



D6.5: Results of the Open Call

Task 6.2: Open Call and FSTP Management and Open Cal promotion

WP6: Dissemination, communication, and exploitation of results via stakeholder involvement and linking to the missions and wider outreach

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ABSTRACT	This deliverable, titled "Results of the Open Call," provides a comprehensive assessment of the outcomes and impacts achieved through the iMERMAID Technical Assistance Programme for local and regional authorities. Implemented via two Open Calls, the programme provided Financial Support to Third Parties (FSTP) to public authorities across eight countries. This support enabled these entities to test iMERMAID's innovative chemical monitoring and remediation solutions while building local capacity by leveraging the consortium's accumulated expertise and project knowledge.

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Acronyms

BRIDGEWAT	BRIDGing Communities for Sustainable WATers
CoEC	Contaminants of Emerging Concern
DEL	Deliverable
DNOC	Dinitro-\(o\)-cresol
EU	European Union
FSTP	Financial Support to Third parties
GA	Grant Agreement
HE	Horizon Europe
HEMRIS	Detection of heavy metals and removal potential in Slovene Riviera
IA	Innovation Action
IMRHMCSR	Integrated Monitoring and Remediation for Heavy Metal Contamination of the Seyhan River
ISHMPGR	Innovative Solutions for Heavy Metal Pollution in Georgian Rivers
KPI	Key Performance Indicator
MARINER	Monitoring Advanced Responses for Innovative networks in Eilat's region
MP3 Lake	Monitoring and Evaluation of Priority Pollutants in pomorie Lake
OC	Open Call
PA	Public Authority
PPRRRCM	Pesticide Prevention, Reduction and remediation Roadmap for Cimisia, Moldova
REACT	Remote Environmental Assessment and Continuous Metal Tracking

Executive Summary

The iMERMAID Technical Assistance Programme, implemented through two Open Calls, has successfully demonstrated the effectiveness of Financial Support to Third Parties (FSTP) in accelerating the adoption of innovative chemical monitoring and remediation solutions across Mediterranean associated regions. By attracting public authorities from diverse regions to participate, the programme addressed critical challenges focused on contaminants of emerging concern (CoECs).

Participating entities were able to test iMERMAID's innovative solutions, leverage accumulated project knowledge, build capacity and disseminate results within their local ecosystems, effectively building a roadmap for further targeted environmental actions. This deliverable, titled "Results of the Open Call," provides a comprehensive assessment of the results, impacts, and collaborative dynamics observed during the implementation of the sub-granted projects through iMERMAID Open Calls 1 and 2.

The core success of the programme is evidenced by the exceptionally high rate of impact realization observed and reported by the FSTP (sub-granted) beneficiaries. The majority of the projects achieved 100% of their anticipated objectives, averaging an 88% success rate in impact fulfilment overall. Key achievements include the successful real-world validation of iMERMAID solutions, including among others the Electrochemical sensor box dedicated to microorganic pollutants and the Heavy metal sensor, which were proven to provide laboratory-grade accuracy in field conditions. This showcased to local authorities the possibility to transition from periodic, manual sampling to high-frequency, data-driven environmental management.

Beyond technical outputs, the programme has more than doubled its initial engagement KPIs, reaching 49 local support organizations against an original target of 15. This institutional impact is further highlighted by the ability of participants to leverage their involvement for future growth; most notably, the MP3 Lake project secured follow-on Horizon Europe funding directly based on the results achieved within the iMERMAID framework. While specific administrative and procurement challenges were identified - particularly regarding the capacity of public authorities to manage complex technical actions the iMERMAID model has created a resilient network, with the capacity to scale actions against CoEC toward a zero-pollution future for the Mediterranean waters and beyond.

1.0 Introduction

The iMERMAID project (Innovative solutions for Mediterranean Ecosystem Remediation via Monitoring and decontamination from Chemical Pollution) is a Horizon Europe (HE) project funded under the "Restore our Ocean and Waters" EU Mission initiative. The project is specifically dedicated to protecting the Mediterranean basin from hazardous chemical pollution. Central to the project's strategy is the Technical Assistance Programme implemented via two Open Calls and designed with two clear goals in mind:

- Engage local and regional authorities to showcase the feasibility, replicability and scale up of the iMERMAID solutions.
- Support the participating authorities by providing them with technical assistance to build capacity and to implement freshwater ecosystem restoration solutions in their territory that contribute to achieving the Mission objectives.

Through two open calls conducted the use case portfolio of the project was expanded with eight additional out of which six successfully completed projects across six different countries – Bosnia and Herzegovina, Bulgaria, Israel, Montenegro, Slovenia and Turkey. The Open Call encountered two specific cases – Georgia and Moldova, which will be thoroughly discussed within the respective sections. This deliverable, D6.5: Results of the Open Calls, provides an in-depth analysis of the performance and outcomes of the projects selected through Open Call 1 and Open Call 2. The objective of these calls was to empower local and regional public authorities to act as extended demonstrators for the iMERMAID solutions, thereby testing their scalability, reliability, and local relevance across diverse environmental and socio-political contexts.

To provide a clear overview the current document is structured as follows:

- Section 1: Introduction – The current section, providing an entry point and overview of the report's structure.
- Section 2: Programme Results and Impact Achieved: An analysis of the main results and impact generated from the Open Call funded projects. Specific attention has been as well placed on the satisfaction level of the beneficiaries participating in the programme and their assessment of the various Technical Assistance components.
- Section 3: Results per funded projects: Special attention is dedicated to each project, providing a comprehensive overview on their work, tangible outcomes produced, deviations and lessons learned.
- Section 4: Technical Assistance provided to FSTP beneficiaries: An overview of the support programme delivered by iMERMAID, including its structure, components, and underlying logic.
- Section 5: Stage definition and Reviews: Focuses on the evaluation mechanisms put in place to assess and validate the FSTP beneficiaries' work.
- Section 6: Lessons Learned: Review of the challenges encountered, offering practical recommendations for future FSTP mechanisms regarding technical support for authorities.
- Section 7: Conclusion: A final summary of the programme's achievements and its contribution to the broader iMERMAID mission.

2.0 iMERMAID Open Calls Programme Results and impact

The current section presents the overall results from the seven projects that have completed all three stages of the iMERMAID Technical Assistance Programme for Open Call beneficiaries. The eight project that entered Open Call 2 – ISHMPGR executed by Lentekhi municipality in Georgia terminated its involvement in the programme right after Stage 1 and therefore is not accounted within the results. This assessment is performed based on an impact assessment survey shared with the beneficiaries at the end of their programme involvement.

2.1 Results achieved

The iMERMAID Technical Assistance programme has successfully supported the deployment and validation of iMERMAID innovative monitoring and remediation solutions across multiple European associated regions. It as well has supported building extensive capacity on the topic of CoEC in these regions. A review of the deliverables and performance indicators as per the responses provided by the beneficiaries in the impact assessment survey reveals a high rate of objective fulfilment. Five projects reported a 100% completion rate for their planned technical activities. Notably, the MP3 Lake and REACT projects stood out by not only meeting their initial KPIs but exceeding them through expanded pilot testing.

The MP3 Lake project, which reported not only the successful testing of sensor technologies in Pomorie Lake but also the generation of a comprehensive pollution baseline that exceeded their initial KPI targets. Similarly, the REACT project successfully validated the heavy metal monitoring solution in Montenegro, reporting a high degree of correlation between sensor data and laboratory controls. MARINER and IMRHMCSR both confirmed that the technical assistance allowed for the successful installation and operational testing of monitoring hardware in their use cases

While other projects reported 90-100% objective completion, PPRRRCM's self-reported data indicates that several key technical tasks remained incomplete or were only partially addressed due to internal administrative hurdles. A specific emphasis was placed on the issue of finding a national available laboratory which can produce the analysis of the contaminant molecules identified for the project, which led to delays in finding and contracting a laboratory in another country. Additionally, the HEMRIS project noted a minor deviation in their timeline; while the technical results were achieved, the sampling frequency had to be adjusted due to local environmental conditions, though this did not compromise the overall quality of the resulting data.

Despite these outliers, the aggregate result is a robust portfolio of validated solutions ready for broader regional replication.

2.2 Impact achieved

The impact achieved by the sub-granted FSTP projects is characterized by the successful transition from proposals to validated environmental monitoring and initial remediation feasibility assessment in diverse water basins. Based on the self-assessments provided by the beneficiaries, the programme has not only met its technical goals but has also created a measurable effect in regional environmental management.

The most direct metric of success is the percentage of realized impact. The majority of the beneficiaries achieved a near-perfect success rate:

Full Realization (100%): BRIDGEWAT, IMRHMCSR, REACT and HEMRIS all reported a score of 10, MP3 Lake and MARINER reported a score of 9 (90%) and PPRRRCM reported a score of 8 (80%). Notably, PPRRRCM

(80%) cited the identification of pollution sources and the mapping of regional contamination as their primary fulfilled impact. The final score of the PPRRRCM was attributed to a short implementation period as assessed by the project and in addition a lack of a local laboratory that would test for Dinitro-(o)-cresol (DNOC) - one of the identified pollutants in Moldova.

When describing their most significant achievements, the projects highlight the following:

- Recurring feedback from the participating associated regions is the real-world validation of iMERMAID sensors (predominantly the electrochemical and heavy metal sensors). Projects reported that these tools provided results comparable to accredited laboratory analysis while offering faster, low-cost, and more flexible field measurements.
- Operational Simplicity: The technologies were confirmed as a game-changer for marine and river sampling because they are highly scalable, require no prior or major technical expertise to operate, and simplify complex monitoring processes.
- Capacity Building: Through professional site-visits and hands-on training (e.g., in Florence) public authorities and their teams gained the expertise to operate advanced monitoring hardware independently.

Environmental Insights and Remediation:

- Pollution Mapping: Projects successfully identified pesticide "hotspots" (PPRRRCM) and contamination pathways, or e.g. in mining-impacted areas and industrial river basins like the Seyhan River (IMRHMCSR).
- Beyond just monitoring, projects (such as HEMRIS) successfully demonstrated the feasibility of combining monitoring with remediation approaches (e.g., the 4D Scavenger), creating a concrete link between identifying a problem and planning its solution.
- Infrastructure Support: Technical results provided the evidence needed for municipalities to develop investment programmes and plans for further pollution remediation.

Stakeholder Engagement and Societal Impact:

- High-Level Visibility: Projects achieved massive outreach, with some engaging over 250 participants through own channels and educational workshops (e.g. MARINER), ensuring technical results were visible to students, local operators, and the wider community.
- Policy Integration: Strong stakeholder engagement confirmed a high level of acceptance and long-term adoption potential, bridging the gap between scientific innovation and municipal policy-making.

The iMERMAID Technical Assistance programme successfully strengthened the "triple helix" of collaboration between local government, academia, companies and other key organizations, ensuring that the results remain relevant beyond the project duration. It should be noted that for some of the municipalities this was a first encounter with such type of innovative projects and international large-scale partnerships.

Based on the feedback from the beneficiaries, the high level of impact achieved across the programme was driven by several core enablers, while specific technical and administrative challenges required adaptive management to ensure project success.

The following factors were cited as the primary drivers of the projects' achievements:

- **Exceptional Mentorship and Consortium Support:** Beneficiaries consistently highlighted the high quality of technical guidance provided by mentors (such as the University of Florence (UNIFI),

Società Metropolitana Acque Torino S.p.A. (SMAT), University of Angers (UA) and WEEEFINER (WF) among others) and the iMERMAID consortium. Prompt feedback, technical expertise, and a direct link between scientific teams and local municipalities ensured that the implementation of complex solutions remained on track.

- **Strategic Stakeholder Engagement:** The most successful projects leveraged existing regional reputations and established networks to engage a broad audience. The use of the iMERMAID stakeholder engagement toolkit developed by H2O People in some of the projects (e.g. BRIDGEWAT and MARINER), coupled with well-organized roundtables, municipal channels, and educational workshops, allowed projects to reach hundreds of participants, from government officials to students.
- In addition, the broader impact of the programme is quantified by the engagement of local support organizations and the ability of projects to secure future sustainability.
 - Support Organizations: Collectively, the projects engaged a total of 49 local support organizations.
 - Open Call 1 contributed 17 (BRIDGEWAT: 6, IMRHMCSR: 7, PPRRRCM: 4).
 - Open Call 2 contributed 32 (REACT: 17, HEMRIS: 5, MARINER: 5, MP3 Lake: 2, ISHMPGR:3).
 - This total of 49 is a major milestone, as it more than triple the programme's initial KPI of 15.

It should be noted that this number differs from the general stakeholder engagement with higher number as here organizations that participated in targeted discussions of the implementation roadmaps and future sustainability of the projects' results are accounted for and not broader dissemination and involvement.

- **Adaptive Implementation and Practical Relevance:** Success was often rooted in a "site-specific" approach. Projects like those in Eilat (MARINER) and the Slovene Riviera (HEMRIS) utilized adaptive strategies - such as selecting specific sensors only after baseline data was analysed - ensuring that the technical solutions remained relevant to local environmental needs.
- **Strong Organizational Coordination:** Timely planning and the professional management provided by F6S and lead municipalities (like Yüreğir and Pomorie) created a streamlined environment for executing deliverables and communication campaigns.

Main Challenges and Bottlenecks:

Despite the overall high scores, several projects experienced some common challenges:

- **Technical Complexities:** In the field, environmental samples proved complex. Issues such as matrix effects in wastewater and coastal waters (specifically affecting zinc measurements) required methodological adjustments and additional analytical support to maintain data integrity. This was carefully managed by the assigned mentors from the iMERMAID project considering their academic and technical background, supporting the projects hands on.
- **Administrative and Regulatory Delays:** For some regions, obtaining necessary administrative permits for sampling in sensitive areas (like marinas) took longer than anticipated. Additionally, procurement delays for specialized reagents tested the flexibility of project timelines. Timely communication with F6S as the open call programme manager and the mentors was key here in order to align expectations and adjust timelines, so that the projects can executed their tasks within the overall timeframe of the funding programme.
- **Compressed Timelines:** The relatively short duration of the programme (specifically the 9-month implementation windows) was noted as a challenge for achieving long-term policy shifts or measurable pollution reduction, forcing teams to focus on rapid validation and engagement. This

has been translated in the lessons learned where potentially programmes of such type should have an extended duration of up to 12 months. However it should be noted that actual pilot deployment and further scaling of the project results is not anticipated within the time-frame of the project.

- **Local Infrastructure Gaps:** In specific cases, such as in Moldova, the lack of local laboratory facilities for testing specific pollutants (like DNOC) created a reliance on external support and highlighted the need for localized technical capacity. An alternative laboratory in Romania has been identified and contracted for the activity.

What Worked Well:

The most effective approach was the combination of technical validation with social engagement. By not only testing a sensor but also presenting results to local actors who support future uptake, the projects bridged the gap between scientific innovation and societal impact. This multi-layered strategy - technical excellence supported by expert mentorship and local political will - ensured that even when challenges arose, the projects remained resilient and achieved their anticipated goals.

Sustainability and Growth:

The impact of the projects is further evidenced by their ability to attract further funding. For example, MP3 Lake specifically reported that their participation in iMERMAID was the catalyst for securing a follow-on HE grant. REACT similarly noted that their participation allowed them to strengthen partnerships for future EU-funded initiatives.

2.3 iMERMAID Technical Assistance Programme - 3rd parties survey results and satisfaction level

As part of the Impact Assessment Survey beneficiaries had to provide responses to questions catching not only their overall performance but as well satisfaction level from the iMERMAID Technical Assistance programme and its different components.

iMERMAID Technical Assistance Programme Evaluation

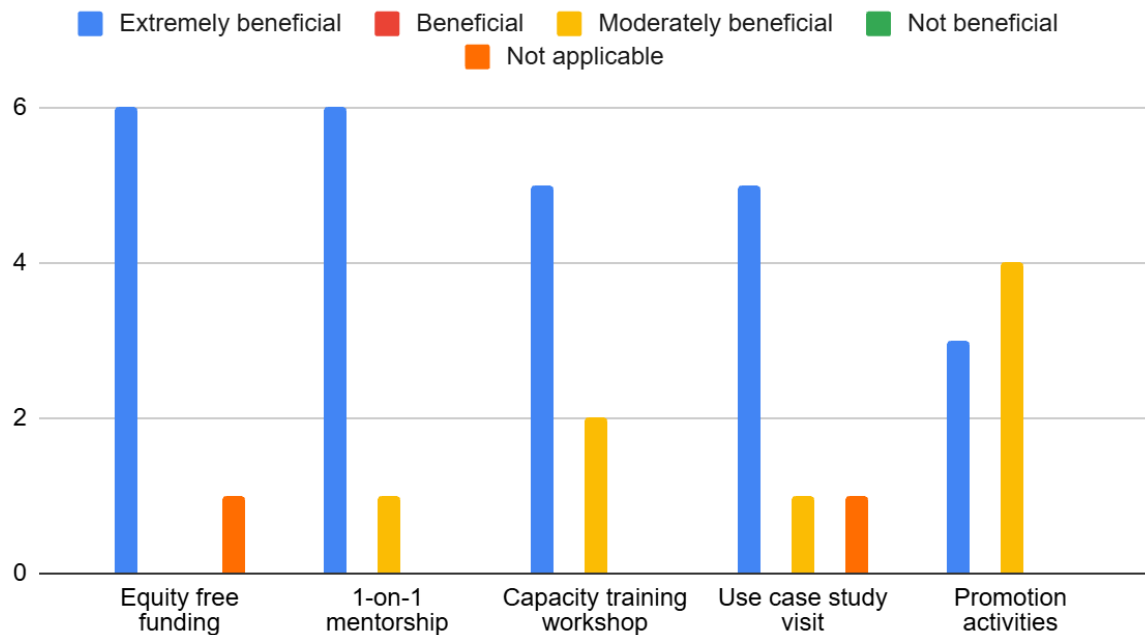


Figure 1: iMERMAID Technical Assistance Programme Evaluation.

Based on the evaluation data as seen in Figure 1: iMERMAID Technical Assistance Programme Evaluation, several key insights emerge regarding the value of the support components provided to beneficiaries.

High-Impact Support Components:

The most significant takeaway from the survey is the overwhelming appreciation of equity-free funding and 1-on-1 mentorship. Both categories received the highest possible rating, with six respondents (vertical axis) identifying them as "extremely beneficial." This suggests that the combination of direct financial support and personalized expert guidance forms the backbone of the programme's value proposition. The high marks for the mentorship provided, in particular, validates the importance of mentors in bridging technical gaps for public authorities and local partners.

Technical and Field Engagement:

The capacity training workshops and use case study visits also performed remarkably well, with five respondents in each category rating them as "extremely beneficial." While the workshops saw a small number of participants rating them as "moderately beneficial," the overall assessment remains strongly positive. The success of the use case visits is particularly noteworthy, as it underscores the importance of on-site collaboration and the physical demonstration of iMERMAID solutions. It should be noted that one respondent marked the site visits as "not applicable." While this specific project team did not travel themselves, they hosted the solution providers at their local site for a live showcase of the selected technology. It is likely that the beneficiary interpreted the question as applying only if they had travelled elsewhere, rather than accounting for the visit hosted at their own location. Consequently, the "not applicable" mark does not fully reflect the value of the interaction, as the beneficiary expressed that having the solution providers on-site was extremely beneficial.

Promotion and Outreach:

Promotion activities showed the most varied results among all categories. While three respondents found these activities "extremely beneficial," four respondents rated them as only "moderately beneficial." This indicates that while promotional support is valued, it may not be perceived as critical to the immediate technical success of the projects as the funding or mentorship components for example. It suggests an area where future iterations of the programme could potentially refine the focus to better align promotional efforts with the specific needs of the beneficiaries.

Overall Programme Efficacy:

It is highly encouraging to note that across all five categories of support, there were zero "not beneficial" ratings. Every element of the technical assistance programme was seen to add value to the participating projects. The presence of a few "not applicable" responses - specifically in equity-free funding and use case visits - likely reflects the specific circumstances of the projects that withdrew or faced implementation shifts, rather than a failure of the support mechanisms themselves. It can be as well argued that these projects did not interpret the question correctly. Overall, the data confirms that the programme’s design effectively addressed the primary needs of the funded projects.

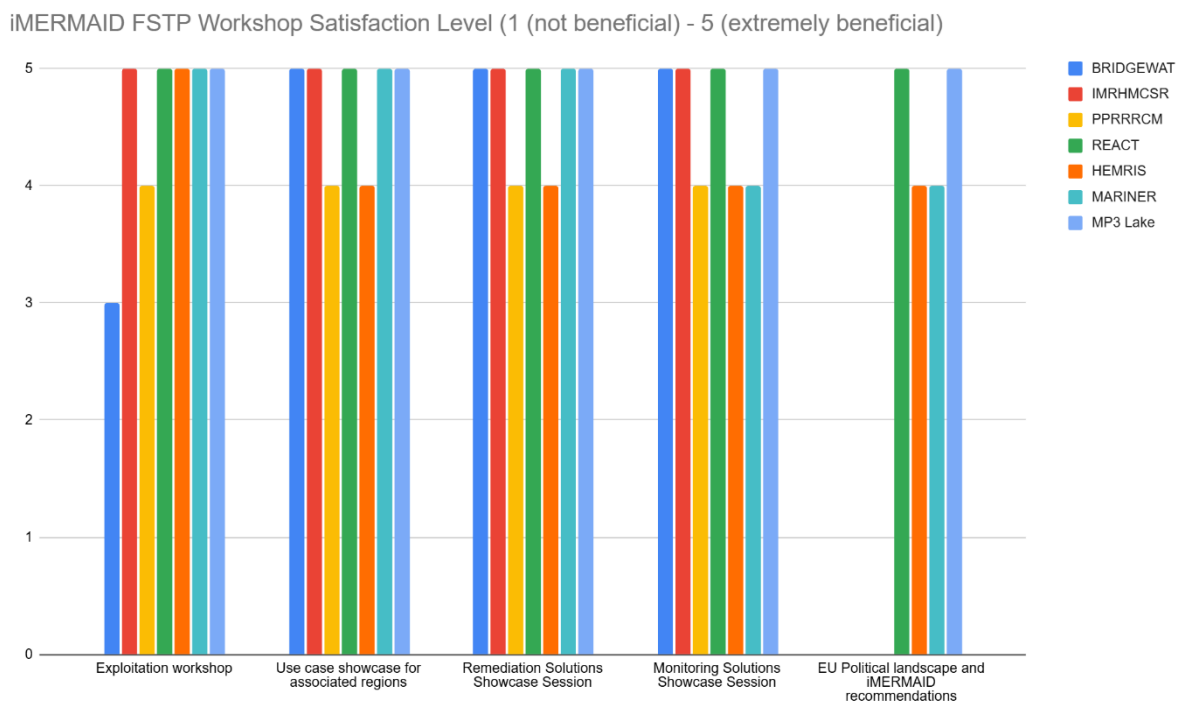


Figure 2: iMERMAID Workshop Satisfaction Level.

Workshop Sessions Assessment:

The workshop sessions, specifically the Remediation Solutions Showcase and the Monitoring Solutions Showcase, received exceptionally high marks. Most projects, including BRIDGEWAT, IMRHMCSR, REACT, and MP3 Lake, rated these sessions as "extremely beneficial" (5). This indicates that the core technical content of the programme was well-aligned with the needs of the beneficiaries, providing them with high-value insights into available innovations.

The data reveals interesting variations in how different projects perceived the workshops. The REACT and MP3 Lake projects consistently provided the highest possible ratings across almost every workshop they attended. Conversely, the PPRRRCM project consistently rated the sessions as "beneficial" (4) rather than "extremely beneficial." This slight deviation may correlate with the systemic challenges regarding this project's execution as it will be carefully explained as part of Section 3 of the current document, suggesting the workshop content was helpful but perhaps more difficult for them to integrate into their specific circumstances.

Workshop-Specific Insights:

- **Exploitation Workshop:** While largely successful, this session showed the most variation, including a score of 3 from BRIDGEWAT. This suggests that while exploitation is a critical phase, the readiness or interest levels regarding commercialization and long-term sustainability varied among the different associated regions. It should be as well noted that typical exploitation is quite more challenging for public authorities than for private entities due to structure and institutional frameworks and roles. Last but not least exploitation within this case is dependant on the readiness level of the solution and the solution provider to further collaborate on usage and scaling opportunities.
- **EU Political Landscape:** This session was attended by a smaller group of projects (REACT, HEMRIS, MARINER, and MP3 Lake), as it was organized when OC1 projects have concluded their involvement in the iMERMAID Technical Assistance programme, although they have been invited to attend, with BRIDGEWAT project from OC1 joining the session. Those who participated found it highly valuable, particularly REACT and MP3 Lake, who both awarded it a 5.
- **Use Case Showcase:** This workshop was highly regarded across the FSTP projects, reinforcing the value of inter-regional knowledge sharing where associated regions could learn from iMERMAID use case specific implementations and applied methodology.

Summary:

Overall, the workshop series was a success. No session received a rating below 3, and the vast majority of scores fell within the 4 to 5 range. This data confirms that the workshops were effectively delivered as a high-quality educational experience that was both relevant and actionable for the sub-granted projects.

3.0 Results per funded project

The following section provides a comprehensive overview of the main focus areas and results coming out of the 8 funded projects: 3 under Open Call 1 and 5 under Open Call 2.

Of these eight, six projects successfully completed the technical assistance programme. Several of these have produced impressive, tangible results that are expected to continue well beyond the project's lifespan. However, two projects deviated from the standard implementation path:

- PPRRRCM (Open Call 1):** Led by Cimişlia Municipality, this project faced systemic challenges in task execution. This led to a partial funding freeze during Stage 2 and their subsequent exclusion from Stage 3 payments. Following an appeal and an external evaluation of the work performed, Cimişlia Municipality was awarded 32.1% of the suspended amount (€13,083 out of €40,757). A final settlement has been signed and the funds released.
- ISHMPGR (Open Call 2):** Led by Lentekhi Municipality, this project was terminated with a request from their side due to changes in local governance and a suspension of EU-funded projects.

Detailed explanations for both cases are provided in their respective subsections.

Despite these two outliers, the iMERMAID Technical Assistance programme has been a clear success, meeting the Y+3 KPI (EO-KPI-5) within the project timeframe. Six associated regions successfully tested iMERMAID solutions through expanded use cases with a KPI target of 5, involving a total of 49 support organizations, more than double the initial target of 15.

The successful completion of the majority of these projects is marked by a strong commitment to future exploitation. For instance, the MP3 Lake project has already secured a Horizon Europe grant to build upon its iMERMAID results. Additionally, the lead for the REACT project (CETI) is in the process of signing an agreement with its mentor (UNIFI) to continue their collaboration after the programme concludes.

3.1 *Open Call 1: Extended Demonstration of iMERMAID innovative solutions in associated regions of the Mediterranean*

Open Call 1 focused on regions that have a connection to the Mediterranean such as Albania, Algeria, Bosnia and Herzegovina, Croatia, Egypt, Israel, Libya, Malta, Montenegro, Morocco, Portugal, Slovenia, Turkey, etc. The goal was to demonstrate the feasibility, replicability, and scalability of the iMERMAID solutions in these areas. The participating associated regions received funding and technical advisory services to prepare roadmaps, plans, and projects aimed at preventing, eliminating, and remediating chemical pollution from water basins. Based on the Open Call released on the 27th of June and closed on the 17th of September 2024 3 projects were selected and funded.

Table 1: Open Call 1 Funded projects.

Acronym	Full name	Authority	Lead Mentor	Support
BRIDGEWAT	BRIDGing Communities for Sustainable WATers	Institute for Protection and Ecology of the	APCL	ZEN and F6S

		Republic of Srpska” (IPERS) (B&H)		
IMRHMCSR	Integrated Monitoring and Remediation for Heavy Metal Contamination of the Seyhan River	Yuregir Municipality (Turkey)	UNIFI	SMAT
PPRRRCM	Pesticide Prevention, Reduction and remediation Roadmap for Cimislia, Moldova	The Municipality of Cimislia (Moldova)	EDEN	SOCAMEX and UA

In the following subsections a detailed overview for each project has been provided.

3.1.1 BRIDging Communities for Sustainable WATers (BRIDGEWAT)



Image 1: Banja Luka Study area

Table 2: BRIDGEWAT project overview and achieved results.

Project Overview:	<p>The BRIDGEWAT (Bridging Communities for Sustainable Waters) project focused on addressing the growing challenge of chemical water pollution in Banja Luka and the larger region of Republic of Srpska in Bosnia and Herzegovina. It aimed to promote iMERMAID innovative water monitoring and remediation technologies, raise awareness, and strengthen collaboration between research institutions, industry, policymakers, and local communities.</p> <p>During its nine-month implementation, BRIDGEWAT carried out awareness campaigns, stakeholder workshops, and capacity-building trainings for students and young professionals. Three iMERMAID technologies: the Heavy Metal Sensor Box, PFAS Sensor and Electrochemical Sensor for Organic Micropollutants were successfully presented and demonstrated in field, showcasing their practical applicability and performance in real environmental conditions. The project also produced five promotional videos to showcase its progress and achievements, improving visibility and public engagement.</p> <p>Through these activities, BRIDGEWAT strengthened cooperation with key stakeholders, established new partnerships with national institutions and the iMERMAID consortium, and significantly increased awareness of water pollution issues and innovative monitoring approaches. All planned objectives, milestones, and KPIs were achieved, with several surpassing expectations.</p> <p>The project stands as a strong example of successful collaboration between science, policy, and industry, while enhancing the visibility and impact of the iMERMAID initiative in the Western Balkans and providing a solid foundation for future EU-supported environmental programmes.</p>
Budget	100.000,00 €
Beneficiary	PSRI Institute for Protection and Ecology of the Republic of Srpska (IPERS)
Deliverables	<p>D1 Individual Mentoring plan</p> <p>D1.1 Communication Roadmap</p> <p>D2 Technical and Progress Report on use case implementation including:</p> <ul style="list-style-type: none"> - Media and Digital Outreach campaign - Production of Promotional and Educational materials - Workshops, training sessions and pilot demonstrations <p>D3 Final evaluation and Feedback, including:</p> <ul style="list-style-type: none"> - Production of Promotional videos <p>D3.1 Report on Comparison of Heavy Metal Monitoring Methods</p> <p>D4 Exploitation plan including stakeholder and impact assessment Project impact report and evaluation</p>
iMERMAID solutions assessed	<ul style="list-style-type: none"> - Electrochemical Sensor for Heavy Metals - PFAS Sensors for Monitoring Water Contamination

	<ul style="list-style-type: none"> - Electrochemical sensor box dedicated to microorganic pollutants (i.e., pesticides, pesticides residues, drugs, pharmaceuticals compounds)
Results	<p>The BRIDGEWAT project achieved its planned results by raising awareness, building capacities, engaging stakeholders, and promoting iMERMAID solutions in Bosnia and Herzegovina through targeted communication activities, outreach campaigns, workshops, training sessions, and field demonstrations.</p> <p>Achieved results:</p> <ul style="list-style-type: none"> - Increased awareness among industry stakeholders, public institutions, and local communities about CoECs pollution, iMERMAID technologies and their potential for addressing water pollution. - Successful field demonstrations of three iMERMAID sensor technologies in real industrial settings (Colorit Ltd. and Hemofarm Ltd.), confirming their technical feasibility and practical applicability. - Strengthened cooperation between industry, research institutions, and environmental authorities, creating a foundation for future uptake of these solutions. - Significant engagement of students and young professionals through training sessions and workshops, contributing to capacity building for future environmental monitoring and innovation. - Promotion and dissemination of iMERMAID project results through digital campaigns, workshops, and educational materials, increasing the visibility of the initiative in the Western Balkans.
KPIs	<ul style="list-style-type: none"> - 5 workshops and 5 training sessions successfully implemented. - Over 170 participants engaged (stakeholders, students, industry representatives, NGOs, local authorities). - 3 iMERMAID solutions demonstrated in real operational environments. - 10,000+ outreach interactions achieved through online communication and awareness campaigns. - 2 industrial sites involved in sensor demonstrations. - 5 promotional videos produced and disseminated to increase visibility and outreach. - 10+ number of published articles, interviews or TV segments covering BRIDGEWAT activities
Impact	<ul style="list-style-type: none"> - Reduce the presence of harmful pollutants in environment by educating the public and stakeholders about the risks of chemical contaminants and the benefits of iMERMAID solutions. (EU Zero Pollution Action Plan) - Contribute to protection of the Mediterranean Sea against pollution by addressing the pollution that affects local rivers. - Encourage the adoption of safer chemical practices. - Focus on sustainable water management practices to protect marine ecosystems from upstream pollution.

	<ul style="list-style-type: none"> - Enhance significantly public awareness of chemical pollution by educating and involving public in environmental protection efforts. - Engage local stakeholders (government officials, NGOs, community leaders) and strengthen local capacities to address environmental challenges. <p>The expected impact has been achieved by 100% as reported by the beneficiary.</p>
Sustainability	<p>The BRIDGEWAT project successfully promoted and demonstrated the feasibility, replicability, and scalability of iMERMAID solutions in Bosnia and Herzegovina.</p> <p>1. Feasibility:</p> <p>BRIDGEWAT demonstrated three iMERMAID solutions during targeted field demonstrations at industrial sites (Colorit Ltd. and Hemofarm Ltd.) in Banja Luka. These activities provided direct, real-world testing and validation of the technologies. Industry stakeholders observed their ability to provide real-time monitoring, lower operational costs compared to conventional laboratory methods, and practical applicability in industrial wastewater settings.</p> <p>2. Replicability:</p> <p>The BRIDGEWAT project demonstrated the replicability of iMERMAID solutions by successfully applying different types of sensors in different industrial environments, proving that the technologies can be deployed and operated effectively under real operational conditions. This demonstrates that the functionality of these sensors could be replicated in other industrial sectors as well, showing their potential for wider application in similar operational environments.</p> <p>3. Scalability:</p> <p>The project demonstrated clear potential for scaling up these solutions through:</p> <ul style="list-style-type: none"> - High interest expressed by leading companies (Colorit and Hemofarm) to explore further sensor deployment; - Active participation of ministries, inspectorates, and environmental agencies, enabling potential regulatory alignment; - Capacity building of more than 100 students and young professionals, ensuring the availability of a future skilled workforce to support technology adoption. - The technologies are suitable for integration into existing monitoring systems and can be scaled to additional industrial and municipal sites nationwide <p>Adequacy for targeted challenges:</p> <p>The selected solutions directly respond to pressing regional challenges in Bosnia and Herzegovina, where current monitoring systems are dominated by slow, costly laboratory methods and limited awareness of innovative</p>

	<p>technologies. These sensors offer cost-effective, on-site, real-time monitoring, addressing the need for faster detection and better decision-making in industrial and environmental water management.</p> <p>Obstacles to scaling up:</p> <p>Key barriers identified include:</p> <ul style="list-style-type: none"> - The need for further regulatory integration and official recognition of sensor-based monitoring methods. - Financial constraints for smaller industries that may limit immediate adoption. - The necessity of additional validation in different operational settings to fully align with national standards and policies
<p>Most significant project achievement</p>	<p>The successful promotion and real-world demonstration of innovative water monitoring technologies in Bosnia and Herzegovina, coupled with strong stakeholder engagement and awareness raising.</p>
<p>External stakeholders reached</p>	<p>329 participants (approx.: industry - 110, policy makers - 25, researchers - 30, students and young professionals - 158, general - 6)</p>
<p>Lessons learned</p>	<p>The high level of achievement of the expected impact was the result of several key enabling factors:</p> <ul style="list-style-type: none"> - Strong organization and coordination of events, including well-structured workshops, training sessions, and field demonstrations, which ensured high stakeholder participation and visibility. - Excellent connections and reputation of the Institute with relevant national and local stakeholders, enabling easy access to industry, government institutions, NGOs, and media. - Broad and active stakeholder network, which supported efficient dissemination and engagement activities. - Regular and consistent implementation of the communication campaign, including social media activities, outreach efforts, and promotional materials. - Timely engagement of target groups (industry, students, public authorities) throughout the project implementation period. - Strong cooperation and support from the iMERMAID consortium, which facilitated access to technical expertise and contributed to the successful execution of planned activities.


3.1.2 Integrated Monitoring and Remediation for Heavy Metal Contamination of the Seyhan River (IMRHMCSR)



Image 2: Yuregir study area

Table 3: IMRHMCSR project overview and achieved results.

<p>Project Overview:</p>	<p>The Integrated Monitoring and Remediation for Heavy Metal Contamination in the Seyhan River (IMRHMCSR) project aimed to assess and address heavy metal pollution in Türkiye’s Seyhan River, focusing on the Yüreğir District of Adana Province. By adapting and piloting the heavy metal sensor system developed within iMERMAID, the initiative introduced a cost-effective and innovative method for real-time water quality monitoring.</p> <p>Throughout the project, ten strategically selected sampling stations were established along a 10 km stretch of the Seyhan River to capture pollution dynamics from diverse sources, including agricultural runoff, industrial discharges, and urban wastewater. The electrochemical sensor was used to measure concentrations of Cu, Cd, Pb, and Zn, while results were cross-validated using ICP-MS laboratory analyses. Calibration studies demonstrated strong precision and reliability ($R^2 > 0.99$ for all metals), confirming the sensor’s effectiveness in controlled conditions. Field applications revealed certain challenges associated with complex sample matrices - particularly high suspended solids and conductivity - that affected the detection of specific metals, highlighting areas for further technical refinement.</p> <p>Collaboration and mentoring played a vital role in the project’s success. Regular monthly mentoring meetings supported the project team in solving technical issues, optimizing calibration, and interpreting field data. This continuous exchange of knowledge strengthened technical capacity within the Yüreğir Municipality and ensured that project activities adhered to scientific and methodological standards.</p> <p>Overall, the IMRHMCSR project achieved all planned objectives and deliverables, advancing local expertise in environmental monitoring and building a solid foundation for the wider application of smart sensor technologies in river pollution control. It represents a meaningful step toward integrating digital innovation into environmental governance and</p>
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	demonstrates the value of cross-border cooperation in tackling shared ecological challenges.
Budget	100.000,00 €
Beneficiary	 Yüreğir municipality
Deliverables	D1 Individual Mentoring Plan, including: <ul style="list-style-type: none"> - Data Monitoring Strategy D2 Technical and Progress Report D3 Final evaluation report and Feedback D4 Exploitation plan (roadmap to prevent, reduce and remediate heavy metal pollution in the Seyhan river)
iMERMAID solutions assessed	Heavy metal sensor, developed by the University of Florence
Results	<p>The main result from the project was to pilot test the iMERMAID solution for heavy metal detection and data aggregation at selected sites along the river. Under the iMERMAID technical assistance programme a significant increase in the municipality team's technical capacity was achieved as well as the establishment of a strong professional network, particularly close collaboration with the iMERMAID consortium and the University of Florence, which greatly enhanced the municipality expertise and future cooperation opportunities. In addition, highly positive feedback was gathered, emphasizing the practicality, accuracy, and cost-effectiveness of the iMERMAID methodology. ASKİ and local municipalities expressed interest in using the method as a complementary tool for routine monitoring, while universities highlighted its research potential. NGOs valued the project's awareness-raising and community engagement aspects. Feedback was collected through workshop discussions, evaluation forms, and follow-up interviews conducted during mentoring sessions and the final dissemination event.</p>
KPIs	<ul style="list-style-type: none"> - KPI1 Project Team Formation - KPI2 Stakeholder Engagement in the ex-ante mapping discussions. - KPI3 Sampling Locations Determined - KPI4 Stakeholder Engagement in the consultations and analysis - KPI5 Pilot (Sensor installation) - KPI6 Data Collection and Aggregation - KPI7 Roadmap Development <p>KPIs have been achieved 100%.</p>
Impact	<ul style="list-style-type: none"> - Improved monitoring of heavy metal contamination in the Seyhan River using electrochemical methods. - Strengthened technical capacity of Yüreğir Municipality and ASKİ staff through training and mentoring.

	<ul style="list-style-type: none"> - Increased collaboration between municipalities, universities, and NGOs on water quality management. - Enhanced public awareness of pollution issues and sustainable river management. - Establishment of a replicable monitoring model for other river basins in Türkiye. <p>The expected impact has been achieved by 100% as reported by the beneficiary.</p>
Sustainability	<p>Feasibility, replicability, and scalability:</p> <p>The project demonstrated feasibility through successful calibration and field validation of the electrochemical method in the Seyhan River. Its low-cost, modular setup and adaptable protocol make it replicable and scalable across similar river basins in Türkiye.</p> <p>Stakeholder feedback was highly positive, emphasizing the practicality, accuracy, and cost-effectiveness of the iMERMAID methodology. ASKİ and local municipalities expressed interest in using the method as a complementary tool for routine monitoring, while universities highlighted its research potential. NGOs valued the project’s awareness-raising and community engagement aspects. Feedback was collected through workshop discussions, evaluation forms, and follow-up interviews conducted during mentoring sessions and the final dissemination event.</p> <p>Adequacy for targeted challenges:</p> <p>The solution effectively addressed the need for more frequent and cost-efficient monitoring of heavy metal contamination in the region’s industrial and agricultural waterways.</p> <p>Scalability:</p> <p>The solution can be scaled up through inter-municipal cooperation and integration into regional monitoring programmes, supported by national or EU-level funding.</p> <p>Obstacles to scaling up:</p> <p>Main obstacles include the lack of trained personnel to use the new sampling method in their work.</p>
Most significant project achievement	The successful validation and practical application of the iMERMAID electrochemical sensing methodology for heavy metal monitoring in the Seyhan River, which built lasting technical capacity within Yüreğir Municipality and strengthened collaboration between local authorities, academia, and EU partners.
External stakeholders reached	50 stakeholders reached. (Academia, representatives from the Yüreğir Municipality, Adana Metropolitan Municipality and environmental NGOs).
Lessons learned	Strong mentoring support from the University of Florence and SMAT, effective coordination by Yüreğir Municipality, and active engagement of ASKİ (Adana

	Water and Sewerage Administration General Directorate) enabled smooth implementation and reliable results. The main difficulties appeared in zinc measurement due to matrix effects.
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3.1.3 Pesticide Prevention, Reduction and remediation Roadmap for Cimislia, Moldova (PPRRRCM)



Image 3: Cimislia study area

The Pesticide Prevention, Reduction and Remediation Roadmap for Cimislia Moldova, implemented by the municipality of Cimislia, Moldova deserves a special attention.

Stage 1 (Successful Completion): The project started with positive administrative alignment. The initial deliverables, including the Individual Mentoring Plan (D1) and Key Stakeholder Report (D1.1) were accepted after the beneficiary introduced required corrective measures. Stage 1 budget of €16,341.25 was fully released.

Stage 2 (Emergence of Delays and Remedial Actions): During Stage 2, the project began experiencing systemic delays. While core tasks such as the Pesticide Pollution Report (D2.2) and the First Draft of the Roadmap (D2.3) were accepted after multiple consecutive reviews, critical technical components lagged. Most notably, the Soil and Water Analysis (D2.1/KPI3) was missing essential laboratory results for the target chemical compound (DNOC). In addition, delay in contracted communication and dissemination activities was identified.

Financial Retention: To mitigate the administrative risks and ensure completion of the results, a formal notice was issued on July 18, 2025. An amendment to the Subgrant Agreement (SGA) was signed, freezing **30% of the Stage 2 budget (€16,725.75)** as retention. The release of these funds was conditionally shifted to Stage 3 upon the delivery of the completed deliverables.

Stage 3 Underperformance and Exclusion Proceedings

The transition into the final stage was marked by severe operational difficulties and persistent reporting delays.

- **Deliverable delay and unfulfillment:** The final deliverables, including the Final Roadmap (DEL 3.1) and Exploitation Plan (DEL 4) - were submitted post-deadline on November 25, 2025. The original program deadline for all Open Call projects was October 31, 2025. PPRRRCM was provided with

several extended deadline, including November 5, November 10 (for drafts), and November 21 (for final deliverables) with the final submission deadline for the beneficiary was November 24, 2025. At the end, among others a core component the DNOC analysis results remained missing from the Stage 3 reports.

- **KPI Deviations:** Significant deviations from the contracted KPIs were as well recorded. The planned Poster Campaign (CKPI 1) had no submitted evidence of implementation. Furthermore, the Mobility Activity (KPI 5) was only partially carried out, with only 1 out of 6 planned representatives participating.
- **Exclusion Notice and Vote:** On November 26, 2025, following a comprehensive performance review that yielded a score of **3.425/10** (well below the mandatory 7.0/10 program threshold), the iMERMAID Selection Committee voted 10-to-1 to formally terminate the subgrant and exclude the beneficiary.

Appeal, Proportional Reduction, and Final Settlement:

Following the formal exclusion notice, the beneficiary submitted an appeal and later provided the translated, completed DNOC laboratory analysis on March 4, 2026.


- **The Selection Committee Determination:** To ensure maximum procedural fairness, the iMERMAID Selection Committee voted in March 2026 to proceed with the **Horizon Europe principle of proportional reduction** for partially completed work packages.
- **Independent Expert Review:** An external expert was appointed to review the entire body of work, including the submitted DNOC analysis as of March 4, 2026. The evaluation, conducted from April 14 to April 23, 2026, confirmed that while late-stage deliverables lacked deep technical integration, they still provided certain baseline data for the municipality and acknowledged the submission of the completed deliverables and as well identified the missing components.
- **Final Technical Coefficient:** The expert calculated a final **Technical Completion Coefficient (TCC) of 32.1%**. This score accounts for the accepted deliverable elements (9%), partially verified KPIs (23.1%), and a 0% score for deadline compliance due to the substantial delay in submitting the complete technical results.
 - Total Evaluation Scope (Stage 2 retention + Stage 3 budget): €40,757.00
 - Technical Completion Coefficient (TCC): 32.1%
 - Final Proportional Settlement Payment: €13,083

This final settlement of **€13,083** allows the iMERMAID consortium to release funds proportional to the work actually completed and usable.

Below an overview of the achieved results as reported by the municipality has been provided.

Table 4: PPRRRCM project overview and achieved results.

Project Overview:	The PPRRRCM project, implemented under iMERMAID’s Open Call 1, supported the Municipality of Cimişlia (Republic of Moldova) in developing a roadmap for pesticide pollution prevention, reduction and remediation. The project aimed at establishing a local stakeholder platform, identified priority pesticides and sampling sites, collected and analysed soil and water samples, and produced an open dataset and map of pesticide contamination. It also
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	<p>developed a roadmap and communication materials, and shared results with local authorities, NGOs, farmers, media and national stakeholders.</p> <p>Through close collaboration with the iMERMAID consortium, participation in capacity-building workshops and a study visit to Banja Luka, the project gained practical knowledge on innovative monitoring and remediation technologies and their potential relevance for Moldova. It is stated that despite timing and reporting constraints, the technical assistance provided by iMERMAID significantly enhanced local capacity to address pesticide pollution and positioned Cimişlia as a reference municipality for similar initiatives in the country.</p>
Budget	96.125,00 € (Total provided after corrections: 68 451 €)
Beneficiary	 <p>Cimişlia municipality</p>
Deliverables	<p>D1 Individual Mentoring Plan</p> <p>D1.1 Report from the key stakeholder dialogue</p> <p>D2 Technical and Progress Report on use-case implementation</p> <p>D2.1 Aggregated samples</p> <p>D2.2 Report on pesticide pollution in Cimişlia</p> <p>D2.2 Annex 1 Study visit Report</p> <p>D2.3 Pesticide pollution prevention, reduction and remediation Roadmap - first draft</p> <p>D3 Final Evaluation Report and Feedback</p> <p>D3.1 Final Pesticide pollution prevention, reduction and remediation Roadmap</p> <p>D3.2 Press materials from dissemination conference (Partial completion – Press release in a word document provided)</p> <p>D4 Exploitation plan</p>
iMERMAID solutions assessed	<p>Microfluidic water remediation system. In the course of the project The Electrochemical sensor box dedicated to microorganic pollutants has been identified as well as potentially applicable in Moldova, as it can reduce the price of testing samples for presence of DNOC - one of the pesticides that has been used in the country.</p>
Results	<p>The Microfluidic water remediation system has been identified as feasible for Moldova, not for municipalities but chemical / agricultural / water treatment companies, as it requires adequate infrastructure and pre-filtered water. It has been identified as adequate for pesticide remediation, but at an upstream level, not to remove it from the environment. The Electrochemical sensor box dedicated to microorganic pollutants has been identified as adequate and</p>

	<p>scalable, since as of now there is no single laboratory in the country that would test for DNOC. Implementation of the solution in the country could make sampling for organic pollutants much cheaper and faster.</p> <p>The project:</p> <ul style="list-style-type: none"> - Established a platform dedicated to the prevention, reduction and remediation of pesticide pollution in Cimislia involving key stakeholders: the local authorities of Cimislia, municipal companies, environmental NGOs and local farmers - objective achieved - Identified and mapped pesticide pollution hot spots and sources in the Municipality of Cimislia, providing baseline data to measure the effects of the solutions applied after the end of the project - objective achieved, 30 samples have been taken, and two hot-spots have been identified - Gained technical and organisational know-how in pesticide pollution prevention, reduction and remediation measures - objective achieved via iMERMAID workshops - Developed a roadmap for pesticide pollution prevention, reduction and remediation for Cimislia - Disseminated the developed Roadmap across the Republic of Moldova - objective achieved, over 40 participants in the final conference, video material released by AgroTV
KPIs	<ul style="list-style-type: none"> - KPI1 Deliverables for Stage 1 (D1 and D1.1 submitted) - KPI2 Plan and methodology for pesticide sampling – Results (8 sites identified, 3 target chemicals selected- Atrazine, Glyphosate and DNOC) - KPI3 Soil and water samples – Results (30 samples taken for Atrazine and Glyphosate, and 16 samples of DNOC analysis to be received in the 1st week of December 2025) – Water samples were missing in the provided results, final documents provided to iMERMAID on the 4th of March. - KPI4 Report on pesticide pollution in Cimislia – Results (D2.2 Report on pesticide pollution in Cimislia submitted) - KPI5 Report on the site visit – Results (Report of Study Visit in Banja Luka during 26-27 August 2025 submitted) - KPI6 Pesticide pollution prevention, reduction and remediation Roadmap - first draft – Results (D2.3 - first draft of the roadmap including environmental, economic and legal challenges associated with pesticide prevention, reduction and remediation as well as solutions tailored for Moldova and the feedback from 5 stakeholders submitted) - KPI7 Final Pesticide pollution prevention, reduction and remediation Roadmap – Results (D3.1 Final Pesticide pollution prevention, reduction and remediation Roadmap including the feedback from 5 stakeholders representing different interests to be submitted in the 1st week of December 2025 after DNOC analysis results received from the laboratory) - KPI8 Dissemination conference (40 participants): The Dissemination Conference was held on 30 September 2025 with 44 participants.

Impact	<p>- A Holistic, evidence-based approach to the issue of pesticide Prevention, Reduction and Remediation - achieved with sample analysis and reports</p> <p>- Roadmap implementation and replication will lead to the reduction of pesticide inflow into the Black Sea and, consequently, the Mediterranean Sea - yet to be achieved, roadmap will be finalised and shared with local authorities from Moldova</p> <p>- Piloting the establishment of a cross-sectoral platform dedicated to pesticide prevention, reduction and remediation - achieved, representatives of the Municipality, local farmers, NGO and a lab have established a partnership in the course of the project that will tackle the issue of pesticide pollution after its end</p> <p>The expected impact has been achieved by 80% as reported by the beneficiary.</p>
Sustainability	<p>The results of the PPRRRCM use case are designed to remain useful beyond the end of the iMERMAID Technical assistance programme. The aggregated dataset on pesticide pollution in Cimişlia, produced with open-source software, will be published together with a map of sampling results through the municipality's communication channels, accompanied by an open download link. This will allow local authorities, researchers and other stakeholders to reuse the data for further analysis, awareness-raising and planning. The Pesticide Prevention, Reduction and Remediation Roadmap developed under the project will continue to serve as a reference document for municipal decision-making and for dialogue with national authorities and funding institutions. The first version of the Roadmap was shared during the Stakeholder Dialogue 2 in Cimişlia (Tasks 2.3 and 3.1), where it was presented to local authorities, NGOs, farmers' representatives and technical experts for feedback. It was also shared internally with CALM, which supported the dissemination of project materials among Moldovan local authorities. The final version of the Roadmap is shared through several channels:</p> <ul style="list-style-type: none"> • Publication on the official website of the Municipality of Cimişlia, together with the pesticide monitoring results; • Distribution by CALM via their internal communication channels to more than 700 Moldovan LPAs; • Submission to national institutions (MARDE, ANSA, Apele Moldovei) as a reference document linked to local pesticide management needs; • Use in funding applications to EU programmes, national funds and donor organisations; • Presentation during municipal council meetings, which will continue after the project to evaluate progress and plan updates. <p>This structured dissemination ensures that the Roadmap remains actively used, visible and accessible, enabling long-term integration into local planning, national dialogue and future funding efforts.</p>

Most significant project achievement	The most significant project achievement was the identification of pesticide hot spots.
External stakeholders reached	<ul style="list-style-type: none"> - Via stakeholder workshops - approx. 30, local farmers, NGOs - Via the final conference - approx. 40 LAs - AgroTV video material - over 52 000 subscribers on Youtube, coverage of 90% of nations territory
Lessons learned	<p>Key lessons include the importance of:</p> <ul style="list-style-type: none"> - realistically assessing laboratory capacity and planning for potential outsourcing from the start; - clearly communicating “non-alarming” analytical results (e.g., values below detection limits) so that stakeholders remain informed without creating a false sense of security or disengagement; - integrating co-contaminants and related water quality issues into the roadmap, even when they were not initially central to the project design. <p>The collaboration with iMERMAID mentors and peers also illustrated the value of combining technical guidance with peer learning (e.g. study visit), rather than focusing only on written reports.</p>

3.2 *Open Call 2 - Extended Demonstration of the iMERMAID solutions in new associated regions*

Open Call 2 focused on regional authorities with emphasis on new sea basins and countries not only with a link to the Mediterranean. The goal was to expand the number of use cases acting as demonstrators and support learning and capacity building beyond the project focus area. Similar to Open Call 1, the participating associated regions under Open Call 2 received funding and technical advisory services to prepare roadmaps, plans, and projects aimed at preventing, eliminating, and remediating chemical pollution from water basins. Based on the Open Call released on the 22nd of January 2025 and closed on the 3rd of April 2025 5 projects were selected and funded.

3.2.1 *Detection of heavy metals and removal potential in Slovene Riviera (HEMRIS)*



Image 4: Ankaran Study area

Table 5: HEMRIS project overview and achieved results.

Project Overview:	The HEMRIS project, led by the Municipality of Ankaran, aims to improve monitoring and management of heavy metal pollution in the coastal and inland waters of the Slovene Riviera. By combining innovative sensor technology with advanced remediation solutions, the project seeks to strengthen environmental protection in marinas, river inflows, and coastal areas.
Budget	99.750,00 €
Beneficiary	 Občina Ankaran Comune di Ancarano Municipality of Ankaran
Deliverables	D1 Individual Mentoring Plan & Use Case Specification D2 Technical and Progress Report on use-case implementation D3 Final evaluation report and feedback D4 Exploitation plan, including stakeholder assessment and impact assessment
iMERMAID solutions assessed	iMERMAID Heavy Metals Sensor and 4D Scavenger for removal and recovery of heavy metals
Results	The HEMRIS use-case generated important technical, operational, and strategic outcomes for the monitoring and management of heavy metal pollution in the Slovene Riviera. The project focused on two complementary solutions: the deployment and validation of the iMERMAID heavy metal sensor and the feasibility assessment of the 4D Scavenger (4DS) remediation technology. Together, these activities demonstrated that advanced monitoring and remediation-oriented solutions can be meaningfully adapted to local environmental conditions and stakeholder needs.
KPIs	<ul style="list-style-type: none"> - KPI1 Mentoring Plan Completed: D1 delivered by 15/09/2025. - KPI2 Sensor Deployment & Validation: installation and validation of at least one Cu sensor at one demo site completed. - KPI3 4DS Feasibility Assessment: feasibility report delivered within D2. - KPI4 Data Collection & Analysis: dataset covering at least three sampling points and interim analysis completed. - KPI5 Stakeholder Engagement: stakeholder roundtable, workshop, and awareness activities completed. - KPI6 Roadmap Development: final roadmap delivered within D4. - KPI7 Dissemination & Visibility: communication outputs reached more than 3,000 people.
Impact	<ul style="list-style-type: none"> - Improved monitoring of heavy metal pollution in the coastal and inland waters of the Slovene Riviera through the deployment and validation of the iMERMAID heavy metal sensor.

	<ul style="list-style-type: none"> - Better-informed water treatment and management strategies based on site-specific data on heavy metal occurrence and variability. - Reduced environmental risk from heavy metals by assessing the applicability of the 4DS technology for the treatment of contaminated marina wastewater. - Strengthened local capacity for sustainable water management through technical training, mentoring, and knowledge transfer to project partners and stakeholders. - Higher stakeholder awareness and engagement through roundtables, public presentations, campaigns, and workshops involving municipalities, experts, students, and the wider public. - Increased public awareness of heavy metal pollution and its impacts on marine ecosystems, water quality, and the food chain. - Support to EU environmental policy objectives, especially the Zero Pollution Action Plan, the Water Framework Directive, and the Marine Strategy Framework Directive. - Creation of a replicable model for other coastal regions, demonstrating how advanced monitoring and remediation solutions can be adapted to local conditions. - Positioning of the Municipality of Ankaran as a regional leader in innovative coastal environmental management and sustainable water protection. - Foundation for future scale-up and long-term implementation of monitoring and remediation solutions in Slovenia and other Mediterranean coastal areas. <p>The expected impact has been achieved by 100% as reported by the beneficiary.</p>
Sustainability	<p>Feasibility, replicability, and scalability of the selected solutions:</p> <p>The project demonstrated the feasibility of the selected solutions through practical field application and validation. The iMERMAID heavy metal sensor was used at several relevant sampling points, including Marina Izola, the Rižana distributary, St. Jerome Bay, and the Izola shipyard area, generating site-specific data on copper, lead, zinc, and cadmium contamination. This confirmed that the monitoring approach is technically applicable in real coastal and transitional environments, including marinas, river inflows, and protected coastal areas. In parallel, the feasibility study of the 4DS technology confirmed that treatment of contaminated marina wastewater is technically achievable and identified Marina Izola as a realistic site for possible future implementation.</p> <p>The project also demonstrated replicability. The selected monitoring methodology can be transferred to other locations with similar pollution pressures, especially marinas, boat maintenance areas, river-sea interfaces, and shipyard environments. The HEMRIS pilot showed that the combination of sensor-based monitoring, laboratory-supported interpretation, and targeted site assessment can be applied in other coastal municipalities facing</p>

	<p>comparable heavy metal contamination challenges. Likewise, the 4DS concept is replicable wherever wastewater streams with elevated heavy metal concentrations are collected in a controllable way and where treatment before discharge is technically and institutionally feasible.</p> <p>Regarding scalability, the project provided a strong basis for future upscaling. The collected datasets, the identification of pollution hotspots, and the technical assessment of the 4DS system support the development of a roadmap for broader implementation in Slovenia and in similar Mediterranean coastal areas. In particular, the project identified concrete stakeholder interest in possible future uptake of the remediation solution, which is an important indicator of scale-up potential.</p> <p>Adequacy of the solution for the targeted regional challenges:</p> <p>The selected solutions were adequate for the targeted regional challenges. The Slovene Riviera is characterized by a combination of marinas, river inflows, protected coastal waters, and industrially influenced coastal areas, all of which may be affected by heavy metal contamination. The iMERMAID heavy metal sensor was appropriate for this context because it enabled targeted measurement of pollutants at sites where conventional monitoring is often limited in spatial and temporal resolution. The 4DS solution was also relevant because it directly addressed the need for practical remediation of highly contaminated marina wastewater, particularly in areas linked to boat maintenance and shipyard activities.</p> <p>Scaling:</p> <p>The solution can be scaled up, although this will require further technical, organizational, and financial support. The monitoring solution can be extended relatively easily to additional marinas, river mouths, shipyards, and other coastal hotspots, provided that trained personnel, analytical support, and regular sampling protocols are available. The remediation solution can also be scaled up, especially in locations where contaminated wastewater is already collected and where local operators are willing to invest in treatment before discharge. The project has shown that there is both technical relevance and practical interest for such expansion.</p> <p>Obstacles encountered in scaling up the solution:</p> <ul style="list-style-type: none"> - Sample complexity and matrix effects: Environmental samples were often heterogeneous and influenced by salinity, sediments, and suspended solids, which can affect sensor measurements and require careful preparation and interpretation. - Logistical and procurement challenges: Delays in obtaining key reagents and materials affected timing during implementation and showed that specialized monitoring solutions remain sensitive to supply-chain issues. - Infrastructure constraints at sampling sites: At Marina Izola, the damaged tank hatch caused mixing of wastewater with seawater, reducing sample representativeness and complicating interpretation. This showed that
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	<p>local infrastructure conditions may limit direct transferability unless site-specific adjustments are made.</p> <ul style="list-style-type: none"> - Need for continued technical adaptation: Some analytes, especially zinc, proved more difficult to assess reliably under certain sample conditions, which indicates that further methodological refinement may be needed before wider operational deployment. - Investment and implementation requirements for remediation: While the 4DS solution was found to be feasible, wider adoption will depend on stakeholder willingness to invest, availability of suitable installation points, and alignment with operational and regulatory requirements.
<p>Most significant project achievement</p>	<p>The successful translation of innovative iMERMAID solutions into a practical, locally relevant use-case in the Slovene Riviera was considered the most significant project achievement. In particular, the project did not stop at environmental assessment but combined real-world validation of the iMERMAID heavy metal sensor with a feasibility demonstration of the 4DS remediation approach, while also generating stakeholder interest for possible future implementation. This created a concrete bridge between monitoring, remediation planning, and local uptake.</p> <p>A second major achievement was that the project connected technical results with public and stakeholder engagement. Through the roundtable, public presentations, communication activities, and educational workshops, HEMRIS ensured that the results were not only scientifically useful, but also visible, understandable, and relevant to municipalities, local operators, students, and the wider community. In that sense, the project showed that a cascade pilot can deliver both technical innovation and societal impact within a short implementation period.</p>
<p>External stakeholders reached</p>	<p>Approximately 300+ stakeholders were reached across the main in-person occasions organized or attended by the HEMRIS project (excluding online/social media reach). This total includes the stakeholder roundtable and public events, as well as two educational workshops:</p> <p>Open Day at Marina Izola / Stakeholder Roundtable (externally organized event, attended by the project), Total reached: 200+</p> <ul style="list-style-type: none"> - Policy makers / municipal representatives: ~20 - Industry / marina / business representatives: ~30 - Researchers / academics: ~40 - Environmental agencies / NGOs / expert institutions: ~10 - General public / other local stakeholders: ~100 <p>BLUE ECONOMY FORUM 2026 (externally organized event, attended by the project), Total reached: 50+</p> <ul style="list-style-type: none"> - Policy makers / institutional representatives: ~10 - Industry / business representatives: ~20 - Researchers / academics: ~10 - General public / other stakeholders: ~10

	<p>Educational workshop at Marina Izola for university students (organized by the project), Total reached: ~20</p> <ul style="list-style-type: none"> - Students: ~18 - Researchers / educators: ~2 <p>Educational workshop for pupils from Ankaran Primary School (organized by the project), Total reached: ~20</p> <ul style="list-style-type: none"> - Pupils: ~18 - Teachers / accompanying staff: ~2 <p>Approximate total across all occasions: 300+ stakeholders reached.</p> <p>In addition, online communication activities reached more than 3,700 people via Facebook, municipal news, and Instagram.</p>
Lessons learned	<p>HEMRIS involvement in the iMERMAID programme provided significant technical, methodological, and strategic added value to the HEMRIS project. Through collaboration with mentors and the wider iMERMAID consortium, the team strengthened both technical capacity and understanding of how local pilot actions can contribute to wider European environmental objectives.</p> <p>One of the main lessons learned was the importance of combining advanced monitoring with practical remediation planning. The project confirmed that reliable data on heavy metal contamination is essential, but that monitoring alone is not sufficient if it is not linked to realistic treatment or mitigation options. The parallel work on the iMERMAID heavy metal sensor and the 4DS feasibility study showed the value of an integrated approach that connects detection, interpretation, and potential remediation.</p> <p>From a technical perspective, the mentoring support was especially valuable in helping the team understand the practical use of electrochemical sensors in real environmental conditions. The team learned that field samples are often much more complex than laboratory-prepared samples because of salinity, suspended solids, heterogeneous matrices, and seasonal variability. These factors can strongly influence measurement accuracy and require careful sample preparation, interpretation of results, and sometimes adaptation of analytical procedures. This experience improved the team confidence in using the sensor technology and interpreting the data in a realistic environmental context.</p> <p>Another important lesson was the need for flexibility in project implementation. Delays in the delivery of key reagents temporarily affected the work plan, but the project was able to continue through risk mitigation measures, including the use of accredited laboratory analyses, adjustment of sampling priorities, and close coordination with mentors. This showed the importance of contingency planning and regular communication in small pilot projects where timing and logistics can significantly affect implementation.</p> <p>Collaboration with the mentors and the iMERMAID consortium was also highly beneficial from a strategic perspective. The guidance received from the</p>

	<p>University of Florence and Weefiner helped ensure the scientific relevance of the work and its alignment with the broader iMERMAID framework. In addition, exchanges with other projects and stakeholders during public events and roundtables demonstrated the importance of cooperation, knowledge sharing, and cross-project synergies, particularly in relation to the EU Mission “Restore our Ocean and Waters”.</p> <p>The project also highlighted the value of stakeholder and public engagement. Activities with local stakeholders, students, and school pupils showed that communication is essential for increasing awareness of heavy metal pollution and for building long-term support for innovative environmental solutions. Translating technical results into understandable and locally relevant messages proved to be just as important as generating the results themselves.</p> <p>The experience confirmed that mentoring, practical testing, and collaboration within a wider European innovation network are crucial for turning local environmental challenges into actionable and scalable solutions.</p>
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3.2.2 Monitoring Advanced Responses for Innovative networks in Eilat's region (MARINER)



Image 5: Eilat Study Area

Table 6: MARINER project overview and achieved results.

<p>Project Overview:</p>	<p>The MARINER project focused on enhancing water quality monitoring in the Marina and Qatsaa Beach, two critical areas for tourism, recreation, and biodiversity. Following comprehensive initial sampling and baseline assessments, the project has identified heavy metals and oil spills as the primary pollution challenges. Eilat municipality team utilized the Sentinel-1 satellite model for advanced oil spill detection, paired with iMERMAID specialized heavy metal sensor box to address the specific contaminants identified during the preliminary phase. This data-driven approach ensured that iMERMAID technologies are tested in real-world conditions with maximum impact. Alongside the technical work, MARINER engaged local</p>
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	stakeholders, raised public awareness, and produced policy recommendations, positioning Eilat as a model for Mediterranean and Red Sea marinas seeking scalable and replicable pollution monitoring and remediation solutions.
Beneficiary	  Eilat Municipality
Deliverables	D1 Individual Mentoring Plan and Use-case Specification D1.1 Baseline report D1.2 Deployment strategy and data collection protocol D1.3 Public engagement strategy D1.4 Launch event D2 Technical and Progress Report on use-case implementation D2.1 Deployment of sensors and satellite monitoring D2.2 Three stakeholder workshops D3 Final evaluation report & feedback D3.1 Final dataset and pollution trend report D3.2 Policy recommendations and roadmap D3.3 Final event D4 Exploitation plan including stakeholder and impact assessment
iMERMAID solutions assessed	Heavy Metal Sensor Box and Oil spills monitoring model based on Sentinel-1 satellite data
Results	<ul style="list-style-type: none"> - Heavy Metal Sensor Validation: Laboratory trials were successfully executed using seawater samples to determine heavy metal concentrations at a key location within the Eilat Marina. - Through intensive collaboration between Elhanan from CRMEXPERTS and the model developer, iMERMAID partner NTUU KPI, Eilat municipality successfully adapted the cloud-based Sentinel-1 SAR model for the Gulf of Eilat. - The final stakeholder workshop served as a pivotal milestone, demonstrating a deep level of interest and a clear commitment to future collaboration.
KPIs	<ul style="list-style-type: none"> - KPI1 Number of monitoring sites established – 2 controlled sites - Achieved - KPI2 Baseline water samples collected and analysed (Marina & Qatsaa + control site) – Target N3 - Achieved - KPI3 Number of stakeholder workshops held using iMERMAID Toolkit Target N3 - Achieved

	<ul style="list-style-type: none"> - KPI4 Number of people reached through engagement activities – Target N250 - Achieved - KPI5 Stakeholder satisfaction rate measured via survey after events – Target N – 80% - Achieved - KPI6 Pollution hotspot identified – Target N1 - Achieved - KPI7 Policy brief with recommendations delivered to municipality – Target N1 - Achieved - KPI8 Replication roadmap for Red Sea marinas drafted – Target N1 - Achieved - KPI9 Successful detection of at least one pollutant at ppb levels during pilot phase – Target N1 - Achieved - KPI10 Operational uptime of Sentinel-1 based oil spill monitoring model – Target 70% over pilot period - Achieved
Impact	<ul style="list-style-type: none"> - Held four stakeholder meetings to coordinate between researchers, NGO'S, and the municipality - Proved that the heavy metal sensor can detect heavy metals even at very low concentrations - Established a working satellite model that identifies oil spills in the Gulf of Eilat - Engaged directly with over 250 residents and stakeholders through project meetings and activities <p>The expected impact has been achieved by 90% as reported by the beneficiary.</p>
Sustainability	<p>The sustainability of MARINER results is ensured through a combination of institutional integration, continued stakeholder engagement, and knowledge dissemination (in Eilat-Eilot and internationally). MARINER has successfully embedded its activities within existing municipal frameworks, particularly the Integrated Coastal Zone Management strategy, which provides a long-term policy anchor for continued monitoring and environmental action.</p> <p>Key results (such as baseline datasets, stakeholder networks, and engagement methodologies) will remain available to the Municipality and its partners for future use. These outputs will support ongoing decision-making, awareness-raising activities, and the development of new projects on chemical pollution monitoring, treatment, water quality and ocean protection.</p> <p>Dissemination efforts will continue beyond the project through presentations to other municipalities, publications on the NetZeroCities platform, and participation in national and international platforms such as the Cities Mission Conferences, MajorCities events and regional climate initiatives (AKLIMA, forum 15, the Ocean Rise & Coastal resilience coalition of cities and regions, Waves of Change). The project also has strong replication potential in other</p>

	<p>coastal cities in Israel (Ashdod, Haifa, Tel Aviv, Herzliya) and in the Red Sea region (Aqaba).</p> <p>Sustainability will also depend on securing additional resources and partnerships. Continued collaboration with research institutions, innovation hubs, and national authorities will be essential to maintain and expand monitoring activities. While some limitations remain (particularly regarding access to technologies and funding) the foundations established by MARINER provide a strong basis for long-term continuation.</p>
Most significant project achievement	<p>The MARINER project successfully transitioned from experimental setups to validated results, highlighted by validating the low-cost heavy metal sensor capable of detecting concentrations down to 1 ppb with high speed. Technical achievements included the adaptation of a Sentinel-1 SAR satellite model as well for the Gulf of Eilat, initiating constructive strategic coordination between developers and local authorities. Ultimately, the project established a robust professional network and a long-term collaborative framework between researchers and the Municipality of Eilat for future marine management.</p>
External stakeholders reached	<p>Stakeholder meeting – September 2025 – 16 participants</p> <p>Stakeholder meeting – December 2025 – 20 participants</p> <p>EcoPeace – Educational Conference – September 2025 – 14</p> <p>Youth Climate Conference – November 2025 – 100</p> <p>Stakeholder meeting – 24 March 2026 – 20 participants</p>
Lessons learned	<ul style="list-style-type: none"> - Agile Adaptation and Collaboration: One of the most vital lessons was the necessity of performing real-time adjustments. Instead of persisting with initial errors, the team learned to consult early and often with partners and stakeholders to pivot effectively. - Personal Technical Synergy: The team discovered that the most effective way to bridge technical gaps is through direct, personal interaction between the Project Manager and the technology developers. These one-on-one sessions were far more productive than remote coordination alone. - Administrative Efficiency: A significant takeaway for future planning is the realization that the volume of required documentation and repetitive reporting can be overwhelming. In future projects, it is essential to define more streamlined submission requirements to avoid losing days of work to administrative overhead. - Persistence Against Scepticism: The team learned the importance of maintaining confidence in technology even when experts and stakeholders express significant doubt. By remaining persistent and believing in the possibility of the proposed technical solution, we were able to prove their efficacy and change the professional community's perception once the successful results were presented.

	<ul style="list-style-type: none"> - Leveraging Local Infrastructure: The collaboration taught the team that success is highly dependent on utilizing local professional anchors, such as the IOLR and IUI, which provided the necessary stability and resources to overcome logistical hurdles
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3.2.3 Monitoring and Evaluation of Priority Pollutants in Pomorie Lake (MP3 lake)



Image 6: Pomorie study area

Table 7: MP3 Lake project overview and achieved results.

<p>Project Overview:</p>	<p>The MP3 Lake use case, implemented at Pomorie Lake (Bulgaria) within the iMERMAID project, aimed to evaluate innovative monitoring approaches for priority pollutants in a sensitive coastal lagoon environment. The project combined electrochemical sensor technology with conventional laboratory analyses to provide high-resolution information on pollutant dynamics and support evidence-based water management.</p> <p>Monitoring activities were conducted at representative locations within Pomorie Lake, complemented by additional sampling points to investigate potential pollution pathways. The system targeted selected micropollutants, including pharmaceutical residues and agrochemicals, alongside key physicochemical parameters. Sensor measurements were cross-validated using laboratory-based analytical techniques, ensuring reliability and scientific robustness of the collected data.</p> <p>The monitoring results demonstrated the capability of the integrated approach to detect pollution events, identify potential sources, and capture temporal variability associated with rainfall, seasonal tourism, and diffuse agricultural inputs. The combination of real-time sensing and periodic laboratory validation significantly improved the understanding of pollutant dynamics compared to conventional monitoring practices.</p>
<p>Budget</p>	<p>94.625,00 €</p>

Beneficiary	 Pomorie municipality
Deliverables	D1 Use-case specification and individual mentoring plan D2 Report on Use Case Implementation D3 Final evaluation report including stakeholder feedback and impact assessment D4 Exploitation plan
iMERMAID solutions assessed	Electrochemical sensor box dedicated to organic micropollutants (i.e., pesticides, pesticides residues, drugs, pharmaceuticals, agro-industrial compounds)
Results	<ul style="list-style-type: none"> - Baseline assessment of water quality conditions, pollution sources, and selection of optimal sampling locations affected by agricultural runoff, tourism pressure, and inflow dynamics - Review and identification of priority agrochemicals and pollutants of emerging concern relevant to the study area - Installation, calibration, and operational deployment of the iMERMAID sensor-based monitoring system - Collection of conventional water quality data under different environmental conditions - Laboratory validation of sensor data using LC-MS and GC-MS analyses - Stakeholder engagement activities, including surveys, workshops, and knowledge-sharing events - Training and capacity-building activities with mentors, solution providers, project team and local stakeholders - Preparation of technical reports, impact assessment, exploitation planning, and replication roadmap
KPIs	<ul style="list-style-type: none"> - KPI1 Number of monitoring points: 2 points for baseline assessment (M1 to M3) and 4 points for Stage 2 (after M4) for electrochemical sensor measurements - Achieved - KPI2 Number of samples processed: At least 26 samples analysed - 92% (24 samples collected and analysed) - KPI3 Number of Participants Engaged in Stakeholder Meetings: 100 - 126% (126 participants engaged in the Stakeholder meetings and workshops)
Impact	The MP3 Lake use case has delivered measurable impact across environmental, technological, and operational dimensions within the 9-month implementation period. From an environmental perspective, the project successfully demonstrated the capability to detect and monitor contaminants of emerging concern, including pharmaceuticals and agrochemicals, under

	<p>real-world conditions in Pomorie Lake. The integration of sensor-based monitoring with laboratory validation enabled improved temporal resolution and provided deeper insight into pollutant dynamics, including the identification of potential sources and event-based pollution patterns.</p> <p>Importantly, the results clearly demonstrated the existence of a significant water runoff problem from surrounding agricultural areas, identified as a leading source of pesticide pollution in the lake. This finding provides concrete, evidence-based support for local authorities and is expected to be used by the municipal administration as a basis for the development of targeted projects and investment programmes. In particular, it supports the need for rehabilitation and improvement of infrastructure aimed at diverting or managing rainwater runoff, in order to prevent its direct mixing with lake waters and reduce pollution loads.</p> <p>From a technological standpoint, the project validated the applicability and reliability of the iMERMAID sensor-based solution in a complex and dynamic environment, such as a hypersaline coastal lagoon. The successful calibration, deployment, and operation of the system confirmed its readiness for real-world application and demonstrated the feasibility of combining sensor data with conventional analytical methods for robust monitoring.</p> <p>In terms of management and operational impact, the project contributed to improved awareness and understanding among stakeholders regarding the benefits of real-time monitoring. The stakeholder engagement activities, including surveys, meetings, and a final workshop, confirmed strong interest in adopting such solutions and highlighted their potential to support more informed, timely, and cost-efficient decision-making. The results also contributed to strengthening collaboration between academia, public authorities, and other stakeholders.</p> <p>Additionally, the project supported capacity building and knowledge transfer through hands-on training, the successful completion of an MSc thesis based on project results, and the preparation of scientific outputs. These activities contribute to long-term impact by building expertise and supporting the wider dissemination of the developed approach.</p> <p>The expected impact has been achieved by 90% as reported by the beneficiary.</p>
Sustainability	<p>The sustainability of the results achieved within the MP3 Lake use case is supported by a combination of continued stakeholder engagement, planned follow-up activities, and the practical relevance of the demonstrated monitoring approach. The strong interest expressed by local authorities, stakeholders, and end users provides a solid foundation for the continuation and further development of the solution beyond the duration of the iMERMAID Technical Assistance Programme.</p> <p>A key element is the intention to continue applying and refining the monitoring approach in Pomorie Lake and potentially expand it to additional sites. The results generated during the project, particularly those related to</p>

	<p>pollution sources and dynamics, are already being considered for use in future infrastructure planning and environmental management initiatives, ensuring direct and lasting impact.</p> <p>Dissemination and communication activities will play an important role in sustaining and amplifying the results. Planned outputs include scientific publications, a book chapter, technical reports, and presentations at relevant events, which will ensure continued visibility within both the scientific community and among practitioners. These efforts will support knowledge transfer and encourage wider adoption of the approach.</p> <p>The knowledge and experience gained during the project, including training activities and the successful development of an MSc thesis, contribute to building local expertise and ensuring that the necessary skills are available for future implementation and operation of the system.</p> <p>At the same time, the long-term sustainability of the solution will depend on several enabling factors. These include the availability of stable funding mechanisms, the development of user-friendly data platforms, continued validation and certification of the technology, and alignment with regulatory frameworks. Addressing these aspects will be essential to ensure the transition from pilot implementation to fully operational and institutionalized monitoring systems.</p> <p>Overall, the MP3 Lake use case has established a strong foundation for long-term sustainability by combining technical validation, stakeholder engagement, capacity building, and clear pathways for future development.</p>
<p>Most significant project achievement</p>	<p>The project provided important evidence to support the Municipality for further development of local infrastructure investment programmes aimed at improving rainwater management, reducing diffuse pollution inputs, and limiting the transport of wastewater into the lake system. Equally important was the strong stakeholder engagement achieved during the project, which confirmed high interest, acceptance, and long-term adoption potential of the demonstrated monitoring approach.</p>
<p>External stakeholders reached</p>	<p>Policy makers, Scientific community, Industry representatives, General public.</p> <ul style="list-style-type: none"> - Public administration – 30.8% - Scientific/educational institutions – 23.1% - Business (tourism, agriculture, industry) – 15.4% - NGOs – 15.4% - Environmental management and monitoring organizations – 15.4%
<p>Lessons learned</p>	<p>Through the collaboration with mentors and consortium partners, the project team gained hands-on experience in the deployment, calibration, and operation of electrochemical sensor systems, as well as in the integration of sensor-based data with conventional laboratory analyses. This significantly strengthened technical capacity and improved understanding of data quality assurance, validation procedures, and system optimization.</p>

	<p>Beyond the technical aspects, the interaction with the iMERMAID consortium contributed to a broader understanding of how monitoring technologies can be embedded into policy and management frameworks. The mentoring process supported the alignment of the use case with real stakeholder needs, emphasizing the importance of user-oriented design, clear data communication, and decision-support functionality. The exchange of knowledge and best practices with international partners also highlighted the potential for replication and scalability of the approach across different environmental contexts.</p>
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3.2.4 Remote Environmental Assessment and Continuous Metal Tracking (REACT)



Image 7: Brskovo Study Area

Table 8: REACT project overview and achieved results.

<p>Project Overview:</p>	<p>The REACT project evaluated the applicability of electrochemical sensors for monitoring heavy metals in surface waters impacted by historical mining activities. The study focused on real environmental conditions in the Brskovo area, Montenegro, including sites influenced by legacy contamination.</p> <p>Monitoring activities were conducted at five locations, including both upstream and downstream profiles, as well as identified contamination hotspots. A total of 70 samples (total and dissolved fractions) were collected and analysed using both sensor-based measurements and reference laboratory methods (ICP-MS).</p> <p>The results demonstrate that the sensor system provides reliable measurements for dissolved metal concentrations, with generally good agreement with ICP-MS data. For most metals, the correlation between the two methods was strong ($R^2 \geq 0.85$), and the majority of results fell within the predefined $\pm 30\%$ acceptance range.</p>
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	<p>The validation was performed on real environmental samples characterized by complex matrices, including sites under direct influence of historical mining activities. This approach represents a robust and realistic assessment of sensor performance, although it introduces additional variability compared to controlled laboratory conditions.</p> <p>The study confirmed that sensor performance is influenced by detection limits and environmental matrix effects, particularly at low concentration levels. However, these limitations were clearly identified and addressed through methodological recommendations, including sample filtration (0.45 µm) in line with the Water Framework Directive (WFD).</p> <p>In addition to technical validation, the project contributed to improved understanding of surface water quality in the Brskovo area and provided a valuable dataset for future monitoring activities. The results support the potential for wider application and replication of sensor-based monitoring approaches.</p> <p>The project achieved its objectives, delivering validated methodologies, performance assessment, and practical recommendations for the use of sensors in environmental monitoring under real-world conditions.</p>
Total budget:	98.276,88 €
Beneficiary	 LLC Center for Ecotoxicological Research Podgorica (CETI)
Deliverables	D1 Individual workplan and use-case specification D2 Technical and Progress Report on use-case implementation D3 Final evaluation report and feedback D4 Exploitation plan, including stakeholder assessment and impact assessment D5 Final publishable summary / policy brief
iMERMAID solutions assessed	Heavy metal sensor
Results	<p>The iMERMAID REACT use-case demonstrated that the electrochemical iMERMAID sensor is a feasible and effective tool for monitoring heavy metals in waters influenced by historical mining activities.</p> <p>The solution was tested under real field conditions and validated through comparison with accredited ICP-MS analysis, confirming its reliability for indicative monitoring and early detection purposes.</p> <p>The project also provided an improved understanding of contamination pathways within the study area, identifying the Rudnica River as the main transport route and detecting downstream influence on the Tara River. In addition, the results highlighted the importance of analysing total metal</p>

	content alongside dissolved fractions, contributing to more comprehensive environmental assessment approaches.
KPIs	<ul style="list-style-type: none"> - KPI1 Number of monitored sites: 5 sites: Tara River upstream (SP1) and downstream (SP2) of the Rudnica confluence, Rudnica river (SP3), Water from tunnel (SP4) and Water from open pit (SP5) (all actively monitored) - Achieved - KPI2 Number of lab-validated samples: ≥ 50 samples analysed. 70 samples were analysed (35 total, 35 dissolved); monitoring continued until March for broader dataset – Achieved - KPI3 Sensor vs ICP-MS agreement (R^2): $R^2 \geq 0.85$ for detectable ranges. Achieved in 7 out of 8 evaluated cases, with most R^2 values exceeding 0.90 - KPI4 Mean relative difference (bias) $\pm 30\%$ (mean): The majority of results fall within the $\pm 30\%$ acceptance range, confirming good agreement between methods – Achieved - KPI5 CRM recovery (lab QC) 85–115% recovery: Certified reference material recovery values within target range – Achieved - KPI6 Number of SOPs / Protocols produced ≥ 4 SOPs (calibration, deployment, sampling, data handling): Four SOP-s completed – Achieved - KPI7 Number of stakeholder workshops held using iMERMAID data/protocols ≥ 2 practical trainings + ≥ 50 participants: Two stakeholder workshops and two student workshops conducted. - KPI8 Data publication & FAIR compliance - At least 1 publicly available dataset with metadata (FAIR): Data platform developed; dataset will be publicly available – Achieved - KPI9 Sensor precision (RSD of duplicates) $RSD \leq 25\%$ for concentrations above LOQ: Precision confirmed on real samples - KPI10 Replication roadmap drafted ≥ 1 roadmap: Replication roadmap developed following stakeholder engagement; presented in Deliverable 4.
Impact	<ul style="list-style-type: none"> - Improved monitoring of heavy metals in waters affected by mining activities through the application of innovative sensor technology - Enhanced capacity for early detection of contamination events, enabling faster response and preventive action - Support to existing monitoring frameworks through complementary, cost-effective and rapid screening tools - Better understanding of contamination pathways and pollutant transport in mining-impacted environments - Contribution to more comprehensive environmental assessments by highlighting the importance of total metal content alongside dissolved fractions - Increased efficiency and flexibility of monitoring programmes, particularly in remote or resource-limited areas - Support to evidence-based decision-making for environmental management and water protection

	<ul style="list-style-type: none"> - Contribution to the alignment with EU Water Framework Directive (WFD) objectives, while addressing site-specific challenges - Potential for replication and wider application of the solution in similar mining-affected regions - Strengthening collaboration between research, monitoring institutions and stakeholders involved in water management <p>The expected impact has been achieved by 100% as reported by the beneficiary.</p>
Sustainability	<p>The feasibility of the solution was confirmed through successful field deployment across multiple sampling locations, covering the full contamination pathway from the source (open pit and mine tunnel) to downstream water bodies. The sensor results showed good agreement with accredited ICP-MS analysis, confirming that the technology can provide reliable data for indicative monitoring, particularly for rapid assessment and early detection of contamination.</p> <p>Replicability of the solution was demonstrated through the applied monitoring design, which can be easily transferred to other mining-impacted areas. The methodology, including the combination of sensor-based measurements, physicochemical parameters, and validation with laboratory analysis, is not site-specific and can be implemented in similar environmental contexts.</p> <p>Regarding scalability, the solution shows strong potential. The sensor enables faster and more flexible measurements compared to conventional laboratory methods, making it suitable for expanding monitoring networks and increasing sampling frequency. This is particularly relevant for remote or resource-limited areas where continuous laboratory-based monitoring is challenging.</p> <p>The solution proved to be adequate for the targeted challenges in the region, as it successfully identified contamination sources, confirmed the role of the Rudnica River as a transport pathway, and detected downstream impacts, including subtle influences on the Tara River when total metal content was considered.</p> <p>However, certain limitations were identified. The sensor has constraints related to detection limits, meaning it is most suitable for indicative (screening) monitoring rather than regulatory compliance monitoring. In addition, current national legislation, aligned with the Water Framework Directive (WFD), requires the use of accredited laboratory methods for official reporting, which limits the direct regulatory application of sensor-based results.</p> <p>The main obstacles for scaling up include:</p> <ul style="list-style-type: none"> - regulatory constraints related to the acceptance of sensor-based data - the need for further validation and standardisation for wider institutional use - limitations in detecting extremely low concentrations in some cases

	<ul style="list-style-type: none"> - the need for technical training and capacity building for field implementation <p>Despite these challenges, the results indicate that the solution has strong potential to complement existing monitoring systems and contribute to more efficient and responsive environmental management.</p>
Most significant project achievement	<p>The successful demonstration of the electrochemical iMERMAID sensor under real environmental conditions, confirming its applicability and reliability for monitoring heavy metals in waters affected by historical mining activities.</p> <p>In particular, the project showed that the sensor can provide results comparable to accredited ICP-MS analysis, while offering faster and more flexible measurements. This represents an important step towards the use of innovative, field-deployable technologies for indicative monitoring and early detection of contamination.</p> <p>Additionally, the project provided valuable insights into contamination pathways, including the role of particulate-bound metals and the importance of total metal content, contributing to a more comprehensive understanding of environmental risks in mining-impacted areas.</p>
External stakeholders reached	<p>Stakeholder workshops (2 events) – externally organized/project-related dissemination</p> <ul style="list-style-type: none"> - Total stakeholders reached: 34 - Policy makers / public authorities (ministries, municipalities, environmental agency): 14 - Industry and public utilities (water utilities, waste management, energy, mining, companies): 11 - Research & academia (universities, institutes): 4 - Civil society / NGOs: 4 - Education (secondary school): 1 <p>Event: Student workshops (2 events)</p> <ul style="list-style-type: none"> - Total participants reached: 42 (general public / students) <p>Overall total stakeholders reached (all events): 76</p>
Lessons learned	<p>From a technical perspective, the use of iMERMAID electrochemical sensors in complex environmental matrices requires careful consideration of detection limits, sample preparation, and matrix effects. Validation under real environmental conditions proved to be significantly more challenging than laboratory-based testing, but also more representative for practical application.</p> <p>In addition, the importance of parallel laboratory validation was confirmed, particularly for low concentration levels and for ensuring data reliability.</p> <p>From an organizational perspective, the project emphasized the need for structured data management and interpretation tools. The large volume and</p>

	<p>complexity of the collected dataset highlighted the importance of implementing FAIR principles and advanced data processing solutions.</p> <p>Stakeholder engagement activities demonstrated strong interest in the application of sensor-based monitoring, confirming the relevance and potential for replication of the developed approach.</p>
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3.2.5 Innovative Solutions for Heavy Metal Pollution in Georgian Rivers (ISHMPGR)



Image 8: Lentekhi Study Area

The project Innovative Solutions for Heavy Metal Pollution in Georgian Rivers (ISHMPGR), led by the Lentekhi municipality, Georgia completed only Stage 1 under the iMERMAID Open Call 2 Technical Assistance programme.


On the 29th of January 2026, the lead mentor, open call manager, and iMERMAID coordinator received a communication from the beneficiary stating its decision to terminate its participation in the programme. This decision was made by the beneficiary due to shift in cabinet at the time, which reportedly no longer allowed for the implementation of externally funded projects.

To this end, the beneficiary’s participation was terminated, and a Termination Agreement was signed between the coordinator and the third party. All relevant documents and correspondence have been filed in the project repository and will be retained for five years after the conclusion of the iMERMAID project.

For this reason, the table below depicts only the results achieved by the project during Stage 1 of iMERMAID Open Call 2.

Table 9: ISHMPGR project overview and achieved results.

<p>Project Overview:</p>	<p>The Lentekhi Use Case of the iMERMAID OC2, Innovative Solutions for Heavy Metal Pollution in Georgian Rivers (ISHMPGR), addresses one of Georgia’s most pressing environmental challenges: arsenic and heavy metal contamination in the Pishkori and Tskhenistskali rivers. Historical industrial activities left behind large amounts of toxic waste, threatening ecosystems,</p>
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	<p>agriculture, and public health in the Racha-Lechkhumi and Kvemo Svaneti region, with risks extending downstream into the Rioni River and the Black Sea.</p> <p>The project introduces advanced sensor technology to measure contamination levels of lead, cadmium, and other hazardous substances. Measurements will be validated with laboratory analyses to ensure accuracy. The results will provide reliable evidence for designing targeted solutions that protect drinking water supplies, improve food safety, and reduce environmental risks.</p> <p>The initiative is structured into three stages. First, local stakeholders will work with experts to select monitoring sites and define priorities. Next, Georgian and EU partners will cooperate during a study visit and a testing phase on the Pishkori and Tskhenistskali rivers, collecting and analysing water quality data. Finally, findings will be translated into a strategic roadmap that outlines practical measures for heavy metal monitoring and mitigation, which will be presented at a closing conference for wider uptake in Georgia and beyond.</p> <p>This project aimed at providing a model that can be replicated in other municipalities facing similar pollution challenges. By combining modern technologies, capacity building, and stakeholder engagement, the Lentekhi Use Case aimed to contribute to sustainable water management, safeguards biodiversity, and supports compliance with European environmental standards. It also aimed to strengthen Georgia's role in regional efforts to reduce transboundary pollution and protect the Black Sea basin.</p>
Total budget	100.000,00 € (17.000,00 € paid out of this only for the successful completion of Stage 1 as per contractual arrangements).
Beneficiary	 <p>Lentheki municipality</p>
Deliverables	<p>DEL1 Individual Mentoring Plan and Use Case Specification (delivered and accepted)</p> <p>These deliverables have not been submitted due to project withdrawal after Stage 1:</p> <ul style="list-style-type: none"> - DEL2 Technical and Progress Report on Use Case Implementation (not - DEL3 Final Evaluation Report and Feedback - DEL4 Roadmap (Exploitation Plan) for Heavy Metal Measurement and Mitigation
iMERMAID solutions assessed	Heavy metal sensor
Results	<ul style="list-style-type: none"> - Project coordination structure and team established. - Sampling points defined and documented. - Sensor and reagent specifications finalized.

	<ul style="list-style-type: none"> - Local supplier identified for procurement and import logistics. - Individual Mentoring Plan submitted (15 Sept 2025).
KPIs	<p>Stage 1 KPIs achieved:</p> <ul style="list-style-type: none"> - KPI 1 Project Team Set-up: Project team fully operational and delivering assigned functions. - KPI 2 Stakeholder Engagement in the ex-ante charrette: At least 5 (Held on 10th September 2025) - KPI 3 Sampling coverage: Sampling locations: 3
Impact	NA
Sustainability	NA
Most significant project achievement	NA
External stakeholders reached	<ul style="list-style-type: none"> - Ministry of economy and sustainable development - Georgian Tourism Association - Rural Development Agency of Georgia
Lessons learned	NA

4.0 Technical Assistance provided to FSTP beneficiaries under Open Calls 1 and 2

This section outlines the support provided to beneficiaries to help them achieve the impacts and results detailed above. Across both Open Calls, participants engaged in a structured nine-month program governed by clear guidelines and tailored mentorship. Within the established structure each project received dedicated expertise specifically aligned with their unique use case and the iMERMAID solutions they were testing.

4.1 *Kick off meeting*

Both Technical Assistance programs began with an online kick-off meeting designed to ground new beneficiaries in the iMERMAID ecosystem. These sessions introduced the consortium, the available technical monitoring and remediation solutions and internal pilots while establishing the administrative framework and guidelines for the program. Beyond logistics, the meetings served as a collaborative starting point, allowing teams to meet their dedicated mentors and present their project goals. The events were held as half-day online sessions on January 31st and July 17th, 2025, for Open Calls 1 and 2, respectively. Agendas and screenshots of the Kick off meetings are presented below.

IMERMAID OC1 ASSOCIATED REGIONS PROGRAMME - KICK OFF AGENDA

Date: January 31, 2025
 Time: 09:30 CET (Brussels time)
 Duration: 2:5 hours
 Where: ZOOM
 Link: <https://eu01.web.zoom.us/j/65886250015>

Contact person:
 Elie Shtereva – elie@f6s.com

START	END	SUBJECT	PRESENTER	DUR.
9:30	9:35	Moderation and Agenda	Elie Shtereva, project manager, F6S	0:05
9:35	09:45	Welcome note and introduction to the IMERMAID project	Rodrigo Sedano, coordinator of the IMERMAID project	0:10
09:45	10:15	IMERMAID Use cases		0:35
09:45	09:50	IMERMAID Use case methodology	TBA, CMMI	0:05
09:50	09:55	Use case 1 - Demonstrating innovative solutions for the removal of contaminants from agricultural wastewater	Esther Garcia Herreros, project manager, SOCAMEX	0:05
09:55	10:00	Use case 2 - Demonstrating innovative solutions for the removal of pharmaceutical contaminants	Imen Energy engineer, Cipala Recordati	0:05
10:00	10:05	Use case 3 - Demonstrating innovative solutions for the removal of heavy metals	Gianni Cecconi, Centro Ricerche SMIAT	0:05
10:05	10:10	Use case 4 - Monitoring platform on the Mediterranean Sea	TBA, CMMI	0:05
10:10	10:15	Use case 5 - Demonstrating innovative solutions for the removal of organic contaminants from landfill leachates	Kallopi Bompouliaki, chemical engineer, ESGM	0:05
10:15	10:25	Coffee break		0:10
10:25	10:55	OC1 Project presentations		0:30

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10:25	10:35	BRIDGING Communities for Sustainable Waters (BRIDGEWAT)	Predrag Ilic, Director, Institute for Protection and Ecology of the Republic of Serbia	0:10
10:35	10:45	Integrated Monitoring and Remediation for Heavy Metal Contamination of the Seyhan River (IMRHMCSR)	Çiğdem Akku Çam, Stakeholder relationship management and communication, Yungur municipality	0:10
10:45	10:55	Pesticide Prevention, Reduction and remediation Roadmap for Cirsilia, Moldova (PPRRMCM)	Sergiu Andronachi, The Municipality of Cirsilia	0:10
10:55	11:10	Coffee break		0:15
11:10	11:20	Meet your mentor (round table of introductions)	Mentors	0:10
11:20	11:25	Programme expected impact	Elie Shtereva	0:05
11:25	11:45	Mentorship programme and monitoring	Elie Shtereva	0:20
11:45	11:50	Communication activities	Serena Amico, Digital communications and projects officer, Water Europe	0:05
11:50	12:00	Wrap-up	Elie Shtereva	0:10

Image 9: Open Call 1 Kick off Meeting Agenda

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IMERMAID OC2 ASSOCIATED REGIONS PROGRAMME - KICK OFF AGENDA

Date: July 17, 2025
 Time: 09:30 CET (Brussels time)
 Duration: 3:0 hours
 Where: ZOOM
 Link: <https://eu01.web.zoom.us/j/69011204595791d1-09aDmHjWfKkUjQnJb5dABoOpCWQkzS44>

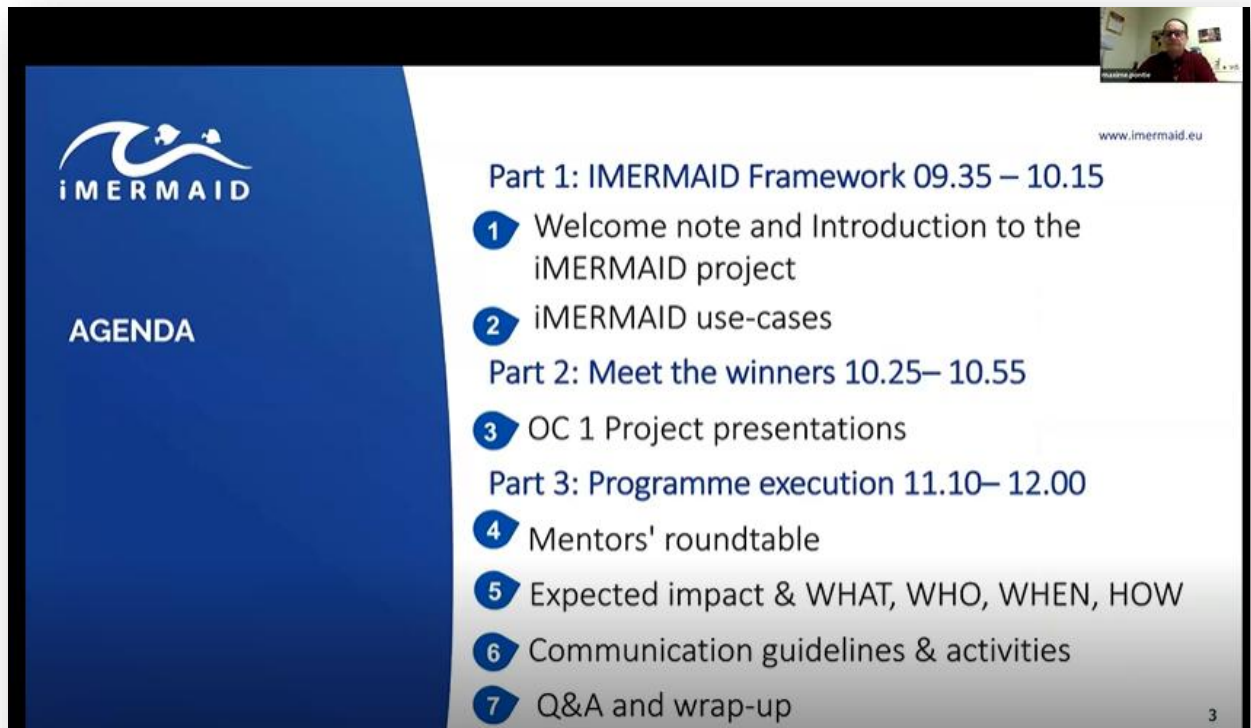
Contact person:
 Elie Shtereva – elie@f6s.com
 Daniela Fonseca – daniela@f6s.com

START	END	SUBJECT	PRESENTER	DUR.
9:30	9:35	Moderation and Agenda	Elie Shtereva, project manager, F6S	0:05
9:35	09:45	Welcome note and introduction to the IMERMAID project	Rodrigo Sedano, coordinator of the IMERMAID project, ITCL	0:10
09:45	10:15	IMERMAID Use cases		0:35
09:45	09:50	IMERMAID Use case methodology	Eleni Christoforou, Associate Scientist, CMMI	0:05
09:50	09:55	Use case 1 - Demonstrating innovative solutions for the removal of contaminants from agricultural wastewater	Rodrigo Sedano, ITCL	0:05
09:55	10:00	Use case 2 - Demonstrating innovative solutions for the removal of pharmaceutical contaminants	Silvia Sini, Dipala Recordati	0:05
10:00	10:05	Use case 3 - Demonstrating innovative solutions for the removal of heavy metals	Gianni Cecconi, Centro Ricerche SMIAT	0:05
10:05	10:10	Use case 4 - Monitoring platform on the Mediterranean Sea	Eleni Christoforou, CMMI	0:05
10:10	10:15	Use case 5 - Demonstrating innovative solutions for the removal of organic contaminants from landfill leachates	Kallopi Bompouliaki, chemical engineer, ESGM	0:05

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10:15	10:25	Coffee break		0:10
10:25	11:15	OC2 Project presentations		0:30
10:25	10:35	Detection of heavy metals and removal potential in Slovene Rivers (HEMRS)	Barbara Snajgr, Municipality of Ankaran	0:10
10:35	10:45	Monitoring Advanced Responders for Innovative Networks in Eilat's Region (MARINE)	Sahome Zuhari, Municipality of Eilat	0:10
10:45	10:55	Monitoring and Evaluation of Priority Pollutants in Pomorie Lake (MPEPLake)	Ivan Abrevy, Pomorie Municipality	0:10
10:55	11:05	Pula Filtration Analysis on Spring Rakovec (PFAS Rakovec)	Katja Mitrovic, Vodovod Pula - Laben d.o.o	0:10
11:05	11:15	Remote Environmental Assessment and Continuous Metal Tracking (REACT)	Sajana Knezevic, Center for Ecotoxicological Research of Podgorica	0:10
11:15	11:25	Meet your mentor (round table of introductions)	Mentors	0:10
11:25	11:35	Coffee break		0:10
11:35	11:50	OC1 Project presentations		0:15
11:35	11:40	BRIDGING Communities for Sustainable Waters (BRIDGEWAT)	Predrag Ilic, Director, Institute for Protection and Ecology of the Republic of Serbia	0:05
11:40	11:45	Integrated Monitoring and Remediation for Heavy Metal Contamination of the Seyhan River (IMRHMCSR)	Çiğdem Akku Çam, Stakeholder relationship management and communication, Yungur municipality	0:05
11:45	11:50	Pesticide Prevention, Reduction and remediation Roadmap for Cirsilia, Moldova (PPRRMCM)	Sergiu Andronachi, The Municipality of Cirsilia	0:05
11:50	12:30	OC2 Inauguration Management		0:40
11:50	12:20	Programme expected impact, Mentorship programme and monitoring	Elie Shtereva, F6S	0:30
12:20	12:25	Communication activities	Serena Amico, Digital communications and projects officer, Water Europe	0:05

Image 10: Open Call 2 Kick off Meeting Agenda



iMERMAID

AGENDA

Part 1: iMERMAID Framework 09.35 – 10.15

- 1 Welcome note and Introduction to the iMERMAID project
- 2 iMERMAID use-cases

Part 2: Meet the winners 10.25– 10.55

- 3 OC 1 Project presentations

Part 3: Programme execution 11.10– 12.00

- 4 Mentors' roundtable
- 5 Expected impact & WHAT, WHO, WHEN, HOW
- 6 Communication guidelines & activities
- 7 Q&A and wrap-up

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3

Image 11: Open Call 1 Kick Off

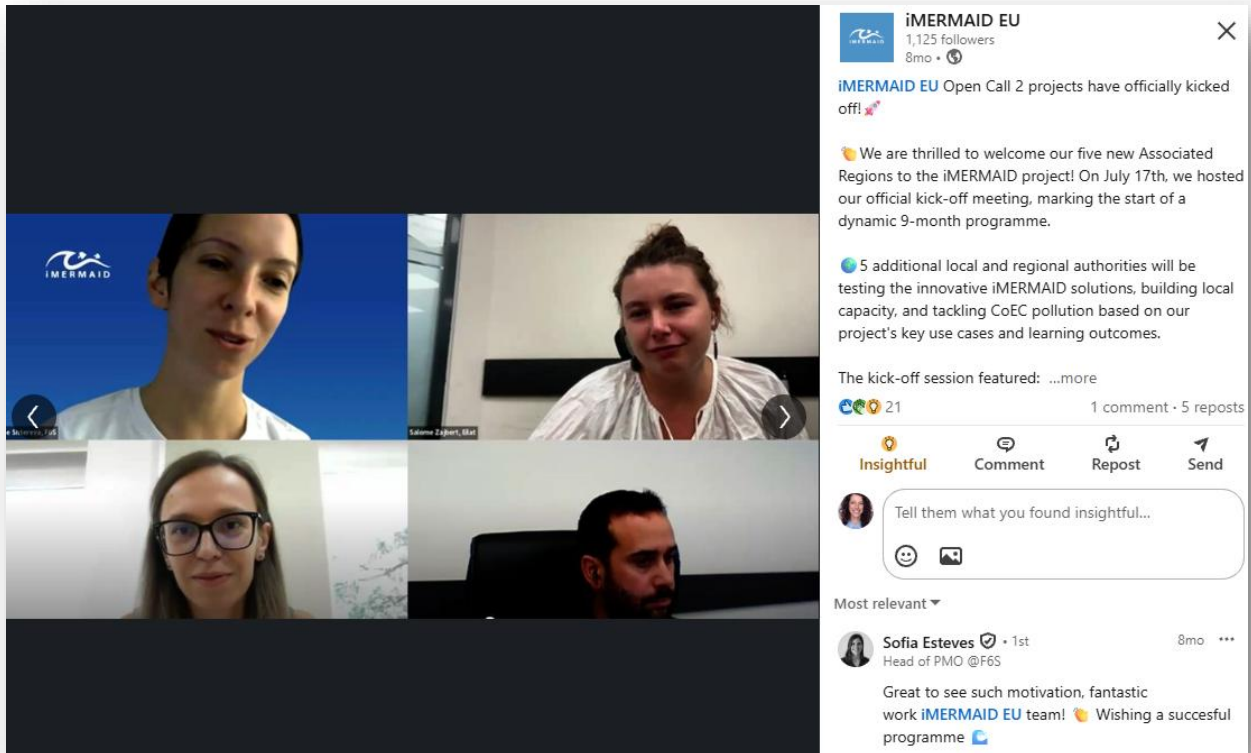


Image 12: Open Call 2 Kick Off

4.2 Mentorship

Each sub-granted project was allocated one lead mentor and 1 or 2 support mentors, depending on the identified needs. All mentors were individuals with expertise in the topics and solutions being addressed within the projects. The mentors were responsible for supporting, providing feedback and evaluating the beneficiary.

Specifically, the mentors:

- Organised monthly calls with their assigned project (e.g., once every month or as agreed).
- Ensured that the work plan, deliverables and project reports are delivered on time.
- Followed the project's progress towards achievement of defined KPIs and results.
- Provided information to the administrative lead from the iMERMAID project represented by F6S about the beneficiary and the respective sub-granted project's progress.
- Provided a technical evaluation of the deliverables and reports submitted by the beneficiary, including approval, rejection, or request for improvements.
- Engaged with other iMERMAID partners and the Selection Committee to discuss needs from the sub-granted project.

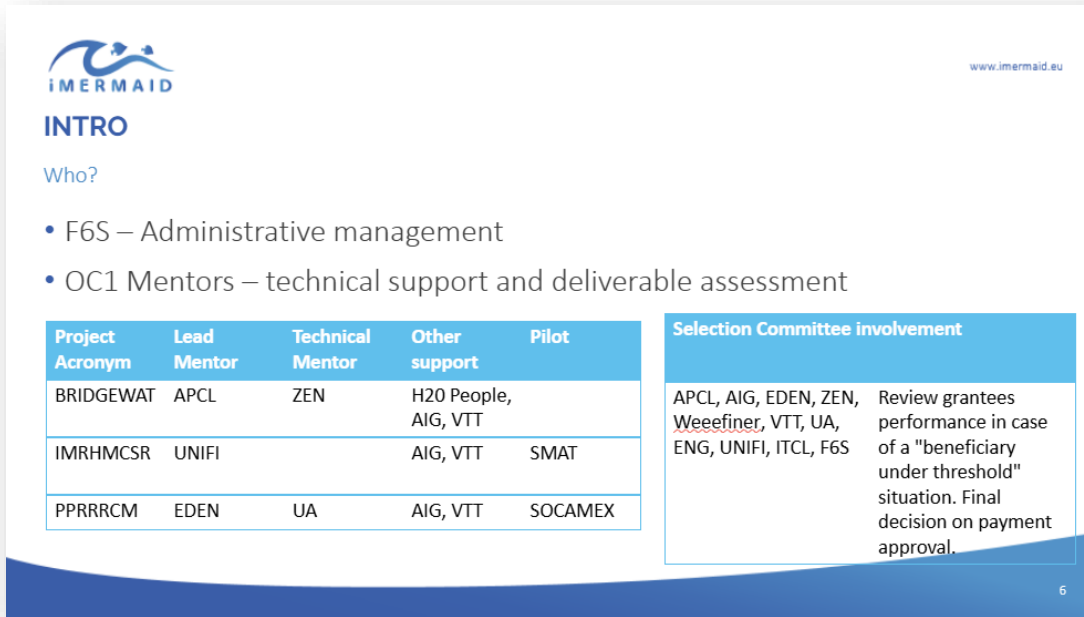
Mentors were a key factor for the success of the projects' execution.

4.3 *Administrational support*

Each beneficiary was assigned dedicated administrative support (a "monitor") from the F6S team throughout their nine-month project. The monitor worked closely with each project and their assigned mentor to ensure implementation stayed on track.

Specifically, the monitor's role included:

- Progress Tracking: Monitoring project milestones through surveys.
- Mentor Coordination: Regularly discussing project progress with mentors and addressing any issues flagged during the meetings or in the surveys.
- Deliverable Management: Collecting reports and deliverables from beneficiaries and facilitating the mentor evaluation process.
- Reporting: Providing progress updates to the iMERMAID coordination team for official reporting.
- Quality Assurance: Ensuring all deliverables were complete and requesting revisions where necessary to meet mentor feedback via formal Review Reports.
- Review Oversight: Checking mentor Review Reports for consistency and detail.
- Stage Reviews: Organize stage reviews.
- Conflict Resolution: Joining meetings to reinforce collaboration agreements if the mentor reported challenges working with a beneficiary.
- Financial Support: Assisting the Treasurer with payment requests upon the successful completion of project stages.
- Mentor Onboarding: Organizing online briefings to prepare and support mentors in their specific roles.
- Selection committee meetings: Lead Selection committee meetings.



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INTRO

Who?

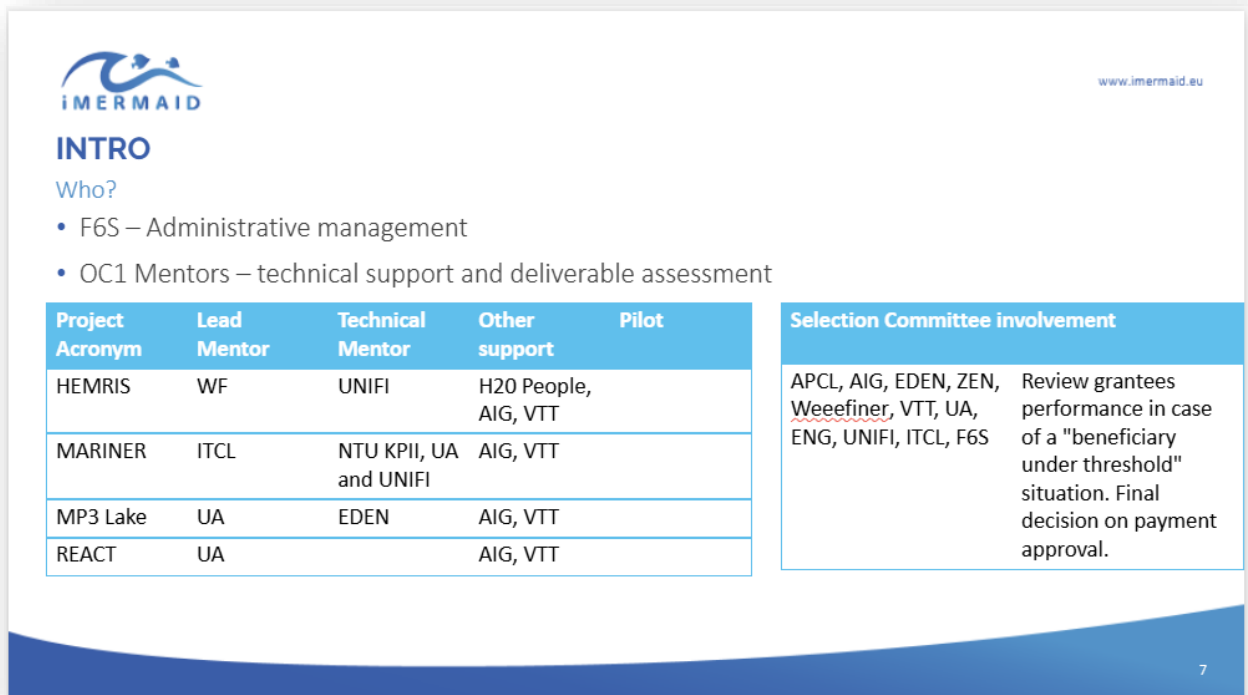
- F6S – Administrative management
- OC1 Mentors – technical support and deliverable assessment

Project Acronym	Lead Mentor	Technical Mentor	Other support	Pilot
BRIDGEWAT	APCL	ZEN	H2O People, AIG, VTT	
IMRHMCSR	UNIFI		AIG, VTT	SMAT
PPRRRCM	EDEN	UA	AIG, VTT	SOCAMEX

Selection Committee involvement	
APCL, AIG, EDEN, ZEN, Weeefiner, VTT, UA, ENG, UNIFI, ITCL, F6S	Review grantees performance in case of a "beneficiary under threshold" situation. Final decision on payment approval.

6

Image 13: OC1 mentors briefing 14 DEC 2025



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INTRO

Who?

- F6S – Administrative management
- OC1 Mentors – technical support and deliverable assessment

Project Acronym	Lead Mentor	Technical Mentor	Other support	Pilot
HEMRIS	WF	UNIFI	H2O People, AIG, VTT	
MARINER	ITCL	NTU KPII, UA and UNIFI	AIG, VTT	
MP3 Lake	UA	EDEN	AIG, VTT	
REACT	UA		AIG, VTT	

Selection Committee involvement	
APCL, AIG, EDEN, ZEN, Weeefiner, VTT, UA, ENG, UNIFI, ITCL, F6S	Review grantees performance in case of a "beneficiary under threshold" situation. Final decision on payment approval.

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Image 14: OC2 Mentors briefing 16 JUL 2025



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**iMERMAID Open Call 2
Review Report**

Date of Review	
Name of Reviewer(s)	
OC2 Project Acronym	
Stage	Stage 1 "The case definition"
Stage goals	<ol style="list-style-type: none"> 1. Develop Individual Mentoring Plan (IMP) and Use case specification 2. Identify which internal iMERMAID project use-case (pilots) is most suitable to follow as an example. 3. Evaluation of project activities compatibility with the chosen pilot 4. Develop a learning plan, potentially including a site visit 5. Publishable summary of the results obtained at this stage. 6. Any other deliverables as per the beneficiary project proposal duly submitted
Stage duration	3 months

1. Deliverable quality assessment

Deliverable title	Comments and recommendations for improvements	Identified deviations and mitigation measures	Score (0-10)
	Review evaluation and feedback of the constant quality of the expected deliverables for this stage.	If there are any deviations have been identified for them have you performed and/or use the mitigation measures that were identified with the beneficiary and additional work to be provided in the upcoming stage, and	Score the evaluated deliverables from 0 to 10, where 0 is poor and 10 is excellent.



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2. Technical Performance Indicators assessment

KPI N and title	KPI target value	Status (Achieved, pending, delayed, other)	Comments	Score (0-10)
			In case any indicators have been identified as not the expected measure that were identified with the beneficiary (e.g. additional work to be provided in the upcoming stage, and)	Score the evaluated deliverables from 0 to 10, where 0 is poor and 10 is excellent.

3. Deadline compliance

Expected actions submitted in due time

YES/NO

Any remarks

In case any activities, deliverables, KPIs were not achieved by the expected deadline for the stage, please identify which and whether this was anticipated. Identify what are the expected corrective actions if any.

Score (0-10)

Score the evaluated KPIs from 0 to 10, where 0 is poor and 10 is excellent.

4. Collaboration between mentor and 3rd party

Collaboration between mentor and 3rd party



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Please express your experience of collaboration during this stage. Are you satisfied with the level of collaboration and communication with the 3rd party? What have you appreciated the most. Do you have any recommendations?

5. Overall Evaluation for this stage

<input type="checkbox"/> Excellent progress (the project fully achieved its objectives)
<input type="checkbox"/> Good progress (the project achieved most of its objectives with minor deviations)
<input type="checkbox"/> Acceptable progress (Some objectives are achieved, corrective actions are required)
<input type="checkbox"/> Unsatisfactory progress (Some objectives are achieved, corrective actions are required)

Mentor Full Name

Organization

Image 15: FSTP Review Report Template

To ensure ease of work and provide additional guidance, the F6S team prepared a Handbook for iMERMAID sub-granted projects. This document detailed the primary monitoring, mentoring and stage review processes, as well as the various support mechanisms available throughout the funded programme. The handbook served as a concise, 10-page guide designed to help FSTP beneficiaries navigate the programme requirements and address common questions. For any issues not covered in the guide, beneficiaries maintained direct access to both their assigned mentors and their F6S monitor for personalized support.



Image 16: iMERMAID FSTP Projects Handbook.

4.4 Site Visits to Use Cases and Solution Providers

Beneficiaries from each Open Call were given the opportunity to travel for hands-on support. Depending on what best suited their project, they could either visit the iMERMAID use case site they have identified they would like to learn from in their proposal or travel to a solution provider’s premises to get onboarded. In one case the mentors and solution providers travelled directly to the beneficiary's location to demonstrate the technology in the field and provide on-site training for the project team. As well the beneficiaries were provided with the opportunity to network and meet with each other during the OC1 BRIDGEWAT project 5th Stakeholder event and field demonstrations organized on the 26 – 27 August 2025 in Banja Luka, Bosnia and Herzegovina. During this event, the F6S FSTP management team liaised with the local organizers from IPERS managing to bring together three of the eight funded projects. Combined with the local hosts, this resulted in four projects in total, creating a valuable networking opportunity for the associated regions from both Open Call 1 and Open Call 2 participating in the iMERMAID project. During the event, three identified iMERMAID solutions within the BRIDGEWAT project were demonstrated, with the solution providers traveling to the site for live demonstration. These included UNIFI’s heavy metal sensor box, the UA’s electrochemical box for micro-organic pollutants, and ZEN’s PFAS sensors for monitoring water contamination. This event was also combined with another iMERMAID initiative: the EJWP Capacity Building programme. This allowed iMERMAID partners participating under Task 6.5 to attend the two-day stakeholder event and demonstration activities organized by IPERS and BRIDGEWAT, as well as a three-day training session held in Banja Luka.

Table 10: OC1 and OC2 Site visits.

Open Call	Project	Location	Date
OC1	BRIDGEWAT	IPERS, Banja Luka, Bosnia and Herzegovina	26-27 August 2025
OC1	IMRHMCSR	UNIFI, Florence, Italy	26 - 28 May 2025
OC2	HEMRIS	UNIFI, Florence, Italy	11-12 November 2025
OC2	REACT	UNIFI, Florence, Italy	20 - 22 October 2025
OC2	MARINER	UNIFI, Florence, Italy	2 - 3 December 2025
OC2	MP3 Lake	Pomorie, Bulgaria	14 - 15 January 2026



Image 17: BRIDGEWAT 5th Stakeholder Event 26 August 2025 Banja Luka




BRIDGEWAT: BRIDGING Communities for Sustainable WATers

**Field Demonstrations and Direct Meetings between Industry and iMERMAID
Solutions Representatives – 27th August 2025**

09:00 – 12:00 CET

Locations:

- "COLORIT" Ltd.** Banja Luka, 114b Blagoja Parovića Street, 78000 Banja Luka, Bosnia and Herzegovina (a manufacturer of construction finishing materials: facade paints, adhesives, and levelling compounds—founded in 1996 and based in Banja Luka, Bosnia and Herzegovina);
- "Hemofarm" Ltd.** Banja Luka, Novakovići bb, 78000 Banja Luka, Bosnia and Herzegovina (a manufacturer of high-quality, effective, safe, and affordable pharmaceutical products, with over 60 years of experience in the industry).

Organiser:
PSRI Institute for Protection and Ecology of the Republic of Srpska, Banja Luka – IPERS

09:00	Departure of participants in front of the Hotel Courtyard by Marriott Banja Luka, Prvog Krajiškog Korpusa 33, Banja Luka, Bosnia and Herzegovina, 78000. Transport is organized by IPERS.
09:30-09:45	Welcome and Company Presentation of Wastewater Treatment Systems at Colorit Ltd.
09:45-10:15	Irena Havreljuk, <i>Technologist (Quality Control and Assurance Manager) at Colorit Ltd.</i> Presentation and Demonstration of the Heavy Metal Sensor Box
10:15-10:30	Dialogue between Industry Representatives and iMERMAID Solution Providers with IPERS Support
10:45-11:00	Welcome and Company Presentation of Wastewater Treatment Systems at Hemofarm Ltd. Miloš Gašić, <i>HSE Manager / CTO at Hemofarm Ltd.</i>




11:00-11:30	Presentation and Demonstration of the PFAS Sensor Vladimir Urošević, <i>ZENTRIX LAB</i>
11:30-12:00	Presentation and Demonstration of the Electrochemical Sensor Box for organic Micropollutants Maxime Pontie, <i>University of Angers</i>
12:00-12:30	Dialogue between Industry Representatives and iMERMAID Solution Providers with IPERS Support
12:30-13:30	Lunch at Hemofarm Ltd. Restaurant hosted by IPERS
13:30	Departure

Organiser and Contact: PSRI Institute for Protection and Ecology of the Republic of Srpska, Banja Luka – IPERS, BRIDGEWAT Project staff

Note: A dinner, organized and offered by IPERS, will be held for participants at the Hotel Courtyard by Marriott Banja Luka, Prvog Krajiškog Korpusa no. 33, Banja Luka, Bosnia and Herzegovina, starting at 19:00h on 26th and 27th August 2025.




Image 18: BRIDGEWAT Field demonstrations Agenda 27 August 2025



Image 19: BRIDGEWAT 5th Stakeholders event 26 August 2025.

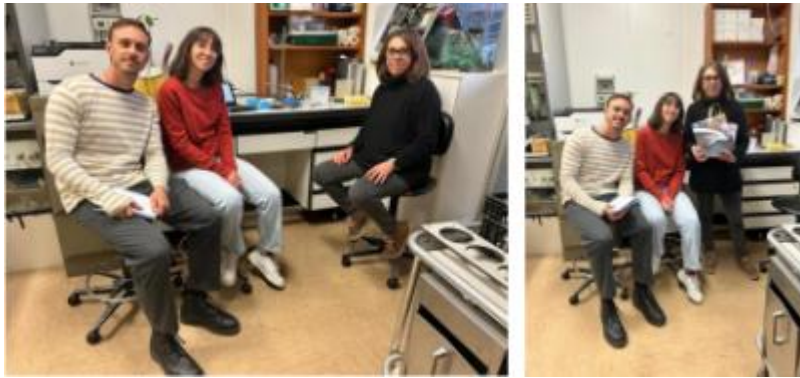


Image 20: MARINER solution provider visit at UNIFI.



Image 21: REACT Training visit at UNIFI.

4.5 Workshops

The iMERMAID consortium held a total of six workshops, organized by F6S and led by partner experts within their respective fields. Starting in September 2025, these online sessions provided an opportunity for beneficiaries from both Open Call 1 and Open Call 2 to attend, creating a collaborative space where participants could learn from one another's queries and experiences. To ensure professional delivery, F6S maintained a master document where each organizer provided a finalized topic, agenda, and technical details, such as the preferred online platform. For multi-partner workshops - such as the solution and use case showcases - F6S acted as the coordinating partner, designing the agenda and presentation formats to ensure a simple, streamlined process. The final workshop "Citizen Science for Public Authorities" led by iMERMAID partner ECSA was coorganized with an external organization ECS as part of their series "ECS collaboration session". Due to the external outreach success examples such as Barcelona municipality were invited to share their positive experience with citizen science helping iMERMAID associated regions to learn and explore further this field. A total of 37 attendees joined this session, including iMERMAID FSTP projects.

Table 11: FSTP Workshops.

Title	Lead	Date
Exploitation for FSTP	AIG	11 Sept 2025
Use case showcase for associated regions	SOCAMEX; OPALIA RECORDATI; SMAT; CMMI; ESDAK	17 Sept 2025
Remediation Solutions Showcase Session	EDEN, ENIG, IRIS, WF	8 October 2025
Monitoring Solutions - Session for Associated Regions	UA, UNIFI, ZEN, ITCL, BioSense	17 October 2025
EU political landscape and iMERMAID recommendations	WE	24 February 2026
Citizen Science for Public Authorities	ECS and ECSA	7 April 2026



Image 22: Exploitation workshop 11 September 2025.

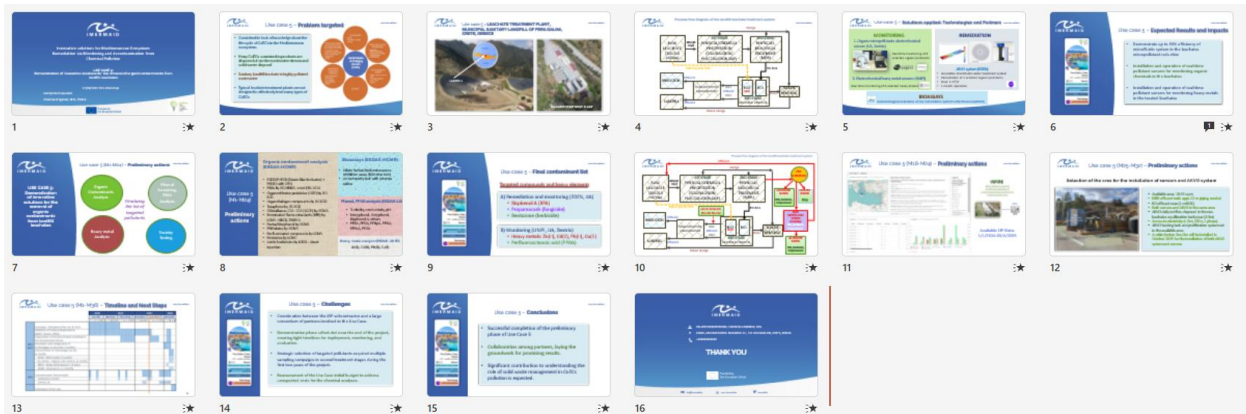


Image 23: Use case workshop (depicting iMERMAID Use Case 5) 17 September 2025.

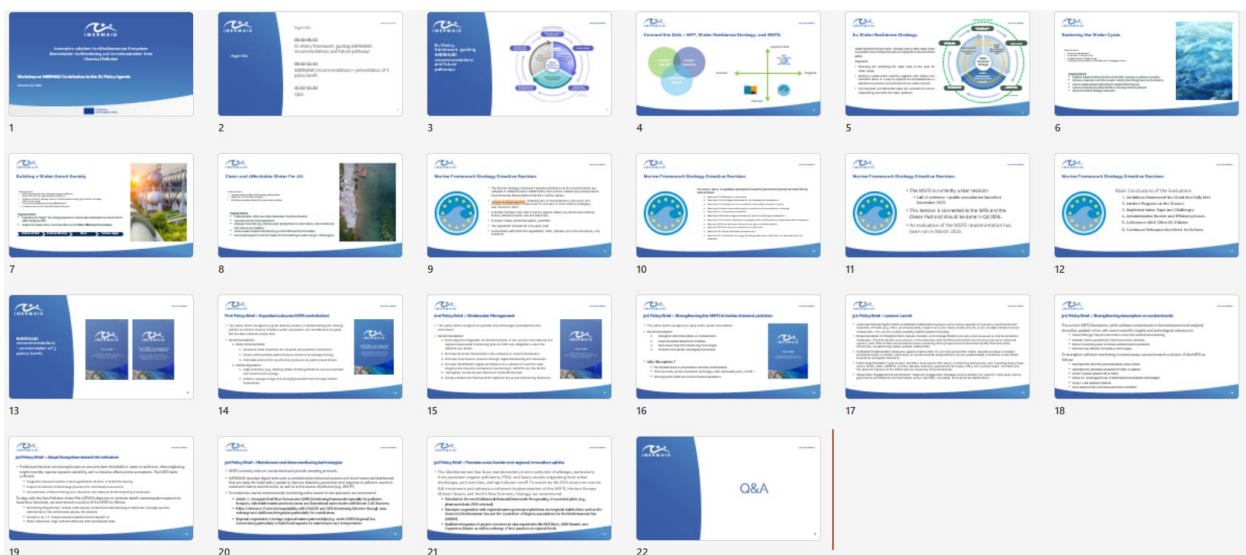


Image 24: EU Policy Agenda Workshop 24 February 2026.

5.0 Stage Definition and Reviews

The iMERMAID FSTP Technical Assistance Programme was with a total duration of 9 months, divided into 3 stages.

Stage 1 “Use case definition” is associated with the starting point of each project and had a duration of 2 months. Within this stage, the beneficiary with the support of his assigned mentor develops his Individual Mentoring Plan (IMP) and Use case specification, elaborating the milestones, KPIs and deliverables which are delivered during the programme and which are evaluated at the end of each stage. During this stage, beneficiaries, in collaboration with their mentors, identify which internal iMERMAID project use-case (pilot) is most suitable to follow as an example. They evaluate the compatibility of the project activities with this chosen pilot and develop a learning plan, potentially including a site visit at the most appropriate time within any of the three stages. The Individual Mentoring Plan, including the use-case specification is an integral part of the Subgrant Agreement and is included as an Annex at the end of Stage 1.

Stage 2 “Use case implementation” involves the actual implementation of the activities described in the IMP. The duration of this stage is four months during which third parties execute all implementation tasks to demonstrate the feasibility of adopting the selected iMERMAID solution/s at the specified location. Depending on the chosen use case, activities such as preliminary work, roadmaps, plans, field tests, sampling, proof of concept and projects to prevent, eliminate and remediate pollution in the associated regions addressing possible barriers and showing the feasibility of implementing the selected innovative solutions are conducted. At the end of this stage the Beneficiary(ies) deliver a Report on the Use case implementation and other deliverables (if any) as agreed in the IMP as a means of verification of work performed. During this stage, beneficiaries can conduct stakeholder meetings and workshops with relevant groups, such as potential end-users and the wider public, to assess the feasibility of the selected solutions.

Stage 3 “Use case Evaluation and Feedback” is critical to leverage the results of the previous stage. The aim is to evaluate the potential for the take-up of the iMERMAID solution and to deliver an exploitation plan highlighting technology adoption roadmap, impact and feedback assessment, sustainability aspect and the potential common exploitation between the iMERMAID technology provider and the third-party applicant(s). Additionally, in Stage 3 third parties can conduct a final stakeholder event, inviting pertinent industry representatives, expert groups, and, if applicable, civil organizations and citizens. The event should showcase achieved results, iMERMAID solutions and initiate dialogue on water monitoring, remediation, and the prevention of CoEC. Stakeholder engagement and mapping methods are provided as a support by the iMERMAID consortium experts. At the end of Stage 3, Beneficiary(ies) deliver the assigned deliverables: Final evaluation report and feedback and an Exploitation plan, including stakeholder assessment and impact assessment. The latter focuses on use case validation, understanding internal processes, system integration, risk management and includes a roadmap for uptake of the selected iMERMAID solution/s.

Table 12: iMERMAID FSTP programme Stages and payment.

iMERMAID FSTP Programme			
	Stage duration (months)	Mandatory Deliverables	Fixed Lump Sum
Stage 1: Use case definition	2	Individual Work Plan and Use case specification	Up to 17 000 EUR
Stage 2: Use case implementation	4	Report on Use case implementation	Up to 58 000 EUR
Stage 3: Use case evaluation and feedback	3	Final evaluation report and feedback Exploitation plan, including stakeholder assessment and impact assessment	Up to 25 000 EUR
TOTAL	9 months		Up to 100 000 EUR

As per the programme requirements all beneficiaries are evaluated at the end of each Stage, based on the work performed as per their ‘Individual Work Plan’ developed at the beginning of the support programme, together with their allocated mentors. The results are evaluated at the end of each stage during a remote review done via a teleconference platform. Each Beneficiary prepares a presentation of the work done, using a predefined template, analyse the progress and answer questions from the iMERMAID experts. Each of the sessions is scheduled by the monitor F6S. On iMERMAID side participants are F6S as the moderator, the project coordinator as the treasurer and the lead mentor as the reviewer. Each review lasts for 40 min, including 5 minutes introduction to the session, 15 minutes for project presentation, 10 min questions from the mentor/s, 5 minutes questions from the coordinator and 5 minutes questions and queries from the beneficiary. Within one week after the review, the Beneficiary receives a review report, including comments and potential recommendations. The report also states if the deliverables and KPIs are accepted or not. On acceptance of the deliverables, payments are released no later than thirty (30) natural days after the notification of positive assessments of the results. In case corrections need to be made the beneficiary is given one week to accommodate this after which an updated review report is provided by the mentor.

The ‘Mentors’ evaluate the grantees’ performance, according to the following criteria.

- Deliverables’ quality. To be scored by the Mentors based on the Deliverables established in the ‘Individual Mentoring Plan’.
- Technical performance indicators. To be scored by the Technical Mentors based on the KPIs established in the ‘Individual Mentoring Plan’.
- Deadline Compliance. To be scored by the Mentors.

Each criterion is scored from 0 to 10 and the weight of each one of these criteria, in the final score, is as follows:

- Deliverable quality (30%).

- Technical performance indicators (60%).
- Deadline Compliance (10%).

According with the received final score:

1) Beneficiaries over threshold (which is 7 points) successfully receive the next payment and continue in the program.

2) Beneficiaries under threshold are proposed, by the 'Mentors', as candidates to leave the Program.

If this decision is ratified by the 'Selection Committee', they have to leave the Program and won't receive the payment due. The 'Selection Committee' reviews and validate the 'Mentors' proposal, putting special attention to the 'under threshold' cases, if any, by taking into consideration all possible objective reasons for underperformance (i.e. external factors which might have influenced the beneficiaries' performance). The Selection Committee considers if a short extension can be allowed to invite a project to update and resubmit deliverables, hence qualifying for its payment, if and when said deliverable is approved. The 'Selection Committee' takes the final decision.

6.0 Lessons learned

This section outlines the key lessons learned from the implementation of iMERMAID Open Calls 1 and 2. These insights are drawn from the practical challenges and successes observed throughout the technical assistance programme and are intended to inform future Financial Support to Third Parties (FSTP mechanisms and Innovation Action (IA) projects.

Challenges for Public Authorities in Innovation Actions:

Public authorities (PAs) from associated regions face unique hurdles when participating in FSTP and IA projects. Experience shows that these entities often require more time and dedicated support than private-sector organizations to navigate project requirements. A primary challenge is that most PAs lack the specialized technical expertise or internal resources necessary to implement complex technical activities independently. Consequently, they rely heavily on external collaboration to meet project objectives. Within the iMERMAID project the external requirement coming from the HE programme specification that funding can be provided solely to public authorities and not permitting partnership with other type of entities such as SMEs and startups for example proved to bring a challenge to project execution. Public authorities could collaborate with such types of entities only via subcontracting which led to the subsequent identified hurdle, e.g. lengthy procurement procedures not fitting within the 9 months duration of the programme or managed to be executed but creating unnecessary stress to the beneficiary and open call management. These were overcome basically through targeted hands-on support from the iMERMAID consortium and dedicating extra time from solution providers to support the associated regions well beyond what was contracted as part of the GA.

Procurement and Administrative Alignment:

The design of FSTP mechanisms must account for the strict regulatory frameworks under which public authorities operate.

Key administrative takeaways include:

- **Subcontracting and Tendering:** Project timelines must reflect the reality of public tender procedures. Administrative delays in these processes can significantly impact the overall project schedule if not accounted for during the initial planning phase. It is recommended that potentially FSTP projects of such scale have a longer implementation period e.g. 12 months.
- **Synchronized Scheduling:** The availability of technical solutions must be carefully aligned with the FSTP timeline. Misalignment between a solution provider's readiness and a beneficiary's implementation phase can lead to bottlenecks.

The aforementioned can be overcome when established procedures provide for better flexibility e.g. public authorities being able to collaborate under such funded FSTP mechanisms with other type of entities via partnerships and not via subcontracting. In addition, projects of such type should be potentially with longer timeframe e.g. 48 months and FSTP support happening in the last 18 months of the project, accounting as well budget for the creation of additional prototypes for solution testing from external beneficiaries.

Primary Drivers of Success:

Analysis of the most successful projects within the open calls highlights two critical factors:

- **The Role of Mentorship:** Continuous, high-quality guidance from assigned mentors was essential in bridging the gap between technical requirements and the beneficiaries' operational capacities.

- Active Regional Engagement: Success was directly proportional to the level of active engagement from the associated region. Projects where the local authority was deeply committed to the demonstrator's outcomes consistently outperformed those with more passive involvement.

This summary of lessons learned serves as a foundation for optimizing future FSTP collaborations and ensuring that public authorities are better equipped to integrate innovative environmental and sustainability solutions.

7.0 Conclusion

The iMERMAID Technical Assistance Programme, executed through two strategic Open Calls, has served as a catalyst for the extended testing and adoption of innovative chemical monitoring and remediation technologies across the Mediterranean basin and beyond. By empowering local and regional public authorities to act as extended demonstrators, the project bridged the gap between advanced scientific research and practical, municipal-level environmental governance.

The program's success is clearly evidenced by its achievement of core Key Performance Indicators (KPIs). Against an initial target of 15 support organizations, the FSTP projects engaged a total of 49 entities, effectively doubling the expected institutional outreach. Furthermore, six associated regions successfully completed the full 9-month technical program, providing a robust, real-world validation of iMERMAID solutions such as the Electrochemical sensor box and the Heavy metal sensor. These tools were proven to deliver laboratory-grade accuracy in diverse field conditions, ranging from hypersaline lagoons in Bulgaria to mining-impacted river basins in Montenegro.

Key strategic outcomes of the program include:

Capacity Building: Public authorities gained the technical expertise to transition from manual, periodic sampling to high-frequency, data-driven environmental management. It is important to note that the municipal teams had the opportunity to experience firsthand the process of sampling, monitoring and results adoption.

Sustainability and Growth: The iMERMAID Open Call program has created a resilient foundation for future action. Notably, the MP3 Lake project secured follow-on Horizon Europe funding directly based on its iMERMAID results, while the REACT project established long-term collaboration agreements with its mentors to continue monitoring activities.

Policy Integration: The development of site-specific roadmaps and exploitation pathways has provided municipalities with the evidence-based frameworks necessary to secure investment for infrastructure improvements, such as rainwater management and pollution remediation.

While the implementation phase highlighted specific administrative and procurement challenges, e.g., particularly the complexities public authorities face within short innovation timelines, the iMERMAID model has demonstrated that a combination of expert mentorship, grant funding, and structured stakeholder engagement can overcome these hurdles.

In conclusion, the iMERMAID project has not only met its technical objectives but has also strengthened the "triple helix" of collaboration between government, academia, and the private sector. By fostering this interdisciplinary network, iMERMAID has contributed significantly to the EU Mission "Restore our Ocean and Waters", paving the way for a contaminant-free future for the Mediterranean Sea and its surrounding ecosystems.

The Mediterranean Sea and its surrounding regions support a diverse variety of essential socioeconomic activities. It is one of the highly exploited water ways and the influence of anthropogenic activities on its marine habitats and ecosystems has grown significantly since the industrial revolution. Because of this, the Mediterranean Sea basin is very vulnerable to chemical contamination and build-up. To safeguard the Mediterranean Sea basin from contaminants for emerging concerns (CoEC), iMERMAID will integrate, coordinate, and synergize innovative preventive, monitoring, and remediation solutions. iMERMAID will build an evidence-based multidimensional framework that will guide policymaking and transform societal perceptions to reduce CoEC usage, emissions, and pollution. Furthermore, next generation sensor and remediation solutions will be developed within iMERMAID to monitor and remove prioritized chemicals from its source while reducing upstream pollution. iMERMAID builds an ideal interdisciplinary team by bringing together prominent SMEs, researchers, regulators, and innovation professionals who have been essential in improving the knowledge and awareness of CoEC. Beyond state-of-the-art techniques, iMERMAID will strive to strengthen regulations against CoEC, expand economic possibilities and competitiveness, improve the standard of living for EU residents, while preventing the accumulation of chemical pollution in the Mediterranean Sea basin. iMERMAID will empower the efforts to create a zero pollution, contaminant free waters by enabling the Chemical Strategy's goals to become a practical reality.



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