funded project. Co-funding of industrial partners.

MALAGA WASTEWATER TREATMENT PLANT (RICHWATER PROJECT)

SPAIN

Website: http://www.richwater.eu
Contact info: rcasielles@bioazul.com

AGRI

- Located in **Malaga (Spain), in La Axarquia region**.
- Founded on **31 May 2017**.
- **Organizational Coordinator**: BIOAZUL S.L. (SME)
- **Multi-stakeholder involvement**: Utility company, research centre CSIC-La Mayora, local and regional authorities, farmers and communities of irrigators.

MALAGA WASTEWATER TREATMENT PLANT

Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based – living lab as transformative agent
Market positioning	Solution provider driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation and testing
Maturity level of living lab	Level 2.5
Living lab service offerings	Data collection Pilot project Product co-design and prototyping Business plan/market strategy
Strategic Interest Water Europe Clusters	Value in Water Value of Water Smart Water treatment
Sustainability of living lab	Yes

Objectives

- Test, optimize and verify an innovative technology for wastewater treatment and reuse of the effluent in agriculture.
- Establish a network of partners with interest in promoting wastewater reuse in agriculture in order to facilitate the market up-take of the solutions developed in the project.
- Develop appropriate market strategies and tools (e.g. CBA) to boost market penetration of the technology providers participating in the project.
- Carry out an Environmental Technology Verification of RichWater technology to prove system performance in providing a high quality effluent valid for irrigation and the preservation of valuable nutrients that leads to fertilizer savings for farmers

Network partnership base

- RichWater project (GA number 691402) is led by BIOAZUL S.L. and consists of the following members: CSIC, PESSL, ISITEC, SMS and TTZ-Bremerhaven.
- Strong presence in the territory with the engagement of relevant stakeholders. In this sense, there is a cooperation agreement signed between the coordinator, association of irrigators, local and regional authorities creating a regional working group for the promotion of water reuse in agriculture. This regional working group is preparing new projects and has created an Operational Group in the frame of the EIP Agri which has received fund in 2018 to continue with the project activities.

Finance

- H2020 funded project. Co-funding of industrial partners.

Projects

- TREAT&USE (GA 311943): Safe and efficient treatment and reuse of wastewater in agricultural production schemes
- SuWaNu (GA 319998): Sustainable Water treatment and Nutrient reuse options
- Water2REturn (GA 730398: REcovery and Recycling of nutrients TURNing wasteWATER into added-value products for a circular economy in agriculture

PLATAFORMA SOLAR DE ALMERÍA

SPAIN

Website: http://www.psa.es/es/index.php
Contact info: 950 387 800 (info@psa.es)

URBAN • INDUSTRY

- Located in **Almeria, Spain**.
- **Organizational Coordinator**: Plataforma Solar de Almeira (PSA)
- **Multi-stakeholder involvement**: Universities, PYMES and large companies

PLATAFORMA SOLAR DE ALMERÍA

Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based – living lab as platform and transformative agent
Market positioning	Public authority driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation and testing
Maturity level of living lab	Level 2.5
Living lab service offerings	Pilot project Product co-design and prototyping Business plan/market strategy
Strategic Interest Water Europe Clusters	Value in water, Value of Water Smart Water Treatment Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

Objectives

- **Stimulate and promote** applied research and innovation projects in the fields of evaluation of solar irradiation, high solar radiation concentration, medium solar radiation concentration, evaluation and developments of materials, decontamination and disinfection of water, and solar desalination, and environmental evaluation of water.

Network partnership base

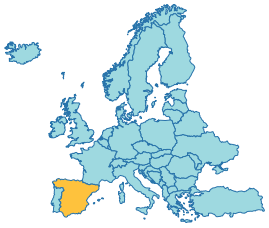
- **Plataforma Solar de Almeira is the largest concentrating solar technology research, development and test centre in Europe**. The objective of its R&D unit of solar water treatment unit is to encourage the research activities and applications of solar photochemistry carried out at Plataforma Solar de Almeira.
- The activities of this R&D unit focus on **heterogenous and homogenous (photo-Fenton) photocatalysis, solar disinfection, other water advanced processes, ozone, UV/H2O2, electrooxidation, membranes, biotreatment**, and so forth.
- The **platform collaborates** with the DLR (German Aerospace Research Institute), Solar PACES program (Solar Power and Chemical Energy Systems) of the IEA, PSA-CIEMAT (Associated European Solar Energy Laboratory), PROMES-CNRS in Odeillo (France), Renewable Energy Laboratory Institute Federal technology Zurich (Switzerland), the Paul Scherrer Institut (Switzerland), CIEMAT, IBERDROLA, ABENGOA, SENER or ACCIONA, DERETIL, CAJAMAR, citrus ANDARAX or COEXPHAL.

IoTsens SMART CITY CASTILLON

SPAIN

Website: http://www.iotsens.com/castellon-smart-city-pilot/
Contact info: +34 964 727 101 (info@iotsens.com)

URBAN



- Located in **Castellon, Spain**.
- **Organizational Coordinator**: IoTsens GRUPO GIMENO
- **Multi-stakeholder involvement**: Universities, PYMES and large companies

IoTsens SMART CITY CASTILLON

Geographical scale	City
Value creation type	Mission-oriented ecosystem-based – living lab as platform and transformative agent
Market positioning	Solutions-provider driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation and testing
Maturity level of living lab	Level 2.5
Living lab service offerings	Pilot project Product co-design and prototyping Business plan/market strategy
Strategic Interest Water Europe Clusters	Value in water, Value of Water Smart Water Treatment Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

Objectives

- **Provide** a comprehensive view of Pau Gumbau neighbourhood and all its services including more than 25 types of sensors to provide information for a large variety solutions integrated in the same platform. Some of the main water-sector related IoT solution areas are as follows: smart water metering, smart waste water, and water quality.

Network partnership base

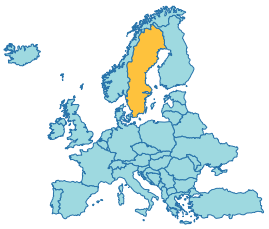
- Castellon Smart City pilot is installed at the **neighbourhood of Pau Gumbau of Castellon, Spain**. Pilot takes place over an area that covers 222.000 square meters where near 8.000 citizens live and work on their daily basis. Some of the main water-sector related IoT solution areas are as follows: **smart water metering, smart waste water, and water quality**.
  - **Smart Water Metering**: reading from seven water meters brands (Itron, Elster, Sensus, Kamstrup, Diehl, Conthidra and Contazara) and collecting data from all householders in the city in order to track and control accurately water management under the same platform.
  - **Smart Waste Water**: allows the user to keep real-time tracking of the wastewater pipelines (water height, flow, % fill, spill alarms or temperature) in order to detect problems and proceed with solutions.
  - **Smart Urban Waste**: keep real time track of the percentage (%) fill status of the bins achieving more efficient the waste-truck routes.
  - **Smart Park Irrigation**: controls the activation and deactivation of parks irrigation depending on the humidity that sensors are receiving from the soil.
  - **Water Quality**: allows the gathering of water quality data in real-time across industrial or utility networks from measuring instruments in the watershed or treatment plants.
  - **Meteorological Station**: collection of real time data of variables like rainfall, humidity, wind intensity and atmospheric pressure helping the determination of certain alarm levels.
- **IoTsens Smart City platform** offers the integration of different municipal services of the Castellon City Council, such as the municipal bicycle service called "BiciCas", the public transport service and the taxi service, which facilitates the collection of information

RECO LAB PLANT

SWEDEN

Website: http://energiogvand.dk/en/frontpage/
Contact info: Nordvastra Skanes Vatten och Avlopp AB Box 2022 S-250 | Marinette Hagman, Project Coordinator, narinette.hagman@nsva.se [Tel: 010-490-98-17].

URBAN



- Located in the **Oceanhamnen urban district, Helsingborg, Scania, Sweden.**
- **Initiated in 2016.**
- **Organizational Coordinator:** Northwest Scania's Water and Sewage Facility.
- **Multi-stakeholder involvement:** drinking water, wastewater services, and sewage facilities, water institutes, and research centers, accelerators.

RECO LAB PLANT

Geographical scale	City
Value creation type	Mission-oriented ecosystem-based – living lab as platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Adoption deployment Concept development Pilot implementation and testing
Maturity level of living lab	Level 2.5
Living lab service offerings	Data collection Pilot project Product co-design and prototyping
Strategic Interest Water Europe Clusters	Value of Water, Value in Water Digital Water, Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

Objectives

- **Develop** open, virtual, and physical test environment where private and public actors, together with academia, can develop new technological solutions in waster and waste in connection with a unique sorting system.
- **Develop and integrate** a test bed in a full-scale system with leading-edge technology in the Oceanhamnen urban district, in the context of the urban renewal project H+ - the largest urban renewal project in Helsingborg.

Network partnership base

- **Three-year testbed for separate waste streams** – blackwater, food waste and greywater (2016-2019).

The planning stage (organization, business model, and financing model) of the Recovery Lab Plant was completed, including the undertaking of an in-depth techno-economic studies and execution of an open innovation contest for ideation.

The testbed will be fully operational by the end of 2019, with three organizational components: development facility, test-bed and showroom.

The project partners are: Sweden Water Research Institute, NSVA (Northwest Scania's Water and Sewage Facility), NSR, WSP, Ekobalans, inUse Experience, Jets, TIBAL (Tyrens), Water Innovation Accelerator (WIN), Sustainable Business Hub, School of economics and management, Lund University, The Department of Service Management and Service Studies, Campus Helsingborg, Lund University, Faculty of Engineering, Swedish University of Agricultural Sciences, Alnarp. One of the project partners – Northwest Scania's Water and Sewage Facility (NSVA) – is a Swedish water services company, owned by six municipalities: Bjuv, Båstad, Helsingborg, Landskrona, Svalöv and Åstor.

Finance

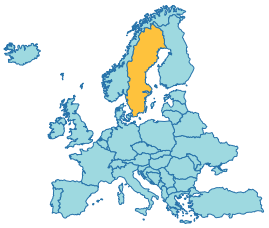
- Funding from Vinnova – Sweden Innovation Agency.

LAKE GARDSJON CATCHMENT AREA

SWEDEN

Website: https://www.ivl.se/
Contact info: Elin Eriksson (elin.eriksson@ivl.se) (010-7886814)

AGRI • ECOSYSTEM



- Located in the **Gårdsjön catchment area, Sweden.**
- Established in **1979.**
- **Organizational Coordinator:** IVL Swedish Environmental Research Institute
- **Multi-stakeholder involvement:** Environmental research institutes,

LAKE GÅRDSJÖN

Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based – living lab as platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Pilot implementation and testing
Maturity level of living lab	Level 2.5
Living lab service offerings	Data collection Pilot project Product co-design and prototyping
Strategic Interest Water Europe Clusters	Value in Water Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

Objectives

- The lake Gårdsjön catchment is 2.1 km2 and includes 5 lakes and a number of headwater streams. It is located 50 km north of Göteborg. Smaller sub-catchments were used for experiments ranging from clear cutting, liming, fertilisation, sulphur addition and a combination of these treatments.

Network partnership base

- The whole area has been intensively studied for the last 30 years by scientists from the Swedish Environmental Research Institute (IVL) and from other institutes from Sweden and from abroad. Since 1979 several both national and international projects have been carried out. IVL, founded in 1966 jointly by the Swedish state and national business interests to carry out research on industrial air and water issues.

HSB LIVING LAB

SWEDEN

Website: https://www.hsb.se/hsblivinglab
Contact info: Emma Sarin (emma.sarin@hsb.se) (+46 10 442 03 44)

URBAN

- Located in **Goteborg, Sweden**.
- Established in **2010**.
- **Organizational Coordinator**: Johanneberg Science Park, HSB, and Chalmers
- **Multi-stakeholder involvement**: Researchers, developers, and innovators, City of Göteborg

HSB LIVING LAB

Geographical scale	City
Value creation type	Mission-oriented ecosystem-based – living lab as platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Adoption deployment Concept development Pilot implementation and testing
Maturity level of living lab	Level 3
Living lab service offerings	Living Labs Methods Data collection Pilot project Product co-design and prototyping
Strategic Interest Water Europe Clusters	Value of Water, Value in Water Digital Water, Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

Objectives

- **Develop** new ways to build and shape the future of living.

Network partnership base

- **Johanneberg Science Park, HSB, and Chalmers** have initiated HSB Living Lab, a living lab for research on sustainable living environment. The living lab was launched in 2010. The living lab has 29 apartments, equipped with monitoring stations and sensors and 33 people live in a changing building where the walls facades and interiors develop as the research progresses.
- **HSB Living Lab** is a collaboration between industry, city, and academia. **Collaboration partners are Tengbom, Peab, Akademiska Hus, Tieto, Electrolux, Bengt Dahlgren, Goteborg Energi, Elfa, and Vedum, Climate KIC, Swedish Modules, Kone, Chalmers Student Houses.**

Projects

- **In the field of water-related RDI projects**, there are **five water projects** related to heat recovery and energy recycling from used water, examination of residents' behavior to reduce water consumption, development of a mobile game for saving water, development a standardization method or a certification method for stormwater solutions.

BALTIC SEA NATURAL TEST-BED

SWEDEN

Website: https://cemeb.science.gu.se/research/test_bed Contact info: Kerstin Johannesson, Director, Department of Marine Sciences, University of Gothenburg (Kerstin.Johannesson@gu.se)

ECOSYSTEM

- Located in **Goteborg, Sweden**.
- Established in **2010**.
- **Organizational Coordinator**: Centre for Marie Evolutionary Biology, University of Gothenburg
- **Multi-stakeholder involvement**:

BALTIC SEA NATURAL TEST-BED

Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based – living lab as platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Pilot implementation and testing
Maturity level of living lab	Level 2
Living lab service offerings	Living Labs Methods Data collection Innovation and research environment
Strategic Interest Water Europe Clusters	Value of Water, Value in Water Digital Water, Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

Objectives

- **Address** the evolutionary consequences of large-scale and rapid environmental perturbations in marine ecosystems.
- The **Baltic Sea** is an ideal natural test bed for studying the adaptation of populations and species over a temporal and spatial scale similar to those of current environmental changes. During recent geological time the Baltic Sea salinity has changed dramatically: First time 8500 years ago when the sea broke through the barriers of the Ancylus Lake, causing salinity to increase from 0‰ to 15‰ over a few hundred years., Second time 4500 years ago, when salinity rapidly dropped to the current 7‰. As a consequence, two permanent and stable salinity gradients were formed along the Swedish coast; one large-scale from the inner Baltic to the North Sea (106 m) and one small-scale from the surface to deep water (101 m). Both shifts and gradients constitute **natural test-beds for studies of evolutionary processes**.

Network partnership base

- **The Centre for Marine Evolutionary Biology, of the University of Gothenburg**, has access to the two marine research stations at University of Gothenburg: Tjärnö and Kristineberg (jointly organized under the Sven Lovén Centre for Marine Infrastructure) providing excellent facilities for experimental research. Both stations have high-capacity through-flow saltwater systems, and space for establishing replicate out- or indoor common-garden and artificial selection experiments. Furthermore, it has access to two other **research infrastructure sites: NBIS** (National Bioinformatic Infrastructure Sweden) and SciLifeLab (Stockholm).

SWEDEN

Website: http://www.stockholmvattenochavfall.se/
Contact info: +46 8 522 120 00

STOCKHOLM WATER HENRIKSDAL PLANT (STOCKHOLM FUTURE WASTEWATER TREATMENT)

URBAN

- Located in **Stockholm, Sweden**.
- Established **in 2016**
- **Organizational Coordinator**: Stockholm Vatten (Stockholm Water Company)
- **Multi-stakeholder involvement**: Utility companies, solutions providers, business consultancy firms, industrialists

HENRIKSDAL WWTP

Geographical scale	City
Value creation type	Mission-oriented ecosystem-based – living lab as platform and transformative agent Individual project-based – living lab as project
Market positioning	Utility-sector driven
Technology development phase supported by living lab	Concept development Pilot implementation and testing
Maturity level of living lab	Level 3
Living lab service offerings	Living Labs Methods Data collection Pilot project Product co-design and prototyping
Strategic Interest Water Europe Clusters	Value of Water Value in Water
Sustainability of living lab	Yes

Objectives

- **Enable** the city of Stockholm to meet the effluent requirements set under the Baltic Sea Action Plan (BSAP) and EU water directive.

Network partnership base

- The planning and design works for the reconstruction of the WWTP were performed from 2007 to 2011 by **Sweco**. In 2010, **Mercor** installed fire doors and gates at the site. The contract to deliver the electrical solutions including telecommunications and automation solutions for the current project has been awarded to ÅF Group.
- The **Stockholm Water** operates the Henriksdal plant and has decided to invest in membrane technology – a technology that separates sludge from wastewater by filtering it through a physical barrier, a membrane with very small pores.
- After a rebuild the **Henriksdal plant** is the largest wastewater treatment plant in the world that utilizes membrane technology. The plant treats wastewater using mechanical, chemical, biological and sand filtration processes. **GE's LEAPmbr technology** which integrates its **ZeeWeed 500** membrane is an advanced ultrafiltration technology that separates solids, bacteria and viruses from water or wastewater.

HAMMARBY SJOSTADSVERK RESEARCH FACILITY

SWEDEN

Website: https://www.ivl.se/
Contact info: Elin Eriksson (elin.eriksson@ivl.se) (010-7886814)

URBAN • AGRI

- Located in **Stockholm, Sweden**.
- Established in **2007**
- **Project initiator**: City of Stockholm
- **Organizational Coordinator**: IVL (Swedish Environmental Research Institute) and KTH Royal Institute of Technology
- **Multi-stakeholder involvement**: Utility companies, solutions providers, local authorities, research institutes

HAMMARBY SJOSTADSVERK

Geographical scale	City
Value creation type	Mission-oriented ecosystem-based – living lab as platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Pilot implementation and testing
Maturity level of living lab	Level 3
Living lab service offerings	Living Labs Methods Data collection, Pilot project Research and innovation environment
Strategic Interest Water Europe Clusters	Value in Water, DIgital Water Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

Objectives

- The pilot facility can be utilized for longer and shorter trials targeting the development and optimization of new systems or competitors. The facility is also used to demonstrate processes and equipment.

Network partnership base

- IVL operates its own laboratories for advanced chemical analysis – both organic and inorganic – and an experimental facility where new technology for more resource-efficient production is developed.
- Together with KTH, IVL jointly operates the Hammarby Sjöstadsverk, which is a unique testing and pilot facility in advanced water treatment technology. The technique is one of several being tested at IVL's research facility.
- The sustainable water solution company Xylem has located part of its development effort. Originally, the facility was built to test technology for incorporation into a full-scale wastewater treatment plant intended to serve the Hammarby Sjostad residential district.
- In late 2007, the city of Stockholm ceded the plant to a joint consortium comprised of IVL Swedish Environmental Research Institute and KTH Royal Institute of Technology.
- In the beginning, the pilot facility was in principle four separate municipal water lines. Since then it has been augmented by the addition of sludge treatment processes, a membrane bioreactor, SBR reactor, and a number of other processes and reactors, technologies to promote cutting edge research and development. The pilot facility can be utilized for longer and shorter trials targeting the development and optimization of new systems or competitors. The facility is also used to demonstrate processes and equipment.

Network partnership base

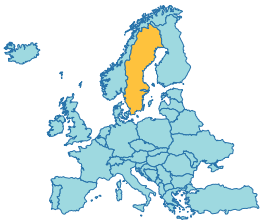
- In 2015, IVL was given financial support by Vinnova to extend operations at Hammarby to include industrial water treatment. The testbed that will be built for this purpose will be open to other interested parties and companies. IVL and KTH are joint owners of the Hammarby Sjöstadsverk R&D facility. Hammarby is member of a collaborative partnership with KTH, Uppsala University, Swedish University of Agricultural Sciences and Malarden University, a centre for municipal wastewater treatment with funding from the Swedish Water & Wastewater Association, and municipal authorities in the Malardalen region.

SWEDEN

Website: http://www.vattencentrum.se/english/research/
Contact info: Amelia Morey Strömberg, Unit Manager, (amelia.stromberg@campusroslagen.se) (0176 28 6117)

WATER CENTRE FOR INNOVATION, CAMPUS ROSLAGEN AB – TEST-BEDS

URBAN



- Located in **Stockholm, Sweden.**
- **Organizational Coordinator:** Campus Roslagen AB, Norrtälje Municipality
- **Multi-stakeholder involvement:** Utility companies, solutions providers, local authorities, research institutes

WATER CENTRE FOR INNOVATION

Geographical scale	City
Value creation type	Mission-oriented ecosystem-based – living lab as platform
Market positioning	Public-authority driven
Technology development phase supported by living lab	Concept development Pilot implementation and testing
Maturity level of living lab	Level 3
Living lab service offerings	Living Labs Methods Data collection Pilot project Product co-design and prototyping
Strategic Interest Water Europe Clusters	Value in Water, Digital Water Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

Objectives

- The **research platform at the Water Center for Innovation, Campus Roslagen AB, Norrtalje Municipality (Stockholm County, east central Sweden)** contributes to research and education for decentralized systems for drinking water and wastewater, as well as water management, in cooperation with universities and other institutes providing 3rd-level education. **The Water Center for Innovation** has a testbed for drinking water filter technology and plans a testbed for infiltration systems for wastewater. **The testbed for drinking water** is for product development, research, and certification; whereas, the testbed for wastewater focuses on filtration systems and is intended for product development and research.

Network partnership base

- The Centre provides an advisory service to **private property owner**s, run courses and workshops for public and private sector actors as well as lead and partake in research and innovation projects.

Finance

- The **Water Centre for Innovation is a sub-department of Campus Roslagen AB, Norrtälje Municipality**. The Centre also receives external innovation funding from the **European Commission and VINNOVA**.

Project

- The Centre **has 6 ongoing** (externally funded) projects: COASTAL, RETROUT, BATSECO-Boat, establishment of a research platform together with the Norrtälje municipality (i.e. the Swedish municipality with the highest share of individual wastewater volume), development of a test-bed for drinking water, and development of a test-bed for wastewater.

DAG & NAT COMPETENCE NETWORK LULEA UNIVERSITY OF TECHNOLOGY

SWEDEN

Website: https://www.ltu.se/research/subjects/VA-teknik/Dag-Nat
Contact info: Prof. Maria Viklander (Maria.Viklander@ltu.se) (0920 – 491634)

URBAN • ECOSYSTEM

- Located in **Lulea, Sweden.**
- **Organizational Coordinator:** The Stormwater & Sewers at Lulea University of Technology
- **Multi-stakeholder involvement:** Utility companies, solutions providers, research institutes, municipalities

DAG & NAT COMPETENCE NETWORK

Geographical scale	City
Value creation type	Mission-oriented ecosystem-based – living lab as platform
Market positioning	Public authority driven
Technology development phase supported by living lab	Concept development Pilot implementation and testing
Maturity level of living lab	Level 3
Living lab service offerings	Living Labs Methods Data collection, Pilot project Research and innovation environment
Strategic Interest Water Europe Clusters	Value in Water, Value of Water Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

Objectives

- The Stormwater & Sewers at Lulea University of Technology develops and disseminates research-based knowledge and builds within stormwater and sewer systems, based on the needs of society, sustainability, and use of resources, and in close collaboration with private and public stakeholders.

Network partnership base

- The Stormwater & Sewers recently undertook an evaluation of the collocation of sewer, water, and low temperature district heating pipelines and four new bioretention facilities in Malmo, Stockholm, Vaxjo, and Sundsvall.
- The competence centre's Water Research School also has courses in the field of sewerage (e.g. sampling, measurement of uncertainties, and statistical analysis).
- The network of Stormwater & Sewers includes at least 6-7 (water sector) demonstration sites, with specific focus on green-blue solutions, clean infrastructure and green safety. There is a strong collaboration culture between researchers and municipalities in the effort to test technologies.
- The Stormwater & Sewers' partner network includes the following organizations: MittSverige Vatten & Avfall, Östersunds kommun, Vakin, Skellefteå kommun, Luleå kommun, Bodens kommun, VA Syd, Svenskt Vatten.

Finance

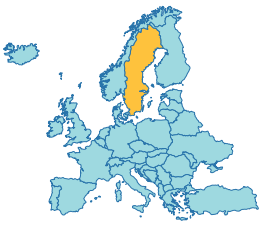
- The Stormwater & Sewers receive external innovation funding from Formas, Vinnova and the European Commission.

OSTERSUND TEST-BED

SWEDEN

Website: http://miljobarometern.stockholm.se/
Contact info: miljoforvaltningen@stockholm.se (08–508 28 800)

ECOSYSTEM



- Located in in the **lake Storsjon, Sweden**
- **Organizational Coordinator**: Municipality of Östersund, Jarven Ecotech AB, Veg Tech AB.
- **Multi-stakeholder involvement**: Utility companies, solutions providers, research institutes, municipalities

OSTERSUND TEST-BED

Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based – living lab as platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Pilot implementation and testing
Maturity level of living lab	Level 3
Living lab service offerings	Living Labs Methods Data collection Pilot project Product co-design and prototyping
Strategic Interest Water Europe Clusters	Value in Water, Digital Water Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

Objectives

- **Establish** a test-bed that will be used to test innovative techniques for stormwater treatment.

Network partnership base

- The **testbed** is located in the **lake Storsjon**. In cooperation with the municipality of **Östersun**d, a test bed (i.e. shielded wet detention pond) will be constructed in the lake Storsjon.
- Flexible walls are built into the lake shielding the pond water from the lake water (by Jarven Ecotech AB).
- The constructed pond will be divided (using shields) into three sections to test aeration, floating wetlands (collaboration with **Veg Tech AB**) and bottom grids (**Jarven Ecotech AB**).
- Aeration and bottom grids will be tested in the same section but shifted in time, while one section will be a blank for comparison.
- The grid will be tested based on the results from abovementioned pre-study. The instrumentation of the sections includes flow meters, sensors/transmitters for online-measurements of turbidity, conductivity and pH as well as automatic samplers

VA KLUSTER RESEARCH AND EDUCATION CLUSTER – MALARDALEN

SWEDEN

Website: http://www.va-malardalen.se/
Contact info: Bengt Carlsson, Uppsala University (bc@it.uu.se) (018 471 31 19)

URBAN

- Located in **Uppsala, Sweden.**
- Established in **2010**.
- **Organizational Coordinator**: Uppsala University, Svenska Miljoinstitutet
- **Multi-stakeholder involvement**: Wastewater utility companies, solutions providers, research institutes, municipalities, universities

VA KLUSTER - MALARDEN

Geographical scale	City
Value creation type	Mission-oriented ecosystem-based – living lab as platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Pilot implementation and testing
Maturity level of living lab	Level 3
Living lab service offerings	Living Labs Methods Data collection, Pilot project Research and innovation environment
Strategic Interest Water Europe Clusters	Value in Water, Value of Water Water Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

Objectives

- Perform research within resource efficient wastewater treatment and sludge management with special emphasis on: handling of new restrictions on discharge of nitrogen, phosphorous and BOD; monitoring, automatic control and optimisation; sustainable reuse of nutrients and organic material on farm land; biogas production; management of persistent pollutants in wastewater; reduced discharge of climatic gases.

Network partnership base

- VA-Cluster Malarden is a research and education cluster in water and wastewater area. The cluster was formed in 2010 and its members cooperate widely on issues relating to wastewater and sludge treatment.
- VA-Cluster Malarden is a research and education cluster in water and wastewater area. The cluster was formed in 2010 and its members cooperate widely on issues relating to wastewater and sludge treatment. The Cluster works with support from the Swedish Water Development.
- The cluster operates primarily to serve as a support for the work of the VA organizations in the Malardalen Region and the rest of Sweden. Furthermore, the cluster trains future employees in the wastewater industry.
- Its members are: Uppsala University, KTH Royal Institute of Technology, SLU Swedish University of Agricultural Sciences, Mälardalen University, Lund University (IEA), Stockholm Vatten, SYVAB, Käppalaförbundet, Uppsala Vatten, Mälarenergi, Eskilstuna Energi och Miljö, Norrköping Vatten, Tekniska Verken in Linköping, Örebro municipality, Växjö municipality, IVL Swedish Environmental Research Institute, JTI – Swedish Institute of Agricultural and Environmental Engineering

Finance

- The consortium receives support from the Swedish Water & Wastewater Associationlänk till annan webbplats, SWWA, and is a part of the project programme for universities launched by SWWA. The consortium is also financially supported by the wastewater utilities in the region.

SWEDEN

ROBACKSDALEN FIELD RESEARCH STATION

Website: https://www.slu.se/en/departments/agricultural-research-northern-sweden/infrastruktur/research-station/
Contact info: Boel Sandström, Experiment Group Leader/Head of Field Research Station, Department of Agriculture research for Northern Sweden, SLU (boel.sandstrom@slu.se) (0046090-786 8739)

AGRI • ECOSYSTEM

- Located in **Uppsala, Sweden.**
- Established in **1954.**
- **Organizational Coordinator**: Department of Agriculture research for Northern Sweden, Swedish University of Agricultural Sciences
- **Multi-stakeholder involvement**: Wastewater utility companies, solutions providers, research institutes, municipalities, universities

ROBACKSDALEN FIELD RESEARCH STATION

Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based – living lab as platform
Market positioning	Public-authority driven
Technology development phase supported by living lab	Concept development Pilot implementation and testing
Maturity level of living lab	Level 3
Living lab service offerings	Living Labs Methods Data collection, Pilot project Research and innovation environment
Strategic Interest Water Europe Clusters	Value in Water, Value of Water Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

Objectives

- **Röbäcksdalen research station** was established **1954** and contains a field station and a dairy barn. The field station offers the ability to perform field research in a variety of areas such as animal science, agricultural science, ecology, phenology, climatology, geochemistry, biology, agroecology, soil science and environmental science.
- Visitors and users of the infrastructure can get access to the land and a stream collecting drainage and surface runoff-water from the area, animals in the dairy facility, workshop, machines, measuring equipment and technique, personnel, laboratories and working stations.

Network partnership base

- The Röbäcksdalen research station, managed by the Swedish University of Agricultural Sciences, collaborates with **Lantmännen Lantbruk at Lännäs (Västernorrland), Torsta AB at Ås (Jämtland) and Hushållningssällskapet Norrbotten och Västerbotten at Öjebyn (Norrbotten)**.

Project

- The number of experiments has varied throughout the years and peaked with over **500 annual trials on six different locations**. Today the number of experiments is around **100 trials per year, at four different locations**. The Röbäcksdalen research station is planning a **new field trial** to compare different strategies for the future for a resource-conserving agriculture, as well as for the study of sustainability, climate change and Agroecology in future cultivation systems.

TURKEY

BASAKSEHIR LIVING LAB

Website: http://basaksehir-livinglab.com
Contact info: https://www.lit-gca.com/contactez-nous/

URBAN

- Located in **Istanbul, Turkey**.
- Project initiator: **Basaksehir Municipality.**
- Founded in **January 2014.**
- **Multi-stakeholder involvement**: citizens, research centers, municipality, business and associations (e.g. industry associations, consumer rights NGOs).

BASAKSEHIR LIVING LAB

Geographical scale	City
Value creation type	Mission-oriented ecosystem-based – living lab as platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Pilot implementation and testing Adoption deployment
Maturity level of living lab	Level 2.5
Living lab service offerings	Living lab methods User development methods Networking, Need finding Pilot and innovation environment
Strategic Interest Water Europe Clusters	Value in Water, Value of Water Digital Water Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

Objectives

- Become one of the leading cities/municipalities in the world in which new developed and IT-related products and services form all over the world are experimented.
- Make the people of Basaksehir inspiring examples for the other cities around the world, in terms of technology usage and creativity.

Network partnership base

- The Living Lab has a 4P approach and collaborates strongly with organized industrial districts, entrepreneurs, investors, the University of Bahcesehir, and citizens. Its strategic partners are Istanbul Design Factory, Starters Hub, Startup Bootcamp Istanbul, Turk Telecom, BUMED Business Angels, Girisim Fabrikasi, Fongogo, Keiretsu Forum, Istanbul Chamber of Industry, KOSGEB (Small and Medium Industry Development Organisation), Denizbank, TIM (Turkish Exporters Assembly), Turkcell, Superonline, Be system, prokare, title, Scandinavia Wallrite, MERU Networks, University of Bahcesehir, Bahcesehir College, University of Kultur, Bilgi University, iKSARA, wissen, and so forth.
- The Basaksehir Living Lab, located in Istanbul, is a 3,000-square-meter, four-floor, LEED Gold certified building. The living lab has a 700-square meter user experience showroom, incubation support capacity, and provides user experience/test environment, as well as ICT and Design education. The Living Lab has four core thematic focus areas: smart city applications, innovation ecosystems of digital cultural assets, personalised healthcare and waste (i.e. re-use of sewage water, separation, and re-use of waste).

Finance

- Funding from strategic partners, the municipality of Basaksehir and external funding.

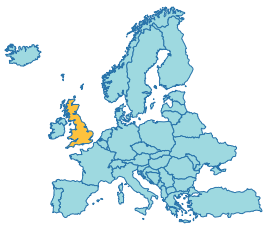
Project

- The Basaksehir Living Lab has approximately 20 pilot projects.

OPEN-AIR LIVING LAB – CATTERLINE

UNITED KINGDOM

AGRI • ECOSYSTEM



- **Project period:** 2018-2022
- **Total budget:** EUR 14 696 502
- **EU funding:** EUR 12 257 343
- **Funding:** EU Framework Programme for Research and Innovation H2020. Project Coordinator: Alma Mater Studiorum – Universita di Bologna
- **Multi-stakeholder involvement:** Companies, water technology centers, water authorities, municipalities, public research organizations.

- **Location: Catterline, United Kingdom**
- **Hydro-meteorological risks: Flood, landslide, storm surge**
- **Existing NBS: Unsystematic**
- **Intended NBS: Green, blue/grey/hybrid**
- **Network partnership base: Statuary authorities, local government, residents, land owner/managers**
- **Innovation: Definition, co-design, KPI**
- **Economic assets: Tourism/recreation, agriculture/fishery**
- **Links to EU initiatives: Natura 2000**
- **Major strategies to maximize impact: Replication, dissemination, capacity building**

OPEN AIR LIVING LAB – CATTERLINE

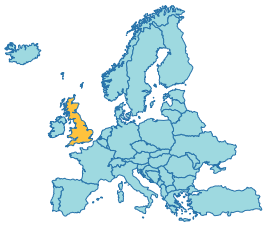
Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based – living lab as platform Individual project-based – living lab as project
Market positioning	Public-authority driven
Technology development phase supported by living lab	Concept development Adoption deployment
Maturity level of living lab	Level 1.5
Living lab service offerings	Technology innovation support Support for innovation management process
Strategic Interest Water Europe Clusters	Value in Water, Value of Water Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

UNIVERSITY OF EAST ANGLIA, AGRITECH WATER CLUSTER

UNITED KINGDOM

Website: https://www.uea.ac.uk/agritechwatercluster
Contact info: Professor Kevin Hiscock, Agritech Water Cluster Director (k.hiscock@uea.ac.uk) (01603 593104)

ECOSYSTEM



- Located in **Norwich, United Kingdom.**
- **Project initiator:** University of East Anglia
- **Multi-stakeholder involvement:** Farmer associations, research institutes, industry partners, universities

Objectives

- **Understand business needs in the Agritech-water industry**
- **Show how University of East Anglia-led research can be used by the water and Agritech industries**
- **Support and encourage new collaboration between industry and University of East Anglia academics in the Agritech-water area.**

Network partnership base

- **The Agritech Water Cluster promotes the formation of new collaborations (e.g. on farm action research) between the University of East Anglia, industry partners in the Agritech and water industries. The cluster has been working on the development of bio-bed trials in catchment areas. Bio-bed means "the installation of a bunded filling area and biofilter in the farmyard to prevent pesticide losses due to sprayer filling and washdown operations reaching the local watercourses, as pesticide washings are contained and breakdown naturally through the biomix." In one of the biobed trials, the Agritech Water Cluster have worked together with Essex & Suffolk Water, farmers in the Chelmer & Blackwater, Bure, Waveney, and Stour catchments. The Cluster has collaborations with industry partners, such as Anglian Water, Agri-Tech East.**

Finance

- **The Agritech Water Cluster is funded by the NERC.**

AGRITECH WATER CLUSTER

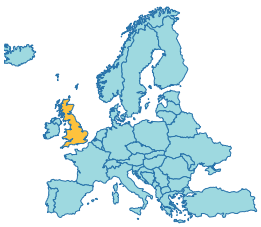
Geographical scale	City
Value creation type	Mission-oriented ecosystem-based – living lab as platform
Market positioning	Public-authority driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation and testing
Maturity level of living lab	Level 3
Living lab service offerings	Living Labs Methods Data collection, Pilot project Research and innovation environment
Strategic Interest Water Europe Clusters	Value in Water, Value of Water Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

BRISTOL WATER FIELD LAB

UNITED KINGDOM

Website: https://www.bristolwater.co.uk/about-us/innovation/
Contact info: innovation@bristolwater.co.uk (03457023797)

URBAN



- Located in **Bristol, United Kingdom**.
- Established in **2012**.
- **Project initiator**: Bristol Water, Imperial College London and Cla-Val
- **Multi-stakeholder involvement**: Water utility companies, local authorities, research institutes, universities

BRISTOL WATER FIELD LAB

Geographical scale	City
Value creation type	Mission-oriented ecosystem-based – living lab as research platform
Market positioning	Water utility-driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation and testing
Maturity level of living lab	Level 3
Living lab service offerings	Living Labs Methods Data collection, Pilot project Research and innovation development
Strategic Interest Water Europe Clusters	Value in Water, Value of Water Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

Objectives

- **Test out** an approach they call Dynamic District Meter Areas (DDMA). DDMAs introduce multi-function self-powered automatic control valves, rather than older valves in DMAs. It allows different DDMA to work together. These network controllers optimize the network connectivity and hydraulic conditions (e.g. control pressure, reduction of the risk of burst mains; reduction of water quality incidents). Approximately 4,000 customers are inside this field lab area. The Bristol Water is currently extending the lab to other areas of its network.

Network partnership base

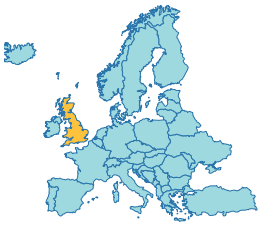
- This project has been a long-term collaboration between an early adopter network operator (**Bristol Water**), a technology company with extensive experience in pressure control (**Cla-Val**) and a research-led university (**Imperial College London**). A demonstrator (the "Field Lab"), operated by BW, was implemented in 2012 as a "playground" for the development and integration of modelling, optimisation methods, and control technologies. The "**Field Lab**" includes three dynamically adaptive DMAs, 7900 customer connections and 59km of mains.

CAM & ELY OUSE (CamEO) CATCHMENT PARTNERSHIP

UNITED KINGDOM

Website: http://www.cameopartnership.org/
Contact info: info@cameopartnership.org

AGRI



- Located in **East Anglia, United Kingdom**.
- Established in **2012**.
- **Project initiator**: Bristol Water, Imperial College London and Cla-Val
- **Multi-stakeholder involvement**: Community interest groups, farmers, governmental bodies, environmental NGOs.

CAM & ELY OUSE

Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based – living lab as research platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation and testing
Maturity level of living lab	Level 2
Living lab service offerings	Living Lab Methods Data collection, Pilot project Research and innovation development
Strategic Interest Water Europe Clusters	Value in Water, Value of Water Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

Objectives

- **Pilot** collaborative approaches to the management of the water environment in the **Cam and Ely Ouse catchment**.

Network partnership base

- **Within the Anglian Water region**, CamEO forms one of 15 catchment partnerships. As Anglian Water co-hosts CamEO and has an interest in the other partnerships, we aim to work across the boundaries with the other catchment partnerships to share best practice and drive river improvements throughout the region. There are many shared issues between partnerships and there is a lot that can be learnt from the great work going on throughout the country. The partnership is co-hosted by the Rivers Trust and Anglian Water and consists of many partners representing community interest groups, farmers, governmental bodies, environmental NGOs, and so forth. The partnership includes also local sub-catchment partnerships to provide a strong community link and a water stewardship business board to increase and align the interests of food and farming dependent businesses in the work of partnership. The Cam & Ely Ouse catchment partnership took part in the Interreg Water Co-Governance for Sustainable Ecosystems project (WaterCoG), which aimed to understand how the implementation of EU directives can be achieved at a local level in the North Sea Region.

Projects

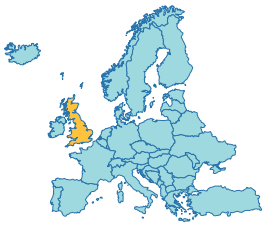
- Thompson Water (Water Soldier Removal), Little Ouse and Thet Fish Passage, Restoration of the Little Ouse and Black Bourn Rivers, Ecosystem Enhancements at the British Trust for Ornithology, Fish Passage at Fuller's Mill, Treatment Wetland on the Bin Brook, Cambridge Connections, Tackling Diffuse Pollution & Invasive Species on the Bourn Brook, and Cleaning Up the Old West.

UPPER WHARFE CATCHMENT PARTNERSHIP

UNITED KINGDOM

Website: http://dvrn.co.uk/upper-wharfe-catchment/
Contact info: Claire Tunningley (Claire.Tunningley@environment-agency.gov.uk

AGRI • URBAN



- Located in **Yorkshire Dales, United Kingdom.**
- **Project initiator:** Yorkshire Dales Rivers Trust.
- **Multi-stakeholder involvement:** Local communities, organisations, and businesses.

UPPER WHARFE

Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based – living lab as research platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation and testing
Maturity level of living lab	Level 2
Living lab service offerings	Living Lab Methods Data collection, Pilot project Research and innovation development
Strategic Interest Water Europe Clusters	Value in Water, Value of Water Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

Objectives

- **Influence** decision making process with regard to the management of the interconnected bodies of water in the **eastern/Humber watershed of the Yorkshire Dales as well as the Vales of York and Mowbray.**
- **Demonstrate** that the implementation and integration of various water management frameworks can be achieved while also providing social, economic and environmental benefits that are currently not being realised.

Network partnership base

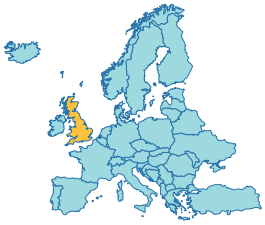
- The Upper Wharfe Catchment is located in northern England and the catchment area is defined as upstream of Bolton Abbey. The **Upper Wharfe Catchment Partnership** forms part of the **Dales to Vales River Network Catchment Partnership** hosted by the Yorkshire Dales Rivers Trust. The Upper Wharfe provides an area to focus on the delivery of natural flood management (NFM).
- The catchment partnership took part in the Interreg Water Co-Governance for Sustainable Ecosystems project (WaterCoG), which aimed to understand how the implementation of EU directives can be achieved at a local level in the North Sea Region.
- The potential partners of the catchment partnership are as follows: **Yorkshire Water Services, Catchment Sensitive Farming Officer, Yorkshire Dales River Trust, Coal Authority, Yorkshire Dales National Park Authority, and Kilnsey Trout Farm.**

EVENLODE CATCHMENT PARTNERSHIP

UNITED KINGDOM

Website: https://www.wildoxfordshire.org.uk/biodiversity/river-catchments/evenlode-catchment/
Contact info: 01865 407034 clare@wildoxfordshire.org.uk , roselle@wildoxfordshire.org.uk

AGRI • ECOSYSTEM



- Located in **Evenlode, United Kingdom.**
- Founded in **2014**
- **Project initiator:** Yorkshire Dales Rivers Trust
- **Multi-stakeholder involvement:** Local businesses, landowners, and community and conservation groups, research institutes, universities, water utilities

EVENLODE

Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based – living lab as research platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation and testing
Maturity level of living lab	Level 3
Living lab service offerings	Living Labs Methods Data collection, Pilot project Research and innovation environment
Strategic Interest Water Europe Clusters	Value in Water, Value of Water Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

Objectives

- Facilitate improvements in water quality, enhance biodiversity, flood management, resilience to climate change and build greater community engagement with the local rivers, at local and greater landscape delivery scales.

Network partnership base

- The Evenlode Catchment Partnership is a collaborative partnership bringing local knowledge and expertise to deliver cost-effective improvements to water environments across the catchment.
- It is hosted by Wild Oxfordshire and it is jointly funded by the Thames Regional Food and Coastal Committee (RFCC) and the Environment Agency (EA). The Evenlode Catchment Partnership has a steering committee and includes many organizations including Thames Water, Earth Watch, Oxford University ECI, CEH, local businesses, landowners, and community and conservation groups.

Projects

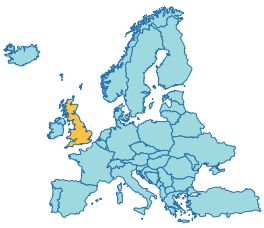
- The projects of the Evenlode catchment partnership are related to the following areas of research: river restoration (including Water Quality & Natural Flood Management measures), Evenlode Catchment Laboratory (a space for environmental education, study and research), environmental monitoring, river education & fieldwork, citizen science, and demonstration and promotion of integrated land management.

BO'NESS WASTEWATER DEVELOPMENT CENTRE, SCOTLAND

UNITED KINGDOM

Website: https://www.scottishwater.co.uk/business/our-services/development-centres/development-centres-landing-page
Contact info: Rebecca Skuce, Scottish Water Horizons (rebecca.skuce@scottishwater.co.uk) (07483 143439)

URBAN • INDUSTRY



- **Project period**: 2018-2021
- **Total budget**: EUR 6.05 m
- **EU funding**: EUR 3.63 m
- **Funding**: Interreg North-West Europe Programme
- **Project Coordinator**: Scottish Partner
- **Multi-stakeholder involvement**: Companies, water technology centers, water authorities, municipalities, and public research organisations

BO'NESS WWDC

Geographical scale	City
Value creation type	Mission-oriented ecosystem-based – living lab as research platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation and testing
Maturity level of living lab	Level 3
Living lab service offerings	Living Lab Methods Data collection, Pilot project Research and innovation development
Strategic Interest Water Europe Clusters	Value in Water, Value of Water Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

Objectives

- The Wastewater Development Centre at Bo'ness is Scotland's first full-scale test facility dedicated to supporting research licenses and innovation in the wastewater sector. **Testing facility** includes: pilot scale sequencing batch reactor, drainage discharge points, compressed air, environmental licences for operating trail units, power supply (240v, 110v, and 400v), inlet screening test area, UKAS accredited sampling and analysis services available as an additional service, modern welfare facilities and a laboratory area, and assistance from qualified operators).

Network partnership base

- In the context of the **Interreg Water Test Network project**, under the coordination of Scottish Water, 8 organisations (James Hutton Limited, DVGW Water Technology Centre, VITO NV, Centre of Expertise Water Technology, French Geological Institute, Water Board Vallei and Veluwe, Enterprise Ireland, and Scottish Enterprise) are collaborating in the effort to establish a transnational network of testing facilities that can be used by SMEs in North-West Europe to test, demonstrate, and develop new products for the water sector.
- Created from a redundant building on the live **Bo'Ness Waste Water Treatment Works**, the Centre enables dynamic testing for waste water technologies. The Centre can provide three individual feeds of waste water from different stages in the treatment process. All discharges from the testing areas are entered back into the normal treatment process, offering a flexible and low risk testing environment. There is also the provision for testing of new screening innovations at the inlet to the Treatment Works.

Finance

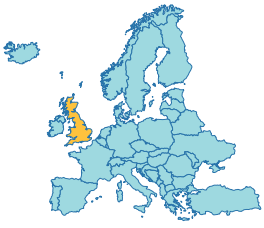
- **Bo'ness Wastewater Development Centre** is part of the **Scottish Water**. It is operated by its **commercial subsidiary Scottish Water Horizons**.

GORTHLECK WATER DEVELOPMENT CENTRE, SCOTLAND

UNITED KINGDOM

Website: https://www.scottishwater.co.uk/business/our-services/development-centres/development-centres-landing-page
Contact info: Rebecca Skuce, Scottish Water Horizons (rebecca.skuce@scottishwater.co.uk) (07483 143439)

URBAN • INDUSTRIAL



- Project period: 2018-2021
- Total budget: EUR 6.05 m
- EU funding: EUR 3.63 m
- Funding: Interreg North-West Europe Programme
- Project Coordinator: Scottish Partner
- Multi-stakeholder involvement: Companies, water technology centers, water authorities, municipalities, and public research organisations

GORTHLECK WWDC

Geographical scale	City
Value creation type	Mission-oriented ecosystem-based – living lab as research platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation and testing
Maturity level of living lab	Level 3
Living lab service offerings	Living Lab Methods Data collection, Pilot project Research and innovation development
Strategic Interest Water Europe Clusters	Value in Water, Value of Water Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

Objectives

- The Wastewater Development Centre near Inverness is Scotland's first full-scale test facility dedicated to supporting research and innovation in water treatment. Testing facility includes: raw material connections, 10 micron sand filter connections, environmental licences for operating trail units, chemical discharge tank, drainage discharge points, power supply, UKAS accredited sampling and analysis services available as an additional service, modern welfare facilities and a laboratory area, assistance from qualified operators, chemical treatment, instrumentation, and disinfection technologies.

Network partnership base

- In the context of the Interreg Water Test Network project, under the coordination of Scottish Water, 8 organisations (James Hutton Limited, DVGW Water Technology Centre, VITO NV, Centre of Expertise Water Technology, French Geological Institute, Water Board Vallei and Veluwe, Enterprise Ireland, and Scottish Enterprise) are collaborating in the effort to establish a transnational network of testing facilities that can be used by SMEs in North-West Europe to test, demonstrate, and develop new products for the water sector.
- Transformed from a membrane Water Treatment Works, the Centre benefits from a varied raw water quality, typical to that of many rural areas in Scotland. As the Centre is no longer connected to the distribution network, users have a unique opportunity to trial new equipment on full scale assets in a low risk environment.

Finance

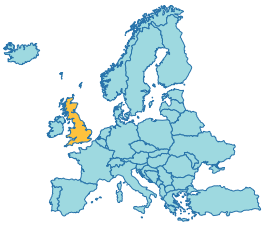
- Gorthleck Development Centre is part of the Scottish Water. It is operated by its commercial subsidiary Scottish Water Horizons.

JAMES HUTTON LIMITED TEST FACILITIES

UNITED KINGDOM

Website: https://www.hutton.ac.uk/about/facilities
Contact info: Richard Allan (Richard.allan@hutton.ac.uk) (0044 01382568952)

AGRI • ECOSYSTEM • INDUSTRIAL



- **Project period**: 2018-2021
- **Total budget**: EUR 6.05 m
- **EU funding**: EUR 3.63 m
- **Funding**: Interreg North-West Europe Programme
- **Project Coordinator**: Scottish Partner
- **Multi-stakeholder involvement**: Companies, water technology centers, water authorities, municipalities, and public research organisations

JAMES HUTTON LTD

Geographical scale	Sub-regional
Value creation type	Mission-oriented and ecosystem based – living lab as (research) platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation
Maturity level of living lab	Level 3
Living lab service offerings	Living Labs Methods Data collection, Pilot project Research and innovation environ-men
Strategic Interest Water Europe Clusters	Value of Water, Value in Water, Hybrid Grey-Green Infrastructure,
Sustainability of living lab	Yes

Objectives

- **James Hutton Limited's Aberdeen based laboratories** offer testing and verification of technologies for the chemical and microbiological treatment of water and water resource management. Testing facility includes: analytical lab and laboratory facilities (i.e. ICP-MS, ICP-OES, GC-MS, GC-FID, LC-MS-MS, Ion Chromatography, Discrete analyses, pH, Microbiology, Enterolert (for enterococci), Colourimetry, Permits, and Assistance from qualified laboratory staff).

Network partnership base

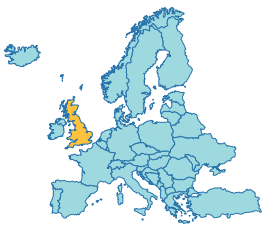
- In the context of the **Interreg Water Test Network project**, under the coordination of Scottish Water, 8 organisations (James Hutton Limited, DVGW Water Technology Centre, VITO NV, Centre of Expertise Water Technology, French Geological Institute, Water Board Vallei and Veluwe, Enterprise Ireland, and Scottish Enterprise) are collaborating in the effort to establish a transnational network of testing facilities that can be used by SMEs in North-West Europe to test, demonstrate, and develop new products for the water sector.
- The **research facilities of the James Hutton are**: Aberdeen (Organic and Inorganic chemistry laboratories), Dundee (Glasshouse Facilities, Controlled Environment Plant Growth Facilities, Research Polytunnels, International Barley Hub project, Advanced Plant Growth Centre Project, Arable Land), Research stations and farms (i.e. Balruddery Research Farm in Angus, Glensaugh Research Farm in Aberdeenshire, Hartwood Research Farm in Lanarkshire). The James Hutton Limited has **36 research partners** (link).

HILLSBOROUGH UK ENVIRONMENTAL CHANGE NETWORK SITE

UNITED KINGDOM

Website: https://www.afbini.gov.uk/
Contact info: Colm Kenna, Agri-food and Biosciences Institute, (colm.mckenna@afbini.gov.uk)

INDUSTRIAL • ECOSYSTEM



- Located in **Hillsborough, Ireland**
- Founded in **1992**
- **Site coordination**: Agri-Food and Biosciences Institute
- **Multi-stakeholder involvement**: Local businesses, landowners, and community and conservation groups, research institutes, universities, water utilities, farmer unions

HILLSBOROUGH ECN

Geographical scale	Sub-regional
Value creation type	Mission-oriented ecosystem-based – living lab as research platform
Market positioning	Public-private partnership driven
Technology development phase supported by living lab	Concept development Adoption deployment Pilot implementation and testing
Maturity level of living lab	Level 3
Living lab service offerings	Living Labs Methods Data collection, Pilot project Research and innovation environment
Strategic Interest Water Europe Clusters	Value in Water, Value of Water Hybrid Grey-Green Infrastructure
Sustainability of living lab	Yes

Objectives

- **Carry out** agricultural and livestock research and long-term environmental monitoring.

Network partnership base

- The site owes it origins to a memo presented by the executive committee of the **Ulster Farmer's Union** to the Prime Minister of N.I. in 1925 stating that 75% of agri income of N.I. farmers is from livestock and stock products. All previous and experimental work in Ireland had mainly concerned crops and if attention to the animal side was progressed similar achievements could be made. After negotiations between UFU and Government 500 acres of land at Large Park Hillsborough was allocated for this purpose.
- The **Hillsborough ECN research site** has been managed by the **Agri-Food and Biosciences Institute** is a multi-disciplinary organisation, which develops research and innovation activities in the fields of natural and marine environment, sustainable livestock production, and animal, plant, and human health and welfare. It has 7 sites across Northern Ireland: Newforge Lane, Stormont, Hillsborough, Crossnacreevy, Loughgal, Omagh, Bushmills, and a 53m dedicated marine research vessel based in Port of Belfast.

SYSTEMIC - LIVING LABS

CROSS-TERRITORY

Website: https://systemicproject.eu/
Contact info: Wageningen Environmental Research, PO Box 47, 6700 AA Wageningen, Netherlands [+31.15.278.5278]

- **Project period**: 2017-2021
- **Total budget**: EUR 9 723 586,25
- **EU funding**: EUR 7 859 828,75
- **Funding**: EU Framework Programme for Research and Innovation H2020.
- **Project Coordinator**: Stichting Wageningen Research
- **Multi-stakeholder involvement**: Companies, water technology centers, water authorities, municipalities, public research organizations.

SYSTEMIC

Geographical scale	Territory (city), Cross-territory
Value creation type	Mission-oriented ecosystem-based – living lab as platform Individual project-based – living lab as project
Market positioning	Solution provider driven (University)
Technology development phase supported by living lab	Need finding Concept development (demo cases)
Maturity level of living lab	Level 1-2
Living lab service offerings	SME business support Concept development Demonstration, test, and validation
Strategic Interest Water Europe Clusters	Water treatment Hybrid grey-green infrastructure

Objectives

- **Identify** systemic innovation approaches to recover and recycle valuable mineral components from organic waste streams into new products and to integrate them optimally into a local or regional circular economy.
- **Implement** the most promising NRR technologies in the effort to implement these on anaerobic digestion demonstration plants in order to demonstrate that the combination of anaerobic digestion and nutrient recovery forms a prerequisite for the valorisation of bio-waste in an economically viable manner.
- **Demonstrate** the viability of the Circular Economy business cases at the demonstration plants and to translate these into business opportunities for another ten EU outreach locations; provide plant operators and investors with a business development package for advancing the circular economy.

Network partnership base

- The LIVERUR H2020 project consortium, led by the **Stichting Wageningen Research (Netherlands)**, has **14 partners**. These are: Stichting Wageningen Research (**Netherlands**), AMPower (**Belgium**), Groot Zevert Vergisting B.V. (**Netherlands**), Acqua & Sole S.r.l. (**Italy**), Rika Biofuel Developments Ltd. (**United Kingdom**), GNS – Gesellschaft fur Nachhaltige Stoffnutzung mbH (**Germany**), A-Tuottajat Oy (**Finland**), ICL Fertilizers Europe C.V. (**Netherlands**), Nijhuis Water Technology BV (**Netherlands**), Proman Management Gmbh (**Austria**), Universiteit Gent (**Belgium**), Universita Degli Studi di Milano (**Italy**), Vlaams Coordinatiecentrum Mestverwerking (**Belgium**), European Biogas Association (**Belgium**), The Rural Investment Support for Europe (**RISE**) Foundation (**Belgium**).

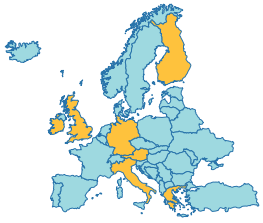
Projects

- The SYSTEMIC project aims to develop partnerships and cooperation through setting up **Living Labs** – outreach locations and real-life innovation environments – demo plants – where scientists, local farmers and industries can exchange knowledge. The **SYSTEMIC living labs** are as follows: Biogas Bree (**Bree, Belgium**), Biogas Plant Bojana (**Cazna, Croatia**), Biogastur (**Navia-Asturias, Spain**), Emeraude Bio-Energie (**Lamballe, France**), GMB BioEnergie (**Lichtenvoorde, the Netherlands**), Greengas AD (**Limerick, Ireland**), SCRL Kessler (**Attert, Belgium**), Biogas plant Makassar (**Torregrossa, Spain**), Waterleau New Energy (**Ieper, Belgium**), Waternet (**Amsterdam, the Netherlands**).
  - Emeraude Bio-Energie, established in the 1990s, as a project developed by Denitral, subsidiary of the Cooperl group. Denitral is specialized in the implementation of organic slurry treatment plants on pig farms. The Emeraude bio-Energie Biogas plant will be located in the industrial site of Ville Es Lan City, next to the Cooperl's main slaughterhouse. The biogas plant project will complete the environmental centre, which receives the organic materials collected from Cooperl pig breeders and waste streams from the meat processing industry. 40 % of the feedstock is slaughterhouse wastewater of the Cooperl slaughterhouse and 25% recycled water from the liquid fraction of the digestate.

OPERANDUM OPEN-AIR LIVING LABS

CROSS-TERRITORY

Website: https://sc5.easme-web.eu/?p=776848#



- **Project period**: 2018-2022
- **Total budget**: EUR 14 696 502
- **EU funding**: EUR 12 257 343
- **Funding**: EU Framework Programme for Research and Innovation H2020.
- **Project Coordinator**: Alma Mater Studiorum – Universita di Bolo gna
- **Multi-stakeholder involvement**: Companies, water technology centers, water authorities, municipalities, public research organizations.

LL4WIDE

Geographical scale	Territory (rural- and regional-levels)
Value creation type	Mission-oriented ecosystem-based – living lab as platform Individual project-based – living lab as project
Market positioning	Solution developer driven (University)
Technology development phase supported by living lab	Concept development Adoption deployment (demo cases)
Maturity level of living lab	Level 1-2
Living lab service offerings	Technology innovation support Support for innovation management process
Strategic Interest Water Europe Clusters	Smart Water Treatment Value of Water Enabling, Industry

Objectives

- **Develop** a set of co-designed, co-developed, deployed, tested and demonstrated innovative green and blue/grey/hybrid NBS for the mitigation of the impact of extreme events, promoting their acceptance and facilitating the adoption of new policies for the reduction of hydro-meteorological risks in Europe rural and natural territories.
- **Integrate** knowledge about NBS efficacy against hydro-meteorological risks.
- **Strengthen** technology innovation in the area of NBS.
- **Improve** acceptance of NBS based implementation.
- **Enhance** market demand and increase of competitiveness of NBS.
- **Strengthen** the adoption of NBS in national policies for DRR land planning and EIP Water.

Network partnership base

- The OPERANDUM H2020 project consortium, led by the **Alma Mater Studiorum – Universita di Bologna**, has **27 partners**: Agenzia Regionale per la Prevenzione, L'Ambiente e l'Energia Del (**Italy**), Centro Italiano Richerche Aerospaziali Scpa (**Italy**), Ciaotech Srl (**Italy**), Cold and Arid Regions Environmental and Engineering Research Ins (**China**), Dublin City Council (**Ireland**), Fondazione Centro Euro-Mediterraneo Sui Cambiamenti Climatici (**Italy**), Helmholtz-Zentrum Geesthacht Zentrum Fur Material – Und Kustenfor (**Germany**), Ilmatieteen Laitos (**Finland**), Kajo SRO (**Slovakia**), Kentro Kainotomon Technologion AE (**Greece**), Luonnonvarakeskus (**Finland**), Naturalea Conservacio SL (**Spain**), Oesterreichische Akademie der Wissenschaften (**Austria**), Perifereia Stereas Elladas (**Greece**), PNO Consultants (**Netherlands**), RINA Consulting SPA (**Italy**), SWECO Gmbh (**Germany**), Technische Universiteit Delft (**Netherlands**), Glasgow Caledonian University (**United Kingdom**), University of Hong Kong (**Hong Kong**), United Nations Education, Scientific and Cultural Organization (**France**), University of College Dublin, National University of Ireland, Dublin (**Ireland**), University of Glasgow (**United Kingdom**), University of Surrey (**United Kingdom**), and University of the Sunshine Coast (**Australia**).

In the context of the project, **seven new Open Air Living (OAL) Labs, backed by multi-stakeholder communities, in seven European countries** that are vulnerable areas with high ecological, cultural, and strategic value to study and demonstrate the applicability of NBS under present and climate change scenarios.

Each OAL is prone to one or more risks that affect the environment with site-specific impacts and the OALs aim to advance NBS from TRL 4-5 to TRL 7-8, together with industrial partners.

The seven OALs are: Po Valley (**Italy**), Lake Puruvesi (**Finland**), UNESCO Biosphere Reserve Elbe Valley (**Germany**), Vogelsberg (**Austria**), Catterline (**UK**), Dodder River (**Ireland**), and Spercheios River (**Greece**).

WATER INNOVATION ACCELERATOR (WIN) SWEDEN

NETWORK

Website: http://winwater.se/
Contact info: Johan Kronholm, Development Manager (johan@win.ideon.se) [+46.704.267079]

- Located in **Ideon Science Park, Lund, Sweden**.
- Initiated in **2012**.
- **Project owner**: Open Innovation Initiative.
- **Multi-stakeholder involvement**: Municipalities, water-sector-related innovative companies.

WIN SWEDEN

Geographical scale	Cross-territory (network level)
Value creation type	Mission-oriented ecosystem-based – living lab as platform
Market positioning	Solution developers driven (accelerator type)
Technology development phase supported by living lab	Concept development Adoption deployment
Maturity level of living lab	Level 1
Living lab service offerings	Data collection, Pilot project Product co-design and prototyping- Networking
Strategic Interest Water Europe Clusters	All

Objectives

- **Facilitate** faster market access to innovative water products and services, by coaching and providing funding assistance.
- **Provide** support and assistance to innovative companies in developing new products and services, scaling up and commercializing water innovations.
- **Enterprise** marketplace and **develop** cluster collaboration for water innovations.

Network partnership base

- It is a non-profit business network organization, part of the Open Innovation initiative at Ideon Science Park. Hence, project owner is Ideon Open AB.
- Municipalities are customers to new products and services.
- In the network, there are 26 partners (active in the areas of drinking water, waste water, infrastructure, measurements, and energy) and 33 innovative companies.
- WIN Sweden have developed international cooperation with Nordic WIN, Technology Approval Group (TAG), European Water Platform (Water Europe), and ACQUEAU (EUREKA Water Cluster).

Finance

- Membership fees; Swedish Agency for Economic and Regional Growth; BSR Starts Innovation Express, EU funding.

Projects

- **WIN Nordic**: New Nordic Innovation Water Platform, funded by the BSR Star's Innovation Express funding instrument, was established in 2015. Nordic Water Platform aims to stimulate collaboration between companies and establish contacts with municipalities, large corporations, and universities. Currently, it has five institutional members: WIN (Sweden), Clean Water (Norway), Novago Business Development Ltd. (Finland), Catalan Water Partnership (Spain), and Water in Urban Areas (Denmark).
- **NEPTURE Project**: The EU-funded innovation action project has a two-fold objective: distribute grants to support innovative technical solutions in the fields of water, agriculture and space; and, shorten time-to-grant and funding application.

WATER SOLUTIONS LAB NETWORK

NETWORK

Website: http://www.gwsp.org/products/water-solutions-lab-network.html
Contact info: Global Water System Project, International Project Office, Walter-Flex-Strasse 3, 53113 Bonn, Germany [e-mail: gwsp.ipo@uni-bonn.de]

- Located in **Bonn, Germany**.
- **Project owner**: International Project Office of GWSP
- **Multi-stakeholder involvement**: Public sector, private sector, scientific research organizations, civil society and NGOs.

WATER SOLUTIONS LAB NETWORK

Geographical scale	Network
Value creation type	Mission-oriented ecosystem-based – living lab as platform Individual project-based – living lab as project
Market positioning	Solutions developer driven (Research)
Technology development phase supported by living lab	Concept development Adoption deployment (demo cases) Pilot implementation
Maturity level of living lab	Level 1-2
Living lab service offerings	Community building Stakeholder management Knowledge-based networking Implementation and monitoring of innovation solutions
Strategic Interest Water Europe Clusters	All

Objectives

- The International Project Office of GWSP set up the Water Solutions Lab Network in Bonn, Germany, which will establish lab-workshop in different regions of the world and each lab-workshop will focus on a water related issue. Each lab will have three phases: pre-lab phase, lab phase, and post-lab phase.
- **Pre-lab phase**: Establish a knowledge base on water related challenges and issues of region from local and global perspectives.
- **Lab phase**: Bring together representatives from different stakeholder groups to work on a water related issue in the region to develop solutions.
- **Post-lab phase**: Implement and monitor innovative solutions.

Network partnership base

- Currently, the Water Innovation Solutions Lab has 13 **partners**: Center for Development Research (ZEF), City University of New York (CUNY), DB Sediments, Federation of Indian Chamber of Commerce and Industry (FICCI), German Water Partnership (GWP), Global Water Partnership (GWP), Global Water System Project (GWSP), International Food Policy Research Institute (IFRI), Innovative Living Institute (ILI), Institute of Hydraulic Engineering and Water Resources Management – RWTH Aachen University (IWW-RWTH-Aachen), School of Oriental and African Studies – University of London (SOAS), UNESCO Institute for Hydrological Education (UNESCO0UHE), University of Amsterdam (UvA), University of Osnabruck, United Nations University – Institute for Environment and Human Security (UNU-EHS), United Nations University – Institute for Integrated Management of Material Fluxes and of Resources (UNU-FLORES), World Business Council for Sustainable Development (WBSCD).

Projects

- The **first lab** will take place in India.
- The **objectives of the lab-workshops** are:
- Gather public sector, private sector, scientific community, civil society, NGOs, among others;
- Monitor the implementation of innovative solutions, supported by the WSLN;
- **Use** learning experiences from lab-workshops to increase the impact of labs on different topics in different regions.

Water Europe

Technology & Innovation

COLOPHON

- **Original Title:**
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- **Written by:**
  Water Europe, PNO.
- **Editors:**
  Cemre Mutlu (PNO), Ron Weerdmeester (PNO), Andrea Rubini (Water Europe), Durk Krol (Water Europe).
- **Layout and design:**
  Andrea Rubini (Water Europe), Durk Krol (Water Europe), Ana de León (Water Europe), Marín Asociados.

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