EUROPEAN UNION

EU MISSIONS

ADAPTATION TO CLIMATE CHANGE

September 2024

EU Mission Adaptation Community

Event Summary: Drying Landscapes: Embracing Water Resilience in a Changing Climate

Wednesday 17th September 2024

1. Introduction: the event at a glance

Registrations & participants:
364 registrations and 127 participants including:

- 21 Charter Signatories
- 8 Mission Projects
- 18 Regions or Local Authorities
- 10 Private Sector
- 40 Research and Academia
- 6 European Commission representatives
- 24 Others

The event aimed to introduce the **challenges, opportunities and tools** associated with drought management in the context of climate change, as well as **share principles, experiences, practices and case studies** on adaptation options related to drought management from a region and/or local authority.

Watch the recording here.

The presentations are available in Futurium.

Key findings

- Cooperation between local, regional, and federal authorities, as well as cross-border and intersectoral collaboration, is vital for effective water management.
- Developing regional drought risk management plans and establishing a transparent hierarchy of water uses are essential for effective water allocation during scarcity.
- It was recommended to water managers to have a detailed drought plan that considers almost every use of water.
- It was recommended to carry out emergency drills to test water facilities, such as desalination plants and wells, to ensure they function properly during droughts.

For further details see Section "Findings and outputs".

2. Summary of the Event

The event highlighted effective drought management strategies and tools. Attendees were able to deepen their understanding of measures and resources to enhance resilience against droughts. Presentations gave an insight into the latest research on further efforts in drought and climate change resilience.

Lukas Repa from the European Commission DG Environment presented the EC's Role in Water Management and water Resilience. Key points highlighted include:

- The European Commission is tasked with protecting water quality, which is intrinsically linked to water quantity, as less water leads to higher pollution concentration.
- The Water Framework Directive, adopted in 2000, obliges Member States to achieve good status of water bodies by 2015, a deadline pushed to 2027.
- The Commission started addressing water scarcity and droughts as a problem in 2007 with a communication that introduced the water hierarchy principle, encouraging water-saving and efficiency before increasing supply. In 2012, the Blue Deal communication furthered the protection against water scarcity and droughts, establishing a task group for member-state cooperation.
- Water resilience has become a top priority for the European Commission due to the compounded effects of climate change and human interventions.
- Local and regional water management authorities are crucial in managing water sustainably, including raising awareness about water conservation, implementing environmental rules, and ensuring efficient water use.
- Early warning systems and long-term investments in water quality and reuse are necessary to improve water resilience.
- Practitioners and regional water managers are recommended to join the Ad Hoc Task Group on Water, which will become a permanent working group under the implementation strategy.

Jordi Molist from the Catalan Water Agency presented Barcelona’s experience with droughts and the management plan. Key highlights include:

- Barcelona's water supply, primarily sourced from reservoirs, has been critically affected by an ongoing four-year drought with a 50% rainfall deficit, reaching a state of emergency in March.
- The drought management plan includes restrictions and measures to reduce reliance on dams by utilising groundwater, maximising desalination efforts, and implementing indirect potable reuse. While the plan offered legal grounding, it did not guarantee public acceptance, especially among the most affected sectors.
- Progressive restrictions, considered a crucial step to prevent a water crisis in cities, were implemented during drought stages. The measures implemented have been enforced through the imposition of hundreds of fines, and there were difficulties in communicating the necessity of these measures to the people and users, highlighting the importance of raising awareness on drought.

- An interactive tool was created to increase transparency and help citizens understand the necessity of the measures taken during the drought. The tool allows users to see the impact of supply-side and demand-side measures on reservoir levels.
- Catalonia aims to implement benchmarking programmes to address water leakage despite already having an 80% efficiency rate.

Klio Monokrousou from NTUA presented advances in the IMPETUS project. Key highlights include:

- Attica, particularly Athens, faces significant drought and water scarcity challenges due to climate change, population growth, and unsustainable water management.
- The IMPETUS project in Athens uses sewer mining (SM) technology to address drought and water scarcity in cities.
- The project in Athens has been operating continuously for more than three years and uses recycled water to irrigate a series of gardens.
- The total cost of the water treatment technology was 200.000€, which includes the pumping station, treatment unit, and control room.
- The operational cost of the water treatment system has been reduced to less than 300€ per year, primarily due to the use of solar panels.
- The water treatment unit is stable in operation and efficient in treatment, with lab tests demonstrating the stability of the water quality produced.

Ariane Blum from ARN presented Water4All's ongoing projects and upcoming calls. Key highlights include:

- There are 27 funded projects in JTC1 (2022) dealing with drought. Some of these projects started this year and will end in 2027. Examples of some of these projects are the AQUIGROW project and the DIME project.
- The new call, published last week, is about water for a circular economy. The deadline to submit the proposal is 13 November 2024. Ariane shared links to the partnering tool and a webinar on 2nd October.
- Other Water4All activities are the Water Oriented Living Labs (WOLLs): A network of 25 Water Oriented Living Labs (WOLLs) exists to encourage sharing water management solutions across Europe. WOLLs function as ecosystems where end-users, such as local authorities, are consulted before developing water management solutions. The network aims to facilitate the sharing of solutions and experiences from different locations, such as Barcelona and Lisbon.

The Q&A focused on various themes related to water management, corporate responsibility, drought resilience and policy implementation. It also highlighted the need for innovative, cost-effective solutions and monitoring systems, particularly in the face of drought and contamination risks.

For a full compilation of the questions asked and answers, please refer to the Annex.

3. Findings and outputs

Based on the insights gathered from the discussions, several key lessons and findings have emerged:

- The European Drought Observatory has issued drought alerts for a significant portion of Europe, particularly in Southern and Eastern Europe (European Drought Observatory: EDO map link).
- If global warming increases by three degrees, the number of Europeans facing drought will increase by 25% more than in 2020, according to a report from the JRC PESETA IV project.
- The 2022 drought and heatwave in the EU had an economic impact of 0.3% of the total GDP, equating to 40 billion euros. A link to an EEA analysis of drought impact on ecosystems in Europe was shared through the chat.
- Water reuse is an attractive option for preserving water reserves and keeping resources within social and industrial systems.
- Different reports, websites and tools that were shared through the chat include EEA Report No 12/2021, EEA Report No 1/2024, Stock-taking report on droughts (2023), EC Communication from 2007, CORDIS - EU research results, EU Policy Recommendations, description of the Sewer mining technology, and some tools on the MIP4Adapt tools database and Climate-ADAPT (Social Vulnerability Index, Climate Adaptation Game, Water Risk Atlas, and Climate Resilient City Tool).

4. Next Steps

The recording and presentations have been uploaded after the event to the online EU Mission Adaptation Community site.

More information about upcoming events can be found on the EU Mission Adaptation Community site.

Upcoming announced events and other key dates include:

- Flood Resilience: Strategies and Solutions for a Safer Future, 26 September.
- Joint Workshop Mission Adaptation and Mission Ocean and Waters: “Integrated Approaches to Build Coastal Resilience”, 30 September.

The second cycle of the Peer Learning Programme for Charter Signatories is now open for registration.

Contact us via the Helpdesk form for any queries from members of the Community of Practice on associated activities and events, specific concerns about your climate adaptation planning process, communications and press releases, and IT technical issues with the website.

Annex

Q&A Compilation

Questions for Jordi Molist from the Catalan Water Agency

The answers to these questions were provided by Jordi Molist from Catalan Water Agency during the event.

Water reuse also reduces e-flows in rivers. Would indirect water reuse also work well in a city more upstream than Barcelona?

We only favour the reuse of water from wastewater treatment plants that are discharged into the sea. But we have many of them because most of the population in Catalonia lives in coastal towns, so this is our strategy to reduce wastewater plant discharges into the sea.

Would it be helpful to have an online monitoring device to measure faecal contamination levels?
Yes, it would be useful. However, we are more concerned about other emerging components, which are more challenging to eliminate.

The answers to the following questions were provided after the event by Jordi:

What measures do you plan to reduce vulnerability to future drought episodes?
We are focusing on a combination of three key strategies: improving efficiency, desalinating seawater, and reusing water, emphasising potable reuse. In the short term, our goal is to ensure that 70% of the water supply in the Greater Barcelona area comes from unconventional resources during drought periods.

As a corporation, what advice could you give us to ensure business continuity and employee wellbeing (apart from awareness and enhancing water efficiency)?
Once all efficiency measures, including internal recycling, have been fully implemented, evaluating the potential use of reclaimed water from a municipal reclamation facility could be a promising option.

Questions for Klio Monokrousou from NTUA

The answers to the following questions were provided during the event.

Have you compared the cost with a more conventional solution of centralised wastewater treatment and subsequent distribution?

Yes, the cost of transporting water varies if we compare it with wastewater treatment plants that are central, but the operational costs are higher than those currently used. The energy cost of bringing the treated water to the urban parks of a city depends on the distance and the size of the city. Still, in many cases, like ours in Attica, where we have huge wastewater treatment plants far away from the city centre, the energy of returning the resource to the city parks is much higher than having a more distributed single system for irrigating. We also must bear in mind that these solutions are more sustainable for water security when it is more difficult to have access to water. Mediterranean areas are experiencing increasing difficulty accessing water, particularly during specific seasons, especially the dry season.

The answers to the following questions were provided after the event by Klio.

What is the approximate lifetime of such a water reuse unit? 3 years? 5 years? 10 years?

The lifetime of sewer mining units is at least 15-20 years, depending on the maintenance of the systems through remote and onsite monitoring and control of the systems and equipment. Of course, there might be a need to substitute or upgrade some of the equipment, but based on our experience (from the first unit that has been working for 9-10 years now), these upgrades are expected to be minor and manageable, e.g. a sensor, a filter or a pump.

What about the cost of the Sewer Water Mining units to recycle wastewater for use in parks? Is this mobile solution also scalable and affordable?
The cost of the Sewer Mining unit was presented at the event. The CAPEX is about 280,000.00 € for a fully energy autonomous system and an OPEX of about €7,300 for a capacity of about 25m3/day. Of course, the solution is flexible and scalable, and in a network of units, the OPEX and capex would be significantly reduced to an affordable cost for the produced water, less than 1,2 €/m3.

In general, Sewer Mining is a circular economy solution that can be implemented on various scales and adapted in different, mainly urban, environments. It is a distributed system with a small environmental footprint that can increase irrigated green spaces in Mediterranean cities and, therefore, decrease the effects of heatwaves and water stress and, at the same time, reduce the pressure on existing sewage treatment facilities. It's really a win-win solution that can clearly enhance the resilience of cities to climate change.

Questions for Lukas Repa from the European Commission DG Environment
The answers to the following questions were provided after the event by the MIP4Adapt team.

At the end of this month, WMO will host a major event called Drought Resilience +10. I know the EU is engaged, but I'm curious about the engagement.
The Joint Research Centre participated actively in this event and presented the draft Global Risk Atlas, which is based on the European Drought Risk Atlas.

When the EC releases its communications - what effect does it have, and what actions does it initiate?
EC communications are an instrument for shaping EU policy, fostering public engagement, and influencing international relations. The Commission can drive progress and ensure the EU's continued relevance and success of topics. EC communications often outline new policy directions or priorities, guiding member states and EU institutions in decision-making. They can initiate legislative proposals, provide guidance and support to member states, and ensure consistent and effective implementation of EU policies.

How soon can we expect the new water strategy to be presented? Within the first 100 days of the new COM?
According to the Mission letter to Jessika Roswall, no timeline has been fixed for the water Resilience Strategy.

Which are the most effective practices implemented in Europe so far to raise awareness of water saving among citizens?
For example, urban water awareness campaigns have been implemented widely across Europe, and experiences from Scotland, France, Spain, Ireland, and Belgium have been compiled recently in an illustrative brochure.

Is Water abstraction licencing already in place for European countries?

Water abstraction authorisation and permitting systems are in place in all EU Member States. The European Commission is currently assessing whether these systems are in line with the requirements of the Water Framework Directive. Further information can be found in the 2019 5th WFD implementation report.

Questions for Ariane Blum from ARN

Ariane provided the answers to the following questions after the event.

What will be opportunities or wishes for industrial research partners to join initiatives and contribute?

Private compagnies are highly invited to submit a proposal to Water4All Joint Transnational Calls like for the current one Joint Call on "Water for Circular Economy" Open! | European Partnership Water4All.

The eligibility rules are defined by each national funding agency. National regulations and rules are available here for the current call: National Regulations-Water4All JTC2024.pdf.

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