



AcquaMind: priority intervention maps

Deliverable 2-4

Approved by the Steering Committee of CIVIS on July
2026

The CIVIS Alliance member universities

Here are the names of the universities and their acronyms as we use them in CIVIS.

Full member universities

AMU	Aix-Marseille Université
NKUA	National and Kapodistrian University of Athens
UB	University of Bucharest
ULB	Université libre de Bruxelles
UofG	University of Glasgow
UNIL	University of Lausanne
UAM	Universidad Autónoma de Madrid
SUR	Sapienza Università di Roma
PLUS	University of Salzburg
SU	Stockholm University
UT	University of Tübingen

Associate member universities

UH2C	Université Hassan II de Casablanca
UCAD	Université Cheikh Anta Diop de Dakar
WITS	University of the Witwatersrand, Johannesburg
MAK	Makerere University
UEM	Universidade Eduardo Mondlane
USF	Université de Sfax

CIVIS is co-funded by the European Union (project N°: ERASMUS-EDU-2022-EUR-UNIV-1-101089983). Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the *European Union* (EU) or the *European Education and Culture Executive Agency* (EACEA). Neither the EU nor the EACA can be held responsible for them.



CIVIS – Europe's Civic University Alliance

CIVIS is formed by the alliance of 11 leading research-intensive higher education institutions across Europe: Aix-Marseille Université, National and Kapodistrian University of Athens, Université libre de Bruxelles, University of Bucharest, University of Glasgow, University of Lausanne, Universidad Autónoma de Madrid, Sapienza Università di Roma, Paris Lodron University of Salzburg, Stockholm University and Eberhard Karls Universität Tübingen. Six prestigious African universities join CIVIS as Associate Members: Université Hassan II de Casablanca, Université Cheikh Anta Diop de Dakar, University of the Witwatersrand, Johannesburg, Makerere University, Eduardo Mondlane University, Université de Sfax.

CIVIS brings together a community of more than 470,000 students and 58,000 staff members, including 35,000 academics and researchers in Europe alone. Including Associate Members, the Alliance counts 720,000 students and 75,000 staff members.

The Authors

Cristian Ioja, Constantin Cazacu, Maria Calotă,
Ana Maria Todoran, Denisa Igescu, UB

Sabine Hennig, PLUS

Cătălina Dobre, ULB

and the entire **CIVIS Community**

Cite as: CIVIS, Europe's Civic University Alliance, & Ioja, C. Calota, M. et al. (2026), Priority intervention maps for water management in Braşov metropolitan area, CIVIS OpenLab, Acquamind project, Bucharest. CIVIS – Europe's Civic University Alliance.

1 Alliance
11 Universities
Countless Possibilities

TABLE OF CONTENTS

The CIVIS Alliance member universities.....	2
CIVIS – Europe's Civic University Alliance	3
The Authors	3
EXECUTIVE SUMMARY	5
PRIORITY INTERVENTION MAPS FOR WATER MANAGEMENT IN BRAȘOV METROPOLITAN AREA	6
1.1. Description.....	7
1.2. Methodology.....	7
1.3. Main Identified Challenges.....	8
1.4. Utility and Added Value	8
EDUCATIONAL SUPPORT – THEMATIC MAPS AND VISUAL MATERIALS	13
2.1 Description	14
2.1. Methodology.....	14
2.3. Main results	15
2.4. Utility and Added Value	15
STAKEHOLDER ENGAGEMENT.....	19
3.1. Context and purpose of the engagement process.....	20
3.2. Overview of Engagement Events	20
3.3 Stakeholder Analysis by Quadruple Helix.....	21
3.4. Stakeholder contributions to problem identification	24
3.5. Key Interests of Stakeholders	24
3. 6. Added value of the quadruple helix approach.....	25
FINAL REMARKS	26
Take home messages.....	27

EXECUTIVE SUMMARY

The AcquaMinds CIVIS OpenLab activities implemented in Braşov and Brăila in 2026 demonstrated the value of participatory and challenge-based approaches for addressing water management, climate adaptation, and urban resilience. Through stakeholder workshops, educational activities, participatory mapping, and policy alignment analyses, the project generated scientific, educational, and governance-oriented outputs that support evidence-based decision-making and strengthen local engagement in sustainability transitions.

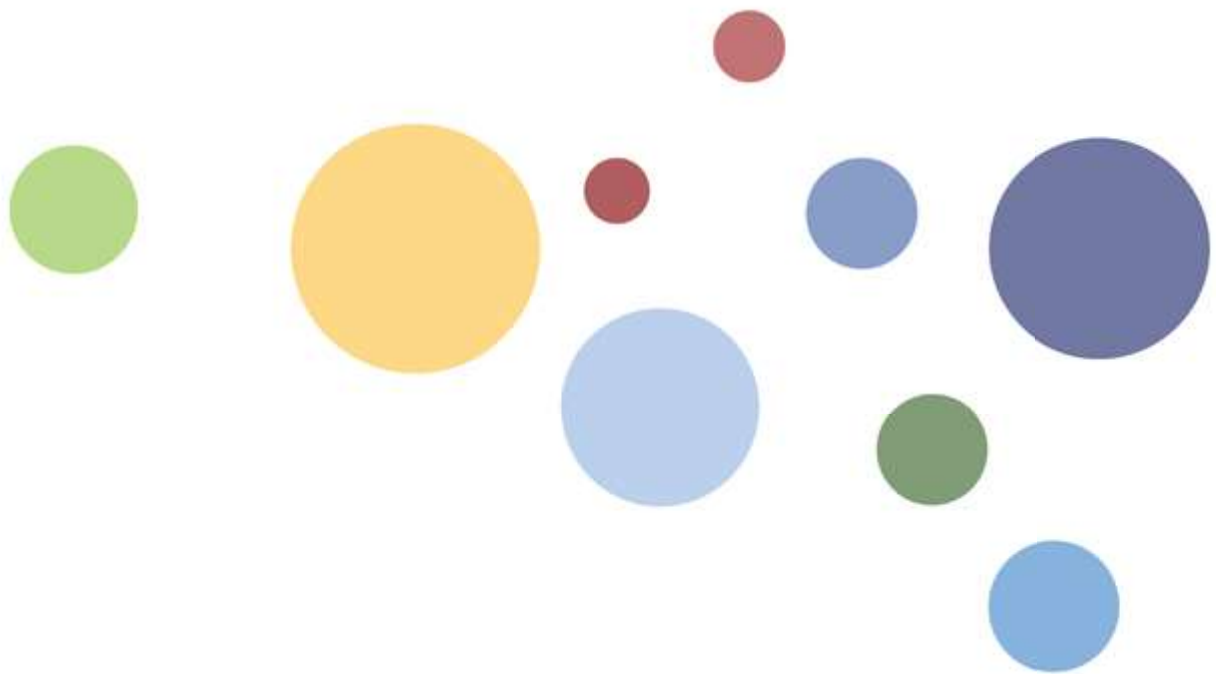
A major achievement of the project was the development of participatory priority intervention maps for the Braşov Metropolitan Area. These maps integrated local knowledge with geospatial analysis and identified key environmental pressures, including flood-prone areas, uncontrolled urban expansion, degradation of river corridors, deforestation, geomorphological hazards, and pressures on drainage systems. The mapping exercise transformed stakeholder experience into spatially explicit information that can support climate adaptation planning, watershed management, urban regeneration initiatives, and the deployment of nature-based solutions. The resulting maps have already been used to support project applications prepared by Braşov City Hall.

The educational component successfully engaged more than 240 students from seven high schools in Braşov through surveys, co-creation activities, thematic mapping, and PESTLE exercises. Students identified increasing heat waves, floods, and other climate-related risks as major concerns affecting their communities, while also proposing adaptation measures relevant to different sectors of society. The educational outputs demonstrated that young people can contribute meaningful knowledge to climate adaptation processes and highlighted the importance of environmental literacy and youth participation in local sustainability agendas.

The stakeholder engagement process followed a quadruple helix approach, bringing together public authorities, research organizations, utility providers, NGOs, students, teachers, and community representatives. The consultations revealed broad consensus regarding the need for integrated water management approaches that combine technical infrastructure, ecosystem restoration, climate adaptation, and improved governance. Stakeholders identified recurrent flooding, insufficient maintenance of drainage infrastructure, rapid urban expansion, weak institutional coordination, degradation of aquatic ecosystems, and limited integration of nature-based solutions as the most important challenges affecting metropolitan resilience.

The project also demonstrated strong alignment with major European policy frameworks, including the Water Framework Directive, the EU Climate Adaptation Strategy, the EU Biodiversity Strategy 2030, and the principles promoted by the CIVIS OpenLab model. Stakeholder discussions consistently emphasized integrated water governance, ecological restoration, green infrastructure, urban resilience, social inclusion, and participatory decision-making, confirming that local priorities are largely consistent with European sustainability objectives. At the same time, participants identified several implementation barriers, including fragmented institutional responsibilities, continued development in risk-prone areas, maintenance deficits, and insufficient incentives for adopting adaptation measures.

AcquaMinds shows that combining scientific knowledge, stakeholder expertise, local experience, and educational engagement can generate practical and policy-relevant outputs for climate resilience. The project produced decision-support tools, strengthened stakeholder networks, increased awareness among younger generations, and provided a replicable model for participatory water management within the CIVIS Alliance and beyond.



1

PRIORITY INTERVENTION MAPS FOR WATER MANAGEMENT IN BRAȘOV METROPOLITAN AREA

1.1. Description

As part of the **AcquaMinds CIVIS Open Lab activities conducted in the Braşov Metropolitan Area**, a series of participatory workshops (18 May, 21-22 May) brought together local stakeholders, researchers, students, public authorities, and community representatives to identify and spatially assess current and emerging water-related challenges. One of the key tangible outputs of these workshops consists of two stakeholder-generated maps that document critical environmental pressures, water management issues, and land-use conflicts affecting the metropolitan area and the Săcele–Târlungeni sector.

The maps represent the collective knowledge of participants and capture local perceptions regarding areas vulnerable to flooding, uncontrolled urban expansion, degradation of river corridors, improper waste disposal, deforestation, loss of urban green infrastructure, geomorphological hazards, and pressures on drainage systems. By integrating local expertise with spatial analysis, the maps provide an evidence-based foundation for future planning and decision-making processes related to water resilience and climate adaptation.

The development of the participatory maps was significantly supported by the expertise provided by **Université libre de Bruxelles (ULB)** and **Paris Lodron University of Salzburg (PLUS)** within the AcquaMinds CIVIS Open Lab framework.

Université libre de Bruxelles (ULB) contributed to the design of the participatory mapping process by bringing expertise in stakeholder engagement, collaborative governance, and co-creation methodologies. ULB researchers supported the development of the workshop structure, ensuring that local knowledge, practitioner experience, and scientific perspectives were effectively integrated into the identification and spatial prioritization of water management challenges. Their contribution helped establish an inclusive dialogue among participants and strengthened the methodological robustness of the geodesign exercise.

Paris Lodron University of Salzburg (PLUS) provided expertise in spatial analysis, geoinformatics, and environmental planning. The university contributed to the conceptual development of the mapping approach, including the integration of geographic information systems (GIS), spatial data interpretation, and the translation of stakeholder inputs into cartographic products. Drawing on its strong background in Earth observation and geospatial technologies, PLUS supported the transformation of workshop outcomes into spatially explicit representations of environmental vulnerabilities and management challenges.

Together, ULB and PLUS played a key role in bridging scientific knowledge and local stakeholder perspectives, ensuring that the resulting maps reflect both evidence-based spatial analysis and place-based understanding of water-related challenges in the Braşov Metropolitan Area. Their contributions strengthened the quality, credibility, and applicability of the maps as decision-support tools for integrated water management, climate adaptation, and nature-based solutions planning.

1.2. Methodology

The maps were developed through a **participatory geodesign and stakeholder mapping methodology**, implemented during the AcquaMinds workshop organized in Braşov. The approach combined local knowledge with spatial analysis and collaborative decision-making techniques. The process followed several stages:

1. Stakeholder Engagement and Problem Identification

Participants representing different sectors and institutions were invited on 18 May, 2026, in Braşov city hall room, to identify current and emerging water management challenges based on their professional experience, local knowledge, and institutional responsibilities. Discussions focused on environmental pressures, climate-related risks, land-use changes, and vulnerabilities affecting water resources and ecosystem services.

2. Collaborative Spatial Delineation

During facilitated workshop session, stakeholders located and delineated areas of concern directly on

geospatial base maps. This exercise enabled the integration of expert knowledge, practical experience, and local observations into a shared spatial framework.

3. GIS Processing and Cartographic Representation

The information collected during the workshop was subsequently digitized and integrated into a Geographic Information System (GIS). The identified problems were georeferenced, classified, and visualized using spatial datasets including hydrological networks, administrative boundaries, transportation infrastructure, land use, and Digital Elevation Models (DEM).

4. Validation and Interpretation

The resulting maps were reviewed against the workshop discussions to ensure consistency with stakeholder perceptions and to accurately represent priority management issues within the metropolitan area.

1.3. Main Identified Challenges

The participatory process highlighted several interconnected challenges:

- Flood-prone areas requiring improved stormwater and watershed management;
- Unregulated waste disposal within river channels, affecting water quality and increasing blockage risks during high-flow events;
- Rapid and poorly coordinated residential development, generating pressures on drainage systems and urban infrastructure;
- Deforestation and removal of mature trees, reducing ecosystem services such as runoff regulation, erosion control, cooling, and biodiversity support;
- Landslide-prone sectors and areas exposed to geomorphological instability;
- Increasing anthropogenic pressures associated with transport infrastructure development and urban expansion.

1.4. Utility and Added Value

The maps represent a valuable decision-support tool for local and regional planning processes. Their importance extends beyond the identification of environmental problems, as they provide a shared evidence base for collaborative water governance.

More specifically, the maps can support:

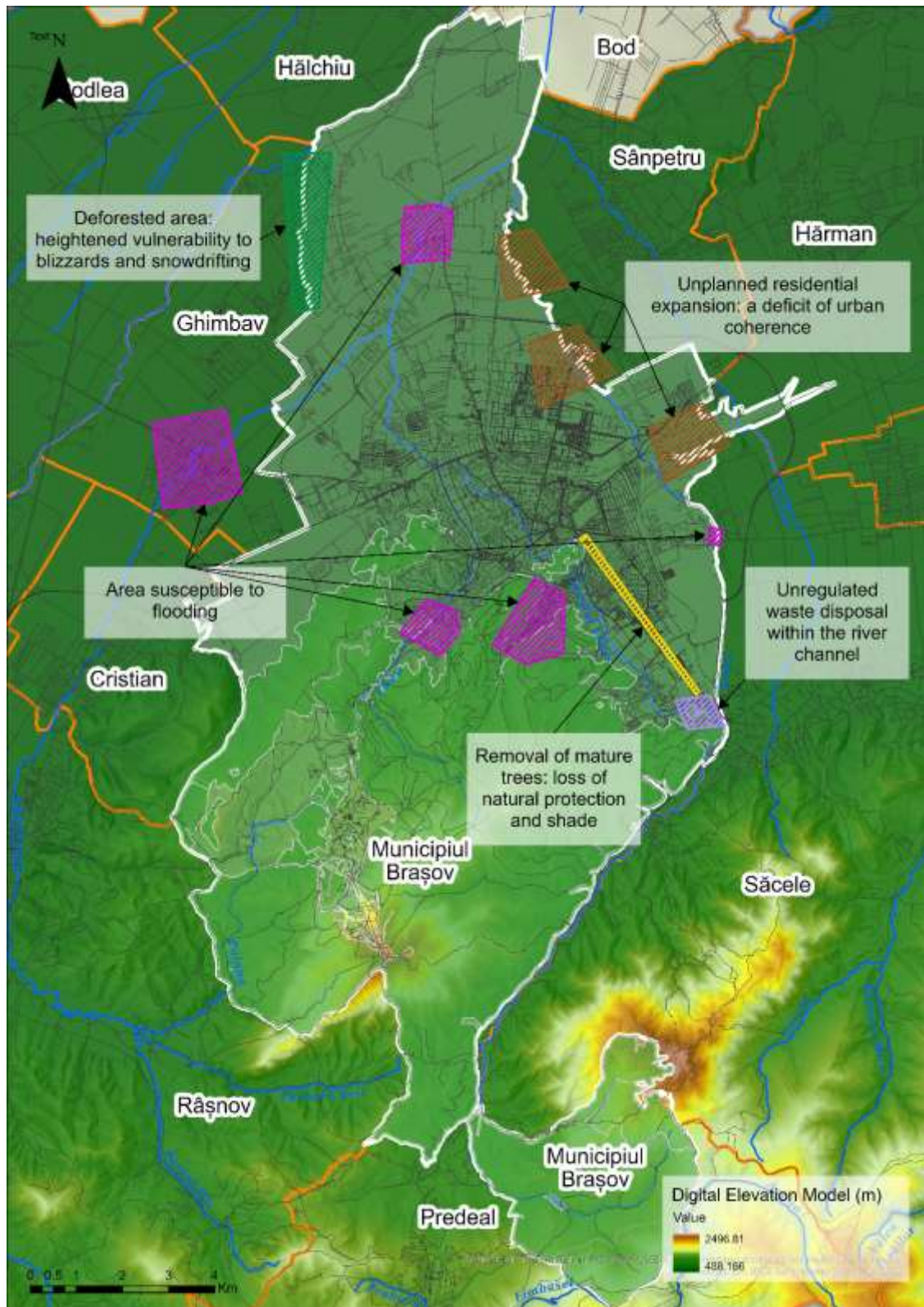
- Integrated water resource management and watershed planning;
- Development of climate change adaptation and resilience strategies;
- Identification of priority areas for Nature-based Solutions (NbS);
- Risk assessment and mitigation planning for floods and landslides;
- Improved coordination between municipalities within the metropolitan area;
- Stakeholder engagement and public participation in environmental decision-making;

- Future research, monitoring, and educational activities within the AcquaMinds framework.

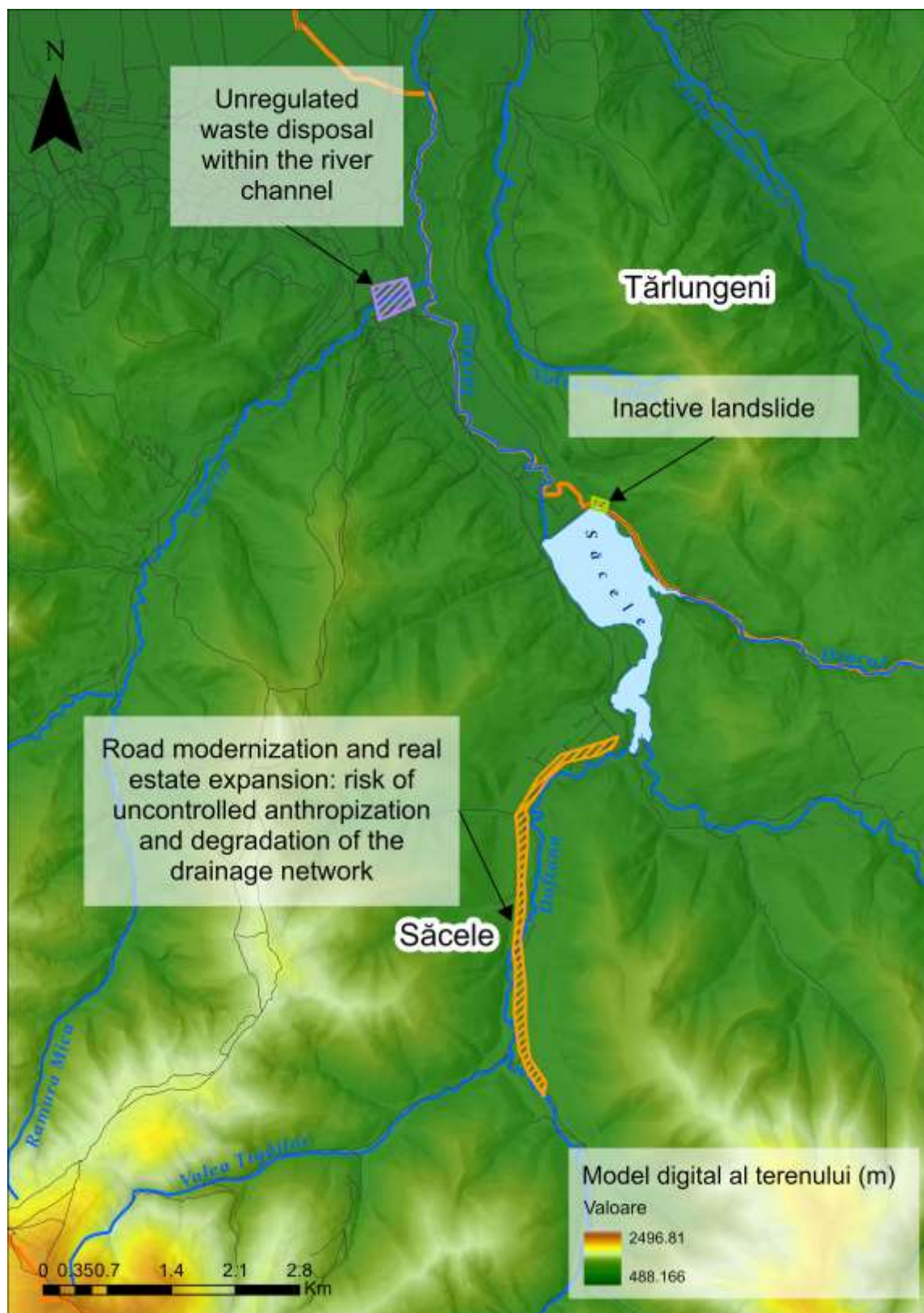
By combining scientific spatial analysis with stakeholder knowledge, the maps contribute to a more comprehensive understanding of the interactions between water management, urban development, ecosystem health, and climate resilience in the Braşov Metropolitan Area. As such, they constitute an important AcquaMinds deliverable, supporting the CIVIS Alliance objective of fostering co-creation, participatory governance, and innovative solutions for sustainable water management across European metropolitan regions.

The maps were already used for support the urban regeneration projects, submitted by Braşov city Hall in two different project competitions.

The collaboration between the **University of Bucharest, ULB, and PLUS** represents a concrete example of the CIVIS Alliance approach, where interdisciplinary expertise and international cooperation are mobilized to co-create innovative solutions for sustainability challenges. Through this joint effort, the partners not only produced valuable cartographic outputs but also fostered knowledge exchange, capacity building, and long-term collaboration among academic institutions and local stakeholders.



Areas with different challenges relevant for water management in Braşov metropolitan area



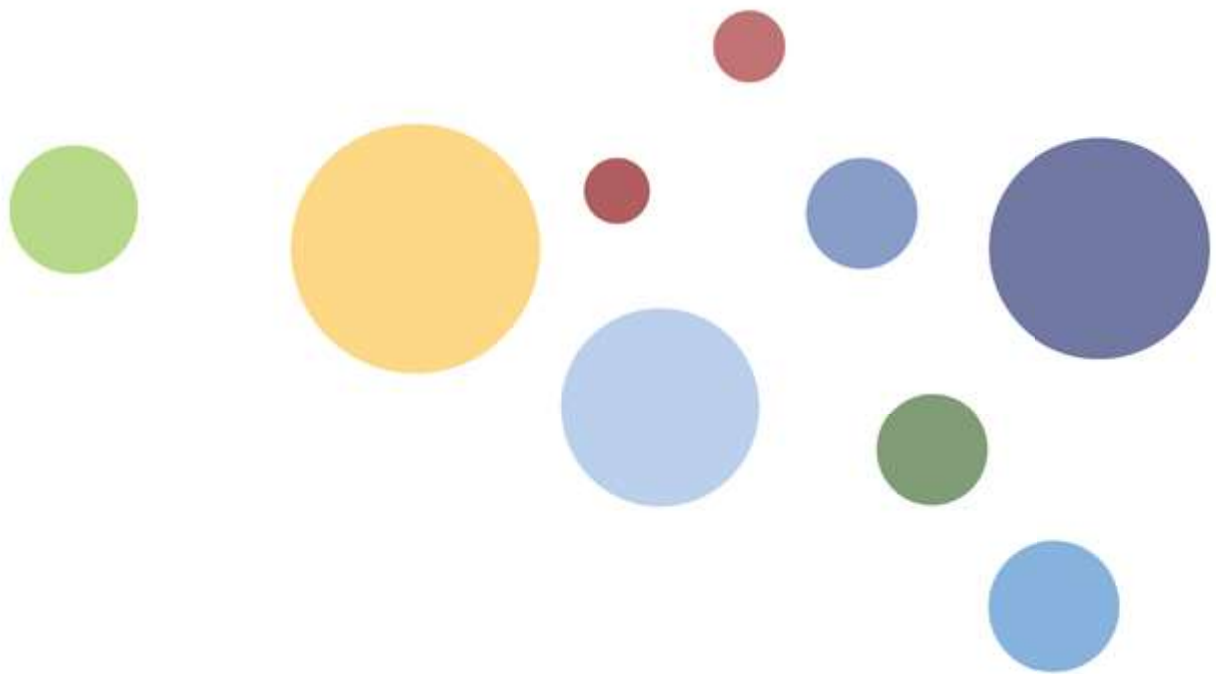
Areas with different challenges relevant for water management in Braşov metropolitan area – Săcele reservoir zoom



Workshop 1 – Mapping areas with water management challenges in Brasov metropolitan area



Workshop 1 – Mapping areas with water management challenges in Brasov metropolitan area



2

EDUCATIONAL SUPPORT – THEMATIC MAPS AND VISUAL MATERIALS

Youth workshops outputs

2.1 Description

As part of the **AcquaMinds CIVIS Open Lab activities conducted in the Braşov Metropolitan Area**, a series of seven participatory workshops (21-22 May) brought together students from seven high colleges of Braşov to identify and spatially assess current and emerging water-related challenges. One of the key tangible outputs of these workshops consists of students-generated map that document critical neighbors because of water management issues.

The maps represent the collective knowledge of participants and capture local perceptions regarding areas vulnerable to flooding. By integrating local expertise with spatial analysis, the maps provide an evidence-based foundation for future planning and decision-making processes related to water resilience and climate adaptation.

The development of the participatory maps was significantly supported by the expertise provided by **Université libre de Bruxelles (ULB)** and **Paris Lodron University of Salzburg (PLUS)** within the AcquaMinds CIVIS Open Lab framework.

Université libre de Bruxelles (ULB) contributed to the design of the participatory mapping process by bringing expertise in students engagement, and co-creation methodologies. ULB researchers supported the development of the workshop structure, ensuring that local knowledge, practitioner experience, and scientific perspectives were effectively integrated into the identification and spatial prioritization of water management challenges.

Paris Lodron University of Salzburg (PLUS) provided expertise in spatial analysis, geoinformatics, and environmental planning. The university contributed to the conceptual development of the mapping approach, including the integration of geographic information systems (GIS), spatial data interpretation, and the translation of stakeholder inputs into cartographic products. Drawing on its strong background in Earth observation and geospatial technologies, PLUS supported the transformation of workshop outcomes into spatially explicit representations of environmental challenges.

2.1. Methodology

The maps were developed through a survey and co-creation activity, implemented during the AcquaMinds 7 workshops organized in seven high colleges in Braşov. The approach combined local knowledge with spatial analysis and collaborative decision-making techniques.

The process followed several stages:

1. Survey to identify the neighbors with flood challenges

Students were invited on 21 and 22 May, 2026, in seven high colleges of Braşov, to identify current and emerging water management challenges based on local knowledge. 242 questionnaires were applied to identify climate-related risks, vulnerabilities affecting water resources and neighbors impacted by floods.

2. Collaborative Delineation

During facilitated workshop session, students identify on PESTLE wheel climate risks, impacts, and solutions related to floods and drought.

3. GIS Processing and Cartographic Representation

The information collected during the survey was subsequently digitized and integrated into a Geographic Information System (GIS). The identified problems were georeferenced, classified, and visualized using spatial datasets including hydrological networks, administrative boundaries, transportation infrastructure, land use, and Digital Elevation Models (DEM).

4. Validation and Interpretation

The resulting maps were reviewed against the workshop discussions to ensure consistency with public institution perceptions and to accurately represent priority management issues within the Braşov metropolitan area.

2.3. Main results

The participatory process highlighted several interconnected challenges:

- Increasing of the intensity and magnitude of some climate risks, such as the increasing of the temperature, of the heat waves, and of the flash floods.
- Importance of considering climate adaptation solutions in all sectors of the society

2.4. Utility and Added Value

The educational materials represent a valuable tool for educational process for all categories of stakeholders.

More specifically, the educational materials include:

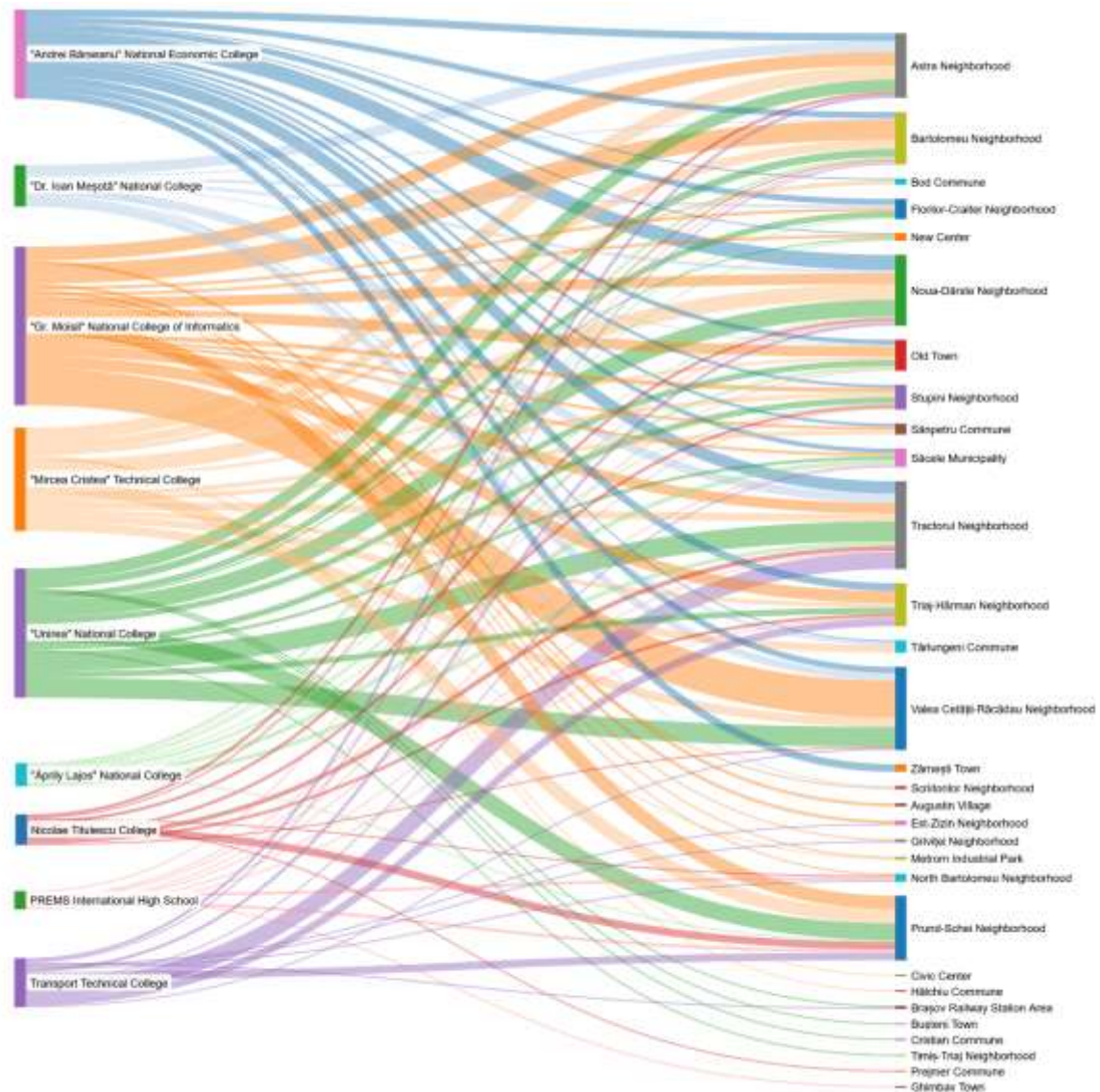
- Maps of perception of floods in different neighbors of Braşov;
- Perception of different climatic risks;
- Representation of different measures represented on the PESTLE wheel.



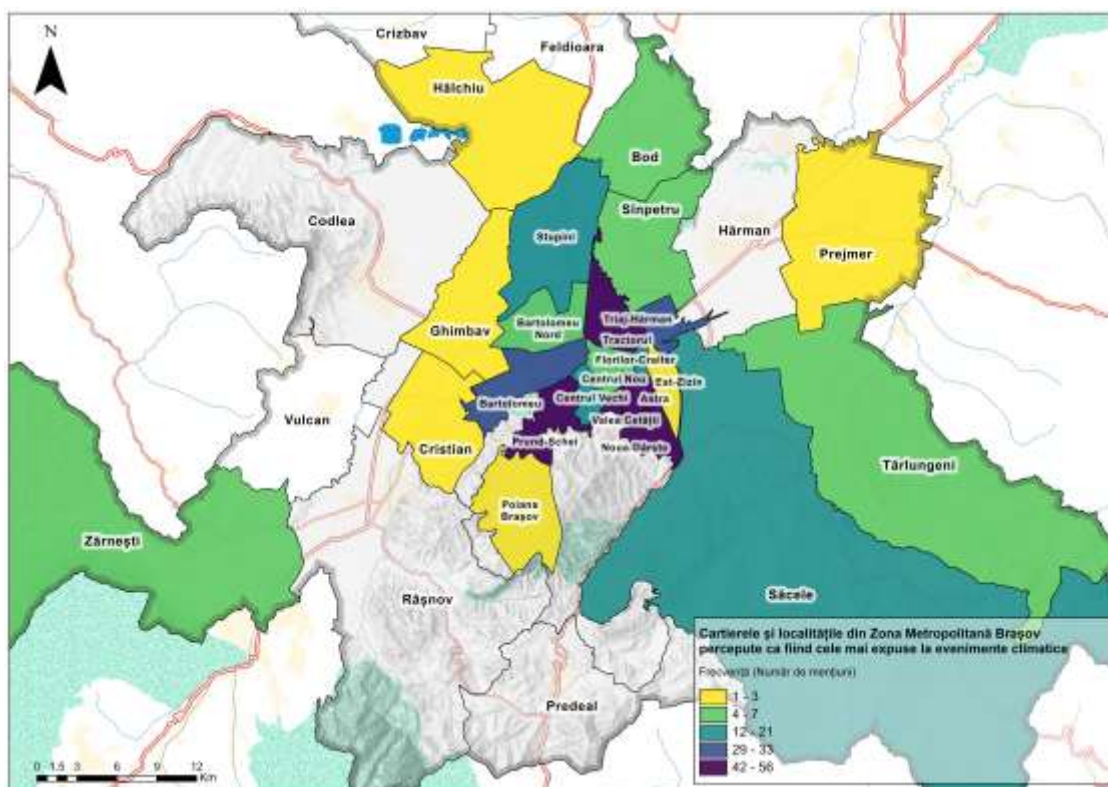
Cocreation session with the youth to identify the water management challenges – 21 May 2026, Braşov



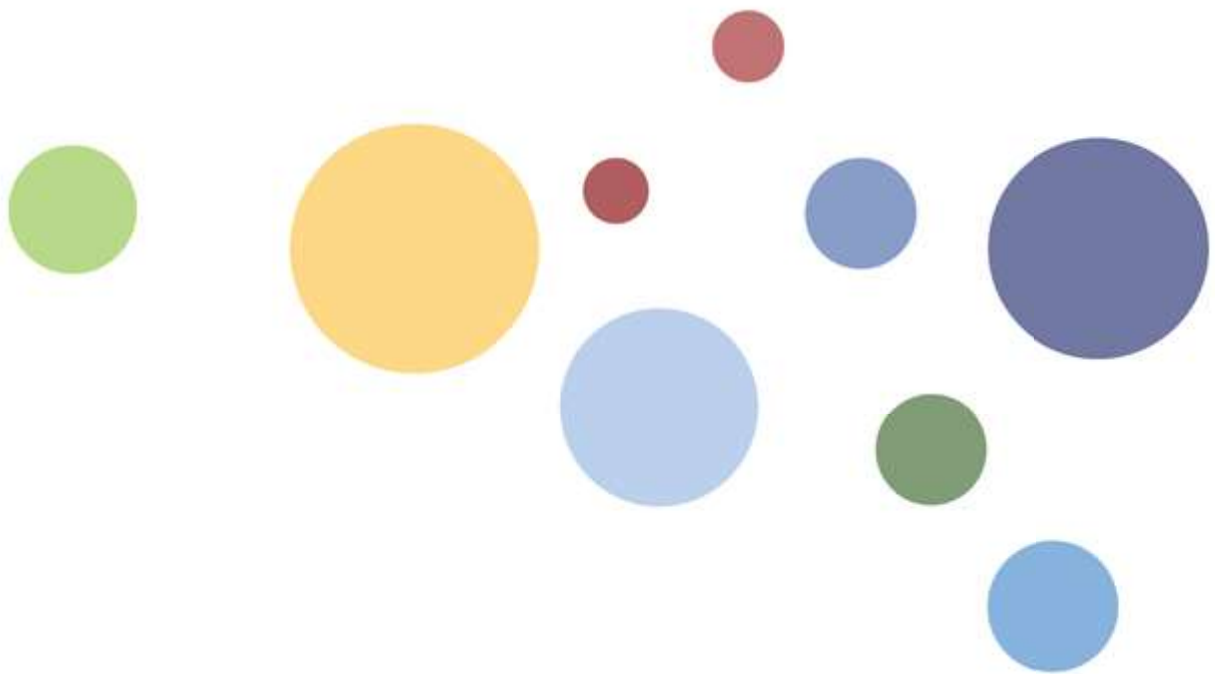
PESTLE Wheel completed in Braşov high colleges



Perception of floods impact around different high colleges (in the left) and different neighbors (in the right)



Maps of flood impact perception around the youth in Braşov city



3

STAKEHOLDER ENGAGEMENT

3.1. Context and purpose of the engagement process

The AcquaMinds CIVIS OpenLab activities were designed as participatory processes aimed at identifying key challenges related to water management, climate adaptation, and urban resilience in Romanian metropolitan and urban contexts. The main engagement activities took place in Braşov on **18 May 2026**, **21–22 May 2026**, and **23 June 2026**, complemented by a related AcquaMinds event in **Brăila on 30 June 2026**. The activities were organized by the University of Bucharest within the CIVIS Alliance and in partnership with local institutions, with a strong focus on co-creating solutions for water management in the Braşov Metropolitan Area.

The stakeholder engagement process followed the logic of the **quadruple helix model**, bringing together public authorities, academia and research institutions, civil society and community actors, and socio-economic stakeholders. This structure allowed the project team to combine institutional knowledge, technical expertise, local experience, and community perceptions in order to identify water-related vulnerabilities, spatial priority areas, and possible nature-based or hybrid solutions.

3.2. Overview of Engagement Events

3.2.1. Braşov Workshop – 18 May 2026

The workshop held on 18 May 2026 at Braşov City Hall focused on the identification and selection of nature-based solutions for improving water management in the Braşov Metropolitan Area. The event brought together representatives of Braşov City Hall, Braşov Metropolitan Agency, Braşov Water Company, the Water Management System, the National Meteorological Administration, the Inspectorate for Emergency Situations, universities, research institutes, and NGOs such as WWF. The discussions addressed recurrent flooding, stormwater management, urban expansion, groundwater vulnerability, insufficient maintenance of drainage infrastructure, river degradation, waste disposal in river channels, deforestation, and the implementation barriers faced by nature-based solutions. The stakeholder inputs were subsequently used to develop participatory maps showing critical areas for water management intervention in the Braşov Metropolitan Area.

3.2.2. Braşov Youth and Educational Activities – 21–22 May 2026

The activities carried out on 21–22 May 2026 involved young people from Braşov and were connected to the broader AcquaMinds objective of integrating community perspectives into climate adaptation and water management debates. The activities involved over 250 students from seven schools in Braşov, generating relevant insights on how young people perceive heat, lack of shade, insufficient green spaces, flooding, and the need for more inclusive and climate-resilient urban regeneration. These activities expanded stakeholder engagement beyond institutional actors and introduced an educational and community-based dimension into the project. Students contributed by identifying everyday vulnerabilities related to climate change and water management, especially in relation to public spaces, school environments, urban greenery, and accessibility to climate adaptation solutions.

3.2.3. Braşov Workshop – 23 June 2026

The workshop organized on 23 June 2026 at the Apollonia Centre in Braşov focused on integrating the perspective of vulnerable groups into urban regeneration projects, with an emphasis on water management, climate adaptation, and social equity. The event gathered 27 representatives of local administration, academia, NGOs, and the educational community, including representatives of Braşov City Hall, WWF Romania, teachers, and students from local high schools.

This workshop connected AcquaMinds with the CARMINE Living Lab Braşov and emphasized the need to ensure that nature-based solutions and water management interventions are not only technically feasible, but also socially inclusive and accessible to vulnerable groups.

3.2.4. Brăila AcquaMinds Event

The Brăila AcquaMinds event contributed to the territorial extension of the project's participatory approach by testing the relevance of similar water management and climate adaptation discussions in a different urban and environmental context. While the Braşov events focused strongly on mountain-metropolitan hydrological risks, urban expansion, stormwater management, and nature-based solutions, the Brăila event can be understood as broadening the AcquaMinds dialogue toward riverine and lowland urban contexts, where water management challenges are likely to relate more strongly to floodplain governance, Danube-related risks, urban drainage, ecosystem restoration, and community awareness.

The report treats this event as part of the wider AcquaMinds stakeholder engagement strategy and highlights its role in comparative learning, transferability of methods, and strengthening the CIVIS OpenLab approach across different Romanian urban contexts. The Braşov activities were strongly supported by the Living Lab Braşov developed in Carmine project, funded in the program Horizon Europe by European Commission and coordinated by Romanian Administration of Meteorology.

3.3 Stakeholder Analysis by Quadruple Helix

3.3.1. Public Authorities and Governance Actors

Braşov City Hall

Braşov City Hall acted as a key institutional partner and host of the 18 May and 23 June workshops, providing legitimacy, access to relevant administrative departments, and a direct connection with local urban planning and climate adaptation priorities. Its contribution was particularly important in framing water management as a metropolitan governance issue rather than a purely technical infrastructure problem. Representatives of the municipality contributed to discussions on urban expansion, public space regeneration, green infrastructure, and the integration of climate adaptation into local development policies. Their main interest lies in reducing flood risk, improving urban resilience, coordinating regeneration projects, and aligning municipal investments with sustainability objectives.

Braşov Metropolitan Agency

The Braşov Metropolitan Agency contributed by bringing a metropolitan-scale perspective to water management challenges. The uploaded workshop centralization shows that metropolitan coordination was repeatedly identified as a key issue, especially because many hydrological problems exceed the administrative boundaries of Braşov Municipality and involve surrounding settlements such as Ghimbav, Sânpetru, Săcele, Târlungeni, Cristian, and Râşnov. Its main contribution was to connect water management problems with spatial planning, peri-urban development, inter-municipal cooperation, and territorial governance. Its interest is linked to better coordination among municipalities, preventing fragmented urban expansion, and integrating water-sensitive planning at metropolitan scale.

Inspectorate for Emergency Situations Braşov

The representative of the Inspectorate for Emergency Situations played a highly visible role during the 18 May discussions. According to the workshop notes, this stakeholder identified several priority flood-risk areas, including Răcădău, Schei, Ghimbav, and Stupini, and explained the causes of flooding in relation to heavy precipitation, surface sealing, clogged ANIF channels, construction close to dikes, and increasing urban density. The main contribution of this stakeholder was operational and risk-oriented. The proposed solutions were mainly engineering-based, including retention basins, automatic pumping stations, widening and raising bridges and dikes, and modernization of sewage systems. Its core interest is to reduce emergency exposure, improve preparedness, and increase the capacity of authorities to respond to extreme hydrological events.

Water Management System / SGA Braşov

The Water Management System contributed to the institutional understanding of water governance responsibilities. The uploaded notes suggest that SGA's role was discussed in relation to river management, responsibilities for water bodies, and coordination with the Braşov Water Company. However, the notes also indicate tensions and perceived coordination gaps between SGA and other institutions, especially regarding who manages specific components of the water system. SGA's interest is connected to the regulation and maintenance of watercourses, flood protection infrastructure, hydrological safety, and compliance with water management responsibilities. Its contribution to problem identification was important because it brought into

the discussion the institutional complexity of managing river channels, drainage systems, and flood-prone areas.

National Meteorological Administration / MeteoRo

Representatives of the National Meteorological Administration contributed mainly through expertise on early warning, extreme precipitation, meteorological forecasting, and climate-related hazards. The workshop notes indicate that MeteoRo representatives focused on the development of systems for early warnings related to torrential rainfall and flood risks. Their primary interest is to improve climate-risk preparedness through better forecasts, faster warning dissemination, and stronger links between meteorological information and local emergency response. Their contribution helped connect water management with climate change adaptation and disaster risk reduction. MeteoRo is also the coordinator of the project Carmine, in which was developed the Living Lab Braşov.

3.3.2. Academia and Research Institutions

University of Bucharest

The University of Bucharest acted as the main academic coordinator and facilitator of the AcquaMinds activities. It introduced the CIVIS OpenLab framework, presented the project objectives, facilitated stakeholder dialogue, and connected the Braşov activities with broader European cooperation within the CIVIS Alliance. Its contribution included methodological design, facilitation of participatory mapping, integration of stakeholder inputs, and conceptual framing around nature-based solutions, climate adaptation, and urban resilience. The University of Bucharest also connected AcquaMinds with the CARMINE Living Lab Braşov, strengthening the relevance of the engagement activities for longer-term metropolitan resilience planning. The main interest of the University of Bucharest is to support co-creation between academic and non-academic actors, generate applied knowledge, produce educational and decision-support materials, and test participatory methods for climate-resilient water management.

Transilvania University of Braşov

Transilvania University of Braşov participated as a local academic actor, contributing contextual knowledge about the metropolitan area and strengthening the connection between research, education, and local territorial challenges. Its interest is linked to applied research, local sustainability, student engagement, and the development of place-based solutions for climate adaptation and urban-environmental management.

National Institute for Research and Development in Forestry / INCDS Braşov

The INCDS representative contributed with expertise related to forest systems, catchment functioning, sedimentation, and the Săcele reservoir. The workshop notes indicate that this stakeholder emphasized the importance of dredging the Săcele reservoir and discussed the possible impacts of future road development along the Doftana River, including the risk of associated real-estate expansion. Its main interest is to ensure that water management decisions consider forest cover, erosion control, sedimentation processes, and ecosystem stability. Its contribution was particularly important in connecting hydrological problems with land cover dynamics and upstream catchment management.

International Academic Partners: ULB and PLUS

Although their direct role in the local events is not detailed in the uploaded stakeholder notes, ULB and Paris Lodron University of Salzburg contributed to the broader AcquaMinds framework by supporting the development of participatory, interdisciplinary, and spatially informed approaches. Their role is relevant for translating the Braşov engagement outcomes into educational materials, comparative learning outputs, and transferable OpenLab methodologies. ULB's interest is primarily related to participatory governance, co-creation, and stakeholder-based urban sustainability processes, while PLUS contributes expertise in spatial thinking, geoinformatics, environmental planning, and the translation of local knowledge into structured analytical materials. Together with the University of Bucharest, these partners help ensure that the stakeholder inputs from Braşov and Brăila are not isolated local discussions, but become part of a broader CIVIS learning and cooperation process.

3.3.3. Civil Society, NGOs and Community Actors

WWF Romania

WWF Romania played a significant role in bringing nature-based solutions into the discussion. The uploaded notes indicate that the WWF representative was the only participant who explicitly introduced nature-based

solutions during one of the discussions, particularly by referring to the restoration of lateral connectivity of watercourses and by giving the example of interventions in Mahmudia. WWF's contribution was essential because it shifted the discussion from predominantly grey infrastructure solutions toward ecological restoration, river connectivity, biodiversity, and community benefits. Its interest is to promote ecosystem-based approaches, improve river health, and demonstrate that water management solutions can generate ecological, social, and even tourism-related benefits.

Students and Teachers from Braşov Schools

Students and teachers became particularly important during the 21–22 May activities and the 23 June workshop. More than 250 students from seven high schools participated in the May activities, while the 23 June workshop involved students and teachers from Colegiul Național de Informatică „Grigore Moisil” and Colegiul de Științe „Grigore Antipa” Braşov. Their contribution was to introduce the perspective of young people into discussions about water management, climate adaptation, heat exposure, green spaces, urban regeneration, and social equity. Their interest is direct and long-term: they are future users of urban spaces, future beneficiaries of climate adaptation policies, and potential ambassadors for sustainable water use and inclusive urban regeneration.

Local Communities and Vulnerable Groups

The 23 June workshop explicitly focused on the integration of vulnerable groups (youth) into urban regeneration and climate adaptation projects. This category contributed by highlighting the need for water management and nature-based solutions to be socially equitable, accessible, and relevant for different categories of users. Their interest is related to protection from climate risks, access to green and blue infrastructure, improved public spaces, better environmental quality, and reduced exposure to flooding, heat, and poorly planned urban expansion.

3.3.4. Economic, Utility and Technical Actors

Braşov Water Company

Braşov Water Company was one of the most active technical stakeholders. According to the workshop notes, its representatives highlighted institutional dysfunctions in water management, problems of urban planning, insufficient enforcement of legislation, pressure from uncontrolled built development, and challenges related to the capacity of sewerage and stormwater systems.

The company contributed practical knowledge on water supply, wastewater management, illegal water use, network capacity, drainage, and the need for better system maintenance. It also discussed water education activities carried out with students during the Green Week in Târlungeni.

Its interest lies in improving infrastructure performance, reducing network losses and illegal consumption, ensuring reliable water supply, expanding and maintaining sewerage systems, and reducing the pressure generated by poorly coordinated urban expansion.

ANIF-related Drainage Infrastructure Actors

Although ANIF was not listed as a direct participant in the uploaded notes, ANIF channels were repeatedly mentioned as part of the problem diagnosis. The notes indicate that clogged ANIF channels can no longer efficiently collect and transport water, contributing to runoff and flood risk.

The relevance of this stakeholder category lies in drainage maintenance, agricultural and peri-urban water management, and flood prevention. Its institutional interest would be to maintain hydraulic functionality and adapt drainage infrastructure to new urban and climate pressures.

Real-Estate and Development Interests

Real-estate developers were not described as direct participants, but real-estate expansion was one of the most frequently discussed pressures. The workshop notes mention accelerated development in Schei and Stupini, continued construction in flood-prone areas, and the transformation of around 1,150 hectares of agricultural land into built-up areas between 2006 and 2018.

This stakeholder category contributes indirectly to the identification of problems because many water management challenges are linked to land sealing, insufficient green space, construction near dikes, expansion into vulnerable areas, and weak integration of drainage needs into development projects. Its interest is economic development and land valorisation, but the engagement process shows the need to align this interest with stricter planning rules, permeability requirements, green infrastructure, and flood-risk restrictions.

3.4. Stakeholder contributions to problem identification

The engagement process showed that different stakeholder categories identified different but complementary dimensions of water management problems.

Public authorities and emergency actors emphasized flood risk, emergency response, hydraulic infrastructure, and the vulnerability of built-up areas. They identified priority locations such as Răcădău, Schei, Ghimbav, Stupini, Durbav, and areas affected by dike-related vulnerabilities or insufficient drainage capacity.

Water utility actors emphasized operational problems, including insufficient stormwater collection capacity, illegal water consumption, maintenance deficits, difficulties in extending utilities in Stupini, the existence of former wells in the Tractorul/Rulmentul area, and the need to rehabilitate underground networks.

Urban planning and metropolitan governance actors emphasized uncontrolled urbanization, impermeabilization, fragmented planning, construction in vulnerable areas, and insufficient regulation of green spaces. Their contribution was important in linking water management to land-use change and governance failures.

Research and environmental actors emphasized catchment-level processes, forest degradation, sedimentation, landslides, ecological status of watercourses, and the need for nature-based solutions. WWF contributed particularly to the identification of ecosystem restoration opportunities, while INCDS highlighted the Săcele reservoir and Doftana corridor as sensitive areas.

Students and community actors emphasized lived experience, including the lack of shade, insufficient green areas, exposure to heat, public space quality, and everyday vulnerability to climate change. Their involvement made the process more inclusive and helped translate technical water management debates into issues that are meaningful for local communities.

3.5. Key Interests of Stakeholders

The engagement process revealed a diversity of stakeholder interests:

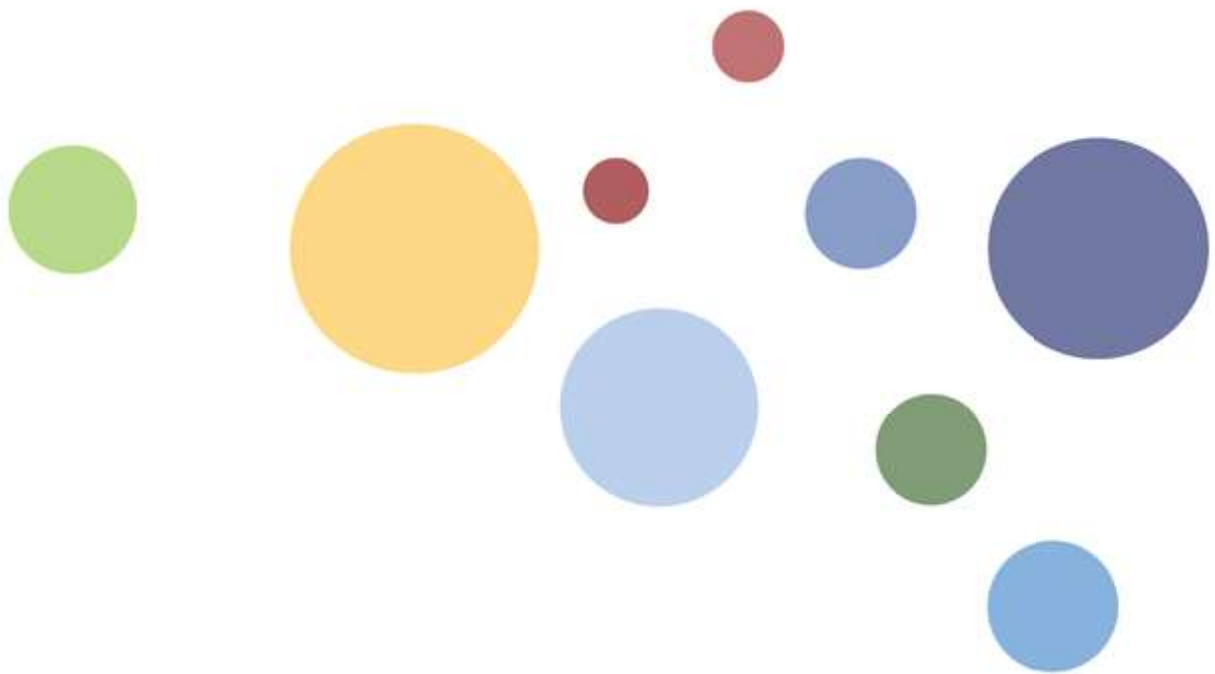
- Local authorities are interested in reducing flood risk, improving urban resilience, coordinating investments, and ensuring that urban regeneration projects respond to climate adaptation needs.
- Metropolitan governance actors are interested in inter-municipal coordination, coherent spatial planning, and the prevention of fragmented development.
- Emergency institutions are interested in risk reduction, preparedness, rapid response, and the protection of people and infrastructure.
- Water management and utility operators are interested in network efficiency, infrastructure maintenance, reliable supply, wastewater and stormwater capacity, and reducing illegal or excessive water consumption.
- Meteorological actors are interested in improving early warning systems and linking climate information with institutional decision-making.
- Academic and research actors are interested in producing applied knowledge, testing participatory methods, developing educational outputs, and supporting evidence-based decision-making.
- NGOs are interested in ecosystem restoration, river connectivity, biodiversity, nature-based solutions, and community benefits.
- Students, schools and local communities are interested in healthier, safer, greener, and more inclusive urban environments.
- Economic and development actors are interested in land development and investment opportunities, but the engagement process highlighted the need to regulate these interests in accordance with hydrological risks and climate adaptation objectives.

3. 6. Added value of the quadruple helix approach

The quadruple helix approach proved valuable because it avoided a narrow technical interpretation of water management. Instead, water-related problems were discussed as part of a wider system linking hydrology, urbanization, infrastructure, social vulnerability, climate change, land-use planning, education, and ecosystem services.

The public sector provided legitimacy, regulatory perspective, and operational knowledge. Academia and research institutions contributed methodological structure, spatial analysis, and conceptual framing. Civil society and community actors brought environmental advocacy and lived experience. Economic and technical stakeholders provided practical knowledge on infrastructure, utility management, and development pressures.

This structure enabled the AcquaMinds project to generate outputs that are both scientifically informed and socially grounded, including participatory maps, educational materials, stakeholder-based problem diagnoses, and future pathways for nature-based and hybrid water management solutions.



4

FINAL REMARKS

The AcquaMinds stakeholder engagement process in Braşov and Brăila demonstrated that water management challenges are strongly interconnected with climate change, urban expansion, infrastructure maintenance, social equity, and environmental degradation. In Braşov, stakeholders identified flood-prone areas, clogged drainage systems, pressure from real-estate development, vulnerable river corridors, sedimentation problems, illegal water use, insufficient green infrastructure, and weak interinstitutional coordination as major concerns.

The May and June activities showed that the AcquaMinds approach successfully engaged not only technical and institutional actors, but also young people and community representatives. This expanded the discussion from infrastructure and risk management toward inclusive climate adaptation, urban regeneration, and the social value of nature-based solutions.

The Brăila event adds an important comparative dimension to the project, allowing AcquaMinds to test the transferability of participatory water management methodologies across different territorial contexts. Together, the activities strengthen the CIVIS OpenLab model as a platform for co-creation, stakeholder learning, and evidence-based planning for sustainable and inclusive water management.

Take home messages

- Participatory mapping identified priority intervention areas related to flooding, urban expansion, ecosystem degradation, and infrastructure deficits.
- Water management challenges are strongly interconnected with climate change, land-use planning, urbanization, and ecosystem services.
- More than 240 students contributed valuable insights on climate risks, demonstrating the importance of youth participation in adaptation planning.
- Stakeholders showed strong support for combining grey infrastructure solutions with nature-based solutions and ecosystem restoration approaches.
- The project findings are highly aligned with European policies on water management, biodiversity conservation, climate adaptation, and participatory governance.
- Institutional fragmentation, weak coordination, and continued development pressures remain the main barriers to effective implementation of resilience measures.