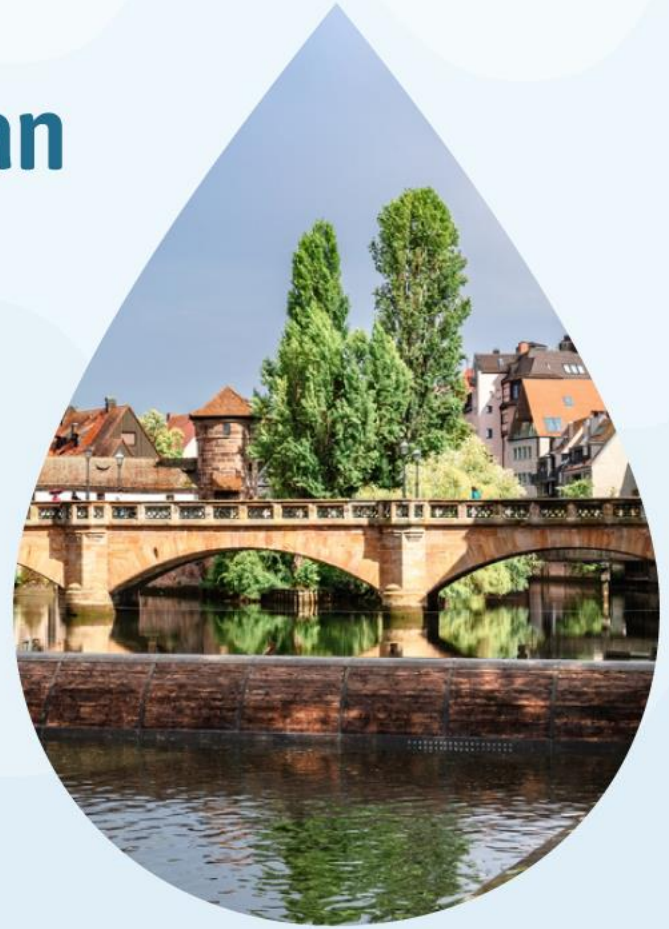
Assessment of the ecological quality of urban streams in the context of One Health



17.03.2025 16:00 PM CET

Host: SYNYO GmbH

OneAquaHealth

IEEE Southern California Council

HL7 Europe

SYNYO

1290 UNIVERSIDADE D COIMBRA

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TOULOUSE INP

EFMI EUROPEAN FEDERATION for MEDICAL INFORMATICS

UNIVERSITY OF OSLO

ENORA INNOVATION

SYNYO

WISEANGLE

Consiglio Nazionale delle Ricerche

Dipartimento Medicina Veterinaria Produzioni Animali

UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II

HIT מכון טכנולוגי חולון Holon Institute of Technology

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AGENDA

Key information

Time	Topic	Presenter
16:00 – 16:30	**Welcome and introduction to the webinar**	
	Overview of OneAquaHealth project and objectives	**Alexander Nikolov** - SYNYO GmbH, Austria
	Importance of improving the ecosystem health of urban streams	**Maria Feio** - University of Coimbra, Portugal
	Methodologies for testing indicators and conducting experiments	**Maria Feio** - University of Coimbra, Portugal
16:30 – 18:00	**Research sites data collection**	
	Introduction to the five research sites of OneAquaHealth	**OneAquaHealth research sites leaders**
	“Non project sites” interaction for project sustainability	
	MOBILISE: A sustainable One Health mobile laboratory for rapid response to infectious disease outbreaks	**Cosmina Stalidi** - MOBILISE Project
	The Water Institute: Innovation and collaboration to support people, ecosystems and economies	**Dr Kathryn Keating** - The Water Institute , United States

AGENDA

Key information

Time	Topic	Presenter
	Energy, Water and Climate: A Business Perspective on EU Regulation, Trends, and Action	**Corina Constantin** - KPMG, Romania
18:00 – 18:20	**Panel discussion**	All participants
18:20 – 18:30	**Next steps to ensure sustainability - OneAquaHealth Community**	**Alexander Nikolov** - SYNYO GmbH, Austria
18:30	**END OF THE WEBINAR**	

HOUSEKEEPING RULES

The session will be entirely recorded and published on the OneAquaHealth Open Information Hub.

All participants except speakers and moderators will be **muted by default**.

Feel free to post your questionsions in the **chat**.

If you would like to speak, raise your hand and wait for the moderator to give you the floor.

FACTS AND FIGURES

Key information

Programme
Horizon Europe

Project Type
Research and Innovation Action

Project duration
48 months (01/01/2023 – 31/12/2026)

Partners
13 from 10 countries

Budget
€4,939,558

Project is expected to (Extract)

*„ The proposal should build on the **holistic integrative concept of 'One Health'** that includes not only the health of humans, but also of animals, soil and plants including ecosystems and environmental health. "*

*„A specific focus of the proposal should be on the **monitoring of the evolution of ecosystem barriers in densely populated, industrialised or agricultural areas**. The proposal should also investigate how environmental observations could provide information that can contribute to improving the effectiveness, sustainability and resilience of these ecosystem barriers in facing emerging diseases. The proposal should **include the reanalysis of long time series of environmental observations and their correlation with the emergence or spread of diseases**."*

*"It should also work on the **concept of alert or early warning systems** based on observation that would contribute* informing governments and authorities, and finally operators*, on the health risks related to the **destruction of ecosystems and biodiversity with a One Health approach**"*

CONSORTIUM

University of Coimbra UC 1
Portugal

SHINE 2Europe SHINE 2
Portugal

Institut National Polytechnique de Toulouse INPT 3
France

European Federation for Medical Informatics EFMI 4
Switzerland

University of Oslo UiO 5
Norway

ENORA Innovation ENORA 6
Greece

SYNYO GmbH SYNYO 7
Austria

Wise Angle WISE 8
Spain

National Research Council of Italy CNR 9
Italy

University of Naples Federico II UNINA 10
Italy

Holon Institute of Technology HIT 11
Israel

Health Level Seven International Foundation HL7 12
Belgium

University of Ghent UGent 13
Belgium

KEY OBJECTIVES

OneAquaHealth

IDENTIFY the level of integrity of urban aquatic ecosystems.

DETERMINE adequate early warning indicators to assess ecosystem health and predict disease outbreak risks.

INTEGRATE live Earth observation data to monitor early warning indicators.

DEVELOP a tool to allow the selection of measures to act upon early warnings and ensure environmental monitoring.

ENGAGE stakeholders raising their awareness to the importance of urban streams.

SOLUTIONS

Predictive models

The models will use machine learning approaches such as multilayer perceptron-artificial neural networks and discriminant function models. Their adaptation will require new machine learning methods.

Open Information Hub

The Hub will contain all the project information and allow the visualization of outputs and support tools for decision making.

City dashboards

The dashboards represent web applications that enable citizens and public institutions to access the data and their statistics through an optimized search graph and a graphical visualization.

Decision Support System (DSS)

The DSS will be implemented through a web server system and use data provided by ESA's Copernicus Program and NASA's Landsat images. The DSS is based on R packages conceived to implement PROMETHEE methods and support the Multiple Criteria Decision Analysis (MCDA).

Citizen Science Application

A mobile and desktop application for environmental observation will designed and supported by a back-office, which will enable citizens and public institutions to access data and statistics through an optimized search graph and a graphical visualization.

RESEARCH CITIES

OneAquaHealth

ITALY

PORTUGAL

BELGIUM

NORWAY

FRANCE

RESEARCH ACTIVITIES

TEST INDICATORS

DEPLOY EXPERIMENTS

FILL KNOWLEDGE GAPS

CITIZEN SCIENCE ACTIVITIES

TEST TOOLS

DIFFERENT CLIMATIC AREAS

CULTURAL BACKGROUNDS

DIFFERENT EXPERIENCES

20 SAMPLING SITES

EXPECTED PROJECT IMPACTS

Better insights in how to foster the **use of environmental observation in** the large domain of **One Health** and the areas within this domain that could benefit the most from environmental and Earth observation.

An **increase of the capacity to trace environmental parameter changes** on how they impact on the emergence of diseases.

Monitoring of the evolution of ecosystem barriers and reinforcement of their sustainability, specifically in densely populated or intensively used areas.

Contributing to **understanding the emergence and tackling the spread of new infectious diseases** affecting human, animal or plant health, and the interlinkages that may exist between them and building up of more resilient ecosystems.

Better **insights into the concept of alert and early warning systems**, including, where possible, the next steps taken (e.g. exploitation/scaling up) in working with the outcomes of the EIC Horizon Prize on Early Warning for Epidemics.


THANK
YOU
GRAZIE
ASANTE
KIITOS
MERCI
MULTUMESC
MAAKE
OBRIGADO
MATONDO
ARIGATO
SPASIBO
WELALIN
VINAKA
JUSPAXAR
KIA ORA
MATONDO
CHOKRANE
DANK JE
TERMA KASIH
RAIBH MAITH AGAT
MOCHCHAKKERAM
MATUR NUWUN
UA TSAUG RAU KOJ
CAM ON BAN
SALAMAT
MULTUMESC
DANKON
NIRRINGRAZZJAK
MAMANA

OneAquaHealth

Importance of improving the ecosystem health of urban streams

Maria João Feio

Project coordinator
Dept. Life Sciences, Fac. Sciences and Technology, MARE-Marine and Environmental Sciences Centre, ARNET-Associate Laboratory Aquatic Research Network

17 March 2025

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OneAquaHealth concept...

The health of freshwater ecosystems and human health and wellbeing in urban contexts are highly interconnected

Improving results in one will result in the improvement of the other, reestablishing the balance between nature and humans

Ecosystem services of healthy rivers and streams

Provisioning
Water, food, timber,...

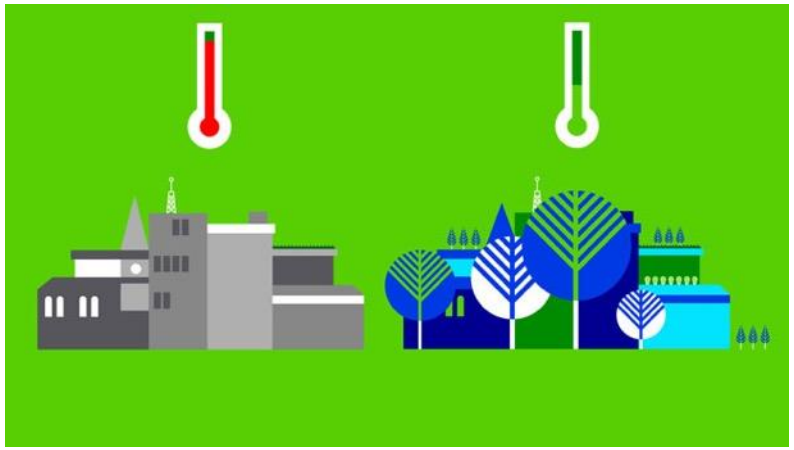
Regulating
Water, soil, climate regulation.
Flood mitigation...

Functions and Habitat
Habitat, Primary production, nutrient and energy cycling, decomposition or organic matter...

Cultural
Recreation, aesthetics, relaxation, education, ...

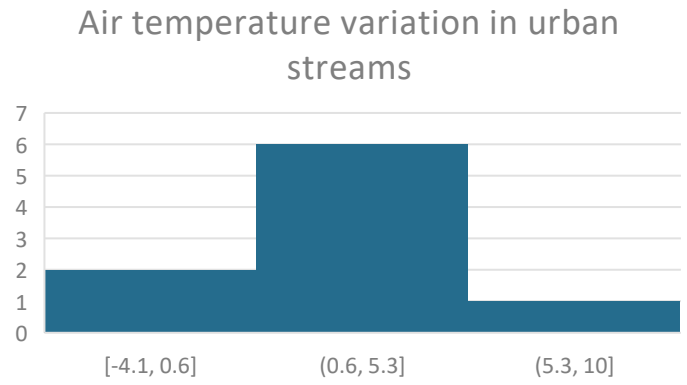
Common International Classification of Ecosystem Services (CICES), European Environment Agency

Climate regulation

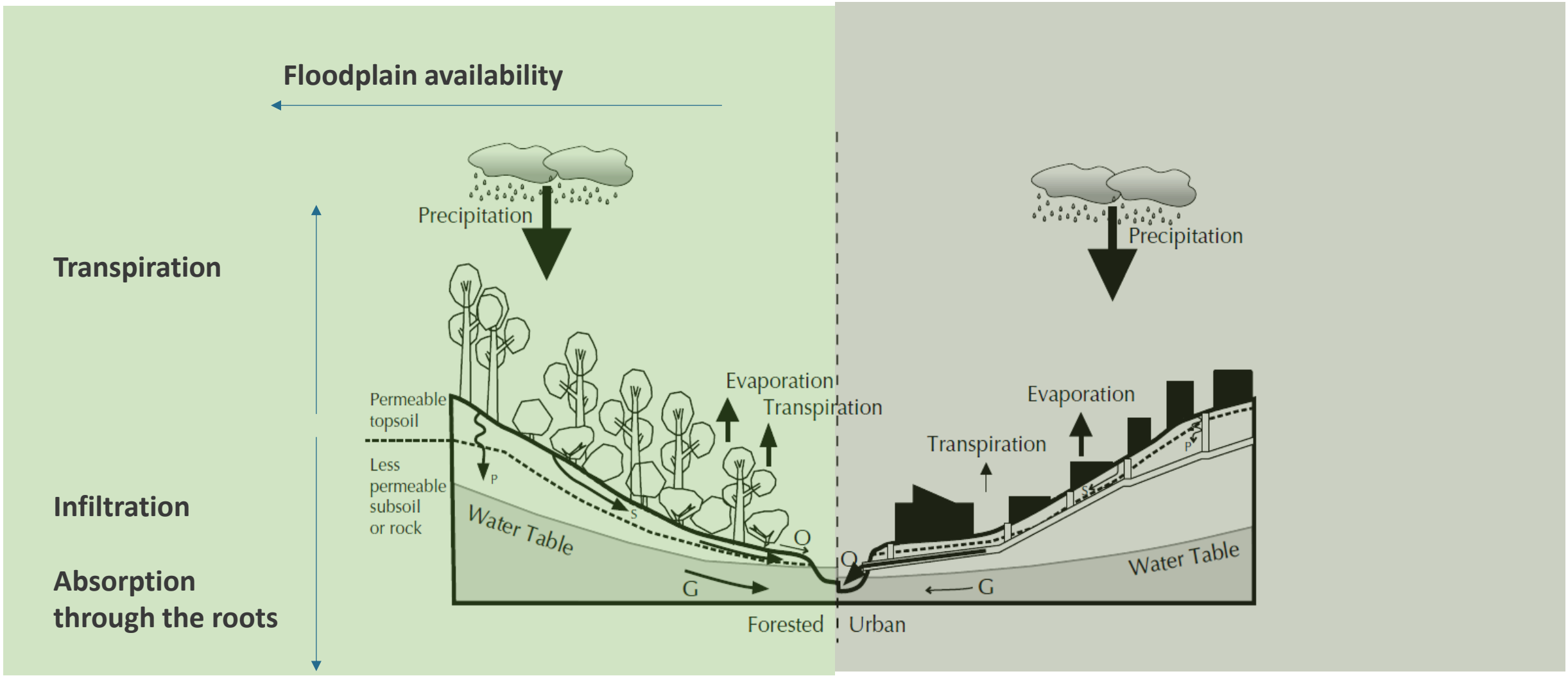


+6ºC on average outside riparian zones during the day (up to +10ºC)

Important in temperate, mediterranean and dry areas and under expected climate change scenarios



Flood mitigation



Walsh et al. 2004 JNABS

Flood mitigation

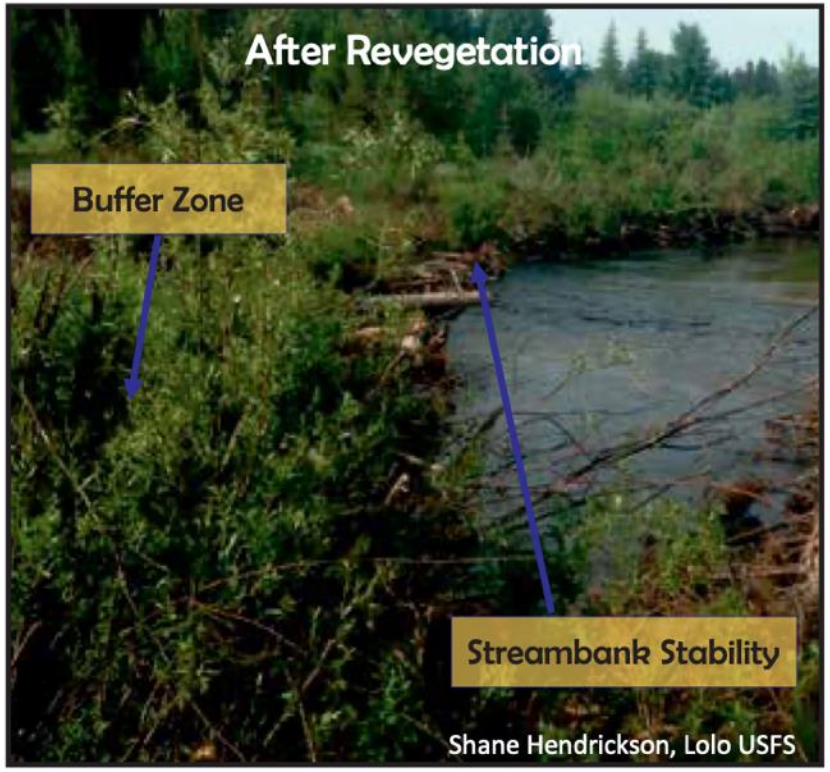
Floods can cause the spread of contaminated water and vectors of diseases

Flood mitigation

Floods can cause the spread of contaminated water and vectors of diseases

Banks stabilization

Bank destabilization is responsible for disasters such as fall of bridges, houses and human losses



Polination

Pollination is essential to keep plants reproduction, essential for plants diversity in forests, human and animal food production and nutritional quality

Food provisioning

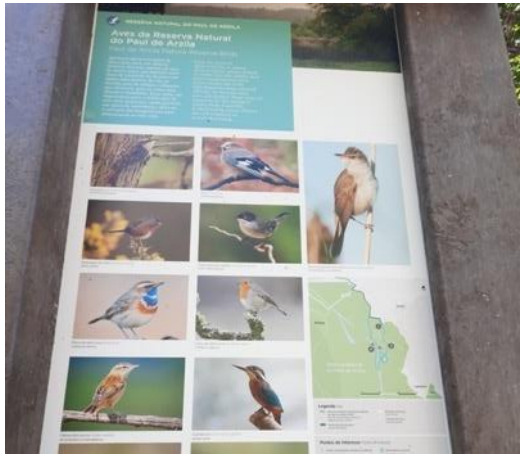
Essential for food availability, diversity and nutritional value

Therapeutic services

Essential for mental health

Environmental education

Essential for cognitive development and nature conservation



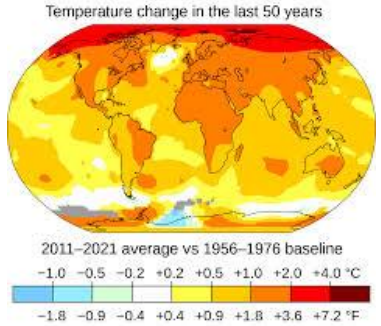
Ecosystem and Biological Health

DEGRADED URBAN FRESHWATER ECOSYSTEMS
are a source of (water and vector-borne) diseases and lack of wellbeing that affect animals, plants and humans

Human Health

Water-borne and vector-borne diseases

Lack of wellbeing associated to environmental urban degradation: noise, air pollution, water pollution, lack of natural areas, disconnection with nature…**and of benefits of nature for mental health benefits**

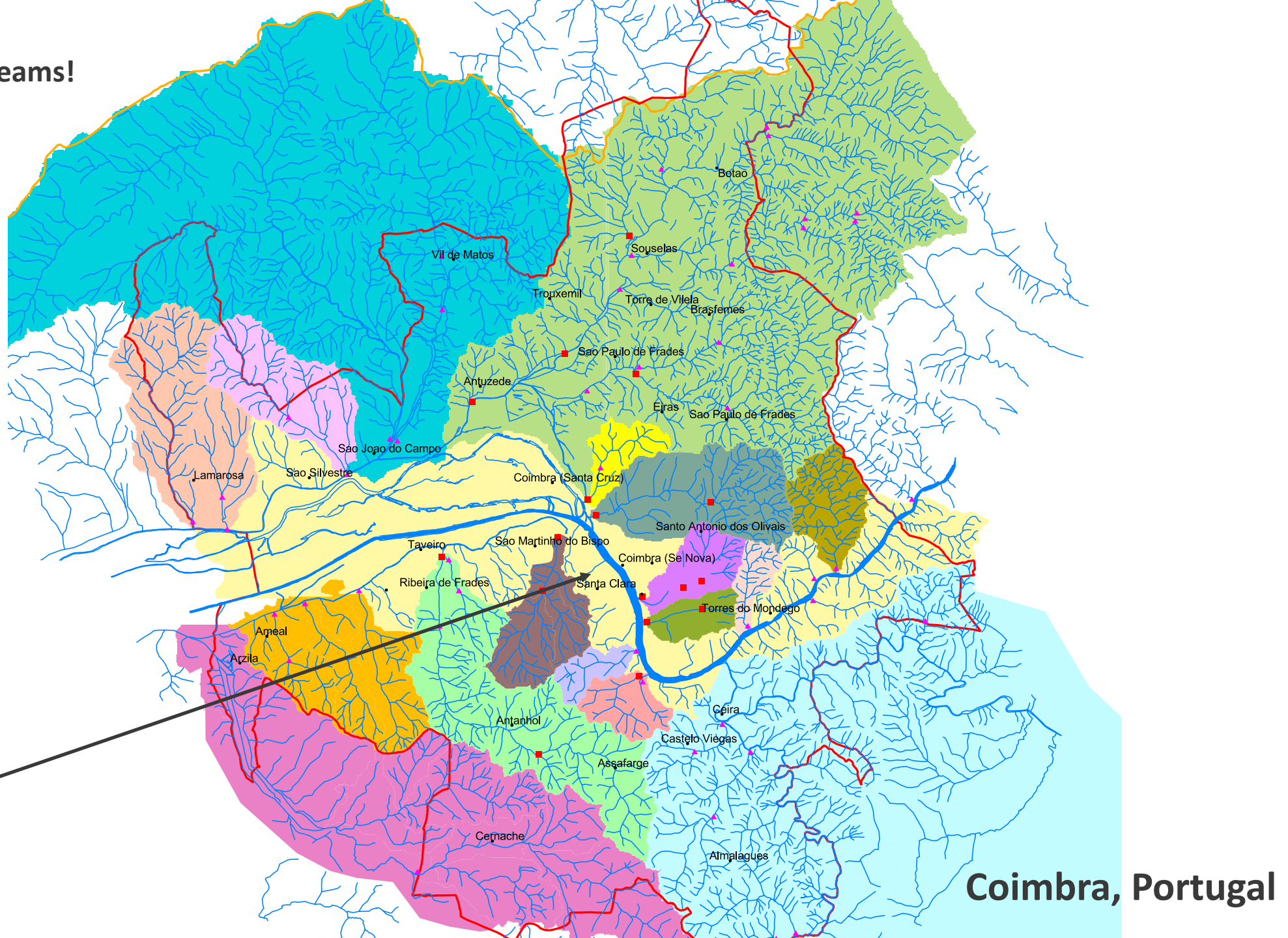


Climate changes

One river and many streams!

The **closest nature** and freshwater to every home and people in the city!

But most of them **are unmonitored (biologically) and are more degraded than streams and rivers outside urban areas**



Rio Mondego

Coimbra, Portugal

Questions & Answers

OneAquaHealth

Methodologies for testing indicators and conducting experiments

Maria João Feio

Project coordinator
Dept. Life Sciences, Fac. Sciences and Technology, MARE-Marine and Environmental Sciences Centre, ARNET-Associate Laboratory Aquatic Research Network

17 March 2025

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Aims

- Establishment of **Early-warning indicators** of environmental health degradation that indicate **risks for human health**
- Development of an **Environmental surveillance system** to support managers

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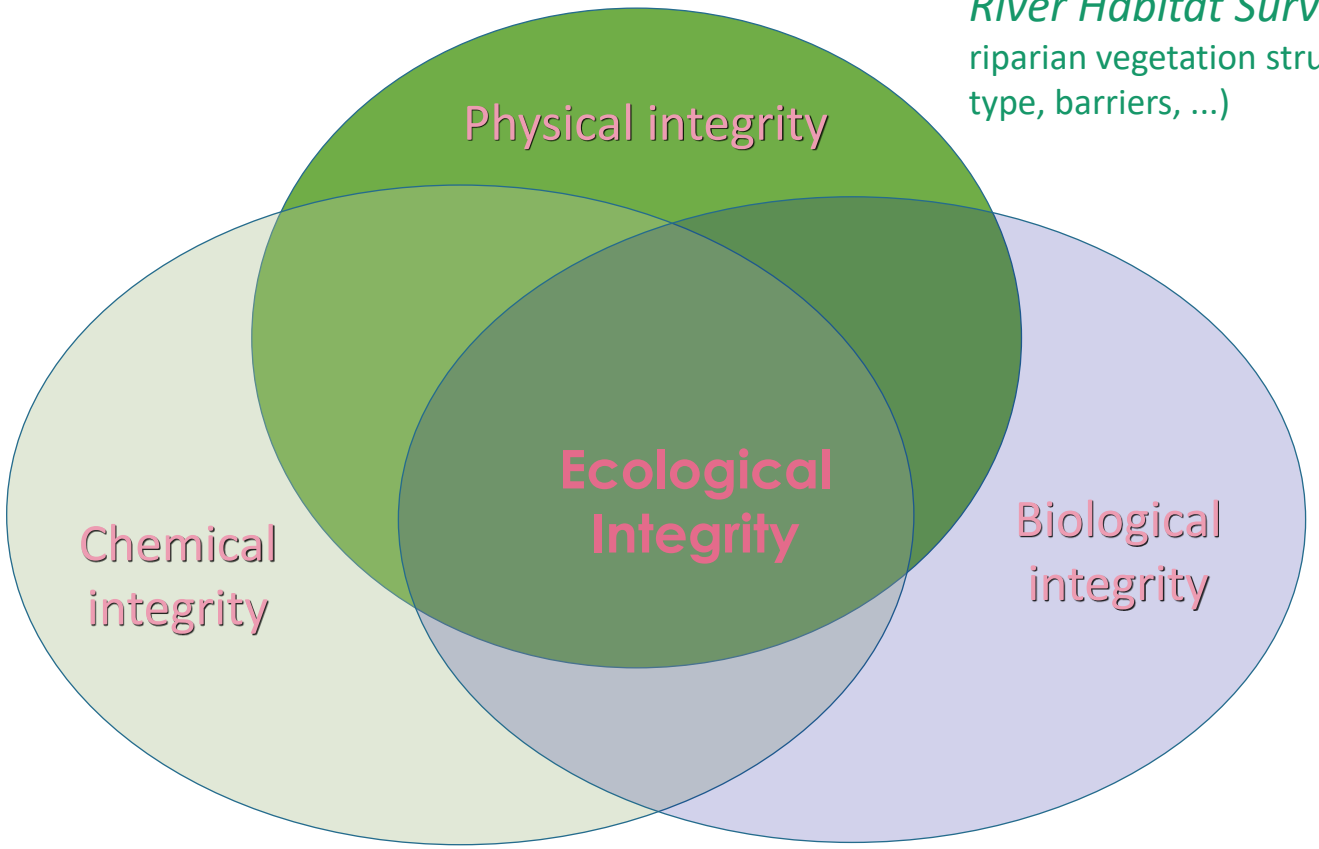
Ecological Monitoring of rivers

Indicators of the **health of freshwater ecosystems**

Hydromorphology:
River Habitat Survey (land use, channel form, substrate, riparian vegetation structure, macrophytes presence, flow type, barriers, ...)



Water:
O_2,
pH,
Conductivity,
NO_3, NO_2, NH_4, N-total,
PO4, P-total,
Other pollutants:
Heavy metals,
Pesticides,
Fertilizers
Pharmaceuticals
...

Biological indicators:
Benthic macroinvertebrates
Fish
Macrophytes
Phytobenthos: diatoms

Ecological Monitoring of rivers

Water Framework Directive, EC 2000

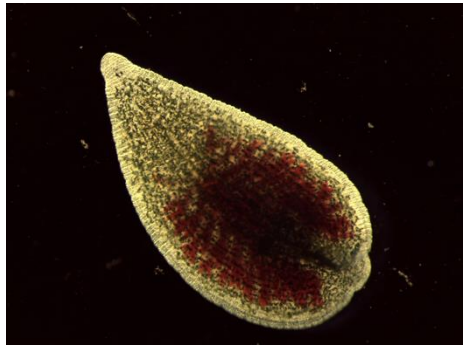
This may not reflect the **organisms' health**

nor the importance of the ecosystem in the context of One Health

↓

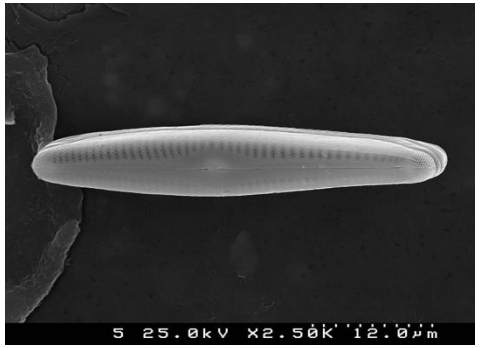
It is important to **show their biodiversity** and **promote their restoration and benefits for citizens**

Macroinvertebrates



Fish

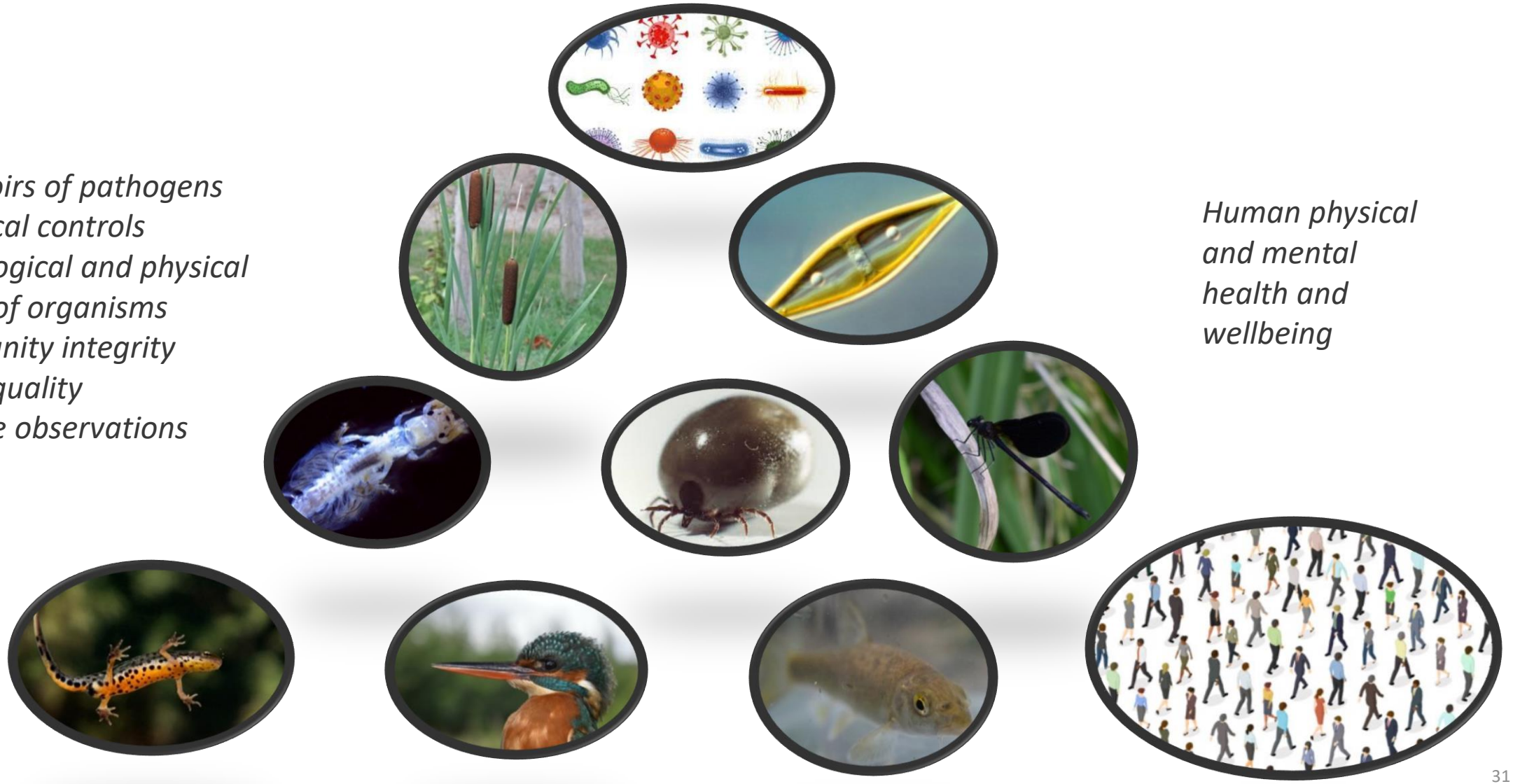
Diatoms



Macrophytes

Which indicators could better relate the health of urban stream ecosystems with human health?

Vectors
Reservoirs of pathogens
Biological controls
Physiological and physical health of organisms
Community integrity
Water quality
Satellite observations



Human physical and mental health and wellbeing

OneAquaHealth Indicators

OneAquaHealth

Type of indicator	Indicator				Sources of information
Ecosystem health indicators	**27**				*bases with information ary to calculate or with of each of the indices trics ld data om the app*
Biological indicators of health risks	**7**	*se… each of the… related to human health*	*identification/count ing/etc*		*Databases with information necessary to calculate or with results of each of the indices and metrics* *New field data*

Selection of Indicators:

Realistic

(Some) are known indicators of freshwater ecosystem health

With (some) historical information (environmental agencies, research projects)

Citizens can contribute with (some) new information

OneAquaHealth Indicators

Type of indicator	Indicator	Rationale	Method	Derived metrics/indices	Sources of information
Ecosystem health indicators	**22**	*Why were they selected; why are each of the indicators related to human health*	*How is each of the indicators sampled in the field/species identification/counting/etc*	**54** *(including official indices for the 5 countries – research cities and some transversal diversity or functional indices)*	*Databases with information necessary to calculate or with results of each of the indices and metrics* *New field data* *Data from the app*
Biological indicators of health risks	**7**	*Why were they selected; why are each of the indicators related to human health*	*How is each of the indicators sampled in the field/species identification/counting/etc*	**16**	*Databases with information necessary to calculate or with results of each of the indices and metrics* *New field data*

OneAquaHealth Indicators

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Ecosystem health indicators

Biological quality indicators
Benthic macroinvertebrates
Diatoms (microalgae/phytobenthos)
Fish
Macrophytes (aquatic plants)
Riparian vegetation
Microbiomes/biofilms

Hydromorphological quality indicators
Morphology of the streams – habitat, shape of the channel and valey, substrate in the channel and margins
Hydrology of the stream – flow type, diversity of flow types, longitudinal connectivity, runoff
Land use in the margins

Water quality indicators
Nutrients (Nitrates, nitrites, ammonia, phosphates, total P, total N, …)
pH
Dissolved O2
Water temperature
Total dissolved solids (TDS), Total suspended solids (TSS)
Conductivity
Pharmaceuticals
Foam/colour/smell
Coliforms

Indicators for monitoring environmental status and health risks of urban aquatic ecosystems

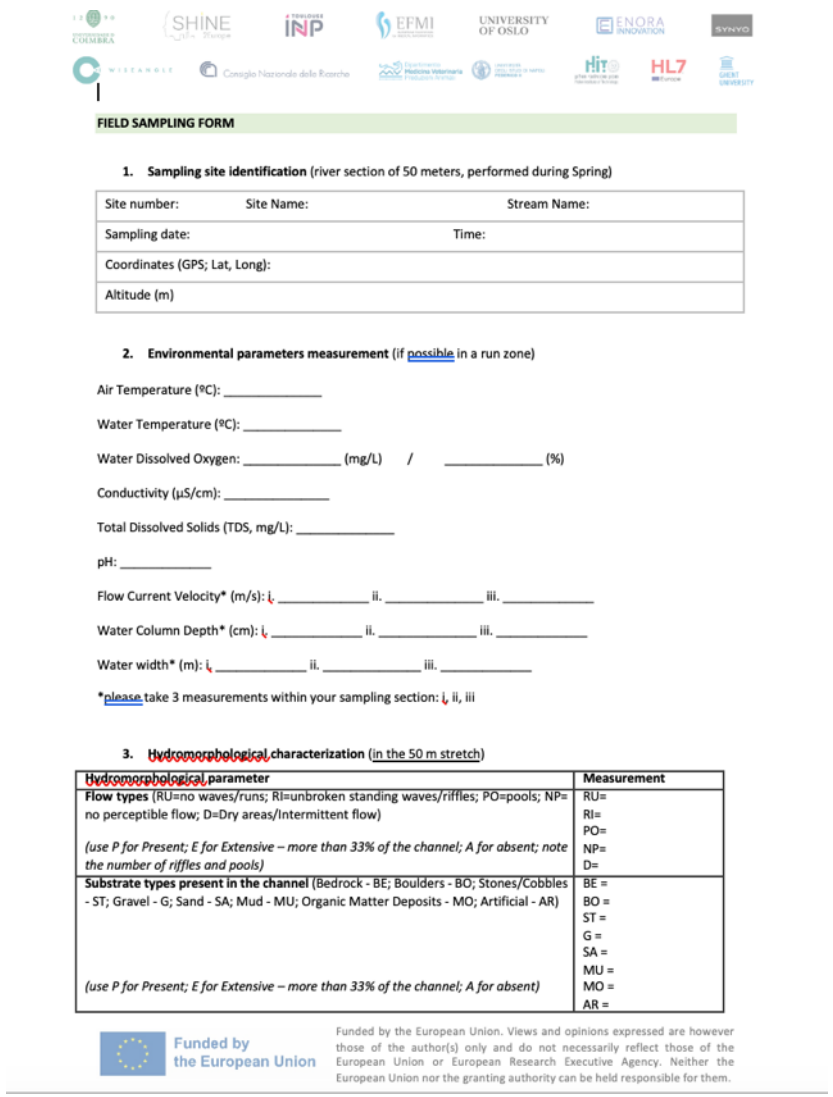
OneAquaHealth

Biological health indicators

Biological health indicators indicators
Diptera– invasive and native
Ticks
Invasive species - invertebrate, plants and fish
Birds – species, physiological health
Diatom teratology (deformities)
Fish
Amphibians

Indicator	Rationale	Sampling method	Derived metrics	Sources of information
Diptera (specially Culicidae and Psycodidae)	Most Diptera have a low sensitivity to pollution and water deoxygenation and become more abundant and representative in invertebrate communities of rivers and streams when they are degraded ecosystems. The order Diptera includes mosquitos of the family Culicidae. They are vectors of several diseases that affect humans: the Culex of West Nile virus, the Aedes of virus Chikungunya, Yellow fever and Dengue, and the Anopheles, an invasive mosquito in Europe may transmit Malaria. The Psychodidae is another family that includes the Phlebotomus genus which can transmit leishmaniasis that affects humans and animals like dogs (caused by the protozoan *Leishmania*).	Mosquito traps Identification and counting of Diptera under a stereomicroscope Molecular diagnosis of the presence of pathogens (virus and bacteria) in Diptera	Abundance (mosquitos and Phlebotomus) Prevalence of pathogenic virus and bacteria	EarlY WArning System for Mosquito-borne Diseases (EYWA) REVIVE – Vector surveillance network of National Institute of Health Doutor Ricardo Jorge ECDC Geoportal - European Centre for Disease Prevention and Control GBIF - Global Biodiversity Information Facility iNaturalist Mosquito Alert Data Portal Field data from T2.2
Ticks	Ticks parasitize mammals, birds and reptiles that live in riparian zones. Tick populations depend on the density of hosts including reproductive hosts (generally large mammals),	Sampling of questing ticks in the vegetation through the flagging method in the riparian zone (margins of streams)	Abundance of ticks. Prevalence of pathogenic	REVIVE – Vector surveillance network of National Institute of Health Doutor Ricardo Jorge

OneAquaHealth sampling protocols



FIELD SAMPLING FORM

1. **Sampling site identification** (river section of 50 meters, performed during Spring)

Site number:	Site Name:	Stream Name:
Sampling date:	Time:	
Coordinates (GPS; Lat, Long):		
Altitude (m)		

2. **Environmental parameters measurement** (if possible in a run zone)

Air Temperature (ºC): _____

Water Temperature (ºC): _____

Water Dissolved Oxygen: _____ (mg/L) / _____ (%)

Conductivity (µS/cm): _____

Total Dissolved Solids (TDS, mg/L): _____

pH: _____

Flow Current Velocity* (m/s): i. _____ ii. _____ iii. _____

Water Column Depth* (cm): i. _____ ii. _____ iii. _____

Water width* (m): i. _____ ii. _____ iii. _____

*please take 3 measurements within your sampling section: i, ii, iii

3. **Hydromorphological characterization** (in the 50 m stretch)

Hydromorphological parameter	Measurement
Flow types (RU=no waves/runs; RI=unbroken standing waves/riffles; PO=pools; NP= no perceptible flow; D=Dry areas/Intermittent flow) *(use P for Present; E for Extensive – more than 33% of the channel; A for absent; note the number of riffles and pools)*	RU= RI= PO= NP= D=
Substrate types present in the channel (Bedrock - BE; Boulders - BO; Stones/Cobbles - ST; Gravel - G; Sand - SA; Mud - MU; Organic Matter Deposits - MO; Artificial - AR) *(use P for Present; E for Extensive – more than 33% of the channel; A for absent)*	BE = BO = ST = G = SA = MU = MO = AR =

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Water physico-chemical characteristics
Hydromorphology
Riparian vegetation
Habitats
Sampling check

This will be later supported by na App

Standardized selection of sites

Comparable streams and covering an urbanization gradient

OneAquaHealth

Criteria and guidelines for sampling site selection

Target: 20 sampling sites at each of the 5 Research sites (Coimbra, Ghent, Toulouse, Oslo, Benevento)

Sampling site = one stream, meaning the same stream should not be sampled at different locations.

Characteristics of sampling sites:

1. Cover a gradient of urbanisation: the 20 sites should cover different levels of urbanization, from high population density/impervious areas to very low or no urbanization but always in urban areas – don't go to natural parks outside urban areas). These last streams (maximum) could even be inside in an area with no urbanization, or an urban park, but with similar natural characteristics to the urbanized streams (in terms of what would be the riparian vegetation, altitude, geology, flow type…). Select for example at least 3 sites in: a) urban green areas or natural parks or that are well preserved in terms of morphology and riparian vegetation; b) residential areas with family homes; c) high density areas with apartment buildings, bridges, roads, etc… If possible, try to avoid selecting urban streams with very different natural characteristics e.g., in altitude, geology or flow type. (see table 1 for more details).
2. Have at least ca. 500m of the stream uncovered (not running underground) and consider ca. 100m with homogenous characteristics (inside and outside water) where the sampling of biological elements will be performed
3. Be accessible: be sure that it is possible to get inside the stream at the 100 m stretch considered above; avoid fenced areas and private properties (unless you can ask for authorization)
4. Width between ca. 1.5 – 8m at the 100 m considered above
5. Depth between ca. 0.25 and 0.7 m at the 100m stretch considered above (this is the water level in Spring or early summer, when the water level is lower; it could be slightly deeper at some places but most of the 100 m should have this depth to allow the use of legs-high waders)

Standardized selection of OneAquaHealth sites

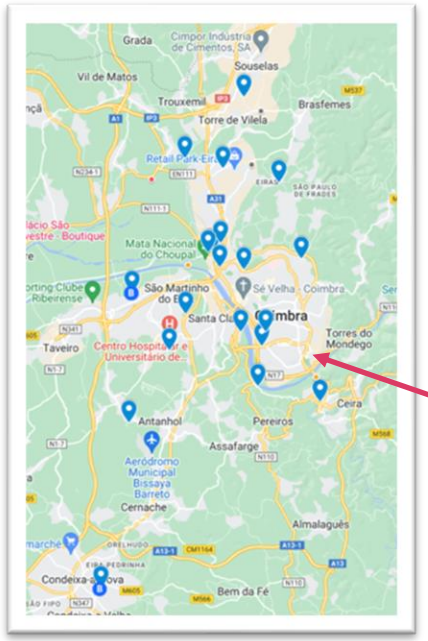
Comparable streams and covering an urbanization gradient

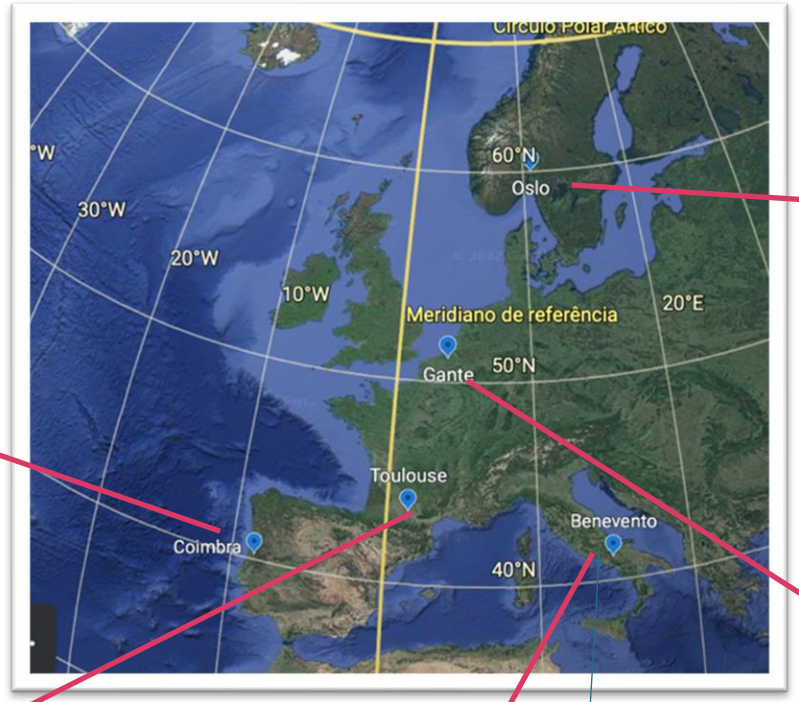
OneAquaHealth

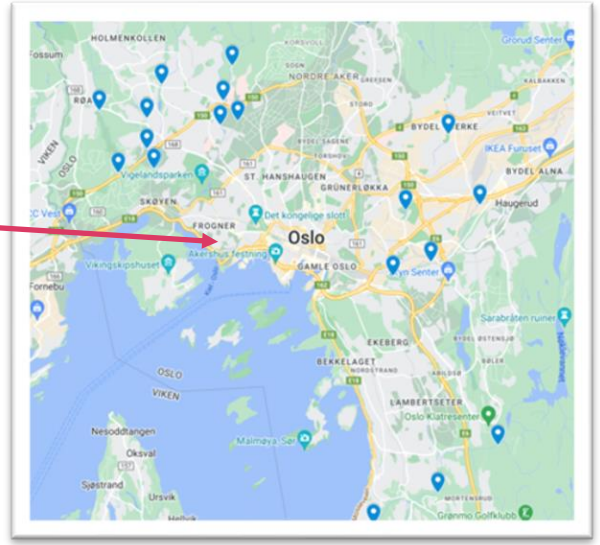
1-5 categories of degradation

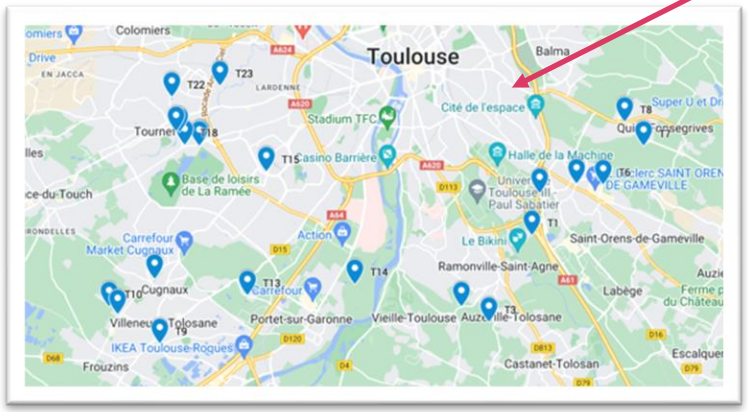
Site number and name	**Urbanization level** (1=no urbanization or just 1 or 2 houses or small roads - 5=heavily urbanized around the site) 1 = no urbanization or just 1 or 2 houses or non-impervious small roads, green areas/ gardens surroundings 2 = urban areas with some constructions (houses, roads), but stream surroundings have small impervious areas 3 = urbanization with housing/residential areas and roads with soil sealing up to 50% of the site length 4 = very dense urban areas,	**Stream connectivity** (1=any dams in the stream site selected or immediately upstream - 5=dams/weirs preventing completely the passage of water or fish) 1= No barriers or existence of a "bypass- type" device 2= Small barriers that allow the passage for most species all over the year 3= Some barriers that allow the passage of certain species 4= barriers that can allow the occasional passage of a single species	**Riparian zone** (1= the vegetation in the margins, trees, shrubs and other is the natural one/typical of streams in the region – 5=riparian vegetation was completely removed or from most ca. 70% the site length) 1= Continuous riparian corridor with native species 2= Semi-continuous riparian corridor with native species 3= occasional clumps of vegetation in the margins including some non-native trees/plants 4= regularly spaced or isolated trees in the margins, presence of many	**Morphological condition** (1=completely natural morphology, with only natural materials in the banks and channel – 5=banks are made of artificial impervious materials, channel is artificialized with concrete or other artificial materials) 1 = natural (no obvious human intervention) 2 = some human interventions, but with natural material and multiple types of habitats available (e.g., stones, sand, submerged roots, aquatic plants, riffles/rapids and pools) 3 = part of the stream is reinforced with artificial material, but natural shape is still maintained and lack of some habitats 4 = most section are reinforced with	**Water pollution** (1=water seems clean- 5= water looks polluted, with foam, colors or bad smell) 1 = very clear running water, no turbidity 2 = water looks unpolluted, but have few suspended dissolved solids, very low turbidity 3 = turbid water 4 = water very turbid or with bad smell 5 = water looks polluted, with foam, colors or bad smell, heavily turbid.	**Existing information about the site** (if you are aware off - water chemistry, ecological assessment classifications, list of species, shapefiles, other – please indicate for each site)

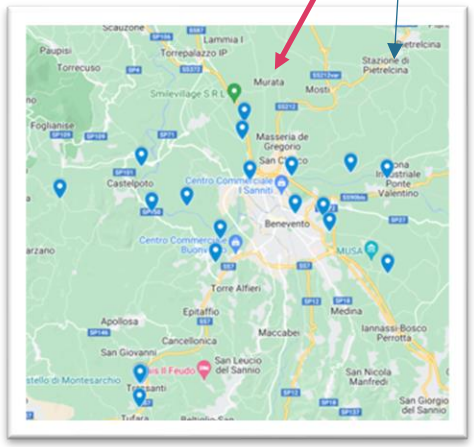
5 Research sites and 100 streams

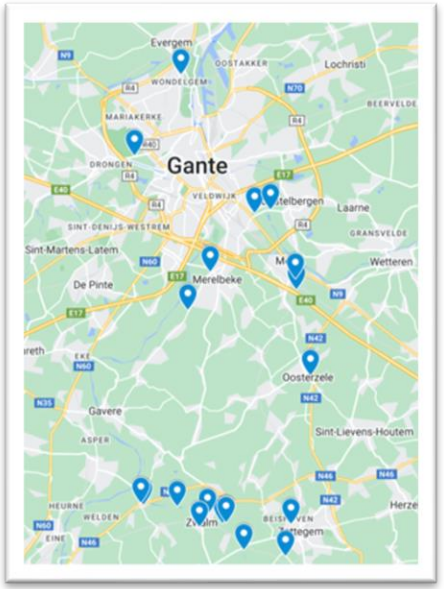




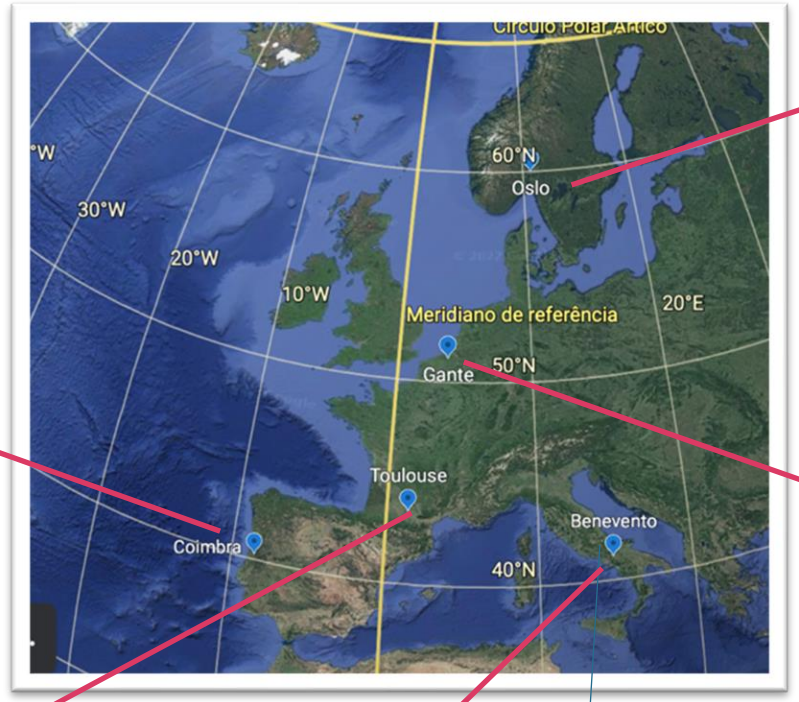








5 Research sites and 100 streams




2023-2024

Ongoing…

OneAquaHealth

Final selection of indicators after data analyses and modelling:

Which indicators respond better to urbanization?

Are they feasible for regular monitoring

Are they able to predict risks for One Health?

Decision Support System
Toolkit of solutions
to improve One Health in the context of cities and freshwater ecosystems

OAH Environmental Surveillance System

Questions & Answers


THANK
YOU
GRAZIE
ASANTE
KIITOS
MERCI
MULTUMESC
MAAKE
MATONDO
OBRIGADO
SPASIBO
ARIGATO
VINAKA
WELALIN
JUSPAXAR
KIA ORA
TERMA KASIH
RAIBH MAITH AGAT
CAM ON BAN
MOCHCHAKKERAM
CHOKRANE
MATUR NUWUN
UA TSAUG RAU KOJ
DANK JE
DANKON
NIRRINGRAZZJAK
MAMANA
SALAMAT

OneAquaHealth

Research sites data collection

Introduction to the five research sites of OneAquaHealth

Benevento (*Italy*)

Maria Pia Pasolini (UNINA)
Oscar Tamburis (CNR)

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OneAquaHealth Research sites

OneAquaHealth Local Alliances

Regione Campania
DG Direzione Generale
per le Politiche agricole,
alimentari e forestali"
(DG 50 07 00) STP Benevento

Città di
BENEVENTO
Servizio Ambiente

MoGAE
CENTRO REGIONALE PER IL MONITORAGGIO E LA GESTIONE DELL'AGROECOSISTEMA DELLA CAMPANIA

il CeRVEnE
CENTRO REGIONALE PER LA PREVENZIONE E GESTIONE DELLE EMERGENZE "ADRIANO MANTOVANI"

Pathogen Readiness Platform
for CERIC-ERIC Upgrade

ATC Benevento

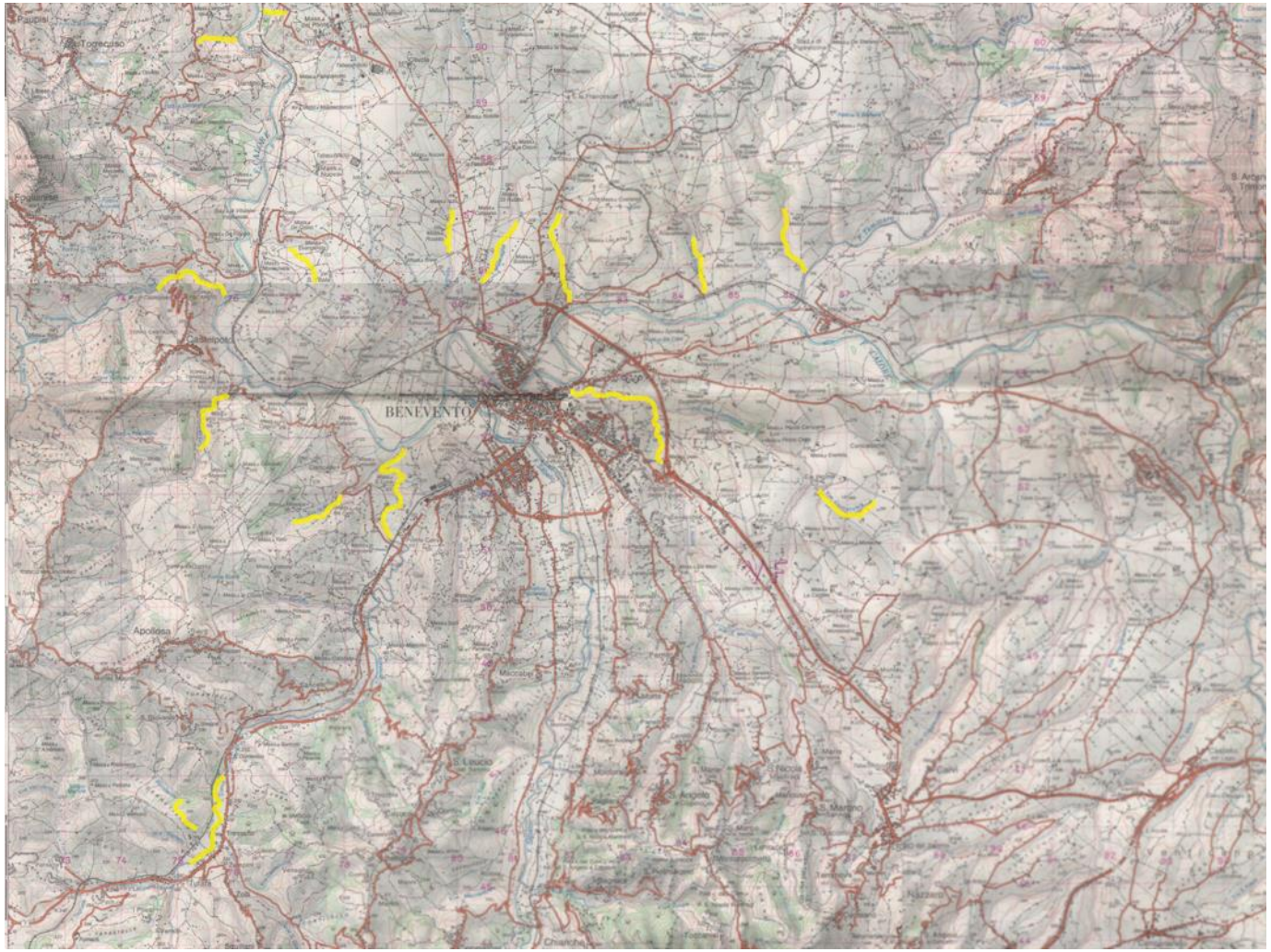
Selection of Benevento Sampling sites

OneAquaHealth

16 Watercourses

Watercourse	OAH ID
Torrente San Nicola	BN1-BN2-BN3
Torrente Serretelle	BN4-BN5
Vallone San Chirico	BN6
Vallone della Noce	BN7
Contrada Monte	BN8
Torrentello Cornacchie	BN9
Torrente Malacagna	BN10
Torrentello Roseto	BN11
Vallone San Vitale	BN12
Vallone la Ripa	BN13
Torrente Corvo Serretelle	BN14-BN15
Torrente Ranno	BN16
Torrente Lossauro	BN17
Torrente Jenga	BN18
Torrente Foeniculum	BN19
Fiume Lenta	BN20

20 Sampling sites



Selection of Benevento Sampling sites

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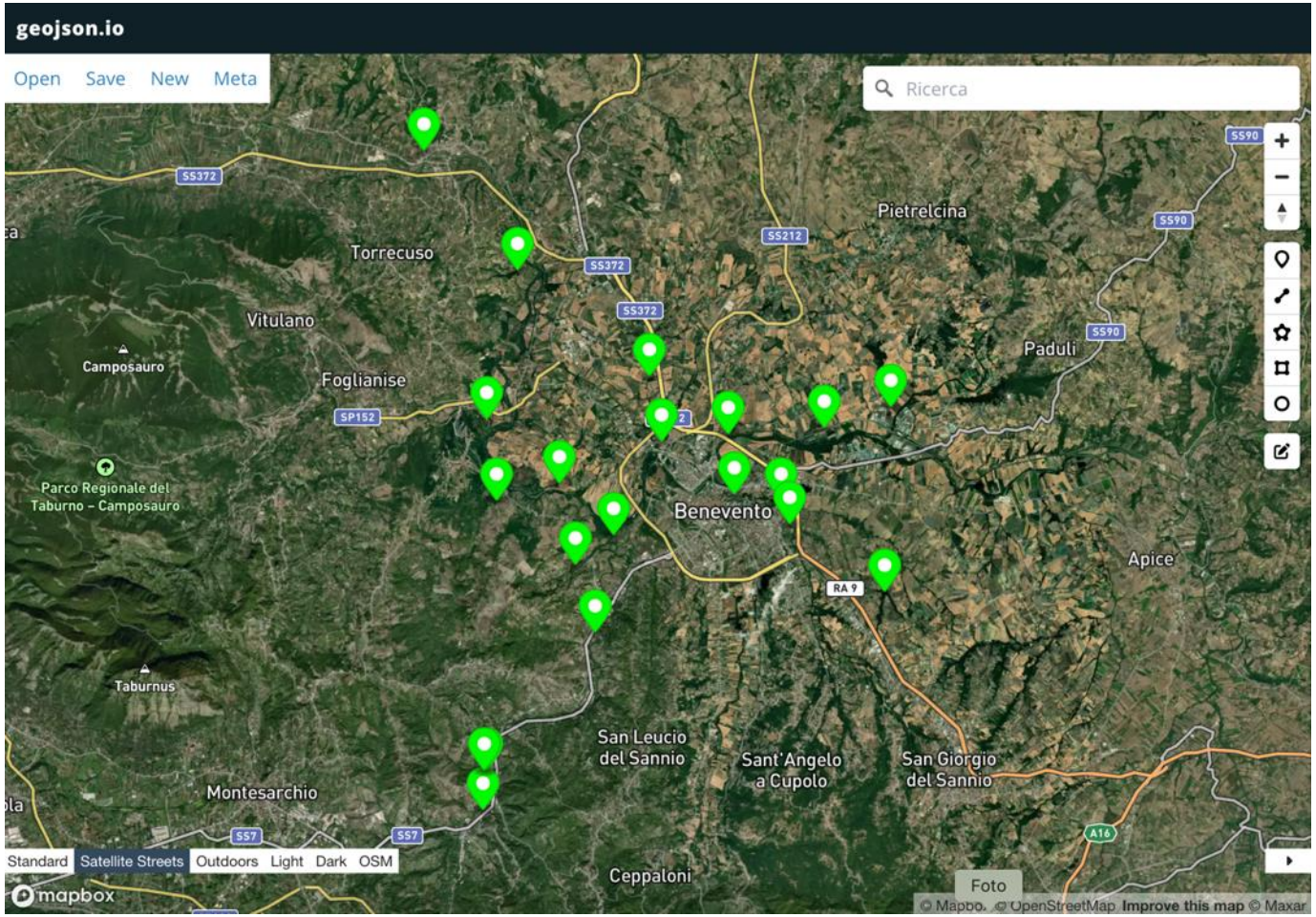
20 Sampling sites



Selection of Benevento Sampling sites

OneAquaHealth

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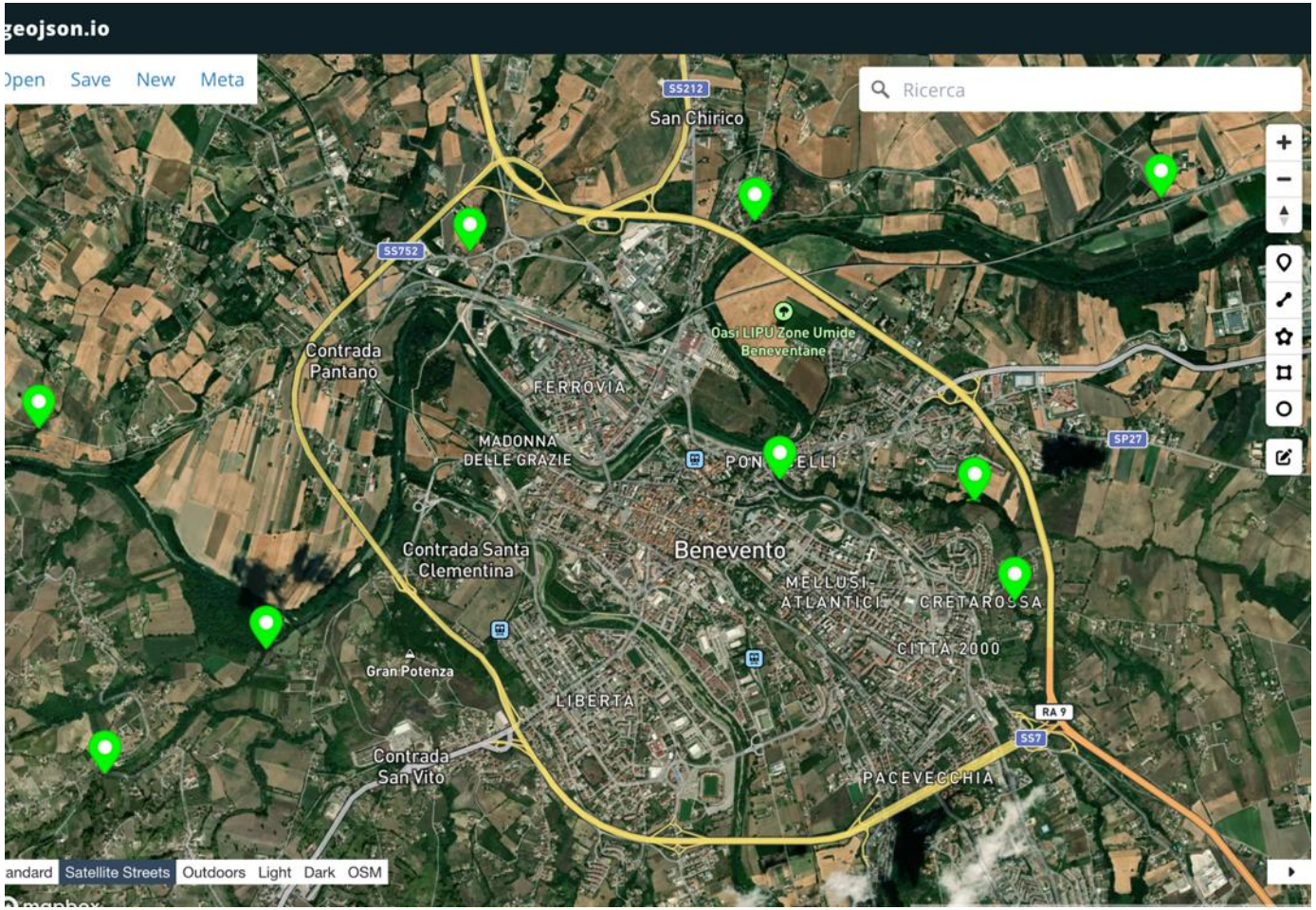
20 Sampling sites



Sampling activities

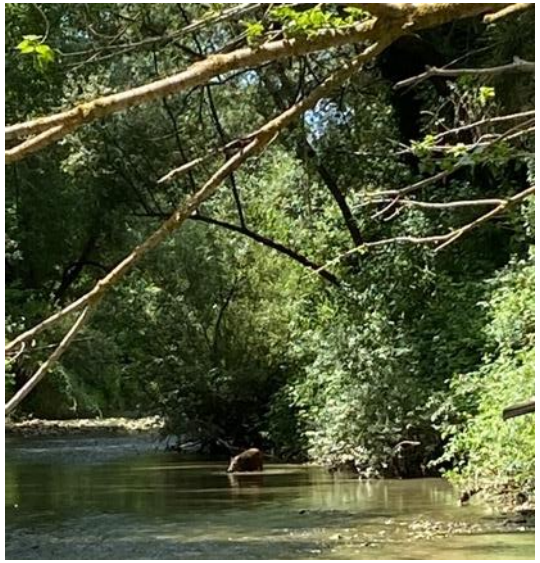
2023 sampling campaign

Water	Environment
Nutrients	Hydromorphological parameters
Pharmaceuticals	Water and riparian vegetation
Biofilms	
Diatoms	
Physical parameters	

BN1 Capodimonte

BN2 Cretarossa

BN3 Ponticelli



BN4 Serretelle 4

Sampling activities

2023 sampling campaign

Water	Environment
Nutrients	Hydromorphological parameters
Pharmaceuticals	Water and riparian vegetation
Biofilms	
Diatoms	
Physical parameters	

BN5 Serretelle 5

BN6 Vallone San Chirico

BN7 Vallone della Noce

BN8 Contrada Monte

Sampling activities

2023 sampling campaign

Water	Environment
Nutrients	Hydromorphological parameters
Pharmaceuticals	Water and riparian vegetation
Biofilms	
Diatoms	
Physical parameters	

BN9 Vallone Cornacchie

BN10 Malacagna

BN11 Masseria Roseto

BN12 Vallone San Vitale

Sampling activities

2023 sampling campaign

Water	Environment
Nutrients	Hydromorphological parameters
Pharmaceuticals	Water and riparian vegetation
Biofilms	
Diatoms	
Physical parameters	

BN13 Vallone la Ripa

BN15 Corvo-tresanti

BN16 Ranno

BN17 Lossauro

Sampling activities

2023 sampling campaign

Water	Environment
Nutrients	Hydromorphological parameters
Pharmaceuticals	Water and riparian vegetation
Biofilms	
Diatoms	
Physical parameters	

BN18 Jenga

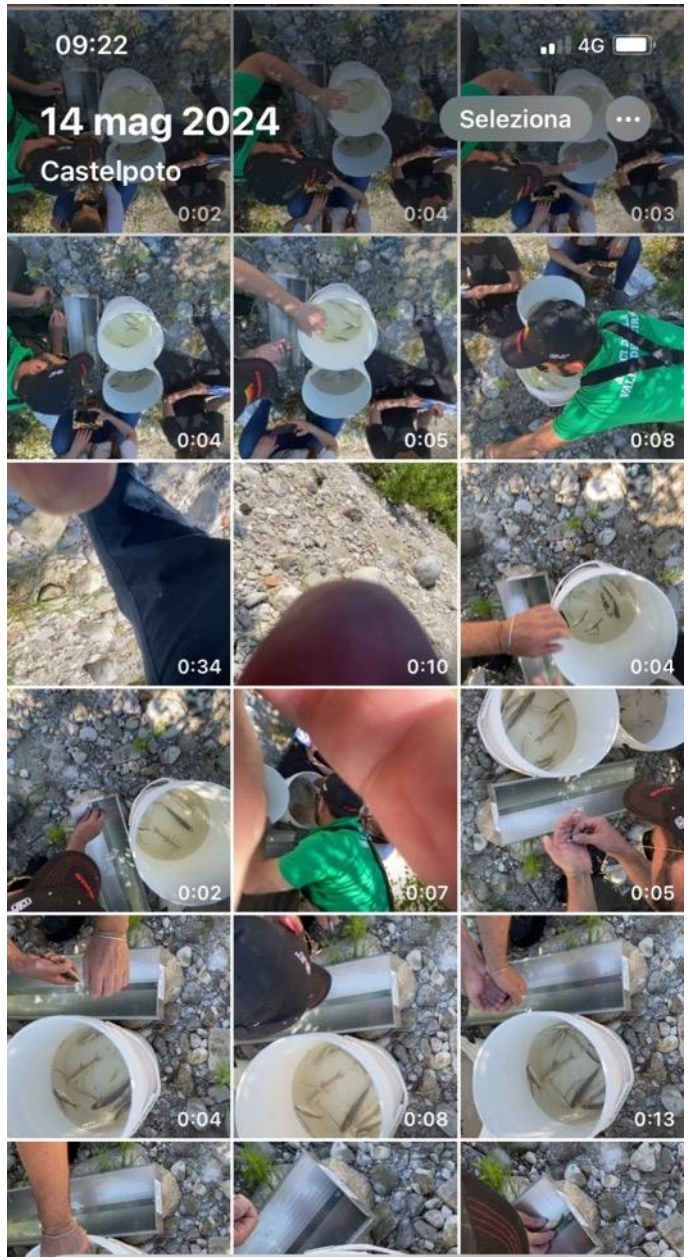
BN19 Foeniculum

BN20 Lenta

Sampling activities

2024 sampling campaign

Biodiversity
Fish
Amphibians
Macro Invertebrates
Insects
Birds



Rana italica

Sampling activities

2024 sampling campaign

Biodiversity
Fish
Amphibians
Macro Invertebrates
Insects
Birds

Zygoptera

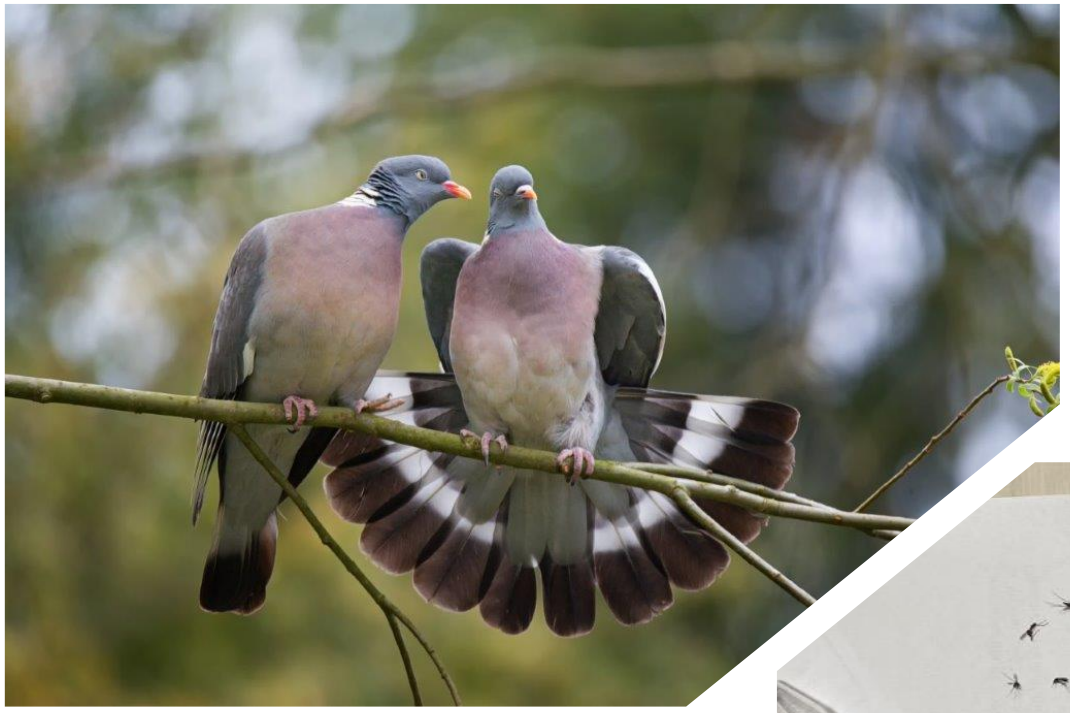
Anisoptera

Potamon

Sampling activities

2024 sampling campaign

Biodiversity
Fish
Amphibians
Macro Invertebrates
Insects
Birds



2023_2024: Benevento Workshops with LoA

2023_2024: Benevento Workshops with LoA

- ***June 2023***: first Workshop organized with the Benevento city's stakeholders. Professor Maria João Feio, as Principal Investigator of the project, described the operational activities that have been and will be developed in Benevento, Coimbra, Toulouse, Ghent and Oslo. Professor Luigi Esposito, and Professor Oscar Tamburis, explained the progress of the field work at the Benevento Research Site.

- ***October 2023***: second Workshop organized with the Benevento city's stakeholders, within the "Urban Nature" event organized by the World Wildlife Fund (WWF) Benevento. Citizens discussed with the sampling sites' leader and the WWF and LIPU associations about the conditions of the stream, its function and use within the urban tissue of Benevento.

- ***March 2024***: third Workshop organized with the Benevento city's stakeholders. The event aimed at involving citizens, policy makers and other relevant stakeholders in environmental observations towards the development of communities committed to ethical sustainability (WP4).

- ***August 2024***: operations of collecting biological indicators as foreseen by the OneAquaHealth Sampling protocols, as part of the activities for identifying indicators of ecosystem health and biodiversity (WP2).

2024: Training School “One Health Biotyper Diagnostic Help”

Insights on Infectious Diseases Testing and the One Health Approach

- A **training school on pathogen detection** was organized as a side event of the project, on November 2024
- The research focused on **microbiomes**, studying microbial communities and how environmental factors like temperature and pH affect them.
- **Genetic sequencing methods** have been used, which provide rich datasets but are time-consuming and require extensive data analysis.
- It was possible to learn about **MALDI-TOF**, a technique that identifies microorganisms by analyzing proteins, offering faster and simpler sample preparation.
- MALDI-TOF is widely used in **medical and veterinary settings**, allowing bacterial identification within two hours, aiding in treatment decisions.

Questions & Answers

OneAquaHealth

Research sites data collection

Introduction to the five research sites of OneAquaHealth

Coimbra (*Portugal*)

Ana Raquel Calapez | Researcher, University of Coimbra

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Research Site

Coimbra

Central Portugal

~320 Km^2

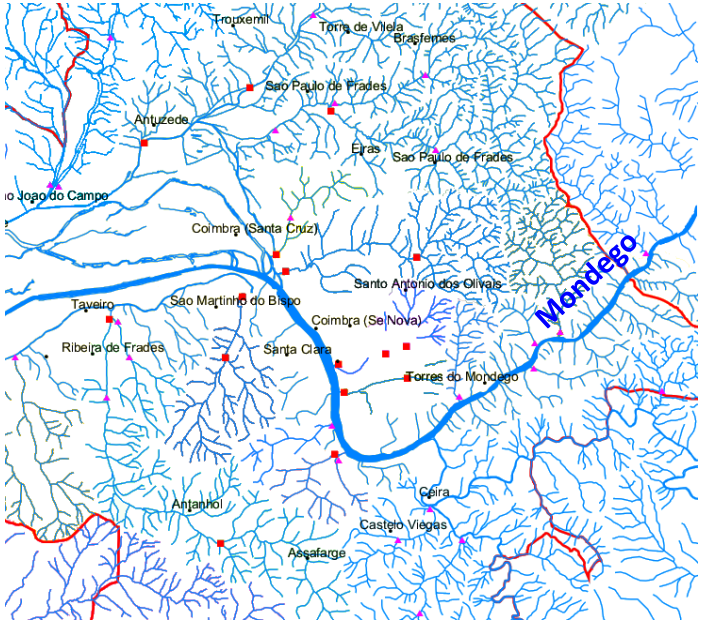
~140 000 inhabitants

- University of Coimbra (735 years); >30,000 students
- World Heritage site by UNESCO in 2013
- Tourism & Cultural Economy
- Healthcare; University Hospital
- New technologies industries

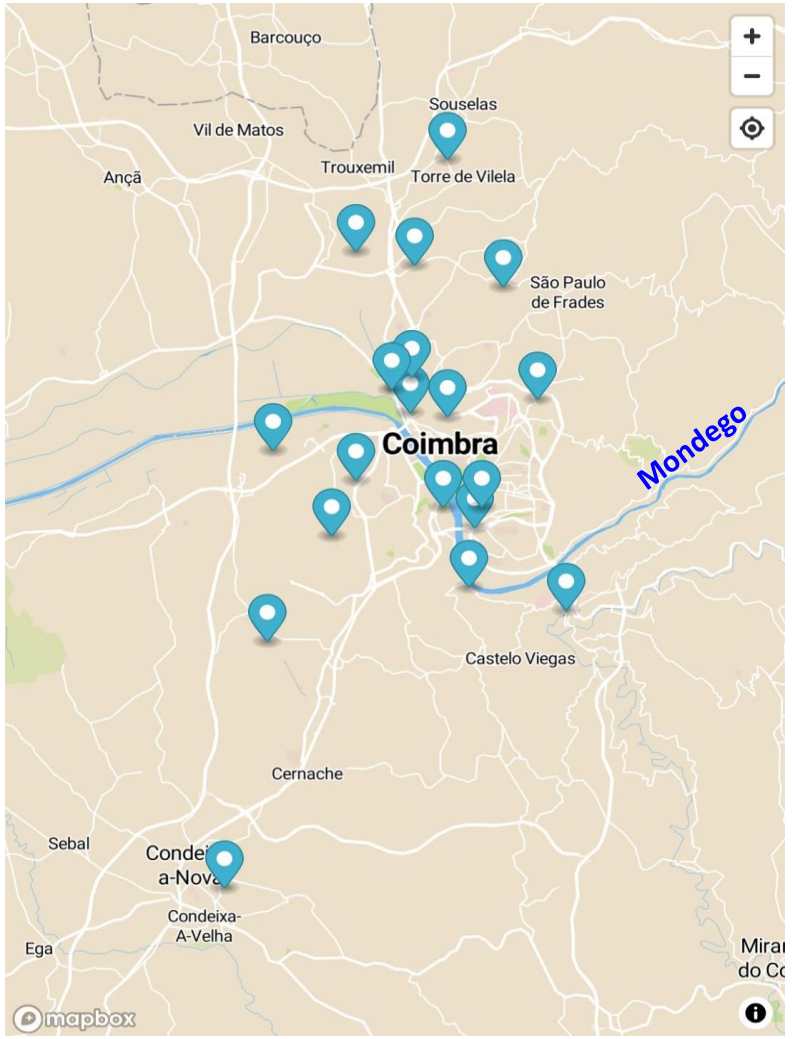
Research Site

Coimbra – Sampling sites

Hydrographic network



River Mondego catchment



Sampling sites (N=20)

Temperate-Mediterranean climate

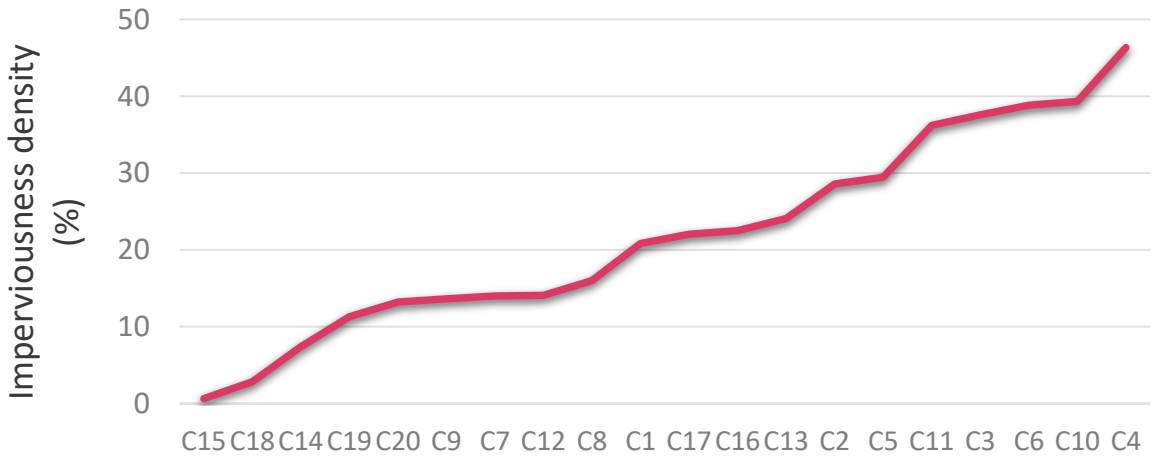
- Temperature (mean): 10.1 ºC (winter) – 21.1ºC (summer)
- Precipitation (mean): 402.3 mm (winter) – 67.0 mm (summer)

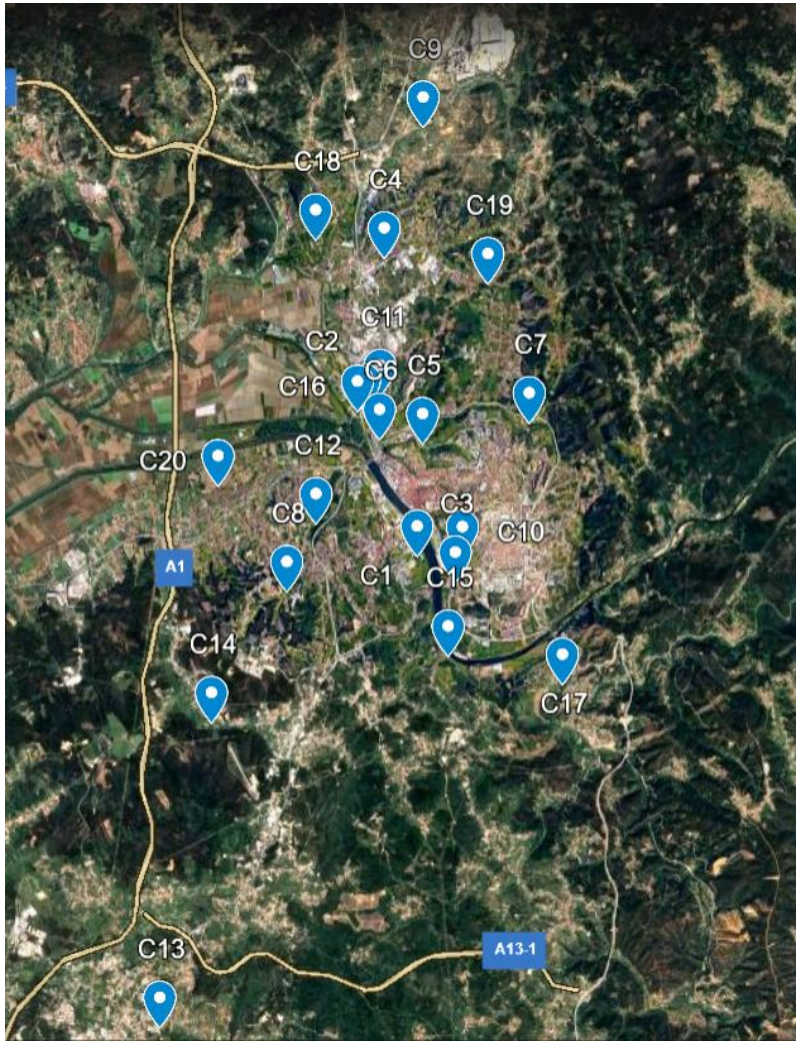
Research Site

Coimbra – Sampling Sites

- Máx. 12 km from city center
- Altitude (m) → 14.0 - 106.0
- Population density (inhabitants/km^2) → 235.6 - 2020.6

→ Sampling sites cover a **gradient of urbanization**, including a range from low (0.6%) to high (46.3%) soil imperviousness density.





Sampling sites (N=20)

Research Site

Coimbra – Sampling Sites

OneAquaHealth

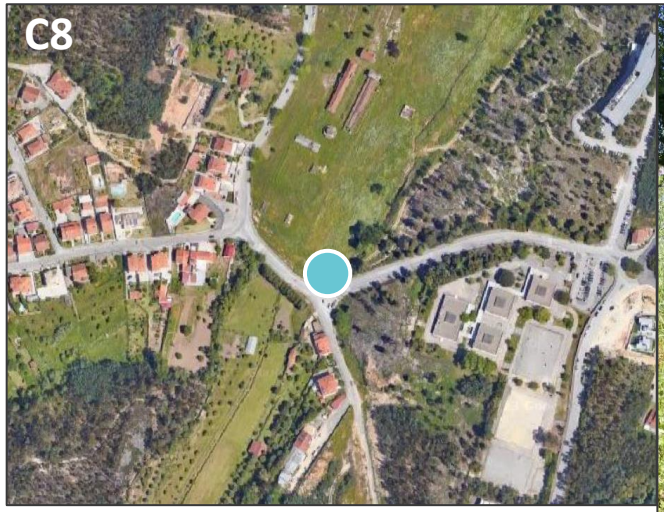
Imperviousness density

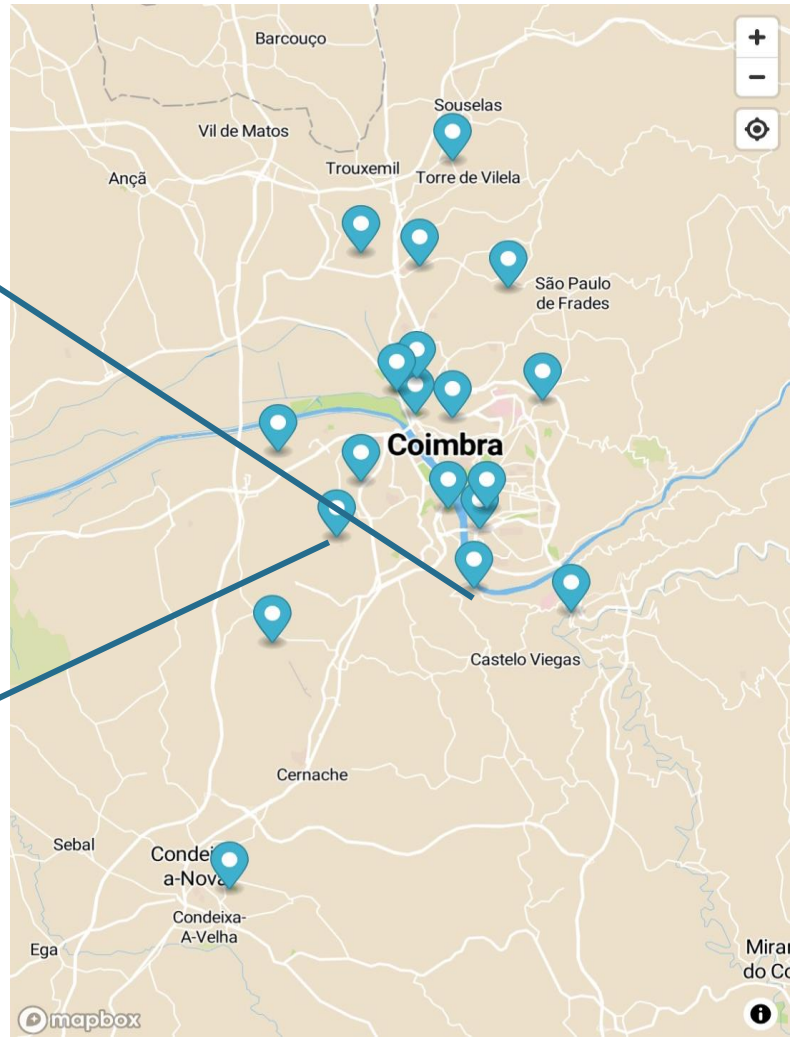
−

+

0.6%

16.0%





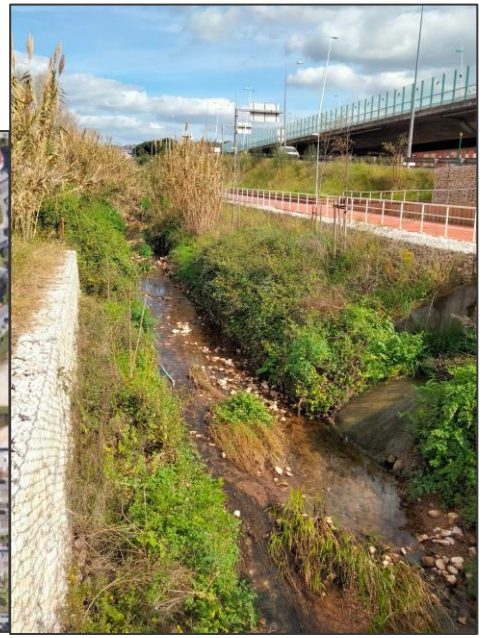
Sampling sites (N=20)

Research Site

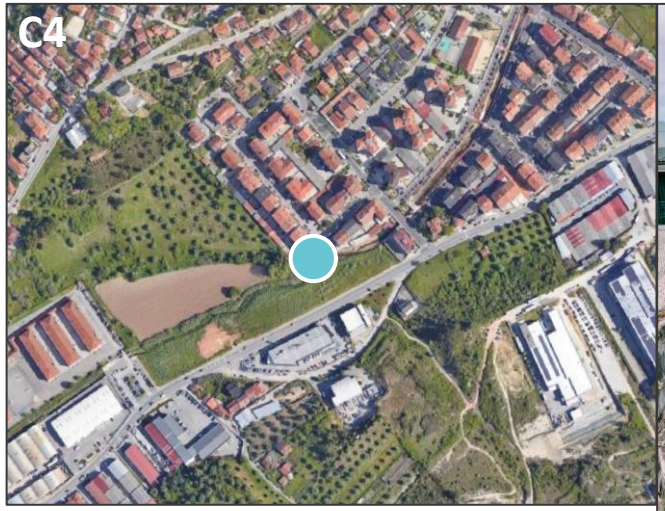
Coimbra – Sampling Sites

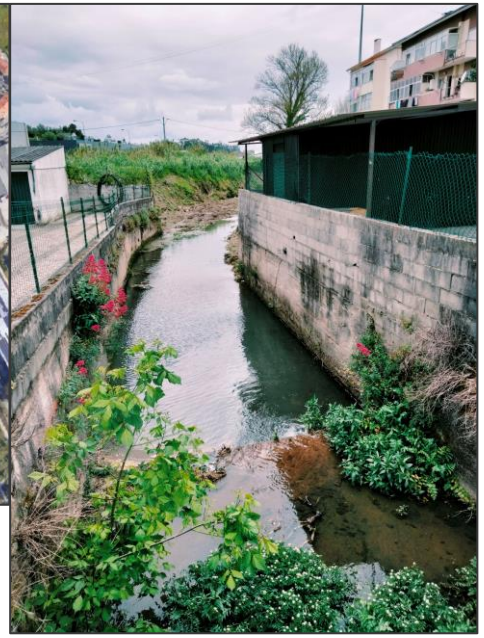
OneAquaHealth

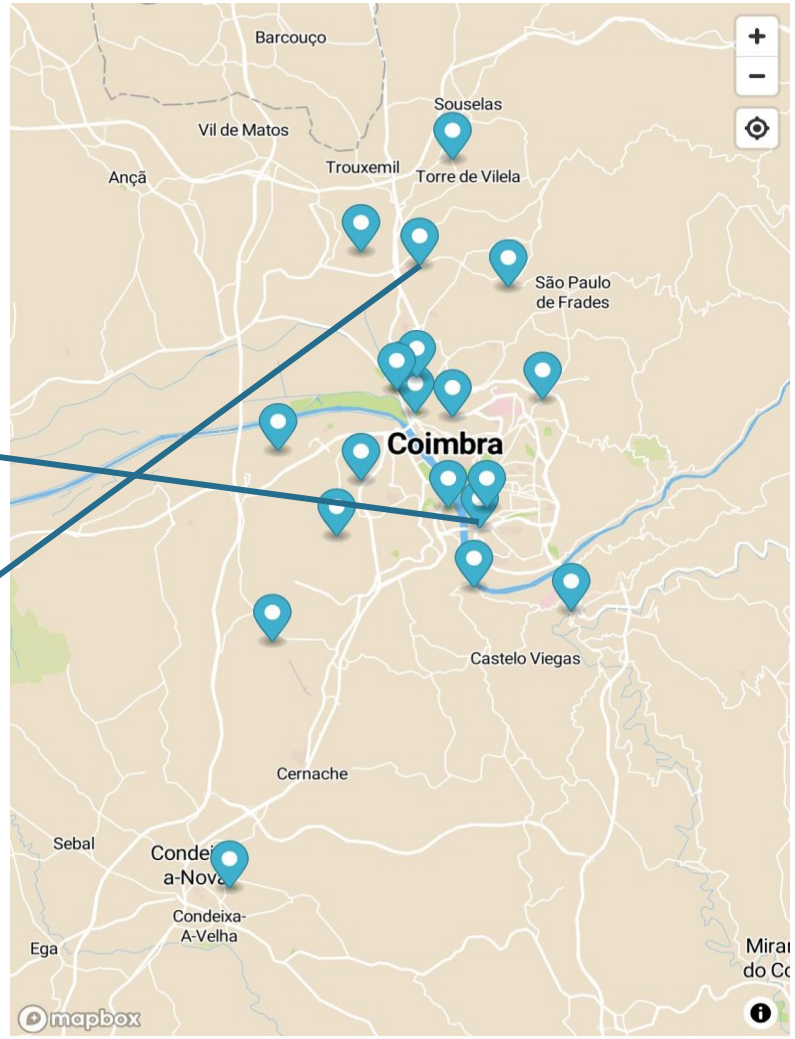
37.6%



46.3%



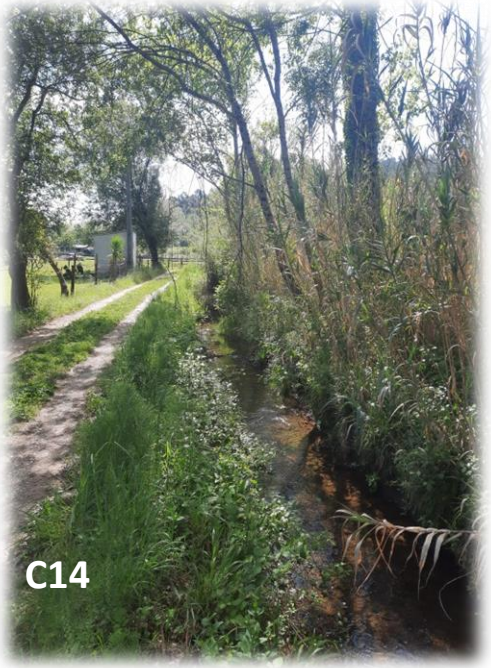




Sampling sites (N=20)

Research Site

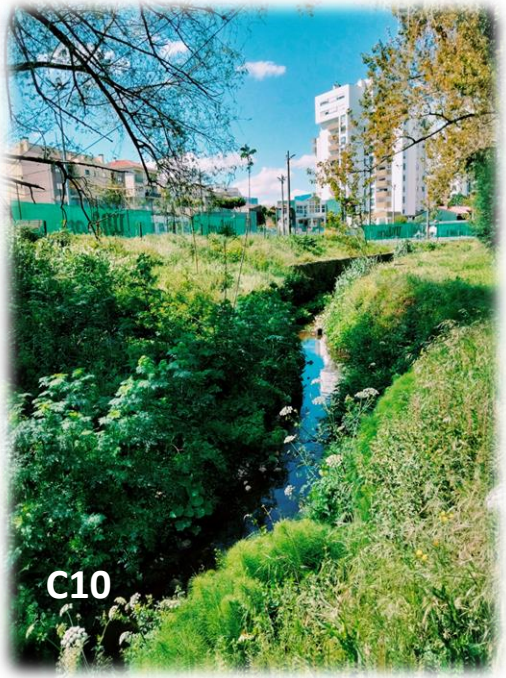
Coimbra – Sampling Sites

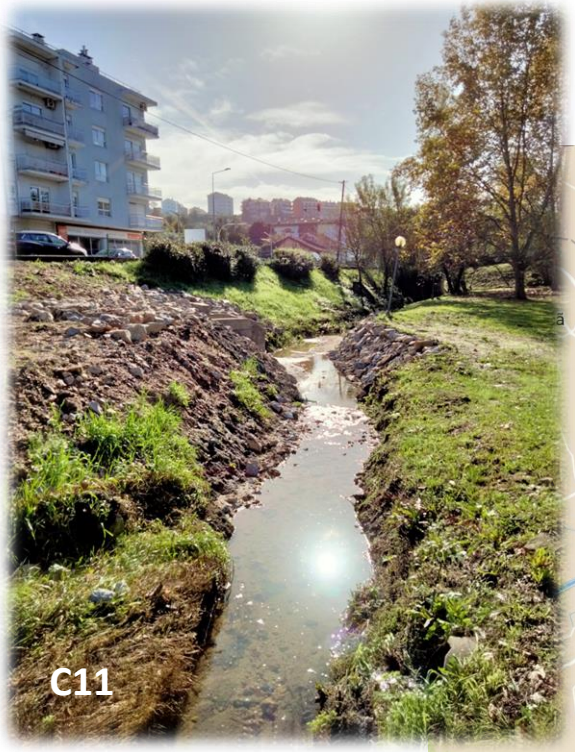


Sampling sites (N=20)

Research Site

Coimbra – Sampling Sites

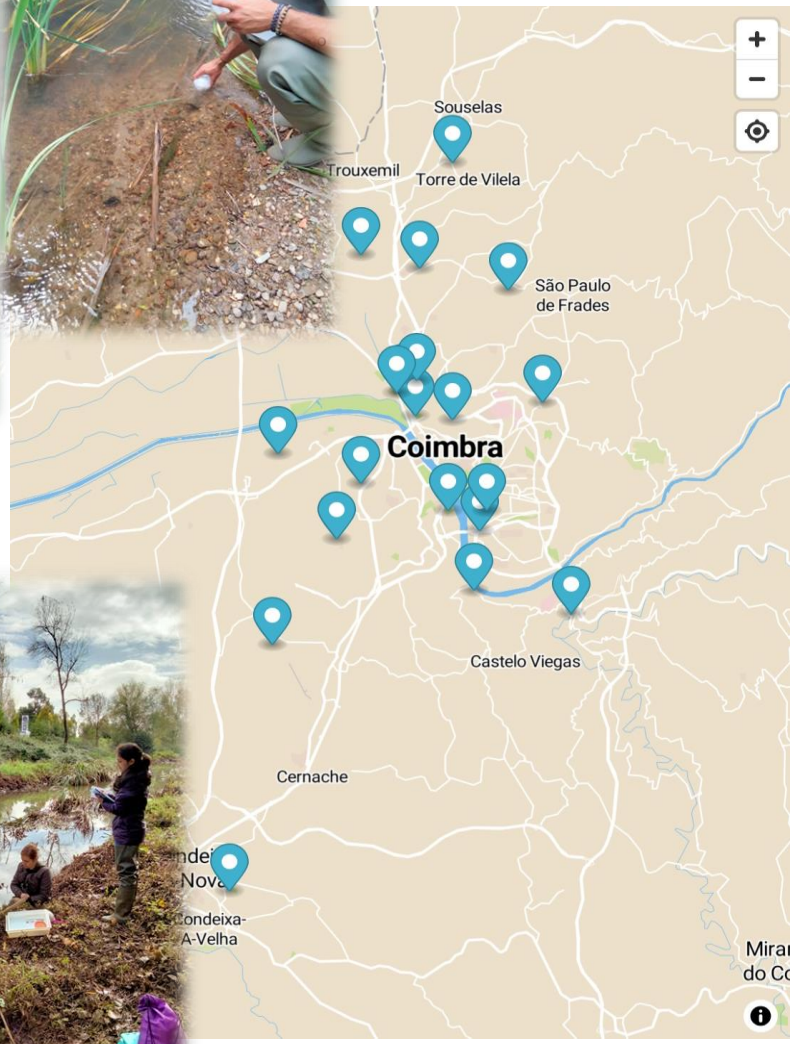




Sampling sites (N=20)

Research Site

Coimbra – Data collection



Sampling sites (N=20)

Questions & Answers

OneAquaHealth

Research sites data collection

Introduction to the five research sites of OneAquaHealth

Ghent (*Belgium*)

Long Tuan Ho

March 17 2025

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The city of Ghent

map: google.com

The city of Ghent

photos: stadgent.be

The city of Ghent

Tech Lane Gent Science Park

photos: techlane.be, stadgent.be

Sites in Ghent

OneAquaHealth

Data and samples were collected at 22 sites. Good mix of different site conditions.

map: google.com

Sites in Ghent

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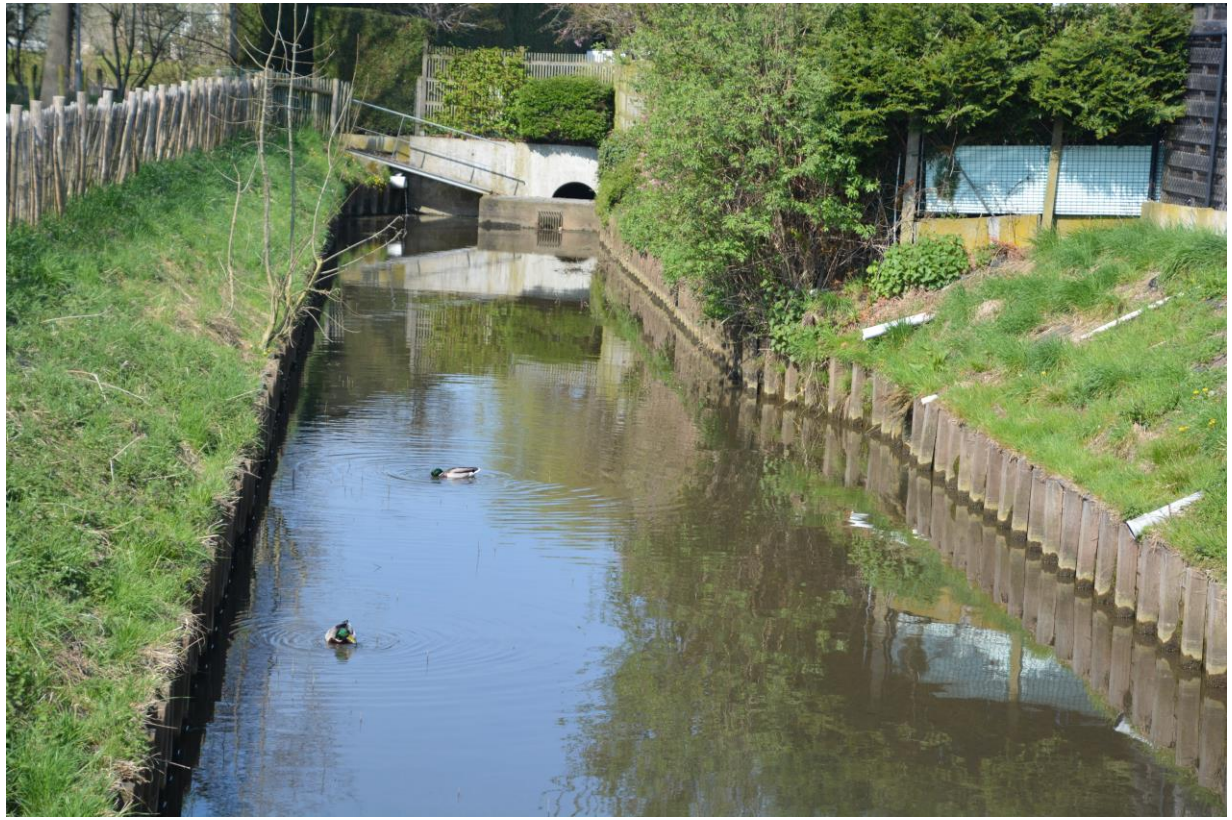

Sites in Ghent

OneAquaHealth

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Sites in Ghent

OneAquaHealth

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Sites in Ghent

Subtitle

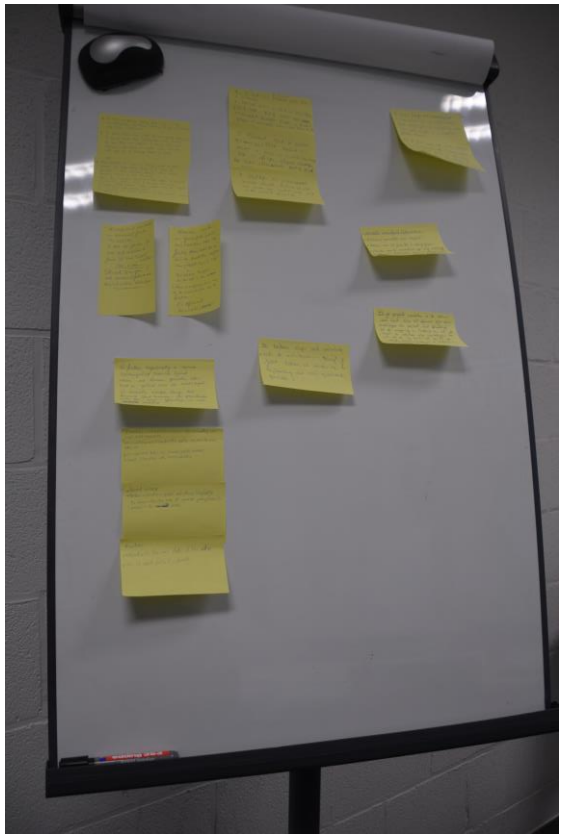
OneAquaHealth

Data and samples were collected at 22 sites. Good mix of different site conditions.

Data collection




Local Alliance



Questions & Answers

OneAquaHealth

Streams in Oslo – local alliance

University of Oslo *(Norway)*

Anne Moen, May Linn Mørch, Silje H. Henni, UiO

17.03.2024

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Local Alliance OSLO

OneAquaHealth

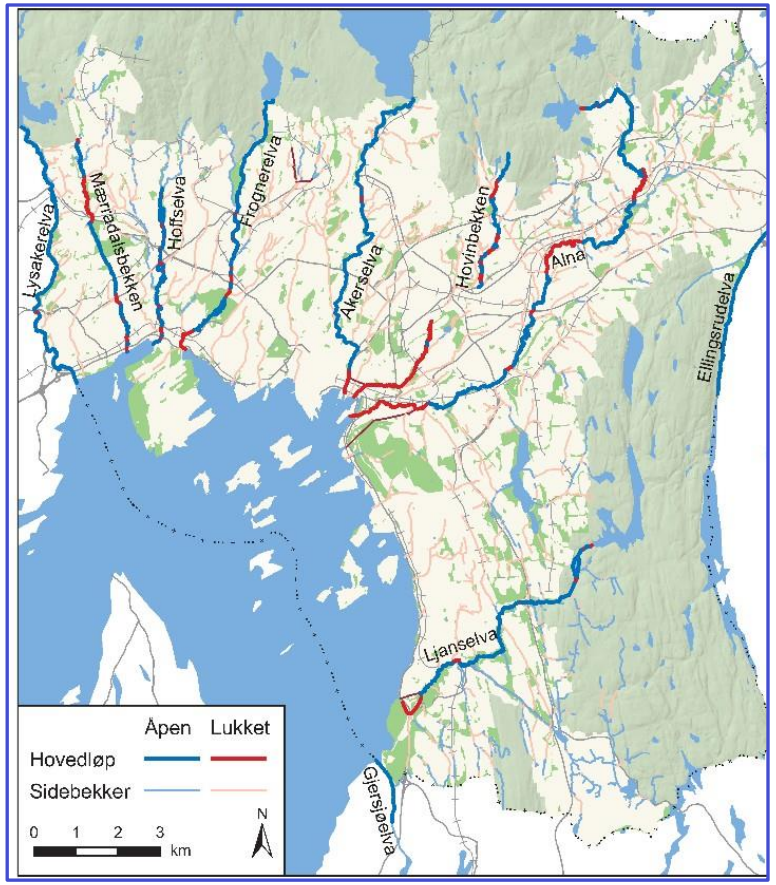
- **Oslo rivers; blue – green freshwater aquatic ecosystems**

  Selected 3 (of 10) areas to illustrate variation and use … in urban area from the forest – fjord

  a) East → "open air classroom"; interact with youth - Ljanselva Miljøpark
  b) Mid → reopened stream; universal access for all - Bjerkedalen Miljøpark
  c) West → "age friendly", physical – mental activities; - Hoffsvassdraget

- **Members of local alliance - collaboration**
  - Oslo Elveforum / Oslo River forum
  - "friends of the rivers" – Hoffselva and Ljanelva
  - Suburbs – prevention, age-friendly city and areas

- **People's use of the areas – public health – initial findings**
  - Access to and use to care for the areas, pleasant and safe for all
  - Social and physical activity – Thrive
  - Natural resting places along the trails



Sites – streams in Oslo – illustrations

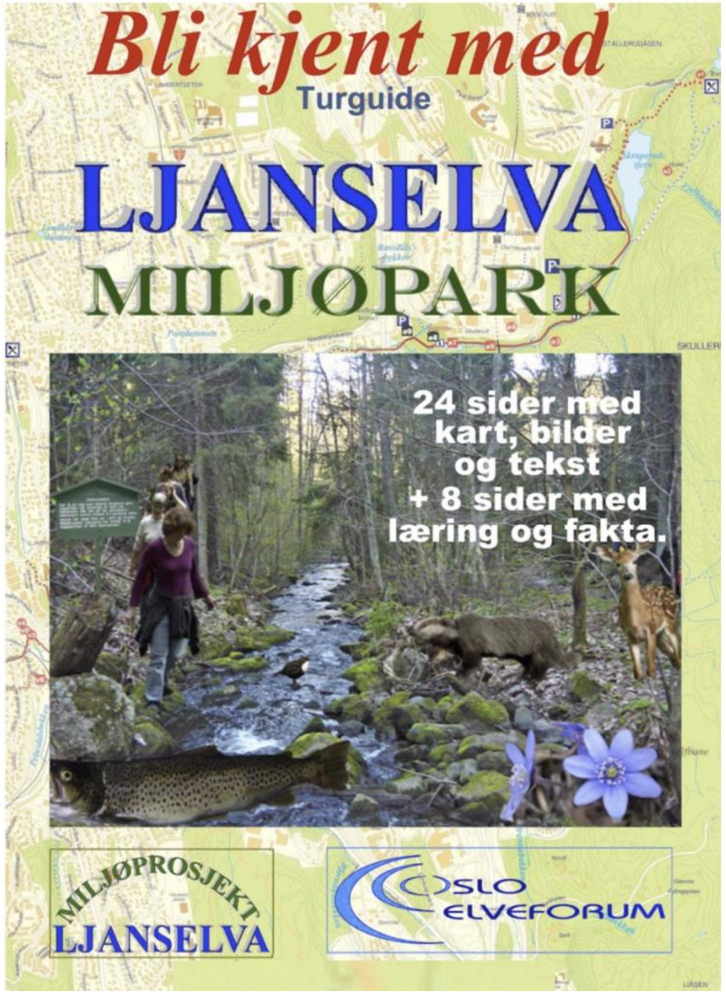
OneAquaHealth

Bjerkedalen miljøpark

Frognerelven

Hoffsvassdraget

BÅNDTVANG
1. april - 20. august
Oslo kommune
Bymiljøetaten
Mærradalen – vernet «villmark» og gravfelt i Oslo by
Mærradalen er noe så unikt som en nesten 2 km lang bekkekløft med urørt skog av nasjonal verdi i Oslo by. Området strekker seg fra Radiumhospitalet i sør til Huseby i nord. Her kan man trekke seg tilbake til skogens ro og kjenne på en stillhet som man ellers må langt inn i Marka for å oppleve.
Biologisk oase
Fordi Mærradalen har stått urørt i lang tid har mye av skogen blitt gammel, og det er stedvis dannet store mengder dødt trevirke. I tillegg er skogen både rik og variert, bestående av ulike typer edelløv-, hagemark- og granskog. Dette bidrar til at området har et stort artsmangfold av flere ulike organismegrupper.
De gamle trærne, samt de stående og liggende døde trestammene, gir egnet livsmiljø for et eldorado av sopp- og insektarter med ulike miljøkrav. Flere av disse er nasjonalt truet. Sopp og insekter omdanner trevirket til jord og er samtidig næring for fugler og andre dyr. Områdets størrelse og de rike skogmiljøene med mange gamle og døde trær gjør at området huser en rik fuglefauna. Tidlige vårmorgener kan man derfor oppleve et høylytt kor fra mange ulike sangfugler.
Topografien og bekkemiljøet gir området høy luftfuktighet, noe som er en forutsetning for den frodige gråorheggeskogen, bregnene og de sjeldne moseartene som lever her. Mærradalen har også en rik sopp- og blomsterflora, som er betinget av den kalkrike berggrunnen. Mærradalsbekken renner gjennom området og har en egen ørretstamme.
I tillegg til skogens og bekkens naturkvaliteter finnes ved husmannsplassen England, lengst nord i området, et gravfelt bestående av to gravhauger (se kart, Fredet kulturminne). Gravhaugene er antageligvis fra jernalderen, perioden fra ca. 500 f. Kr til 1000 e. Kr. I tillegg er det funnet to rydningsrøyser i området vest for gravhaugene. Rydningsrøyser består av stein hentet fra gamle jorder. I dette området er det også rester etter gammel slåttemark med biologisk verdifull engflora, som trenger skjøtsel for å hindre gjengroing og spredning av svartelistede plantearter. Rydningsrøysene, gravhaugene, husmannsplassen og slåttemarken viser at det har vært gårdsdrift i dette området gjennom mange hundre år.
Verneområde
For å ta vare på Mærradalens unike natur- og kulturverdier vernet Oslo kommune området etter plan- og bygningsloven høsten 2015 (regulert naturvernområde og automatisk fredet kulturminne). Det innebærer at det ikke er lov til å hogge trær, fjerne død ved, gjøre gravearbeider eller foreta andre inngrep. Dumping av hageavfall er forbudt på grunn av faren for spredning av fremmede arter som kan fortrenge artene som hører naturlig hjemme her.
Oreskog: Oreskog langs Mærradalsbekken med fuktighetskrevende moseflora. På denne stammen lever den truede arten oreblæremose.
Død skog: Mærradalen er svært verdifull for mange arter av sopp og insekter som lever i dødt trevirke – her honningsopp.
Dvergspett (t.h): Hakkespetten dvergspett finnes i områder med mange døde løvtrær, slik som Mærradalen.
finner i de døde trærne.
Alle foto: Bård Øyvind Bredesen, Naturarkivet.no
Naturvernområde
Fredet kulturminne
Turvei/-sti
Mærradalsbekken
Du er her.
Skann QR-koden for å se Naturvernforbundets naturkart for Mærradalen.
Mærradalen – protected wilderness and ancient burial site
Welcome to Mærradalen, a 2 km long gorge with primeval forest of national value in the middle of Oslo. The Mærradalen creek runs through the area, which stretches from Huseby in the north to Radiumhospitalet in the south.
The Mærradalen area has remained almost untouched for more than a century, and as a result a lot of dead wood has accumulated. This, in addition to a rich mixed forest with different species of trees, gives Mærradalen a rich biodiversity.
The topography and the creek itself provide the area with a humid environment, sustaining a lush forest with a lot of ferns, as well as a few rare moss species. Mærradalen has a rich flora of flowering plants and fungi due to the occurrence of calcareous rocks.
In addition to the biological qualities, you can explore an ancient burial site from the Iron Age in the north, close to the England croft (see hatched area on map).
The whole area is protected by law, which means that felling, removal of dead wood, digging and other disturbances are not allowed. The disposal of garden waste is prohibited due to the risk of spreading invasive species.



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24 sider med kart, bilder og tekst + 8 sider med læring og fakta.
MILJØPROSJEKT LJANSELVA
OSLO ELVEFORUM


Biogents

Questions & Answers

OneAquaHealth

Research sites data collection

Introduction to the five research sites of OneAquaHealth

Toulouse (*France*)

Dirk S. Schmeller (Toulouse Institute National Polytechnique)

17.03.2025

Funded by the European Union

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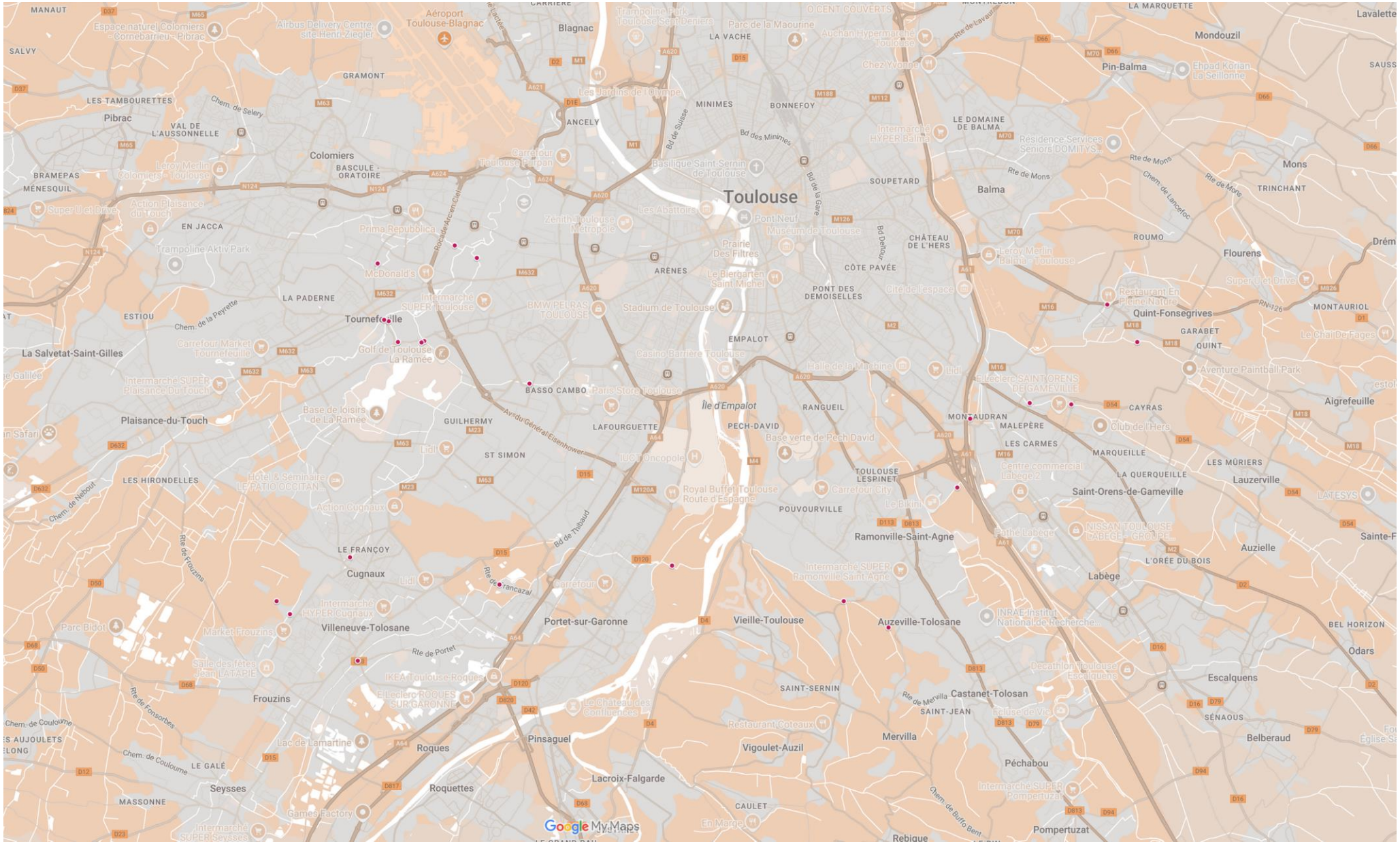
Selection of Toulouse Sampling sites



Toulouse metropolitan area

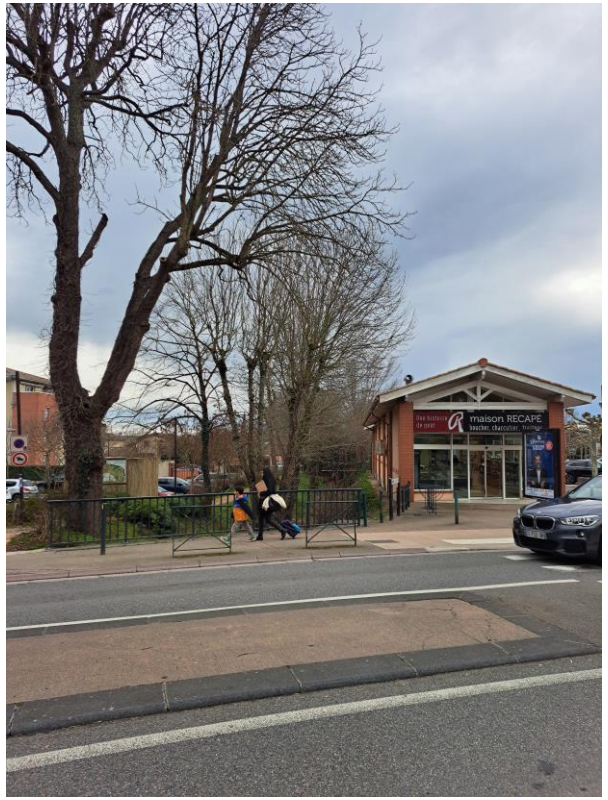
The **Toulouse metropolitan area** is one of the largest urban regions in France, centered around the city of **Toulouse**

- Population: Approximately 1.4 million people (as of recent estimates).
- Economy: Toulouse is a major aerospace and technology hub, home to Airbus headquarters and many aeronautics, space, and defense industries.
- Education: Hosts prestigious institutions like the Université Toulouse Capitole, Paul Sabatier University, and several engineering schools (e.g., ISAE-SUPAERO) with around **130,000 to 140,000 students** enrolled in its universities and higher education institutions.
- Climate: Mild Mediterranean climate with hot summers and cool winters.

Toulouse Sampling sites



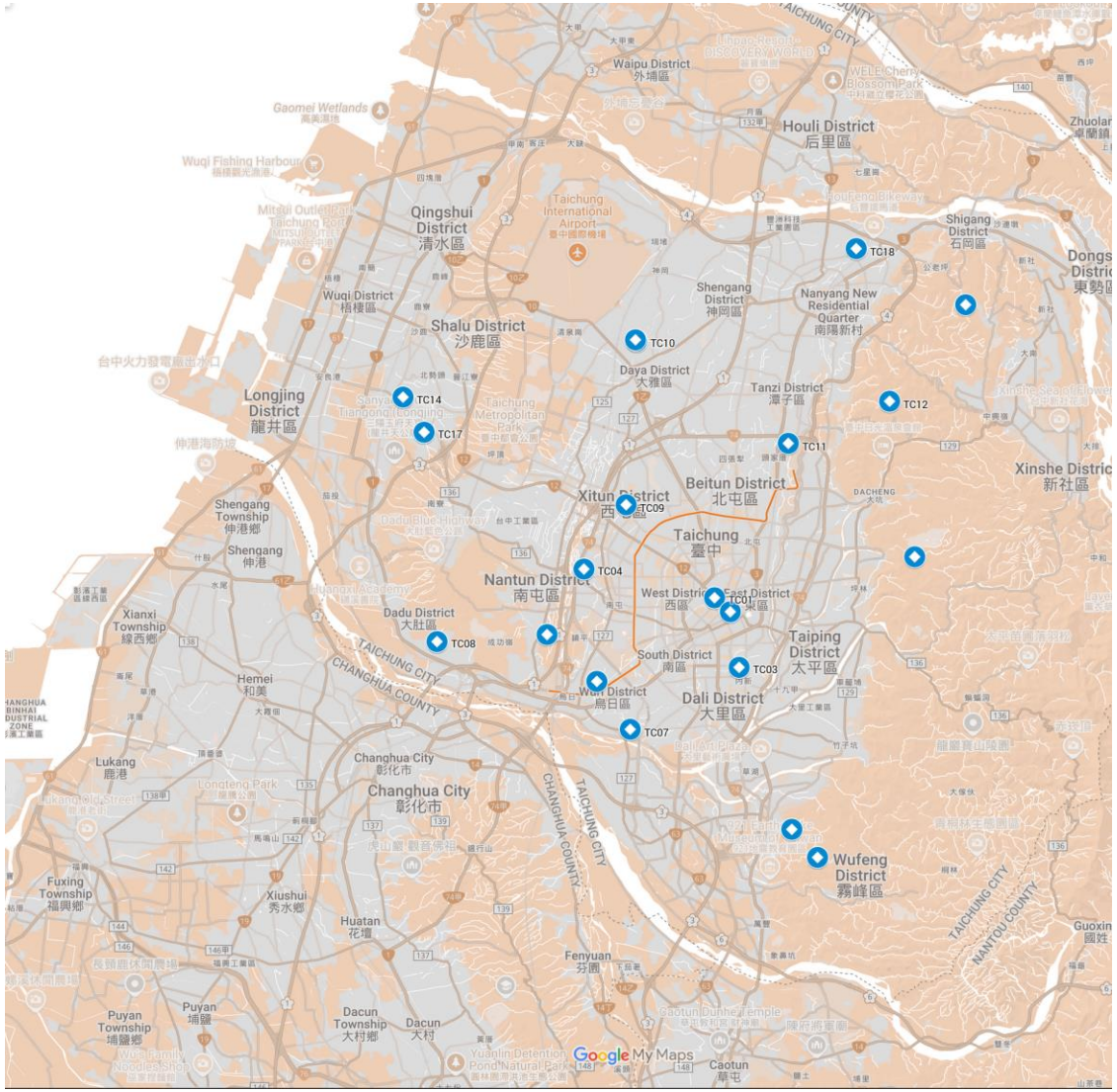

Toulouse Sampling sites



Toulouse Workshops

Selection Taichung (Taiwan) sampling sites

Taichung



Selection Taichung (Taiwan) sampling sites

OneAquaHealth

Taichung

臺中

Population (April 2024)

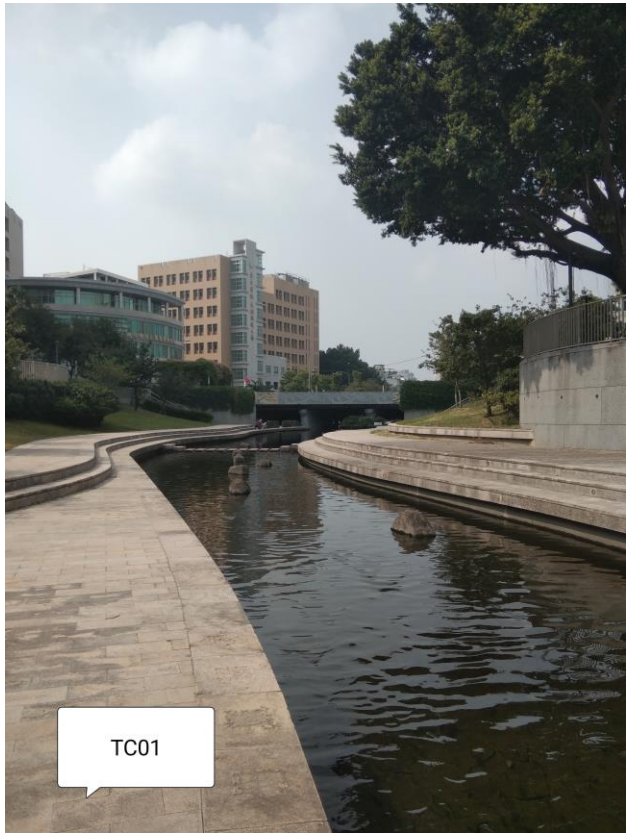
- Special municipality: 2,850,285
- Density: 1,300/km2 (3,300/sq mi)
- Urban: 2,635,000
- Urban density: 5,400/km2 (14,000/sq mi)

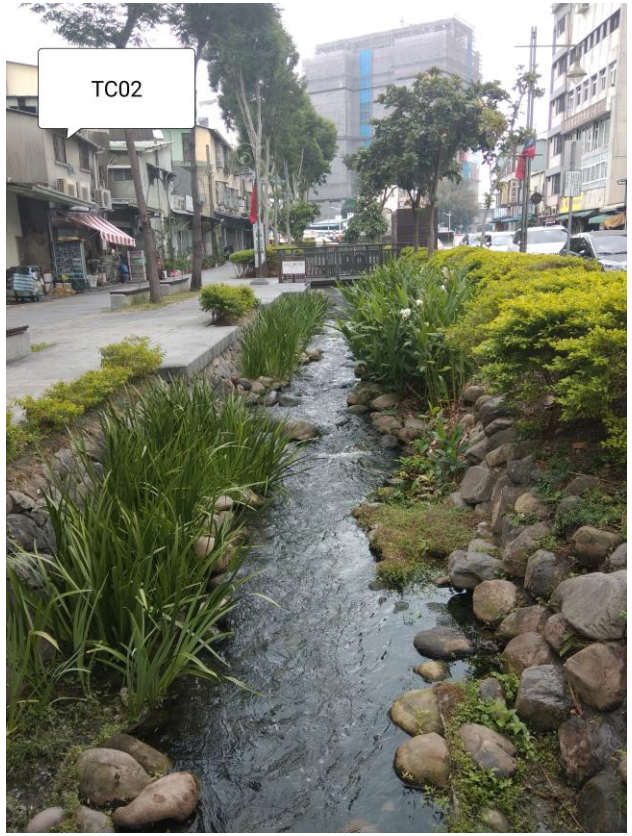
Area

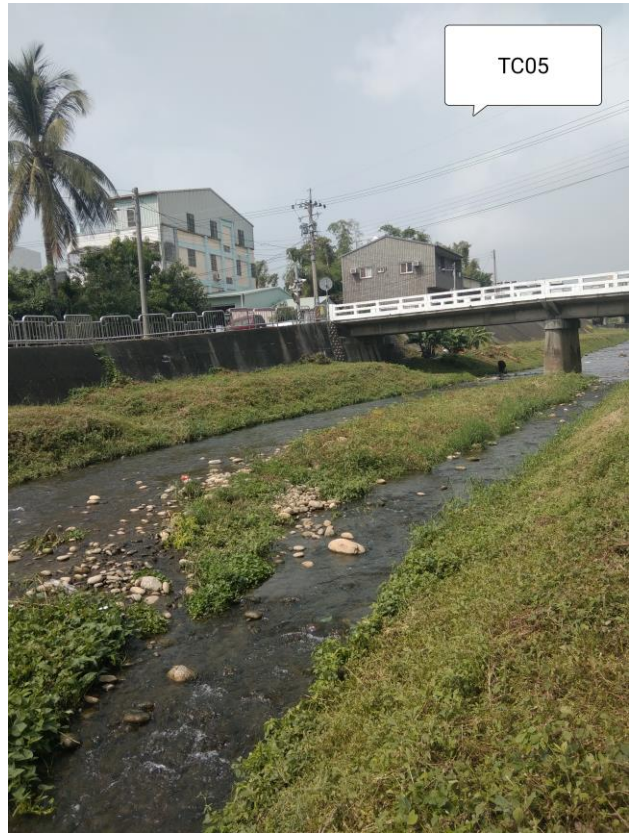
- Special municipality: 2,214.90 km2 (855.18 sq mi)
- Urban: 492 km2 (190 sq mi)

warm humid subtropical climate

Taichung sites







Taichung sites

Biofilms
Water
Mosquitos

Questions & Answers

MOBILISE: A sustainable One Health mobile laboratory for rapid response to infectious disease outbreaks

March 17th, 2025

Cosmina Stalidi

Research & Development Engineer – Beia Consult International

Funded by the European Union

MOBILISE at a glance

Objectives & Key challenges

- Develop a novel and green “One Health'' mobile laboratory unit
- Develop a software solution for a “MOBILISE Emergency Operating Centre and Decision Support System (EOC/DSS)”
- Curation of established “European mobile laboratory inventory database”
- Field validation of the MOBILISE mobile laboratory prototype

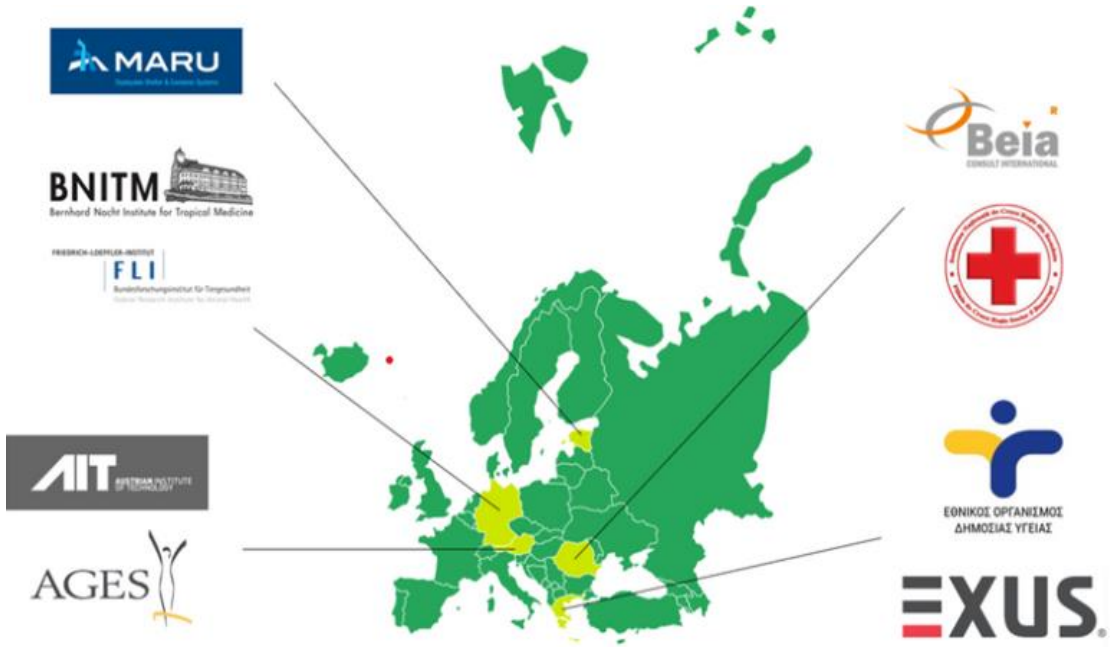
- Lack of “One Health” aspect – for zoonotic infections
- Lack of peripheral BSL 3/4 capacity – for risk group 3 and 4 pathogens
- Lack of interoperability of existing mobile laboratories to tackle cross-border pandemics
- Lack of green laboratory operations – for sustainability

Funded by the European Union

EU Horizon Project MOBILISE

Proposal nummer: **101073982**

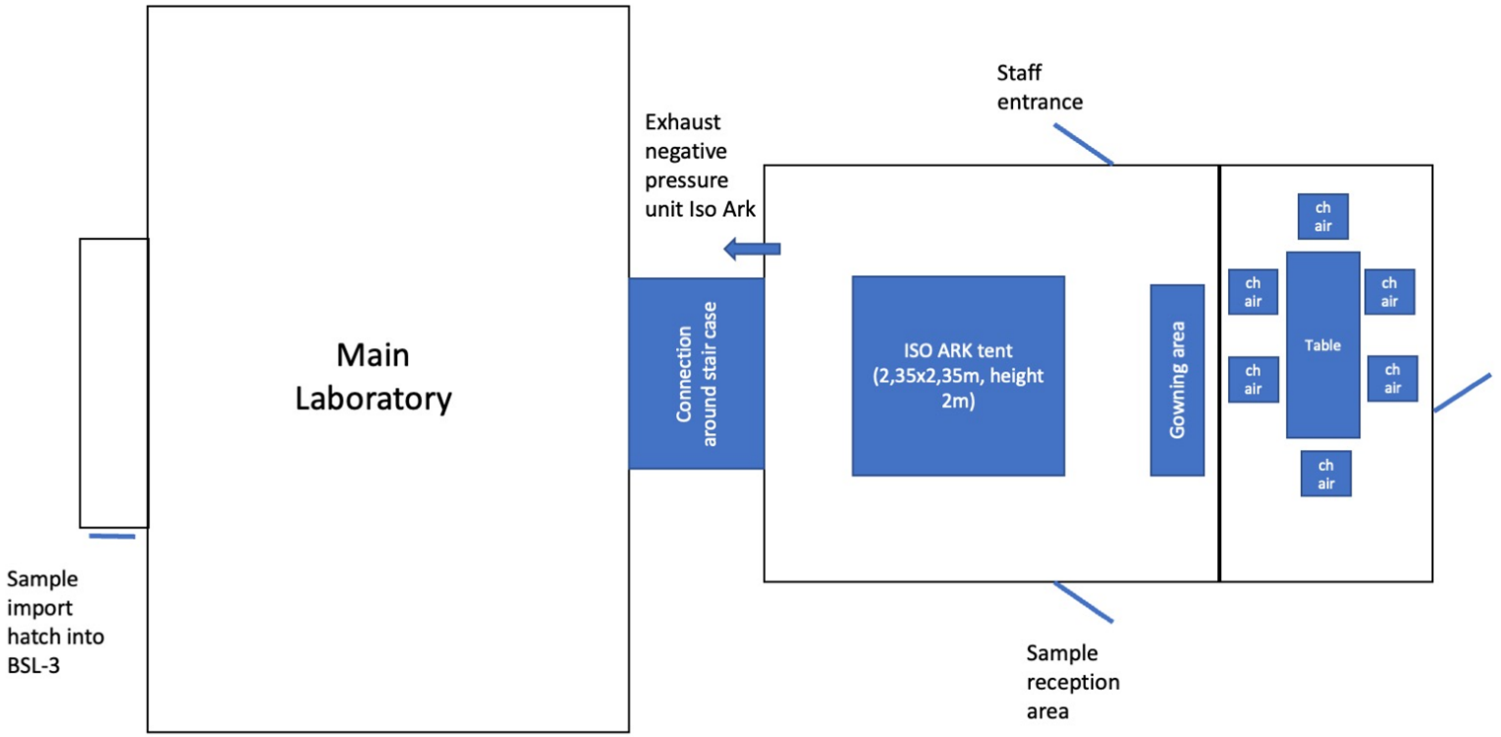
- Project duration: 36 months
- Project start: 01.10.2022
- Funding amount: 3 999 892
- Project management: BNITM



Field missions to validate prototype

- **Austria (AGES)** –Test laboratory workflows (CCHFV, African Swine Fever)
- **Greece (NPHO)**–Test laboratory workflows (WNV)
- **Romania (Red Cross)**–Test integration into national first responder‘s outbreak response
- **East Africa (EAC)**–Usability of green platform in Africa, Rift Valley Fever outbreak

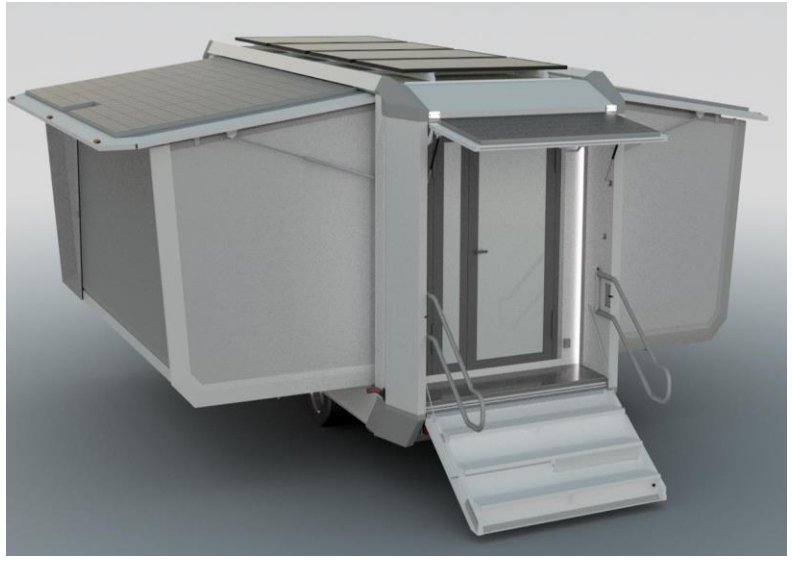
The One Health design



- One Health Mandate requires work with animal samples
- Laboratory contains separate animal sub-sampling workstation in IsoArK BSL-3 Isolation tent
- The IsoArk tent is housed within main tent (which is attached to Lab)
- A Portaclave is available for animal carcasses either in IsoArk tent or in main tent
- The main tent also houses a physically separated relaxation area for lab staff

Funded by the European Union

The green design



The MOBILISE labortatory has six power sources:

- Solar (4kW)
- Wind (1,5kW)

 total: 3kW-3,5kW

- Battery system that will serve as UPS
- Stand-by generator (5-6kVa)
- Mains power connections
- (connection to alternator)

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SHIFT-HUB

Beia CONSULT INTERNATIONAL

JOIN US

Open Innovation Workshop & Fundraising Session

Bucharest & Online

May 6th, 2025

https://shift-hub.eu/
https://beiaro.eu/shifthub

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Thank you so much!
Any questions?

Cosmina Stalidi

Research & Development Engineer – Beia Consult

cosmina.stalidi@beia.ro

https://mobilise-lab.eu/

MOBILISE Project – on LinkedIn

Funded by
the European Union

THE WATER INSTITUTE:

INNOVATION AND COLLABORATION TO SUPPORT PEOPLE, ECOSYSTEMS AND ECONOMIES

THE WATER INSTITUTE

Kathryn Sweet Keating, PhD, LMSW
Social Scientist
Community Resilience Center at The Water Institute

March 17, 2025

MISSION

Our mission is to **reduce the vulnerability of people, communities, ecosystems, and economies** through **transformative approaches** to **interconnected environmental and social challenges**.

VISION

We envision a future where all of humanity can **adapt and thrive** alongside nature in a changing world.

THE MISSION + THE METHOD

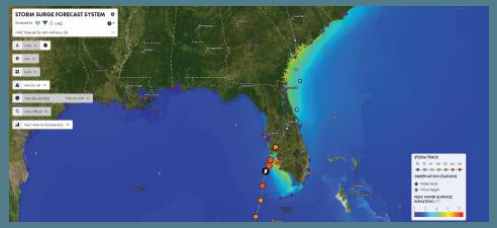
SOLUTIONS
Innovative, solution-driven tools for a dynamic world

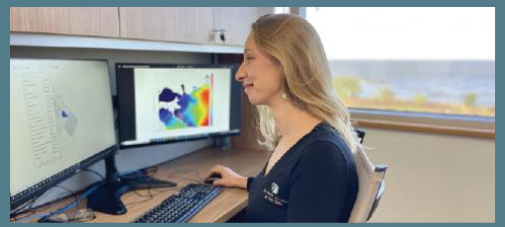
SCIENCE
Solving complex societal and environmental challenges with transdisciplinary research

We are an independent, applied research organization who advances actionable research, technology, and planning in support of inclusive, science-informed decision making. We serve as a thought partner, bridging diverse disciplines and organizations. We draw on our roots in the Mississippi River Delta and Gulf Coast, where water is both a strength and a vulnerability, to tackle challenges wherever they are.

STANDARDS
Identifying and advancing systems for national adoption

TRANSDISCIPLINARY RESEARCH





COMMUNITY RESILIENCE CENTER
AT THE WATER INSTITUTE

FOCUS AREAS

- Fundamentals for Equitable Climate Resilience
- Insurance Affordability and Availability
- Community-Led Migration Legal Frameworks and Approaches
- Equitable Flood Risk Planning and Policies

INSURANCE AFFORDABILITY AND AVAILABILITY:
GRAVELINE BAY, ALABAMA

Restored marsh from 37 acres to just under 100 acres.

GRAVELINE BAY INSURANCE PROJECT: APPROACH

moffatt & nichol

Munich RE

Engineering analysis of changes in total water level

Engage with residents to:

- Assess type & frequency of flood insurance
- Educate on Risk Rating

Assessment of risk reduction

Generate content for each home with:

- Change in flood frequencies
- Corresponding reduction in actuarial risk

Support residents to share with insurance agencies

- Track changes or roadblocks

FUNDAMENTALS FOR EQUITABLE CLIMATE RESILIENCE: COMMUNITY RESILIENCE CATALYST

- **Education:** Work with often overlooked south Louisiana communities to enhance awareness of pathways for increasing community resilience.

- **Technical Support:** Provide capacity to south Louisiana communities in overcoming barriers to resilience planning and action.

WEBSITE: HTTPS://THEWATERINSTITUTE.ORG/PROJECTS/CRC/CATALYST

THE WATER INSTITUTE

THANK YOU

Contact:
Kathryn Sweet Keating, PhD, LMSW
kkeating@thewaterinstitute.org

Questions & Answers

Energy, Water and Climate: A Business Perspective on EU Regulation, Trends, and Action

Corina Constantin

—

March 2025

Sustainability and Climate Change services

For each stage of the ESG journey, KPMG offers tools and services to meet clients' needs, whether it's building or refreshing the sustainability strategy, developing a decarbonization plan or evaluating the ESG program effectiveness.

- ESG Strategy & CSRD Reporting
- Carbon Footprint calculation
- Decarbonization Strategy
- EU Taxonomy Reporting
- Waste Traceability & Reporting
- Circular Economy Initiatives
- ESG Due Diligence Services
- Impact Studies & Benchmarks

Diverse client and sector experience

- Industrial Markets
- Healthcare & Life Sciences
- Transport and Logistic
- Consumer Goods & Retail
- Private Equity
- Energy & Natural Resources
- Government & Public Sector
- Financial Services
- Agribusiness
- Real estate
- Technology, Media & Telecom

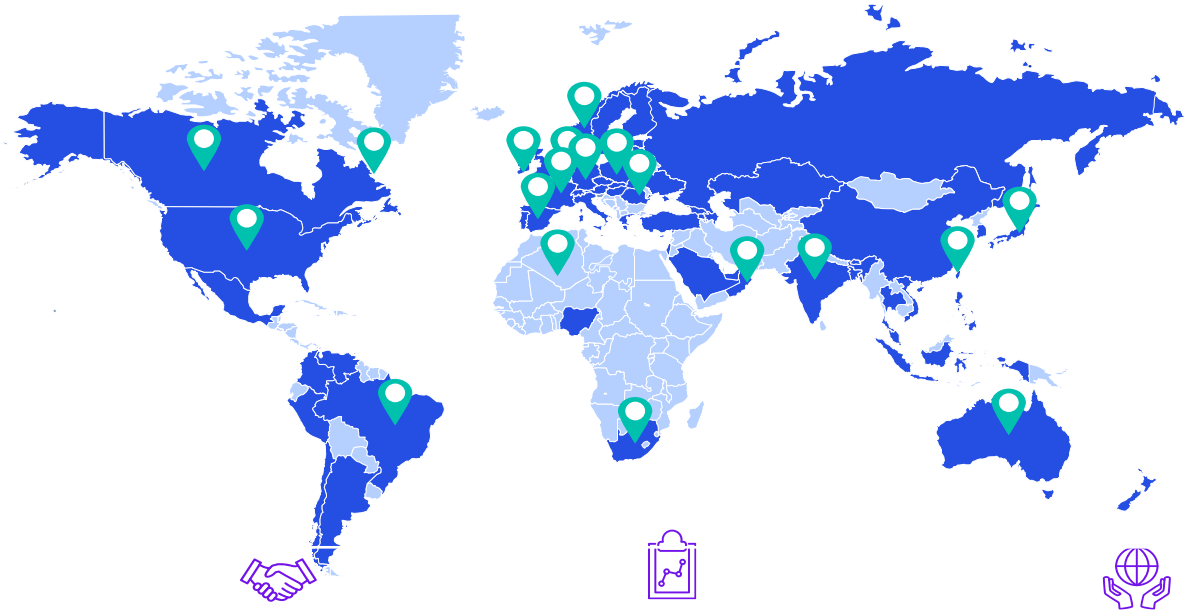
Global network and repository of methodologies and case studies

KPMG ESG is a network of over 500 sustainability professionals delivering sustainability advisory services, climate change, decarbonization, ESG advisory services, sustainability reporting and assurance in around 60 countries.

We have the right expertise in our local team, which can leverage a global network of ESG Hubs on very specific topics, if need be.

We have successfully worked for public and private Romanian companies and across the world on ESG related issues.

Our team in Romania collaborates with ESG experts from other KPMG offices, in order to deliver together complex projects.



Industry leader in strategic sustainability advisory
The KPMG team guides large, international companies in their development and implementation of bold sustainability strategies, ambitious target-setting and best-in-class reporting.

Sustainability thought leaders
KPMG stays on the forefront not only of what is on the sustainability agenda today, but what will be on the agenda tomorrow. KPMG's team includes members of national and European committees, which provide input to new sustainability frameworks and upcoming regulation on sustainability, ESG, and sustainable finance.

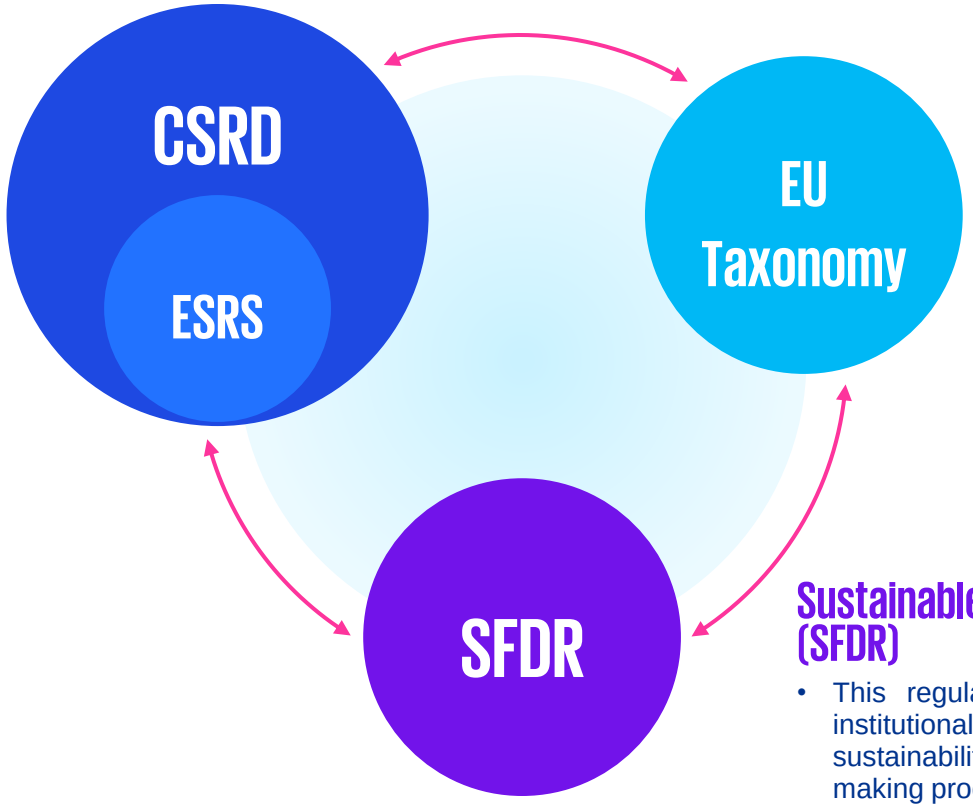
Deep execution experience based on strong climate data
KPMG has constructed a database of all major climate change data and scenarios which we have applied for leading clients in a wide range of industries in support of developing sustainability disclosures, identifying and managing climate-related risks and opportunities, developing and testing climate scenarios and delivery of risk management roadmaps.

Direct involvement in sustainability network
KPMG member firms are directly connected to provide sustainability services globally. Within this network, KPMG ESG team provides a platform to support and empower KPMG professionals to assist clients in fulfilling their purpose and helping deliver on the UN Sustainable Development Goals.

Reporting requirements by the European Green Deal

Corporate Sustainability Reporting Directive (CSRD)

- The CSRD sets out which companies need to report sustainability-related information and when. The ESRSs (European Sustainability Reporting Standards) support this reporting process with detailed reporting requirements.
- It is a key component of the EU's sustainable finance action plan[1] – which also includes reporting under the EU Taxonomy and SFDR.
- It requires companies to report on their sustainability-related information with the aim of:
  - providing investors and stakeholders access to necessary information for assessing investment risks related to climate change and other sustainability – related matters; and
  - establishing greater transparency about a company's impact on people and the environment.



EU Taxonomy

- The EU Taxonomy is a classification system that defines activities deemed to be aligned with a net-zero trajectory by 2050. It aims to help direct investment towards activities that will support the transition to a greener economy.
- As part of the CSRD, in addition to ESRS requirements, companies in scope are also required to report under the EU Taxonomy regulation. This regulation sets out specific KPIs about the extent of a company's sustainable activities.

Sustainable Finance Disclosure Regulation (SFDR)

- This regulation requires fund managers and other institutional investors to publish information on how sustainability is integrated into the investment decision-making process.
- ESRS supports the publication of this information

The CSRD **does** not apply solely for EU-based companies. Its scoping requirements capture a range of companies, including non-EU companies with significant operations in the EU and non-EU-based companies listed in the EU.

[1] *The EU's sustainable finance action plan is part of the European Green Deal – a major package of policy initiatives designed to support the EU to achieve climate neutrality by 2050.*

Cities Transition Plan - Decarbonizing cities requires integrated efforts by all actors across sectors

Value chain

— Cities need to identify both current and future sources of emissions to prioritize and take meaningful climate action

Policy and regulatory action

— Decarbonizing cities would require integrated efforts across sectors such as power, mobility, and infrastructure, supported by national and state policies (crucial to drive the change)

Technology

— Low carbon technologies can help cities reach near-zero emissions level; technologies that promote efficiency across sectors will have the greatest impact on urban decarbonization

Wider ESG considerations

— ESG considerations and a wholistic approach is needed to ensure a "Just Transition" to proactively protect long term value and mitigate severe disruption to the economy

Levers and tipping points

— There are several levers available to cities to drive emissions reductions, as well as critical tipping points that have the potential to accelerate decarbonization (e.g., empowering local governments, technology etc.)

Metrics and targets

— Many cities have already set ambitious near-term and long-term emissions reduction targets and are committed to the global Net Zero ambition

Critical next steps

— Aligning GHG emissions reduction efforts with the Paris Agreement, supported by a city level climate action plan, will be required to drive decarbonization action

— Investing in R&D and promoting the adoption of clean technologies in critical urban sectors will be required to achieve carbon neutrality

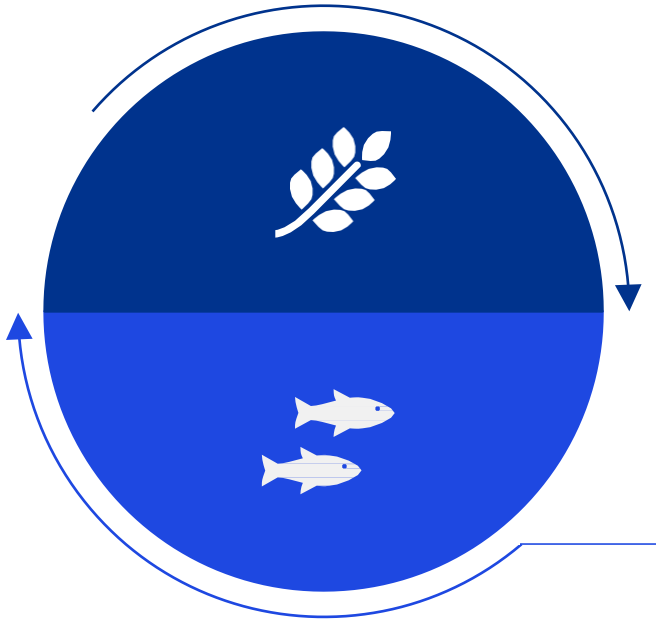
— Improving data integration and interoperability to promote city actions will be essential to accelerate towards Net Zero

Nature and biodiversity cycle

The Exploring Natural Capital Opportunities, Risks and Exposure (ENCORE) tool enables users to assess the materiality of potential impacts and dependencies on nature across city's operation, providing a score of High, Medium, Low, Very Low or Not Applicable.

Impacts

Impact drivers	Materiality
Terrestrial ecosystem use	
GHG emissions	
Non GHG air pollutants	
Water pollutants	
Soil Pollutants	
Solid waste	



Ecosystem services dependencies	Materiality
Surface water	
Ground water	
Bio-remediation	
Mediation of sensory impacts	
Mass stabilization and erosion control	
Filtration	
Flood and storm protection	

Dependencies

Very high | High | Medium | Low | Very low

Source: ENCORE tool

ESRS E3 - Water and Marine Resources (Corporate level)

Cross-Cutting Standards: 1, 2
Environmental Standards: E1, E2, E3, E4, E5
Social Standards: S1, S2, S3, S4
Governance Standards: G1

Standard Profile

ESRS E3 - Water and Marine Resources

- **Objective:** Enable users of the sustainability reporting to understand how a certain company affects water and marine resources, in terms of positive and negative material actual or potential impacts.
- **Disclosures type:**

- **Referenced Frameworks:**

- **Characteristics: 6** disclosure requirements, 3 mandatory data points, 24 data points subject to materiality assessment
- **Key Challenges:**
  - Collection of water intensity KPIs incl. water withdrawals, recycled and/or reused water
  - Assessing water and marine resources-related IRO
  - Reference to Taxonomy Regulation

Standard Architecture

Strategy

Impact, risk and opportunity management

- Reference to ESRS 2 IRO-1
- E3-1: Policies related to water and marine resources
- E3-1: Actions and resources related to water and marine resources

Metrics and targets

- E3-3: Targets related to water and marine resources
- E3-4: Water consumption
- E3-5: Anticipated financial effects from water and marine resources-related impacts, risks and opportunities

ESRS E3: Topics covered by the standard

E3 – Water and Marine Resources

- Water
  - Water consumption
  - Water withdrawals
  - Water discharges
- Marine Resources
  - Water discharges in the oceans
  - Extraction and use of marine resources

Key Take - Aways

Water Reporting by Municipalities: Municipalities should determine the extent of disclosure on strategies, policies, actions, metrics, and targets related to water issues. Establishing a **Water Standard Framework**, similar to the **corporate-level ESRS E3 standard**, is recommended.

Contribution to the European Green Deal: It's important to assess how municipalities support the European Green Deal's objectives for clean air, clean water, healthy soils, and biodiversity, along with promoting sustainable practices in the blue economy and fisheries sectors.

Funding Opportunities: Developing a clear and structured approach could enhance access to public and private funding, which would support the commercialization of emerging technologies.

Corina Constantin

Associate Partner,

Energy, Sustainability and Climate Change

KPMG in Romania and Moldova

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Questions & Answers

Panel discussion

OneAquaHealth

Next steps to ensure sustainability - OneAquaHealth Community

SYNYO GmbH

Alexander Nikolov

Funded by the European Union

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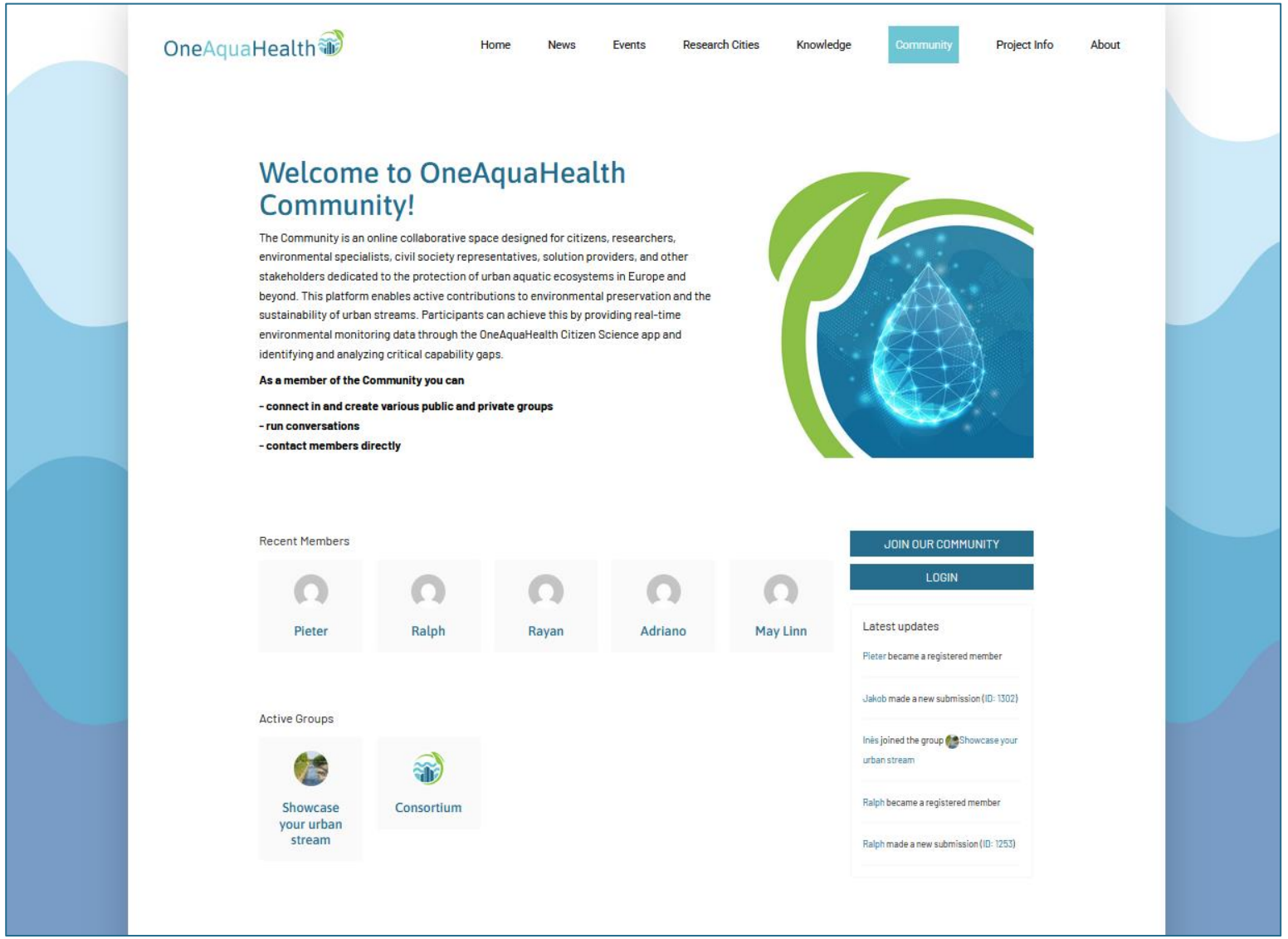
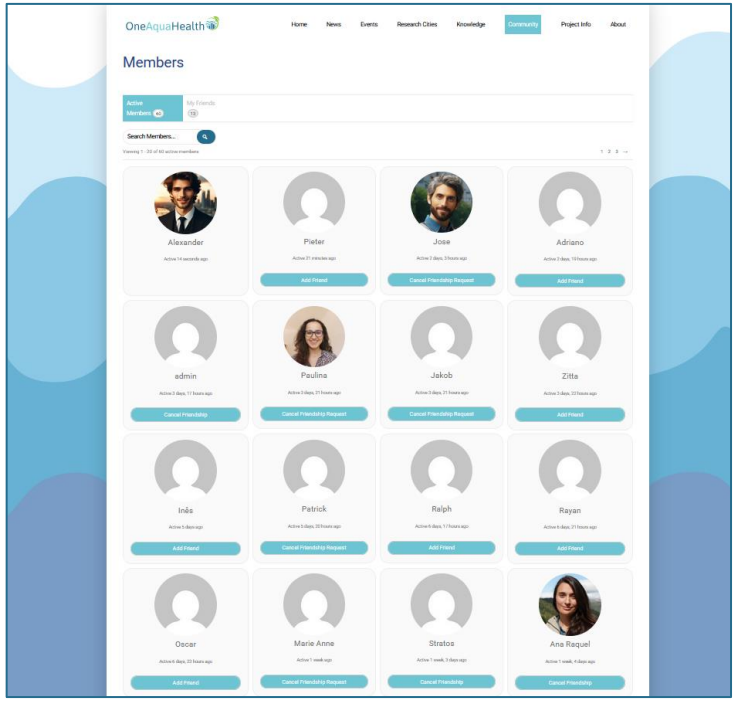
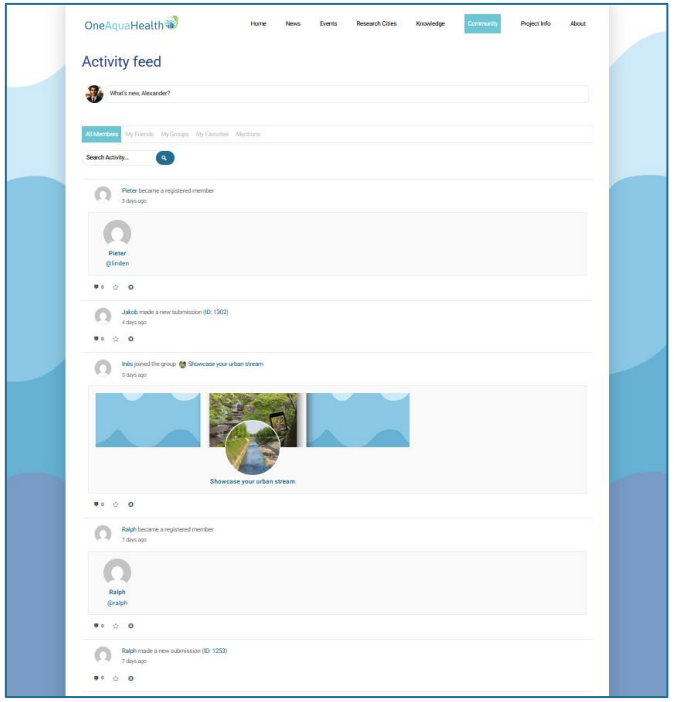
OneAquaHealth Community (module)

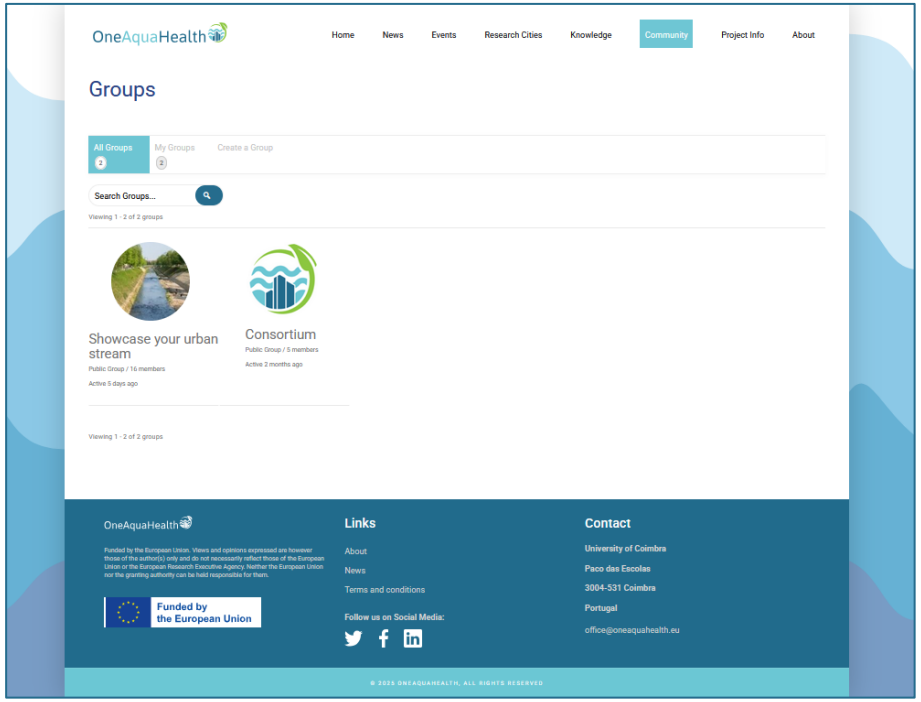


Scan Me

OneAquaHealth Community (module)



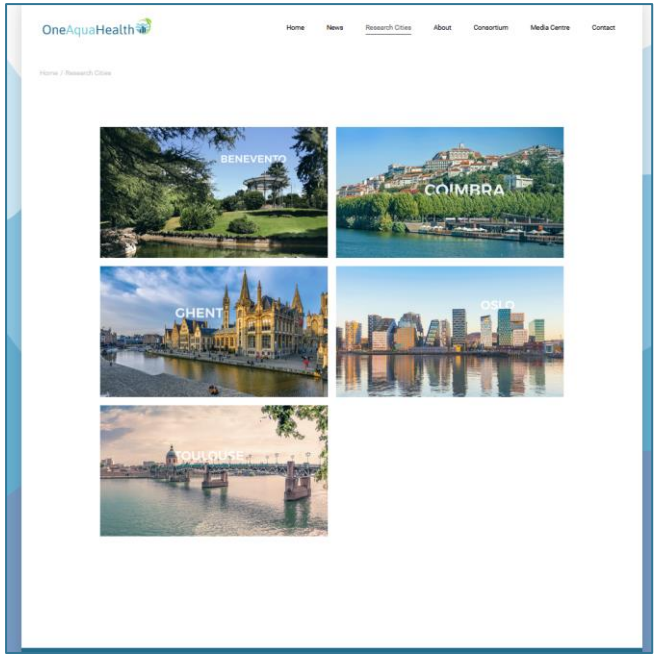


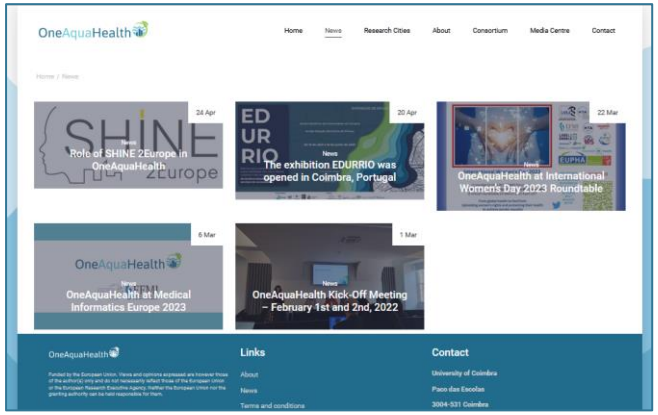


Questions & Answers

DISSIMINATION & COMMUNICATION

Open Information Hub | www.oneaquahealth.eu





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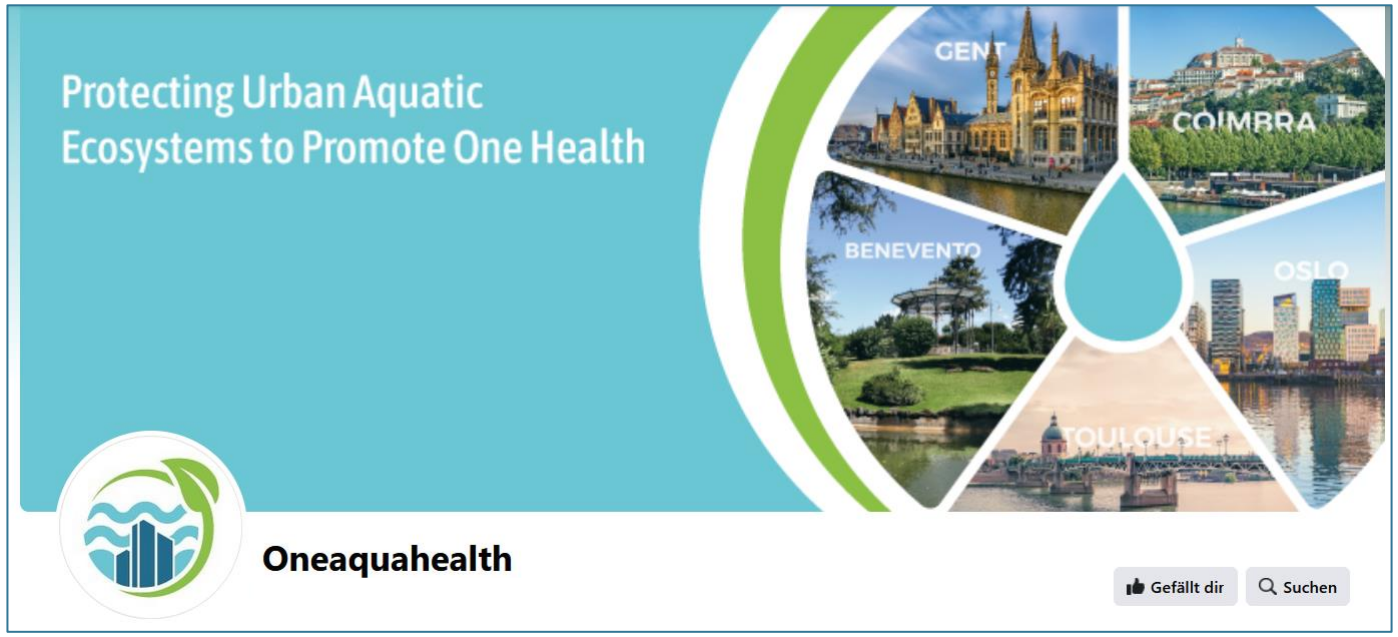

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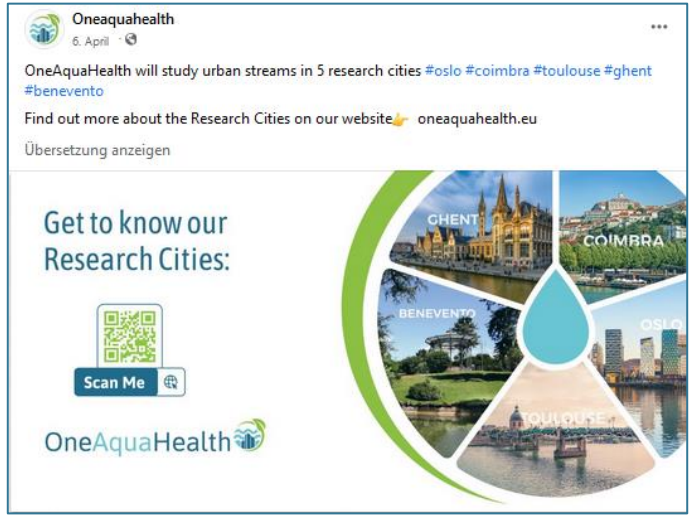

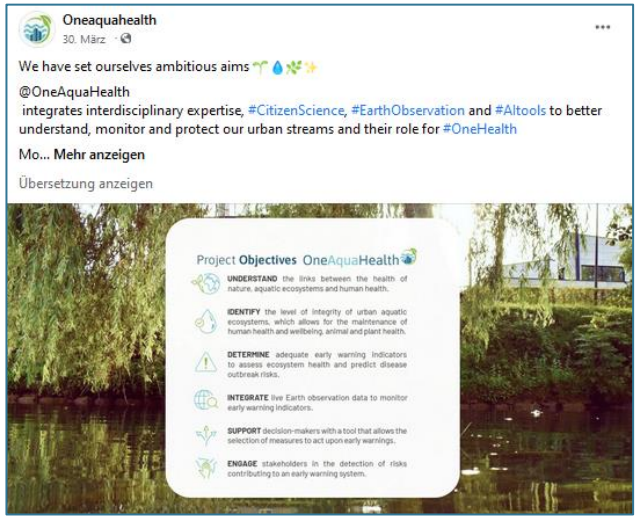

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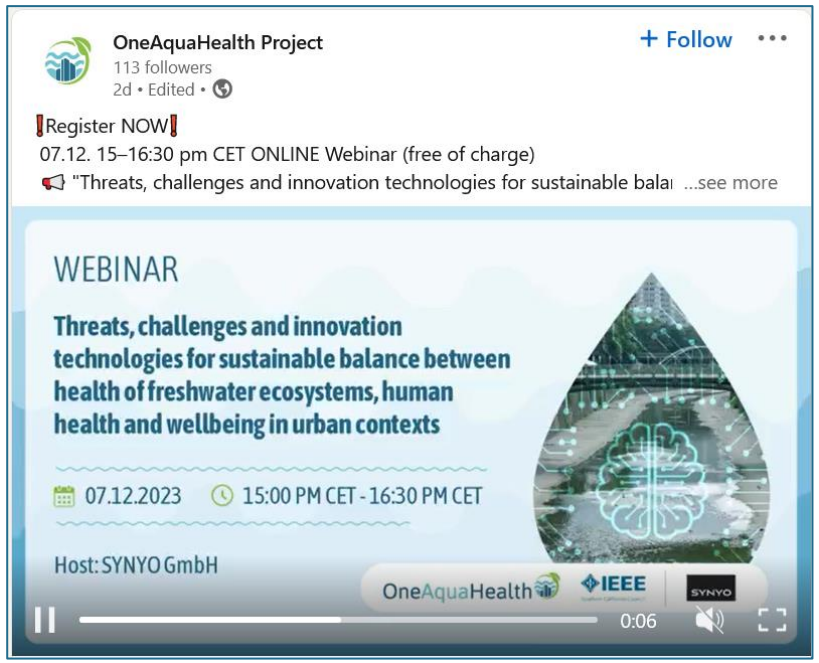

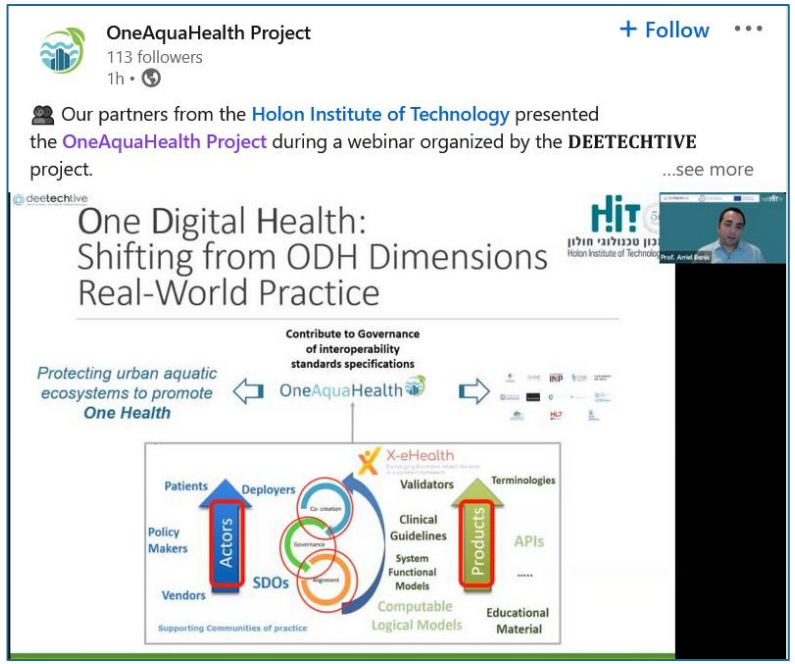

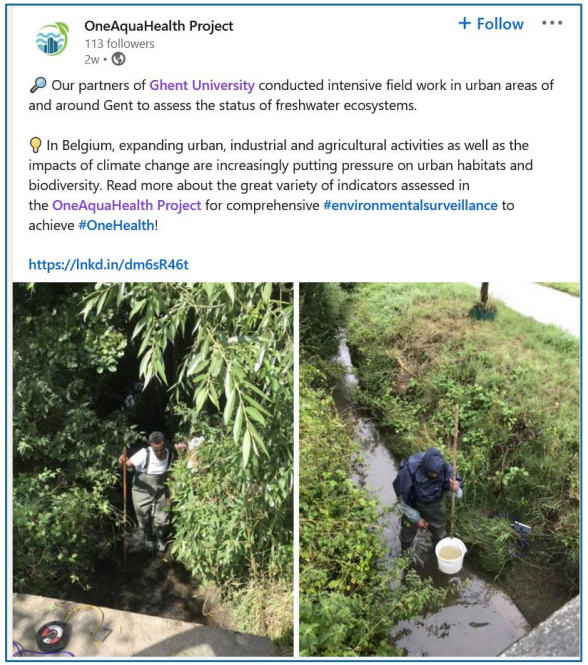

Thank you for your attention!
Contact us, get involved, stay updated:

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