



**Co-UDlabs**  
COLLABORATIVE URBAN DRAINAGE  
RESEARCH LABS COMMUNITIES



# Co-UDlabs TRANSNATIONAL ACCESS

Apply for free-of-charge stays at our research infrastructure



The Co-UDlabs project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101008626.

## About the project

**Co-UDlabs** is a Horizon 2020 project aiming to integrate research and innovation activities in the field of Urban Drainage Systems (UDS) and address pressing public health, flood risks and environmental challenges.



## Main objectives

**Foster a culture of co-operation** between Research Infrastructures (RIs) and the urban drainage community through a set of coordinated **Networking Activities** which help to develop a more inclusive, open and efficient research and innovation environment.

**Facilitate free of charge Transnational Access** to 17 leading European facilities by two calls for proposal targeting scientific communities, water utility and supply chain innovators.

**Enlarge and strengthen the quality and quantity of the services offered** at European level through a combination of interconnected **Joint Research Activities**.

## What is a “European Research Infrastructure”?

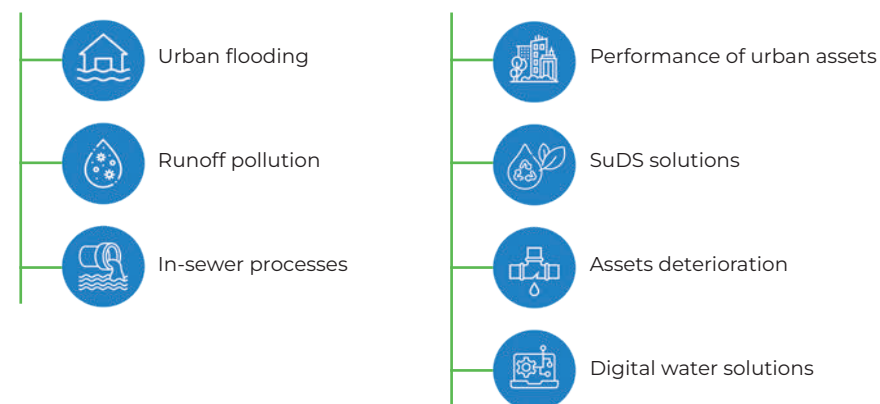
**Research Infrastructures (RIs)** are facilities that provide resources and services for research communities to conduct research and foster innovation. They can be used beyond research e.g. for education or public services and they may be single-sited, distributed, or virtual.

**The European Commission defines, evaluates and implements strategies and tools** to provide Europe with world-class sustainable RIs and ensures that these are open and accessible to all researchers in Europe and beyond!

## Co-UDlabs RIs

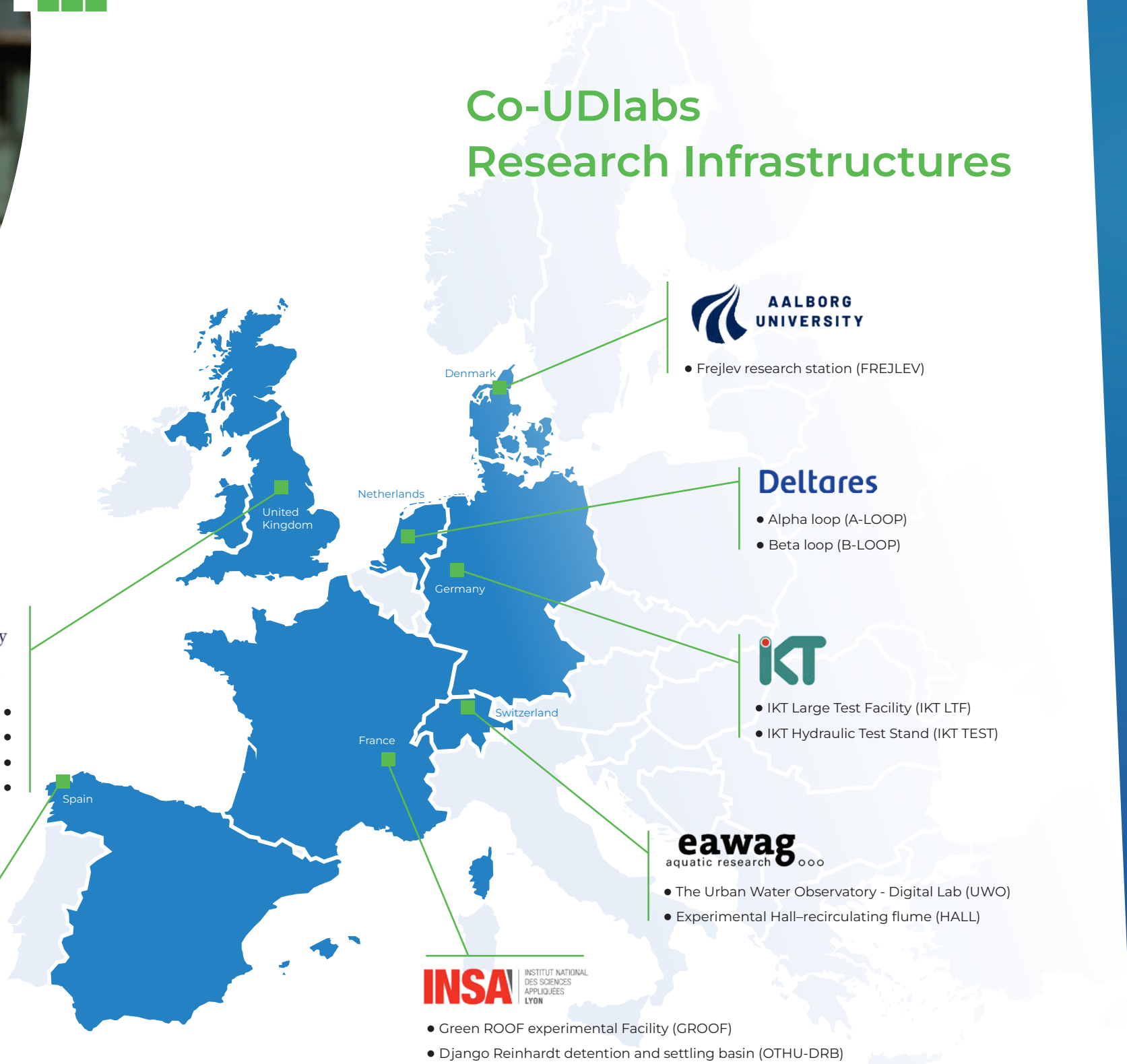
**Through the Transnational Access Programme**, Co-UDlabs opens up 17 unique ‘field scale’ urban drainage experimental facilities located in 7 different countries to external researchers from multiple disciplines, so that they conduct their research studies for free.

**Our 17 facilities** are designed for research across 7 fields of expertise:





# Co-UDlabs Research Infrastructures



**AALBORG UNIVERSITY**

- Frejlev research station (FREJLEV)

**Deltares**

- Alpha loop (A-LOOP)
- Beta loop (B-LOOP)

**IKT**

- IKT Large Test Facility (IKT LTF)
- IKT Hydraulic Test Stand (IKT TEST)

**eawag**  
aquatic research

- The Urban Water Observatory - Digital Lab (UWO)
- Experimental Hall-recirculating flume (HALL)

**INSA** INSTITUT NATIONAL DES SCIENCES APPLIQUEES LYON

- Green ROOF experimental Facility (GROOF)
- Django Reinhardt detention and settling basin (OTHU-DRB)
- OTHU SuDS research facilities (OTHU SuDS)

**The University Of Sheffield.**

- Above/Below Ground Urban Drainage Scale Model (A/B FLUME)
- Temperature controlled Annular Flume (ANNULAR)
- Full Scale Buried Cell Flume (BURIED INFRASTRUCTURE)
- Real Time Control Testing Facility (RTC RIG)

**UNIVERSIDADE DA CORUÑA**

- 1:1 Street model (STREET)
- Scientific platform for urban runoff tests (BLOCK)
- Bens WWTP flume facility (BENS FLUME)





### 1:1 scale street surface model (STREET)

In-Person Access

Full scale model of a 36 m<sup>2</sup> street section (including buried drainage pipes) for studying rainfall processes, street flooding, pollutant runoff and in pipe pollutant transport.

Controllable rainfall is generated. Measurement capabilities include: Large-scale Surface Particle Image Velocimetry (LSPIV), online monitoring and automated sampling for sediments and other pollutants. Surface and inlets can be reconfigured.



### Scientific platform for urban runoff tests (BLOCK)

In-Person Access

100 m<sup>2</sup> rainfall simulator model with 1:4 scale model of an urban intersection for studying rainfall-runoff and the transport of pollutants on surface and in the drainage network. Controllable rainfall is generated.

LSPIV system, online and automated monitoring and sampling procedures for sediments and other pollutants.

Surface and inlets can be re-configured. 4 buildings models can be utilized to analyze different roof configurations, including green roofs.



### Bens waste water flume facility (BENS FLUME)

In-Person Access

Hydraulic flume (10 m length and 0.8 m width flume), variable slope and adjustable downstream boundary condition, can be internally reconfigured with pipe sections.

Wastewater can be routed through and used in the facility, making the flume unique at the international level. Online probes (turbidity, absorbance), acoustic velocimetry, auto-samplers for collecting quality samples, with chemical and microbiological analysis capabilities.

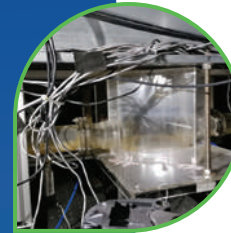


### Frejlev research station (FREJLEV)

Partially Remote Access

Frejlev research and monitoring station receives combined and separated sewage water from the urban city Frejlev. The city has around 2800 inhabitants and consists primarily of residential areas.

Inline access to a continuous flow of sewage water and full list of water quality equipment allows conducting unique wastewater process research.



### Above/Below Ground Urban Drainage Facility (A/B FLUME)

In-Person Access

System comprises of a 75 mm diameter pipe below a 4 m x 8 m surface model to simulate characterise interaction of underground drainage and surface flows. LSPIV and automated solute concentration measurement. Steady and unsteady events can be re-produced.

Adaptable system, re-configurable to different street/building layouts.



### Temperature controlled Annular Flume (ANNULAR)

In-Person Access

The annular flume is a unique facility in that we are able to operate it with wastewater to study microbial and biochemical processes that would be found within a sewer, under different environmental (temperature and nutrient) conditions at pilot scale.

Advanced chemical and molecular microbiological analysis is available.



### Full Scale Buried Water Infrastructure Test Facility (BURIED FACILITY)

In-Person Access

This is a facility to study buried urban drainage infrastructure. It consists of a 45m x 6m x 5m test tank, that can be split into sections in which different buried drainage infrastructure can be created at full scale and subject to surface/pressurized flows, groundwater flows, surface loadings and pollution. Full scale asset performance can then be studied and the interactions between different pressures on asset performance and deterioration can be determined.



### Real Time Control Testing Facility (RTC RIG)

In-Person Access

Full scale system with three linked manholes and a CSO chamber. Flow monitoring and control is installed.

Allows planned, systematic testing of Real Time Control RTC strategies and control systems under different hydraulic regimes.

## Delft (The Netherlands)

## Deltares

### Alpha-loop (A-LOOP)

In-Person Access

Alpha-loop is a full scale three-phase capable pressurized pipeline.

Combined with the measurement expertise at Deltares, A-LOOP provides a unique observation platform for gas, water and sediment interaction and transient flow and thermal phenomena in a simulated pressurized sewerage transport network.

### Beta-loop (B-LOOP)

In-Person Access

Beta-loop is a unique full-scale pipeline for the study of non-Newtonian slurry flows in pressurized networks.

This facility can serve to control and investigate rheological conditions in concentrated domestic slurry transport systems.

## Gelsenkirchen (Germany)



### IKT Large Test Facility (IKT LTF)

In-Person Access

Large Scale Test Facility is a large flume of 18 m x 6 m x 6 m designed to study urban drainage assets (pipes, manholes, gully pots) at full scale under replicable soil, groundwater and traffic load conditions.

### IKT Hydraulic Test Stand (IKT TEST)

In-Person Access

Hydraulic Test Stand is a modular facility with a water transport/circulation system for testing hydraulic capacity of full-scale pumps, throttles, gullies, DIBt (<https://www.dibt.de/en/>) accredited test stand for decentralized stormwater treatment plants.

## Dübendorf (Switzerland)



### Experimental Hall-recirculating flume (HALL)

In-Person Access

The experimental hall is a 500 m<sup>2</sup> test facility for urban drainage and process engineering experiments. It has a fixed installation of flume facilities (4 m length), which allow for temperature-controlled experiments with live raw and (pre) treated wastewaters as well as surface waters.

The facility is equipped with autosamplers and various flow and level meters, as well as online sensors to monitor water quality (temperature, pH or EC, acoustic turbidity).

### Urban Water Observatory – Digital Lab (UWO)

Partially Remote Access

The UWO digital lab is a unique field site because of the high density of quantity and quality sensors (+80) in a real sewer combined network.

Calibrated hydrodynamic network model with historical rainfall data. Historical pesticide datasets from online LC-MS-Mass spectrometer.

## Lyon (France)



### Green ROOF experimental Facility (GROOF)

Partially Remote Access

GROOF is an experimental facility with 6 green roof platforms (3 m x 3 m). The platforms allow comparative mid- to long-term hydrological performance assessment of various green roof configurations. A complete weather monitoring station is installed. Specific outflow and evaporation measurements are also available.

GROOF is highly flexible and adaptable (green roofs can be re-configured).

### Django Reinhardt detention and settling basin (OTHU-DRB)

Partially Remote Access

The Django Reinhardt detention and settling basin is an “end of pipe” facility that enables to intercept up to 80 % of stormwater particulate pollutants. LSPIV is available. Users can implement sensors for quantity and quality measurements at the inlet and outlet of the basin. Historical data collected during 15 years are available. It is also possible to investigate trace metal sediment contamination.

### OTHU SuDS research facilities (OTHU SuDS)

Partially Remote Access

OTHU SuDS include a porous pavement car park (90 m<sup>2</sup>), a swale (290 m<sup>2</sup>) and an infiltration trench (240 m<sup>2</sup>). Event-based rainfall, flow rate and micropollutants data have been recorded during 4 years. The facility allows the installation of new sensors.



# Get free access to our urban drainage research facilities!

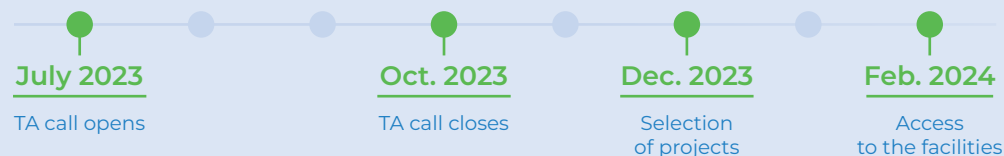
Co-UDlabs provides free-of-charge access to its 17 research facilities to allow diverse groups to work collaboratively on key challenges of the urban drainage sector, aiding a faster and more effective uptake of innovative solutions.

- Do you have a **research proposal** aiming to solve practical problems of urban drainage systems?
- Do you need to get **access** to one of our facilities to carry out experiments?



Apply for our

2nd call for Transnational Access!



Visit our website to know more!

<https://co-udlabs.eu/access/ta-call/>

Who can participate?

- Researchers from academic institutions\*
- Masters' and PhD students
- Researchers from industry and the private sector
- Small and Medium Enterprises (SMEs)
- Urban Drainage practitioners

\*Researchers may only apply for Transnational Access to institutions located in different countries from the organisation they represent.

# How to submit your proposal

**1 Learn everything about the call and the Co-UDlabs facilities!** All information about the #TA call is online on our website. Don't forget to check out the description of Co-UDlabs' research facilities!

**2 Download the call's supporting documents and rules.** You can easily download the full text of the #TA call, the #TA rules and conditions to participate, and the guidelines on the selection procedure from the proposal submission page on our website

**3 Download and fill in all the submission templates.** Don't forget that your proposal will have to include three filled-in files:

- the CV of the user group
- the project proposal document
- the access feasibility plan

All the templates are available for download on our website

**4 Submit your proposal.** Once all the required documents are ready, just visit our #TA call webpage and click on the 'Submit your proposal' button!



Already have a fledgling idea or looking for a team to collaborate with?  
Visit our **Ideas Marketplace!**





# Interested to know more?

## Participate in our next outreach activities!

A series of events will be organized to inform you and help you get ready for our next TA call:

**May 2023**

**Webinar**  
to present the call

**Sept. 2023**

**Hackathon**  
for participants to connect, team up, share ideas and discuss early proposals



**July 2023**

**Workshop**  
during NOVATECH 2023 to launch the call

Visit our website for updates!

<https://co-udlabs.eu/dissemination/event-directory/>

# Transnational Access FAQ

## What does 'free of charge' mean exactly?

According to the H2020 regulations, Co-UDlabs will be able to cover all associated costs for accommodation, travel, and living expenses (such as meals) of the user-group members who will travel to a facility. We also provide logistical, technological and scientific support as well as specific training.

## Can I apply if I am not based in EU?

Yes! However, participation is limited by INFRAIA H2020 rules. Access of groups in which a majority of members are from non-European and non-associate countries is limited to 20% of total granted access days. We recommend you take a look at the official list of H2020 Associated Countries.

## Where can I find feedback and support?

You can contact us by email at any time but if you are specifically interested in one or several of our research facilities, you can contact directly the people in charge of the installations at this link: [www.co-udlabs.eu/facility-contact-form/](http://www.co-udlabs.eu/facility-contact-form/).

## What are the modalities of access?

- In-Person Access (hands-on): the presence of at least one member of the user group is required during the whole period of the access.
- Partially remote access, with the presence of the users at some stage of the research (e.g. at the beginning and end of the experiments).

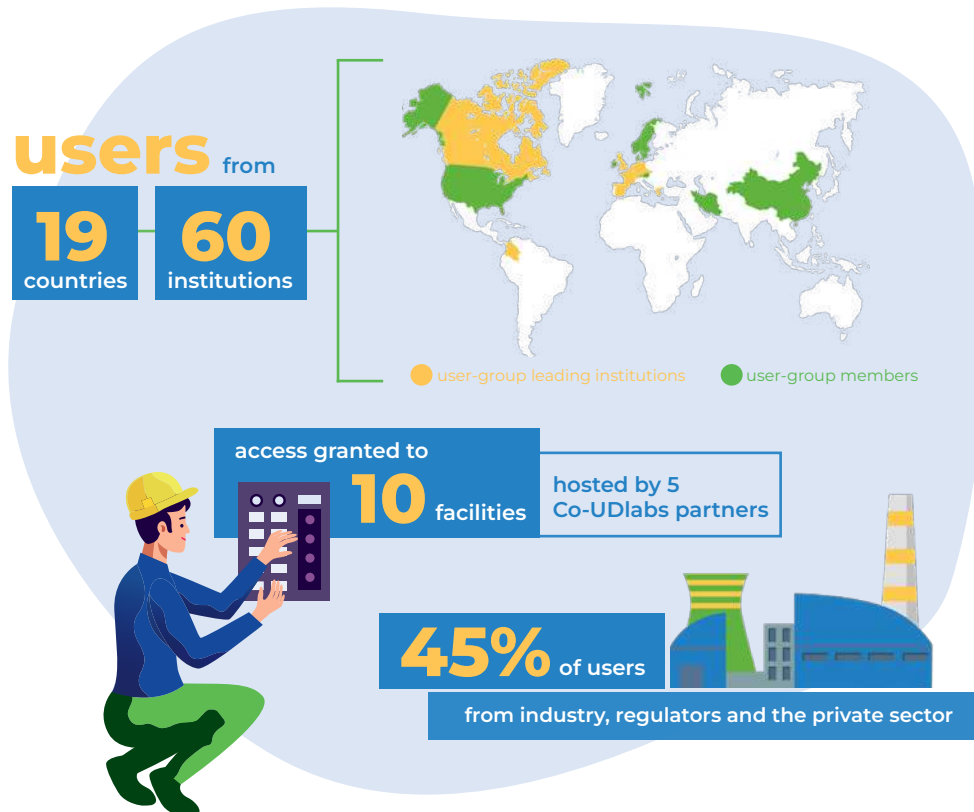
## Can my team members be based all in the same institution?

Yes, whenever a proposal meets the criteria it will be evaluated. However, Co-UDlabs also aims at improving multi-disciplinary collaboration and cross-sector knowledge. The ability of a team to include diverse backgrounds and expertise will be positively assessed.



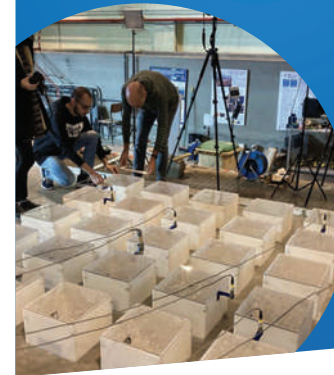
# Results of our 1<sup>st</sup> TA campaign

Our first global call closed in January 2022 and experiments have been running between October 2022 and July 2023



# List of currently finalised and ongoing TA projects

as of April 2023



- Urban Flooding: Houses as reservoir (at UDC STREET)
- Methodology to determine the potential resuspension load of heavy metals from road sediments associated with surface runoff (at UDC BLOCK)
- Pollutant Transport in Urban Floodwaters (at USFD A/B FLUME)
- Non-contact assessment of TSS and COD concentrations in wastewater with hyperspectral imaging (at EAWAG HALL)
- Characterisation of thermal properties of sediments in UDS with temperature probes (at EAWAG HALL)
- In situ SUDS modelling (at INSA OTHU)
- Evaluation of new flow and quality monitoring devices for sewers (at UDC BENS)

## Testimonials from RIs users



“ I worked at the research facility (CITEEC lab) for 2 months. During this time I had the help of professors, researchers and technicians there. I would describe my experience as fantastic. Participating in the Co-UDlabs TA gave me the opportunity to work as part of a research team outside my home institution. This broadened my understanding of my research topic and perspective on my field. ”

- **Spyros Pritsis**  
User-group member of project UDC-03-STREET-Bellos

“ The benefits of participating in the Transnational access programme were many. The UDC team handed and instructed me in the use and analysis of instruments related to concentration of heavy metals, particles analysis and in-depth flow discharges. With that knowledge, I was able to investigate deeply sediment and flow processes. Finally, but not least important, I had a great team here in UDC who helped me clear all the doubts that rose on the road and helped me moving forward with the research project. ”

- **David Santiago Hernández Medina**  
User-group member of project UDC-02-BLOCK-Zafra







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[www.co-udlabs.eu](http://www.co-udlabs.eu)



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Co-UDlabs - Building Collaborative Urban Drainage research labs communities



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Sheffield.

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