Open Market Consultation Report for the Pre-Commercial Procurement for the development of integrated urban water management systems towards "PCP for green and digital transition"

January 2026

SPIN4EIC Assistance to Public Buyers
The National Centre for Research and Development (NCBR), Poland

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A Prior-Information Notice, or PIN, has been published in TED to announce the Open Market Consultation (OMC) on possible future procurement activity. Publication number of the notice: 734672-2025 - Plan zakupu

The original language of this open market consultation is English.

Abbreviations and acronyms

CET	Central European Time
COTS	Commercial Off-The-Shelf
EC	European Commission
EU	European Union
GDPR	General Data Protection Regulation
GPA	Government Procurement Agreement
IPRs	Intellectual Property Rights
NCBR	National Center for Research and Development
OMC	Open Market Consultation
PCP	Pre-Commercial Procurement
PPI	Public Procurement of Innovative solutions
PIN	Prior Information Notice
RFI	Request For Information
R&D	Research and Development
SMEs	Small and Medium Enterprises
TED	Tenders Electronic Daily

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1. The scope of the project

Urban water management is rapidly evolving under climate pressures. As one expert note explains, escalating urban water demand and the need for climate resilience "make it imperative" to adopt an integrated approach rather than handling supply, stormwater and wastewater in isolation. Accordingly, NCBR's PCP challenge is to develop climate-resilient, smart, integrated urban water systems for Polish cities that jointly address water scarcity and excess (drought and flooding). The expected solution must implement smart retention (e.g. rainwater capture), multi-use reuse (e.g. irrigation, firefighting, street cleaning) and continuous real-time monitoring (via IoT sensors and data platforms). In this way, public service continuity and infrastructure safety are enhanced even under extreme weather swings. Notably, the systems are expected to be modular and adaptable – able to respond dynamically to both drought and flood scenarios while fitting local urban conditions.

1.1. PCP challenge and main requirements

NCBR considers conducting standard three-phase PCP (solution design, prototyping, validation) to acquire R&D services for this system. The future PCP – a joint R&D procurement by the public buyers – aims to stimulate demand-driven innovation and "close the gap" between existing offerings and the contracting authorities' needs. Solutions are expected to achieve TRL 7–8 by the end of Phase 3. In practice, the PCP should deliver fully-tested products or services that meet the public buyers' requirements faster and at the best value. The innovative solution must cover all functionalities in the challenge brief as stated in the OMC document.

1.2. Use case: Urban Water Management

The Integrated Urban Water Resilience System use case addresses the growing need of Polish contracting authorities to manage urban water resources in a holistic, resilient, and digitally enabled manner, in line with the principles of Integrated Urban Water Management.

The use case focuses on the development and deployment of an integrated and modular system that enables cities to respond effectively to both water scarcity and excess water risks, which increasingly occur within the same urban areas as a result of climate change. Rather than treating drinking water supply, stormwater, wastewater, and emergency water management as separate domains, the use case assumes that all components of the urban water cycle must be managed jointly, supported by real-time data, digital coordination tools, and adaptive infrastructure.

The system is conceived as a city-level operational and decision-support capability, combining physical infrastructure (e.g. retention, storage, pumping) with digital components (sensors, dashboards, alerts) to support day-to-day operations as well as emergency response and longer-term planning.

'As-is' situation: current challenges in Polish cities

Polish cities increasingly face compound water-related challenges that strain existing infrastructure and organisational arrangements.

On the one hand, urban drought and groundwater decline are becoming more frequent. These conditions affect:

- the availability of water for firefighting and emergency services,
- the maintenance of green spaces and urban cooling functions,
- and the reliability of daily public water services, especially during prolonged dry periods.

On the other hand, cities experience flash floods and intense rainfall events that overwhelm outdated or undersized drainage and retention infrastructure. These events can lead to local flooding, infrastructure damage, service disruptions, and safety risks for citizens.

These opposing challenges are exacerbated by several structural and operational limitations:

- Limited real-time situational awareness, due to insufficient sensor coverage and lack of integrated monitoring across rainfall, soil moisture, groundwater, and drainage systems.
- Underdeveloped reuse practices, meaning that rainwater and stormwater are often treated solely as waste rather than as a resource that could be retained and reused.
- Insufficient emergency water backup, particularly for critical services such as fire brigades, hospitals, and schools, where continuity is essential.
- Fragmented responsibilities and limited technical capacity, making it difficult for municipalities to coordinate across departments, plan systemic upgrades, and prioritise investments using consistent data.

As a result, current practices are often reactive, infrastructure-centric, and siloed, with limited ability to anticipate events, optimise resource use, or adapt solutions to local risk profiles.

Desired result and expected improvements

The Integrated Urban Water Resilience System aims to shift cities from a reactive to a proactive and adaptive mode of water management.

The desired outcome is a system that:

- Responds dynamically to both water scarcity and excess water events, using real-time data and predefined operational logic.
- Supports continuity of public services, ensuring that essential functions such as firefighting, healthcare, utilities, and maintenance of green spaces can be maintained even under extreme conditions.
- Adapts to local conditions, allowing deployment in municipalities of different sizes, risk exposure, and technical maturity, without requiring one-size-fits-all infrastructure.
- Enables coordination and collaboration across sectors and institutions, supporting integrated planning and operational decision-making.
- Aligns with national climate, water, and digitalisation strategies, and supports innovation procurement as a mechanism to modernise public infrastructure.

Improvements are expected to be measurable in terms of:

- reduced service disruptions,
- improved preparedness for extreme events,
- increased reuse of retained water,
- and enhanced operational efficiency for municipal authorities.

Stakeholders and end-users

The use case involves a broad ecosystem of public stakeholders, reflecting the cross-sector nature of urban water management. Key stakeholders and end-users include:

- Municipal authorities responsible for infrastructure, public services, and emergency management,
- Fire brigades and emergency services, relying on water availability during critical events,
- Water utilities managing supply, drainage, and wastewater systems,
- Public institutions such as schools and healthcare facilities,
- Environmental and water authorities, including State Water Holding – Polish Waters,
- Central public bodies, such as the Ministry of Infrastructure and the National Fund for Environmental Protection and Water Management.

The system is intended to support both operational users (e.g. technicians, emergency coordinators) and decision-makers (e.g. municipal planners, infrastructure managers).

Information needs and data sources

To support the use case, the system must rely on a combination of real-time and contextual data, including:

- real-time rainfall measurements and forecasts,
- soil moisture and groundwater level data,
- drainage system capacity and operational status,
- water usage data for critical services,
- digital maps of infrastructure and urban assets,
- emergency demand projections and risk thresholds.

These data sources must be integrated and visualised in a way that enables rapid understanding, comparison across locations, and timely decision-making.

1.3. SOTA Results

The analysis of the global and European innovation landscape for integrated urban water management indicates a rapid expansion of digital, AI-based, and data-centric technologies supporting real-time monitoring, forecasting, and adaptive control. Despite this progress, existing solutions remain compartmentalised, focusing separately on flood mitigation, sensing, or data integration, without achieving a truly unified approach to managing the entire urban water cycle. Within Europe, innovation activity is growing yet still characterised by limited market deployment and fragmented collaboration across sectors. This underscores the potential for enhanced strategic alignment and investment in interoperable, scalable solutions. For Poland and the wider EU, this presents a timely opportunity to pioneer comprehensive, climate-resilient water management systems that connect technological advancement, standardisation, and innovation procurement within a cohesive urban resilience framework.

2. Purpose of the Open Market Consultation

This document describes the results of the Open Market Consultation (OMC) of the current project for the future Pre-Commercial Procurement (PCP) of Research & Development (R&D) services on urban water management. The results are based on the bilingual webinars, e-pitching session, and the RFI questionnaire.

The OMC aimed, on the one hand, to inform technology vendors regarding the potential future PCP and, on the other hand, to understand their capabilities to satisfy the procurers' needs and to obtain their input on the viability of the procurement plans and conditions as described in the OMC document and annexes.

In sum, the objectives of this OMC activities were to:

1. Validate the findings of the State-Of-The-Art (SOTA) analysis and the viability of the set of technical and financial provisions.
2. Raise awareness of the industry and relevant stakeholders regarding the upcoming PCP.
3. Collect insights from the industry and relevant stakeholders (including users) to fine-tune the tender specifications.

The OMC was published through a PIN in Tenders Electronic Daily (TED) on 6 November 2025. The rules and objectives of the OMC, as well as information about the challenges, the potential public buyers, and the PCP approach, were described in the OMC document with Annexes at the following link: https://www.gov.pl/web/ncbr/open-market-consultation-document-for-the-pre-commercial-procurement-for-the-development-of-integrated-urban-water-management-systems-towards-pcp-for-green-and-digital-transition.

Market parties and end users were also requested to fill out a questionnaire in the EU Survey. The preliminary deadline to fill out the questionnaire was December the 3rd 2025, which was later extended until December the 10th 2025. The intention of the questionnaire was to explore the market 'as-is', and to find out more about practitioners' needs and requirements regarding the future PCP. Therefore, there could not be wrong or right answers. The responses to the questionnaire could not contain any confidential information. The information obtained will be used as input for the procurement strategy and conditions.

This OMC was performed under the law of the NCBR, which is Polish law.

3. Activities and timetable

The OMC took take place in the form of:

- One webinar in English .
- One webinar in Polish.
- One e-pitching session in English.
- A Request for Information (RFI) – a questionnaire using the EU Survey tool.

The timetable of activities and required actions of the OMC is as follows:

Date	Activity
October 28, 2025	**Request for Information (RFI)**

	questionnaire: https://ec.europa.eu/eusurvey/runner/SPIN4EIC-NCBR-OMC-survey
October 28, 2025	**Webinar registration form: https://ec.europa.eu/eusurvey/runner/SPIN4EIC-NCBR-OMC-Epitching-registration-form**
November 6, 2025	**Date of publication of the Pre-Information Notice (PIN) on TED: https://ted.europa.eu/en/notice/-/detail/734672-2025**
November 7, 2025	**Date of publication of OMC documents and questionnaire.**
November 25, 2025	**Date of OMC webinar in English.**
November 26, 2025	**Date of OMC webinar in Polish.**
December 10, 2025	**Questionnaire submission deadline.**
December 17, 2025	**Date of e-pitching session.**
Planned date: 15 January 2026, actual date: 16 January 2026	**Date of publication of the OMC report.**
January 19, 2026	**Date of closure for the OMC.**

3.1. OMC webinars

Within the framework of the OMC, two informational webinars were organised by NCBR in order to present the context, scope, and procedural aspects of the potential future PCP. The webinars were held in English on November the 25th 2025 and in Polish on November the 26th 2025, ensuring accessibility for both international and national stakeholders.

Both webinars followed a similar structure and served an informational purpose. They provided an introduction to the PCP instrument, explaining its role as a mechanism for procuring research and development services through a phased and competitive process, as well as its legal basis under European and national public procurement frameworks. The presentations clarified the distinction between PCP and other forms of public procurement and outlined the general phases of a PCP procedure, including solution exploration, prototyping, and testing.

During the webinars, NCBR presented its institutional role and experience in innovation procurement, including its mandate to support public buyers in addressing complex challenges related to the green and digital transition. This was followed by a presentation of the PCP challenge and the common use case entitled “Integrated Urban Water Management System”, which was introduced as a reference scenario for the OMC. The use case presentation described the challenges faced by Polish municipalities in managing both water scarcity and excess water risks and outlined, at a conceptual level, how integrated and digitally enabled systems could support improved resilience and continuity of public services.

The webinars also included a presentation of the preliminary SOTA analysis, summarising high-level findings from an initial patent and market review related to integrated urban water management systems. The analysis highlighted emerging technological trends, particularly in the areas of real-time monitoring, digital sensing, artificial intelligence, and flood forecasting, while noting that existing solutions often address individual elements of the water cycle rather than fully integrated approaches.

Figure 1: The cover pages of the OMC webinars (English and Polish)

Finally, the objectives and activities of the OMC were explained, including the role of the RFI questionnaire and the organisation of e-pitching sessions. Participants were informed about the indicative timetable and the non-binding nature of the consultation. Both webinars concluded with a short question-and-answer segment and closing remarks. The sessions were recorded, and participants were provided with the presentation materials.

3.2. E-pitching sessions

A total of four economic operators participated in the e-pitching session as part of the OMC activities in order to provide interested market operators with the opportunity to present their existing solutions, ongoing research and development activities, and potential approaches relevant to the common use case on integrated urban water management. The session took place after prior registration and in accordance with the rules and conditions communicated to all participants. participants were requested to prepare their presentations using a standardised slide template and to follow the instructions provided prior to the session. The presentation template is included in Annex III of this report.

Based on the information presented during the sessions, it emerged that market offerings and development activities currently cover a range of complementary but often distinct elements relevant to urban water management. These include digital monitoring and sensing technologies, data-driven forecasting and alerting tools, and physical infrastructure solutions for water retention, storage, treatment, and reuse. Several participants highlighted experience with modular approaches that allow solutions to be deployed incrementally and adapted to local conditions, as well as the use of digital platforms to support real-time monitoring and operational decision-making.

At the same time, the e-pitching session confirmed that existing solutions tend to focus on specific components or sub-functions of the urban water cycle, rather than providing fully integrated, end-to-end systems addressing water scarcity and excess water risks simultaneously. Participants also referred to the importance of interoperability with existing municipal infrastructure and systems, as well as the relevance of organisational and economic aspects, including deployment models suitable for public authorities.

The aggregated insights gathered through the e-pitching session, together with the information collected via the RFI questionnaire, contribute to NCBR’s understanding of the current market landscape and technological maturity. These inputs will be taken into account in the further preparation of a potential future PCP, in particular when refining the scope, structure, and evaluation approach of the planned procedure.

4. Summary of the replies to the RFI questionnaire

The RFI questionnaire was an integral part of the OMC conducted by tNCBR within the framework of the SPIN4EIC initiative. A single RFI questionnaire was prepared and addressed to technology providers and other market stakeholders active in the field of integrated urban water management systems.

The objective of the RFI was to collect structured input from the market regarding existing and emerging solutions capable of addressing the common use case on integrated urban water resilience, with particular focus on managing both water scarcity and excess water risks through smart retention, reuse, real-time monitoring, and digital coordination tools. The questionnaire covered aspects such as organisational profiles, solution maturity and readiness levels, modularity and scalability, integration with existing municipal infrastructure, use of digital dashboards and early warning mechanisms, and experience with public-sector deployments. In addition, respondents were invited to provide information on innovation beyond the current state of the art, intellectual property considerations, interoperability, cybersecurity and data protection measures, indicative timelines and budgets, and openness to participation in innovation procurement procedures such as PCP.

The responses collected through the RFI provided NCBR with an overview of the current market landscape, the diversity of technological approaches, and the maturity of solutions relevant to the defined use case. The RFI also offered insights into perceived development needs, integration challenges, and opportunities for further research and development in the context of a potential PCP.

The results summarised in the following sections are based on the analysis of all submitted responses. All inputs have been processed and analysed in an anonymised manner. The report presents only aggregated findings and high-level observations and does not attribute any statements or positions to individual respondents. The information gathered through the RFI will be taken into account in the further preparation of a potential future PCP procedure.

Type of organisation:

		Answers	Ratio
Start-up		0	0.00 %
SME		5	71.43 %
Public organisation		0	0.00 %
Private organisation		2	28.57 %
R&D institute/University		0	0.00 %
Other (Please indicate below).		0	0.00 %
No Answer		0	0.00 %

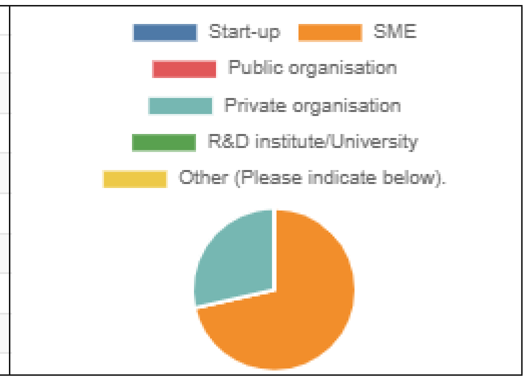

Figure 2: Type of organisations that replied to the Request for Information for end users using the EU Survey tool.

Based on the feedback provided in the EU Survey questionnaire for the technology providers, the respondents belong to SMEs and private organisations, as indicated in the figure above.

The participants who replied to the EU Survey questionnaire are from organisations in Slovakia, Poland, Bulgaria and France.

4.1. PCP challenge and requirements

1- Do you offer solutions for water retention and reuse (e.g. rainwater harvesting, greywater reuse)?

The responses to this question indicate a mixed level of market activity in relation to water retention and reuse solutions. Four respondents stated that they do not currently offer solutions for water retention or reuse. Other respondents confirmed that they do offer such solutions and provided descriptions of their scope.

Among the affirmative responses, solutions described include technologies dedicated to the management of rainwater and greywater, as well as systems for the retention of stormwater in underground, prefabricated retention tanks with varying storage capacities. These solutions were reported to be complemented by additional equipment such as pre-treatment devices, flow regulators, and pumping systems, designed to operate together as integrated retention systems.

Some respondents also indicated that their offerings include solutions for the reuse of retained water for municipal purposes, such as irrigation of green areas, street cleaning, and firefighting, as well as the reuse of rainwater and greywater in residential and non-residential buildings for hygienic and sanitary purposes, including toilet flushing, laundry, and watering of green spaces.

		Answers	Ratio
Yes		3	42.86 %
No		4	57.14 %
No Answer		0	0.00 %

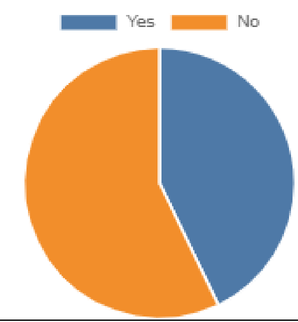

Figure 3: Availability of solutions for water retention and water reuse.

2- Is your solution modular and scalable (i.e. adaptable to different municipality sizes and needs)?

All respondents indicated that their solutions are modular and scalable. The explanations provided describe modularity and scalability implemented through different technical and organisational approaches.

Several respondents explained that their solutions are based on sensor networks connected to digital platforms, where sensors can be deployed incrementally on existing infrastructure such as bridges, utility poles, or street lighting. This allows gradual expansion of monitoring coverage depending on local needs and conditions.

Other respondents described platform-based solutions designed to integrate and visualise diverse water-related data. These platforms were reported to be easy to extend, scale, and maintain, supporting the addition of new data sources, users, and analytical functions over time.

Some respondents highlighted that their solutions can be deployed in both public and private settings and can accommodate different numbers of users, making them adaptable to municipalities of varying sizes and operational capacities.

More detailed descriptions of modularity were also provided by respondents who indicated that their systems are modular at multiple levels. These include hardware modularity, through independent sensing units that can be added over time; software modularity, through plug-and-play analytics, alerting, and dashboard components; and deployment modularity, allowing configurations to be tailored to local topography, hydrology, and risk profiles. In such cases, respondents indicated that municipalities may start with a limited configuration and expand coverage or functionality as needs evolve.

Some respondents described modularity in terms of physical infrastructure, reporting that retention tanks and associated equipment are constructed from prefabricated elements that can be combined to achieve the required storage volume or performance parameters. Additional treatment, flow regulation, and reuse components were reported to be selected or combined from predefined series to match local requirements. In these cases, respondents also referred to digital monitoring and control platforms that can be scaled from individual facilities to broader territorial levels, such as municipalities or regions, without requiring reconstruction of existing infrastructure.

Finally, some respondents indicated that their solutions consist of off-the-shelf systems that can be configured and tailored to specific locations or points of interest, allowing deployment across different municipal contexts.

		Answers	Ratio
Yes		7	100.00 %
No		0	0.00 %
No Answer		0	0.00 %

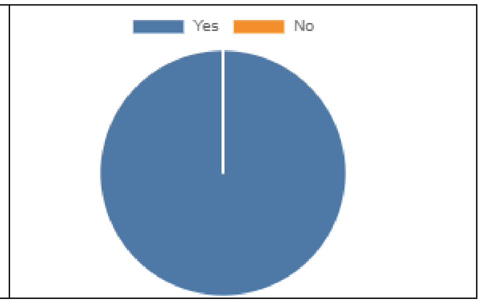

Figure 4: Modularity and scalability of proposed solutions for different municipal contexts.

3- Does your solution include real-time monitoring of rainfall, groundwater, or flood risk?

All respondents indicated that their solutions include real-time monitoring capabilities related to rainfall, groundwater, or flood risk. The explanations provided describe different monitoring approaches and levels of analytical sophistication.

Several respondents reported the use of sensor-based systems that measure hydrological parameters such as river water levels, rainfall, soil moisture, or tank filling levels. Data transmission frequencies were described as periodic or event-driven, with higher reporting rates during flood-risk situations. These data are transmitted to digital platforms where analytics, visualisation, and alerting functions are performed.

Some respondents indicated that their solutions include flood forecasting and simulation capabilities, enabling early warning, estimation of flood extent and potential impacts, and support for response planning based on short- to medium-term forecasts. Others described monitoring systems that combine real-time measurements with weather forecasts and consumption data to support operational management of retained water resources.

In addition, respondents referred to integrated multi-sensor architectures and wireless IoT systems that aggregate hydrological and meteorological data, trigger automated alerts when predefined thresholds are exceeded, and support continuous risk monitoring during both rainfall-driven and rapid-onset flood events.

		Answers	Ratio
Yes		7	100.00 %
No		0	0.00 %
No Answer		0	0.00 %

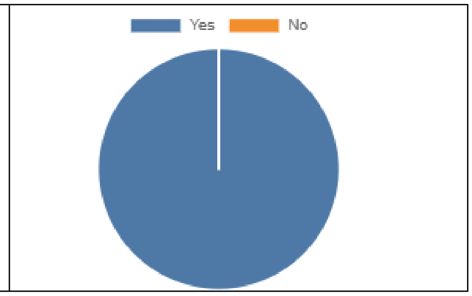

Figure 5: Availability of real-time monitoring and early warning capabilities for rainfall, groundwater, and flood risk.

4- Do you provide a digital dashboard for municipal operators (e.g. alerts, analytics, control panel)?

All respondents indicated that they provide a digital dashboard or operator-facing interface as part of their solution. The responses describe dashboards that support real-time visualisation, alerting, and basic to advanced analytics.

Several respondents reported dashboards that provide real-time status monitoring combined with alert notifications delivered through channels such as e-mail, SMS, phone calls, or in-application alerts when predefined thresholds are exceeded. Data access was described as web-based, with some respondents indicating the availability of APIs to integrate dashboard outputs with existing municipal systems.

Some respondents highlighted dashboards that allow users to view current conditions as well as historical and forecasted data, supporting early warning and situational awareness. Others referred more generally to the provision of alerts and analytics without further detail.

More comprehensive descriptions referred to dashboards functioning as central control panels for municipal operators, aggregating real-time and predictive data, supporting configurable alerts, and enabling operational oversight across multiple monitored assets. In these cases, respondents also mentioned features such as reporting, event logging, remote management of connected devices, grouping and filtering of infrastructure elements, and scalability to support an increasing number of monitored sites. Some responses additionally noted that dashboards may support reporting related to infrastructure safety and continuity planning.

		Answers	Ratio
Yes		7	100.00 %
No		0	0.00 %
No Answer		0	0.00 %

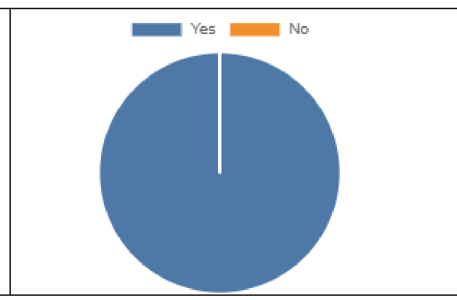

Figure 6: Availability of digital dashboards and operator-facing interfaces for monitoring, alerting, and analytics.

5- Can your system automatically activate emergency measures (e.g. backup pumps, flood gates)?

The responses indicate differing levels of capability regarding the automatic activation of emergency measures. Two respondents stated that their solutions do not support the automatic activation of emergency measures.

Other respondents indicated that their systems support automatic or conditional activation of emergency measures. In some cases, this functionality is implemented directly, for example, by automatically diverting excess water to alternative storage in overflow situations or by controlling pumps and valves as part of normal system operation.

Several respondents explained that automatic activation is enabled through integration with existing municipal infrastructure, such as SCADA systems, control units, or civil protection platforms. In these cases, the solutions provide real-time data, alerts, or machine-readable signals that can trigger predefined actions—such as activating backup pumps, adjusting water routing, or operating flood gates—when specified thresholds are reached. The physical execution of these actions relies on existing actuators and control hardware operated by the municipality.

Some respondents noted that the ability to activate emergency measures is available as a configurable or project-specific option rather than as a default feature, requiring additional integration or customisation depending on local infrastructure and operational arrangements.

	Answers	Ratio
Yes	5	71.43 %
No	2	28.57 %
No Answer	0	0.00 %

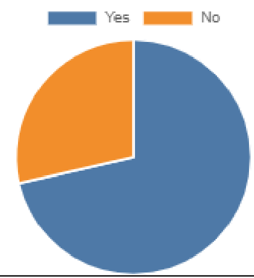

Figure 7: Capability to automatically activate emergency response measures through control or system integration.

6- Does your solution integrate with existing infrastructure and civil protection systems?

The responses indicate different levels of integration with existing municipal infrastructure and civil protection systems.

Two respondents stated that their solutions are fully integrated with existing municipal infrastructures through standard interfaces such as APIs and data exchange mechanisms. These respondents described their systems as interoperable layers that connect with existing hydrological sensors, SCADA platforms, emergency management systems, and municipal IT environments. In these cases, integration supports the direct use of real-time and predictive outputs within civil protection workflows.

Three respondents indicated partial integration, explaining that their solutions can be connected to selected elements of existing infrastructure, such as sewer networks, local monitoring systems, or control devices. These responses highlighted integration of monitoring, alarm, and data exchange functions, with the extent of integration depending on local technical conditions and existing systems.

Two respondents reported that their solutions do not yet integrate with existing infrastructure or civil protection systems, while noting that such integration would be technically possible in the future. In these cases, the solutions were described as currently operating in a more standalone manner, with the ability to ingest external data without full operational integration.

	Answers	Ratio
Fully	2	28.57 %
Partially	3	42.86 %
Not yet	2	28.57 %
No Answer	0	0.00 %

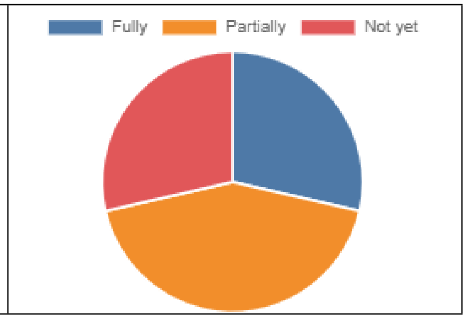

Figure 8: Integration of solutions with existing municipal infrastructure and civil protection systems.

7- Can your solution support emergency water supply backup (e.g. for firefighting, schools, hospitals)?

The responses indicate differing levels of support for emergency water supply backup.

Three respondents stated that their solutions do not support emergency water supply backup.

Four respondents confirmed that their solutions can support emergency water supply backup in different ways. In some cases, this support is provided through the availability and reuse of stored water, which can be used for multiple purposes, including emergency situations.

Several respondents described support in an operational and informational capacity, indicating that their systems do not function as physical water supply assets but instead provide real-time monitoring, forecasting, and situational awareness to support emergency preparedness. These solutions were described as enabling early identification of stress scenarios, monitoring of water availability and storage levels, and coordination with existing municipal infrastructure and emergency services to ensure readiness of backup water supply procedures.

Some respondents noted that, while their systems are designed to support emergency water supply backup, such functionalities have not yet been deployed in operational environments and remain potential or planned capabilities.

	Answers	Ratio
Yes	4	57.14 %
No	3	42.86 %
No Answer	0	0.00 %

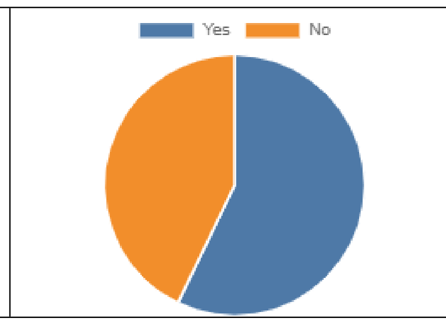

Figure 9: Support for emergency water supply backup for critical public services.

8- Do you provide scenario planning or simulations (e.g. flood response, drought risk)?

Out of the responses received, five respondents indicated “Yes” and two respondents indicated “No”.

Respondents who answered affirmatively reported providing scenario planning or simulation functionalities related primarily to flood response and water-stress situations. The described capabilities include flood forecasting, simulation of flood extent and potential impacts, and the use of predictive analytics to support early warning and emergency response planning. Some respondents indicated that their solutions enable "what-if" analyses under different rainfall intensities, timing scenarios, or hydrological conditions.

Several respondents also described scenario planning in an operational context, where real-time and forecast data are used to support decisions such as the pre-emptive emptying of retention tanks, retention of collected water for later reuse, or optimisation of stormwater network operation. In some cases, collected measurement data were reported to support the development or optimisation of hydrodynamic models and related control algorithms.

Two respondents stated that their solutions do not currently provide scenario planning or simulation functionalities.

4.2. State-of-the-art-analysis

9- Do you think there is room for technological development beyond the state of the art?

All respondents indicated "Yes" to this question.

The explanations provided describe several areas where respondents perceive potential for further technological development. These include more advanced integration of heterogeneous data sources to improve risk anticipation and information sharing with civil protection authorities, as well as further development of predictive and decision-support systems based on artificial intelligence and data-driven models.

Some respondents highlighted opportunities to advance forecasting, simulation, and early warning capabilities by combining real-time measurements, historical data, weather forecasts, and earth observation data. Others referred to the need for more integrated and proactive approaches compared to existing solutions, which were described as fragmented or reactive.

Additional areas mentioned include the development of decision-support tools to improve operational efficiency, optimisation of infrastructure management through intelligent recommendations, and enhancements in cybersecurity and resilience of control systems and critical infrastructure. Some respondents also referred to the potential value of systematic risk assessment or scoring approaches to support long-term evaluation of flood and drought resilience. The responses indicate that the reported readiness levels of solutions vary across respondents and, in some cases, across different components or functional layers of the same solution.

10- What is the readiness level of your solution? (TRL level)

Some respondents reported solutions at high readiness levels, indicating TRL 9, either for the overall solution or for specific components such as sensing hardware. In these cases, respondents stated that their solutions are fully developed, commercially available, and ready for deployment, with hardware and software already in operational use. One respondent indicated the existence of installed demonstrators.

Other respondents reported solutions at intermediate readiness levels, including TRL 7, indicating systems that have been demonstrated in operational environments but may still require further development or scaling.

One respondent described a mixed readiness profile, stating that while certain components or subsystems are at TRL 9, other functional areas—such as cybersecurity modules, operational support tools, scoring mechanisms, or AI-based functionalities—are currently at a lower maturity level, reported as TRL 5.

One respondent reported a lower system-level readiness, indicating that the integrated solution is currently at TRL 4, with key technologies validated in laboratory conditions. This respondent noted that planned pilot deployments in real municipal environments are intended to advance the system to TRL 6.

Overall, the responses reflect a range of maturity levels, from laboratory-validated technologies to fully commercialised solutions, with several respondents distinguishing between the readiness of individual components and that of the integrated system as a whole.

11- Do you rely on any patented technology or standards?

Out of the responses received, one respondent indicated "Yes", while six respondents indicated "No". The respondent who answered affirmatively stated that their solution relies on patented technology. This includes a patented sensing device used as part of the solution and a flood-risk indicator that is subject to patent protection developed in cooperation with an external entity.

12- Are there existing patents or intellectual property barriers that could limit your solution's development or deployment?

All respondents indicated "No" to this question.

In their explanations, respondents stated that there are no intellectual property barriers that would limit the development or deployment of their solutions. Some respondents explained that they own the intellectual property rights to their solutions, including full economic rights, and therefore do not face restrictions related to third-party patents.

Other respondents indicated that, while certain components of their solutions are subject to patent protection or are in the process of being patented, this does not limit deployment, as these patents are owned by the respondents themselves and do not create dependency on external rights holders. It was also stated that solutions rely on open or widely established standards and publicly available scientific principles, particularly in areas such as data exchange, satellite systems, and alerting protocols.

Overall, respondents reported that intellectual property considerations do not constitute a barrier to implementation in public-sector environments.

4.3. Miscellaneous

13- Are you open to piloting your solution in collaboration with public authorities (e.g. municipalities)?

All respondents indicated "Yes" to this question.

14- Would you be interested in participating in an innovation procurement or co-development process (e.g. PCP/PPI)?

All respondents indicated "Yes" to this question.

15- What type of support do you provide post-deployment?

All respondents indicated that they provide post-deployment support.

Specifically, six respondents stated that their post-deployment support includes training, maintenance, and ongoing monitoring and updates.

The remaining one respondent indicated that they provide training as well as monitoring and updates, without explicitly mentioning maintenance services.

16- What standards or protocols do you follow for interoperability and data sharing?

All respondents provided information on standards or protocols used to support interoperability and data exchange.

Several respondents indicated the use of widely adopted web and data exchange standards, including REST/HTTP-based APIs and common data formats such as JSON, XML, RDF, CSV, and related semantic web technologies (e.g. RDF/OWL/SPARQL). These were described as enabling integration with external systems, data export, and access through web-based or cloud-hosted platforms without the need for local software installation.

Some respondents emphasised adherence to open and well-established standards to ensure vendor neutrality and compatibility with existing municipal, civil protection, and water-management systems. This included the use of standard alerting protocols for emergency communication, as well as recognised geospatial standards for the exchange of spatial data and sensor outputs.

Other respondents described a multi-layer interoperability approach, covering field-level interfaces (e.g. standard industrial signals and PLC interfaces), communication layers based on telemetry and Industrial Internet of Things (IIoT) concepts, and application-level data exchange using standard web protocols and commonly used file formats. Integration with external systems, weather services, and third-party sensors was also reported.

Overall, the responses indicate reliance on open, commonly used protocols and standards to enable data sharing, system integration, and interoperability across heterogeneous infrastructures, with an emphasis on flexibility and compatibility with existing and future municipal systems.

17- How do you address cybersecurity and data protection?

All respondents provided information on how cybersecurity and data protection are addressed within their solutions.

Several respondents described the use of technical access controls, including strong authentication mechanisms such as two-factor authentication, user-specific security tokens, and restricted access to technical infrastructure limited to authorised personnel. Secure coding practices and general risk-management approaches were also mentioned.

Some respondents referred to organisational measures, indicating that cybersecurity and data protection are managed through internal procedures and established operational policies.

Other respondents described a comprehensive, defence-in-depth approach, combining technical, organisational, and architectural measures. These responses highlighted secure data transmission using encryption, authenticated communication channels between sensors, gateways, and cloud platforms, and the use of role-based access control, logging, and audit trails. Hosting environments located within the EU and regular system updates were also mentioned.

Several respondents emphasised compliance with data protection requirements, in particular GDPR, noting that their systems either minimise or entirely avoid the processing of personal data by focusing on environmental, hydrological, and technical measurements. Where personal data may be involved, respondents indicated the application of privacy policies, data minimisation principles, and defined data governance practices.

Some respondents additionally referred to cybersecurity approaches tailored to industrial and SCADA/OT environments, including network segmentation, secure telemetry (e.g. APN/VPN), adherence to recognised industrial cybersecurity standards, and procedures for incident handling, backups, and continuity of service.

Overall, the responses describe a combination of technical safeguards, organisational procedures, and regulatory compliance measures to address cybersecurity and data protection risks.

18- What is the typical timeline and budget for implementing your solution?

The responses indicate that implementation timelines and budgets vary significantly depending on the type of solution, deployment scale, local conditions, and integration requirements.

Several respondents described relatively short deployment timelines, typically ranging from a few weeks to several months. In these cases, timelines were influenced by factors such as administrative permitting, site accessibility, system configuration, and integration with existing infrastructure. Phased approaches were mentioned, including initial assessment and design, hardware installation, system configuration, and onboarding, with overall operational readiness commonly reported within approximately 3 to 5 months for standard municipal deployments.

Other respondents indicated that timelines are highly case-specific and depend on whether the solution is implemented as a standalone system or as part of larger infrastructure investment projects. In such cases, implementation schedules and budgets are defined individually based on the number of sites, scope of works, and required levels of redundancy and security.

Regarding budgets, respondents reported diverse cost structures. Some described subscription-based or sensor-based models, with annual per-sensor or service fees covering installation, data access, analytics, maintenance, and platform usage. Others indicated initial setup or capital expenditure in the range of tens of thousands to over one hundred thousand euros, followed by annual operational or maintenance costs. In large-scale infrastructure projects, respondents noted that total project budgets can be substantially higher, with technology costs representing only a portion of broader construction and investment expenditures.

Overall, respondents emphasised that both timelines and budgets are context-dependent and are typically finalised following a detailed assessment of municipal needs, site conditions, and integration requirements.

19- Have you worked with public sector clients on similar solutions? Please provide examples.

All respondents indicated “Yes” to this question.

Respondents reported prior experience delivering similar solutions for public-sector clients, including national or regional water authorities, municipalities, civil protection bodies, and public institutions such as schools. Examples described include the deployment of environmental and hydrological monitoring systems, early-warning and flood-risk solutions, and intelligent water management or retention systems.

Several respondents referred to large-scale sensor deployments across multiple watersheds or administrative areas, as well as installations in urban environments and cooperation with municipal authorities. Others reported participation in publicly funded or EU-supported projects focused on flood prediction, early warning, and environmental monitoring, implemented in collaboration with local and regional public authorities.

Some respondents highlighted repeated implementations for different public entities, covering a range of scales from large cities to smaller municipalities and rural locations. Overall, the responses indicate broad prior engagement with public-sector clients and experience operating within public procurement, regulatory, and operational environments.

20- Would you like to cooperate with another company?

All respondents indicated "Yes" to this question.

Respondents expressed a general openness to cooperation with other companies, including in areas such as deployment, installation, administration, research and development, and system integration. Several respondents noted that cooperation with local or specialised partners is already part of their operating model, particularly to address administrative requirements, local installation activities, or access to complementary technical expertise.

Some respondents highlighted interest in collaboration with partners providing complementary capabilities, such as data sources, infrastructure components, system integration services, or distribution and service channels. Cooperation was also described as a means to support scaling, interoperability with existing municipal systems, and deployment across different regions.

Other respondents referred to structured cooperation models, including phased or modular collaboration approaches, partnerships with research or advisory organisations, and cooperation in areas such as analytics, cybersecurity, risk assessment, or integration with broader municipal or critical infrastructure management frameworks.

Overall, the responses indicate a broad willingness among respondents to engage in cooperative arrangements with other companies to support the development, deployment, and operation of their solutions.

21- Would you be interested in matchmaking possibilities?

All respondents indicated interest in matchmaking possibilities.

Several respondents expressed a general openness to matchmaking initiatives aimed at facilitating cooperation with other companies. These opportunities were described as a means to enable complementary technical collaboration, improve solution completeness, support deployment at scale, and access new municipal or regional markets.

Some respondents indicated interest in targeted matchmaking, particularly with system integrators, infrastructure operators, civil protection solution providers, data or connectivity providers, and local deployment partners. Matchmaking was also described as potentially supporting interoperability, accelerating adoption, and enabling joint participation in innovation procurement processes, including PCP and PPI.

Other respondents clarified that their interest in matchmaking is focused on specific forms of cooperation, such as subcontracting selected research and development tasks, rather than forming formal consortia. Overall, the responses indicate broad interest in matchmaking, with variations in the preferred scope and form of cooperation.

22- What recommendations or alternatives would you propose?

Some respondents suggested that the future PCP should be clearly positioned in relation to other ongoing or recent innovation procurement initiatives in similar domains, in order to clarify the specific innovation focus and avoid overlap.

Several respondents recommended structuring the procurement to support modular, interoperable, and phased solutions, rather than monolithic systems. This approach was described as enabling municipalities with different sizes, budgets, and risk profiles to adopt core functionalities initially and extend capabilities over time. Emphasis was placed on the importance of open standards, APIs, and interoperability requirements to reduce vendor lock-in and ensure long-term sustainability.

Some respondents proposed considering multi-supplier or hybrid approaches, allowing different specialised actors to contribute components such as sensing, analytics, decision support, or actuation, provided these are integrated at the system level. This was suggested as a way to stimulate innovation and enable best-of-breed solutions.

Other respondents highlighted the value of phased technical development, starting with monitoring and data integration and progressively expanding towards advanced analytics, automation, and risk management functionalities. Recommendations also included early and continuous involvement of municipalities and civil protection operators in piloting and validation to ensure operational relevance.

A small number of responses were more general in nature, referring to ongoing efforts to reduce installation and maintenance costs, or expressing openness to cooperation with other entities to increase solution completeness. One response did not provide any recommendation.

5. Conclusions

The OMC provided a structured overview of the current market landscape, existing solution capabilities, and development perspectives related to integrated urban water resilience systems addressing water scarcity, excess water, and emergency preparedness.

The OMC demonstrated that market operators offer a broad range of solutions covering real-time monitoring, early warning, analytics, digital dashboards, and operational decision support for flood and water-stress situations. Respondents reported varying levels of technological maturity, ranging from laboratory-validated systems to fully commercialised and operational solutions, with several distinguishing between the readiness of individual components and that of integrated systems. The majority of respondents indicated that their solutions are modular, scalable, interoperable, and suitable for deployment across municipalities of different sizes and risk profiles.

Providers also raised considerations related to implementation conditions, including the importance of integration with existing municipal infrastructure, civil protection systems, and operational workflows. Respondents highlighted the relevance of open standards, APIs, and widely adopted protocols to ensure interoperability, data sharing, and long-term sustainability, while avoiding vendor lock-in. Cybersecurity and data protection were consistently addressed through a combination of technical, organisational, and regulatory measures, with an emphasis on GDPR compliance and secure operation in industrial and municipal environments.

For the use case of an Integrated Urban Water Resilience System, the responses indicate that the market is capable of supporting both proactive and reactive approaches, including flood early warning, scenario planning, operational control support, and coordination with emergency services. Several respondents reported experience with public-sector clients, participation in publicly funded projects, and willingness to pilot solutions with municipalities and other public authorities. There was also unanimous interest in participating in innovation procurement processes, such as PCP or PPI, and in engaging in cooperation or matchmaking with other market actors.

The discussions highlighted the potential value of structuring a future procurement in a modular and phased manner, allowing incremental adoption of functionalities and the involvement of multiple specialised actors where appropriate. Respondents emphasised that timelines, budgets, and deployment models are context-dependent and should be defined based on local needs, infrastructure, and regulatory conditions. Overall, the OMC confirms the availability of market interest, technical capability, and openness to collaboration to support further development and piloting of innovative solutions in this domain.

Annex I - Presentation of the OMC (English)

Annex II - Presentation of the OMC (Polish)

Annex III - Presentation template for the e-pitching sessions