ISSN 1831-9424

European Commission

WATER RESILIENCE EXPERIMENT

Gathering learnings through multilevel governance for innovative policymaking at the European Commission

EU Policy Lab

JRC SCIENCE FOR POLICY REPORT

DESIGN

COLLABORATION

IMPLEMENTATION

2025

Joint Research Centre

EUR 40186

Contact information
EU Policy Lab
Unit S.1 EU Policy Lab: Foresight, Design and Behavioural Insights
Joint Research Centre, European Commission, Brussels, Belgium
jrc-design-for-policy@ec.europa.eu

EU Science Hub
https://joint-research-centre.ec.europa.eu

JRC140148
EUR 40186

PDF ISBN 978-92-68-23702-1 ISSN 1831-9424 doi:10.2760/9430203 KJ-01-25-007-EN-N

Luxembourg: Publications Office of the European Union, 2025

Graphic Design by NNstudio, Liege Belgium, nnstudio.be

How to cite this report: European Commission: Joint Research Centre, Arrigoni, O., Hamarat, Y. and Dupoux, M., *Water Resilience Experiment*, Publications Office of the European Union, Luxembourg, 2025, https://data.europa.eu/doi/10.2760/9430203, JRC140148.

WATER RESILIENCE EXPERIMENT

Gathering learnings through multilevel governance for innovative policymaking at the European Commission

OTTLA ARRIGONI, YAPRAK HAMARAT, MARION DUPOUX

EU POLICY LAB

The EU Policy Lab is a space for cross-disciplinary exploration and innovation in policymaking. We apply collaborative, systemic and forward-looking approaches to help bringing the scientific knowledge of the Joint Research Centre into EU policymaking.

We experiment with the new, the unprecedented and the unknown. We seek to augment our understanding of the present, challenge and reinvent the way we think about the future.

The EU Policy Lab is also a mindset and a way of working together that combines stories and data, anticipation and analysis, imagination and action. We bring new practical and radical perspectives to tackle complex problems in a collaborative way. Together, we explore, connect and ideate to create better policies.

policy-lab.ec.europa.eu

CONTENTS

ABSTRACT

The Water Resilience Experiment aims to contribute to the European Commission's Water Resilience Strategy through the lens of design for policy and behavioural insights. The project focused on increasing cross-DG collaboration around the water topic and reducing the policy-implementation gap by engaging stakeholders across different levels of governance. The project adopted a holistic, cross-cutting, and systemic approach. The experimentation built on various workstreams generating qualitative insights from governance across local, regional, national, and international levels. Workstreams included the collection of citizen stories, participatory research conducted by innovation labs engaging numerous regional stakeholders, an analysis of the media discourse on water in 9 EU languages, and a collection of case studies as basis for a serious game. During workshops and serious gaming sessions, 55 policymakers and over 60 scientists collaboratively analysed research outcomes using systemic and visual thinking approaches, fostering deeper insights and strengthening collaboration. We identified three essential dimensions for a comprehensive approach to water resilience: the framing of the topic, common internal organisational practices, and the interplay between EU and local knowledge in implementation. Based on these observations, the Water Resilience Experiment proposes eight transformative actions to strengthen the Commission's internal and external water resilience efforts, directed at policymakers, water-focused groups, and communities within and beyond the Commission.

ACKNOWLEDGEMENTS

This project was initiated and scoped by Elahe Rajabiani, who designed the overall process and key steps. Her efforts brought together the people, conditions and ideas necessary to initiate this experiment. We would like to extend our gratitude to Thomas Hemmelgarn, Antonia Mochan and Maciej Krzysztofowicz for providing valuable feedback on this report.

In addition, we thank the Europe Media Monitor team for their support in the creation of the query and the collection of media articles. Special thanks go to those who assisted with translating the survey for citizens and enabling the collection of stories: Anna Galota, Sara Armas del Rio, Hannah Nohlen, Michal Krawczyk, David Martens, Maija Knutti, Joao Farinha, Petra Goran, Teodora Garbovan, Kathrine Jensen, Kaloyan Mitev, Georgios Veis, Magdalena Moravcova, Egle Basyte Ferrari, Tommi Asikainen, Elena Peresso, Kriss Rokk, Borut Cink, Agnes Edit Farkas, Katalin Hudecz-Roman, Olga Ostrovska, Ilze Baltmane, Jiri Hradec and Zuzana Pundova. We would also like to thank Laurent Faucheux for his invaluable assistance with media analysis programming.

Our sincere appreciation also goes to David Martens and Alessandro Borsello for co-developing the serious game, in collaboration with Namahn design agency, and facilitating both test and live sessions and to Sara Armas del Rio for contributing to the design of the game and the gaming sessions across the European Commission. We thank Randa Ashour for collecting media articles, conducting the initial media analysis and designing the first topic sheets, which provided a strong basis for the final media analysis.

Without policymakers' participation, deploying participatory methods at the Commission would not be possible. We thank all participants and their units for their time and valuable contributions to this project.

This project benefited from a multilateral collaboration agreement (No 36378) between the Joint Research Centre (JRC) and five innovation labs across the EU. We thank our five partner labs, which were selected following a call for interest: Water Valley Denmark (Denmark), the non-governmental organisation Urbani Separe (Croatia), Design Policy Lab, Politecnico di Milano (Italy), Co-Atelier Viktorija, Vilis & Co (Lithuania) and Rio Neiva, Neiva Community Lab (Portugal). They were coordinated by Azza Rajhi, and conducted design-driven participatory qualitative research to bring territorial insights into this project.

Finally, we acknowledge the rest of the water resilience experiment team: Andrea Toreti and Alberto Pistocchi (JRC D2) for their expertise in natural water sciences, feedback and continuous support, and Luca Perez, Claudia Hahn and Manfred Rosenstock (Directorate-General for Environment) for their valuable guidance, feedback and budget allocation.

EXECUTIVE SUMMARY

POLICY CONTEXT

The water resilience experiment was an exploratory initiative that aligned with the European Commission's water resilience strategy and deployed an approach based on 'design for policy' and behavioural insights. The project aimed to increase collaboration across directorates-general (DGs) and reduce the policy-implementation gap by engaging stakeholders across multilevel governance and applying participatory, design-driven approaches through fieldwork across Europe, workshops and a serious game with policymakers.

Water resilience connects deeply with diverse human and ecological activities, from agriculture to health and energy. Recognising this, the European Commission has used water resilience as a key paradigm for decision-making and public governance of water.

METHODOLOGY

To tackle the complexity of water-related challenges, the project adopted a holistic, cross-cutting and systemic approach as a guiding analytical framework. The goal was twofold: to investigate the organisational culture within the Commission and to understand and address the barriers to implementing water resilience policies in the EU. By experimenting with organisational methods and frameworks, the project explored innovative approaches to support this integration.

1. **Promoting collaboration across DGs within the Commission**
   To address water policy fragmentation, the project explored new, collaborative methods across DGs of the Commission.

   - **Workshops and creative and visual tools**
     Design-driven workshops engaged policymakers in visual and systemic thinking through different activities, ways of collaborating and ways of taking decisions. This allowed participants to go beyond textual, linear and verbal reasoning to tackle complex contemporary challenges.

   - **Gamification**
     The 'Water Reflections' serious game helped policymakers role-play water-related scenarios, promoting teamwork and innovative problem-solving for complex water resilience challenges.

2. **Addressing the policy–implementation gap**
   Recognising the gap between EU policy and implementation, the project used a multilevel governance framework and fieldwork approach across various EU Member States to gather citizen and stakeholder perspectives and experiences. This approach relied on the following elements.

   - **Water stories from EU citizens**
     Narratives were collected to understand how individuals and communities relate to water in daily life. This went beyond the current consultation practices, enriching the policy discourse with personal and professional insights.

   - **Regional innovation labs**
     Five design labs were selected across Member States to facilitate design-driven participatory strategies among stakeholders and gauge the maturity and regional responses to water resilience issues.

   - **National media analysis**
     Water-related media discourse was analysed in six languages across the EU to identify public concerns and the variety of topics across different Member States.

KEY CONCLUSIONS

To tackle the complexity of water-related challenges, the project adopted a holistic, cross-cutting and systemic approach as a guiding analytical framework. The goal was twofold: to investigate the organisational culture within the Commission and to understand and address the barriers to implementing water resilience policies in the EU. By experimenting with organisational methods and frameworks, the project explored innovative approaches to support this integration.

The research identified three dimensions that are essential for a comprehensive approach to a holistic, cross-cutting and systemic approach to water resilience. We present them as working tools to contribute to internal organisational transformational initiatives:

1. **Framing the topic**
   The way that we frame water-related topics significantly influences our understanding of and the way we tackle water issues.

2. **Internal organisational culture**
   The internal practices within the Commission have an impact on how cross-cutting water policies are developed and implemented.

3. **Implementation and local knowledge**
   The dynamics between the different levels of governance, specifically how integrating regional and local experiences could build trust, can improve public engagement and align policy implementation with local needs.

Based on these conclusions, the water resilience experiment proposes eight transformative actions to strengthen both internal and external water resilience efforts. These proposals are directed at individual policymakers, water-related groups and communities both within and beyond the Commission. Each proposal is designed to be as practical as possible, offering a set of actions and experiments aimed at multiplying initiatives and encouraging greater participation, collaboration and integration of evidence into policymaking. The proposals include the following.

- **Expanding participatory methods**
  Design-driven approaches, visual tools and role-playing games could be adopted more broadly to foster systemic thinking.

- **Enhanced collaboration tools**
  Initiatives that encourage cross-DG cooperation and involve local communities and Member States in iterative policy feedback could strengthen resilience strategies.

- **Localised implementation support**
  By continuously gathering feedback from the regions and interacting with key actors in public administrations where policies are implemented, the Commission can align its strategies more closely with ground realities and work on mitigating implementation barriers.

THE WATER RESILIENCE EXPERIMENT PROPOSES SEVERAL TRANSFORMATIVE ACTIONS TO STRENGTHEN BOTH INTERNAL AND EXTERNAL WATER RESILIENCE EFFORTS.

MAIN FINDINGS

When framing the topic, we found that:

- the perception of water is often reduced to 'urgent and visible' water events,
- water is mainly seen as a resource for human activities,
- water discourses differ across European regions,
- specific water topics enhance the quality of engagement;

When focusing on internal organisational culture, we found that:

- interactions often focus on negotiation rather than collaboration,
- initial project set-ups influence how different DGs participate,
- specific conditions motivate cross-DG initiatives,
- visual tools help transform collaboration;

When focusing on implementation and local knowledge, we found that:

- the behavioural dimension of barriers to policy implementation is often lacking,
- citizens' concerns sometimes go beyond policymakers' perceptions,
- integrating experiences of people and places could enhance public engagement,
- regional and local concerns should be tackled in a tailored way,
- valorising local knowledge could help to build trust across governance levels,
- water events can shape identities of places.

Beyond water resilience, this experiment provides valuable insights for imagining and experimenting with other policy areas through a broad lens. By building on these learnings and fostering transformative actions as a basis for discussion, this project can provide potential internal solutions and interventions, supporting more holistic, cross-cutting and systemic approaches at the Commission.

RELATED AND FUTURE JRC WORK

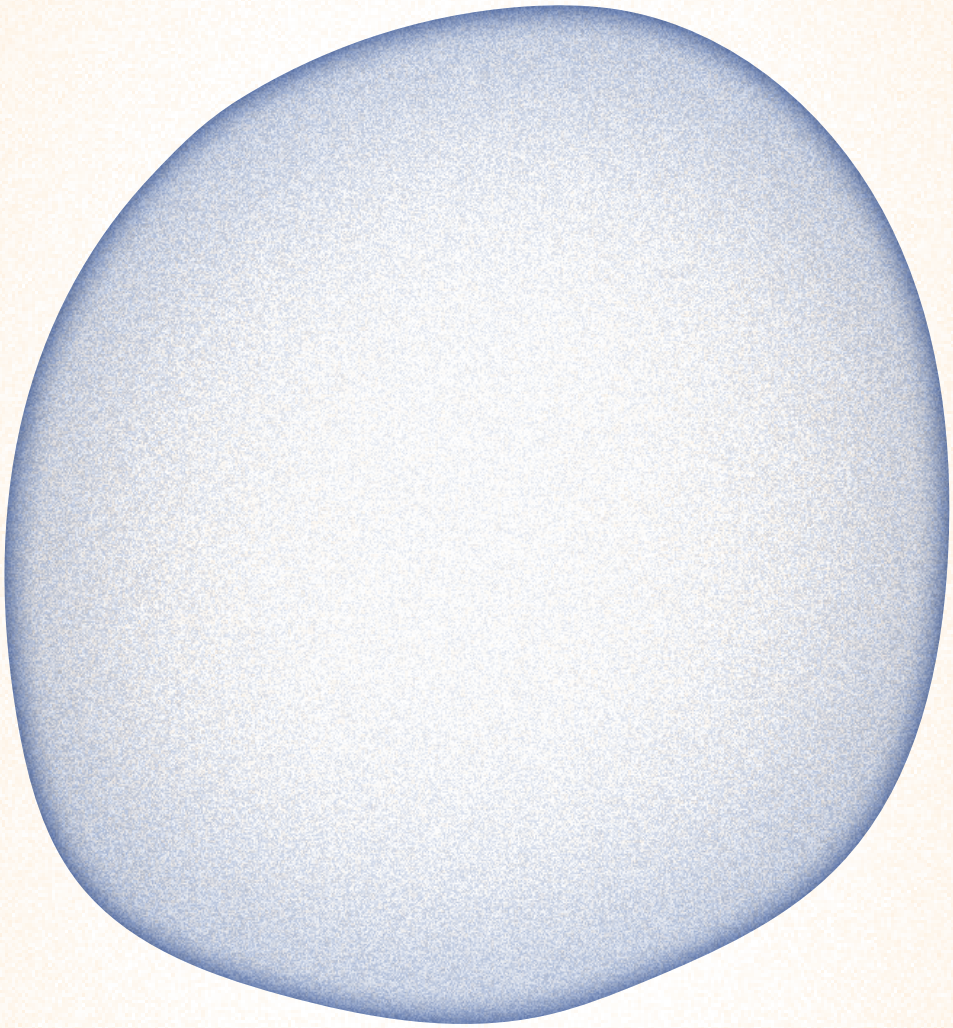
The JRC's work on water resilience ties into broader policy efforts, including upcoming EU proposals and other collaboration and implementation projects, including beyond water specific. Future steps include spin-off projects on water-related topics, integrating design for policy and behavioural insights with JRC's technical scientific expertises.

QUICK GUIDE

The project integrated methods from design for policy and behavioural insights to reach its objectives. To tackle water policy fragmentation, it promoted collaboration across DGs within the Commission. Design-driven workshops, visual tools, and the 'Water Reflections' serious game engaged policymakers in systemic thinking and problem-solving. To bridge the policy–implementation gap, a multilevel governance approach gathered citizen narratives, facilitated design-driven participatory strategies in different member states, and analysed national water-related media discourse. These methods enriched policymaking by integrating diverse perspectives and fostering innovative, cross-sectoral strategies for water resilience.

1

INTRODUCTION



The water resilience experiment was an exploratory initiative led by the Joint Research Centre (JRC) and supported by the Directorate-General (DG) for Environment (DG Environment) of the European Commission. The initiative, which took place from July 2023 to June 2024, aimed to contribute to the European Commission's work on the definition of a water resilience agenda through an approach based on 'design for policy' and behavioural insights, relying on the expertise of the teams that are part of the EU Policy Lab. The EU Policy Lab applies collaborative, systemic and forward-looking approaches to help bringing the scientific knowledge of the JRC into EU policymaking.

The project focused on using and building holistic, cross-cutting and systemic approaches to water resilience at the European Commission. It served as an additional and complementary approach in early policymaking to bring participatory and qualitative evidence into the policy cycle. It focused on co-producing knowledge with stakeholders and incorporating their experiences. This approach differs from and complements traditional feedback-oriented, one-way tools like impact assessments and public consultations. From workshops, serious gaming sessions with policymakers **(FIGURE 1)**, system mappings **(FIGURE 2)** and citizen narratives on water to European media discourse analysis and participatory multistakeholder initiatives in EU regions, the research team explored different ways of investigating water resilience. Across the different phases and workstreams of this initiative, a wide range of stakeholders contributed to the project, including 55 policymakers from 17 DGs of the European Commission, one agency and one executive agency of the Commission[1]; more than 60 scientists from the JRC; five innovation labs in five EU Member States mobilising more than 125 regional stakeholders; and 2 666 citizens and 85 stakeholders through a survey. This report is the summary of this initiative, which aimed to develop new ideas that could contribute to the development of a water resilience agenda for the Commission and inform further policymaking for the development of the water resilience strategy announced by President von der Leyen in her political guidelines for the next Commission (2024–2029). It starts with a snapshot of how water is being addressed today in the EU, and specifically at the European Commission, in various settings. It then proposes some practice-oriented transformative actions for introducing design-driven, qualitative insights that support holistic, cross-cutting and systemic ways of tackling water resilience, as well as implementation of related policies and organisational change at the Commission.

① **The report is structured in six sections**, of which this introduction is the first. ② The second section outlines the context and the objectives of the initiative. ③ The third section **details the experimental strategy** and the methods employed, as well as how and why they complement each other. Interested readers are encouraged to consult the detailed reports for each workstream that explore different methods for different scales of governance (Arrigoni et al., 2025; Dupoux et al., 2025a; Dupoux et al., 2025b; Hamarat et al., 2025). ④ The fourth section presents **the experiment's main learnings**, which provide a better understanding of holistic, systemic and cross-cutting policymaking for water resilience and identify opportunities for the Commission's water resilience strategy to be developed. ⑤ The fifth section focuses on **translating our work into action** at the European Commission. We suggest ways for policymakers working on water and other policy areas to experiment with these results, as well as potential avenues to explore in the context of the water resilience strategy. ⑥ In the final section, we summarise our work and propose **next steps**.

We acknowledge that some parts of this work are based on a limited number of observations. Some learnings and insights are treated as working hypotheses to inform and support innovation in public services. We use this project's outcomes to better frame and design the upcoming interventions and necessary resources to deploy water resilience and innovative policymaking at the European Commission.

[1] The participant DGs and agencies were DG Agriculture and Rural Development, DG Climate Action, DG Competition, DG European Civil Protection and Humanitarian Aid Operations (ECHO), DG Energy, DG Environment, DG Internal Market, Industry, Entrepreneurship and SMEs, DG Migration and Home Affairs, DG International Partnerships, the JRC, DG Maritime Affairs and Fisheries, DG Mobility and Transport, DG Neighbourhood and Enlargement Negotiations, DG Structural Reform Support, DG Regional and Urban Policy, DG Research and Innovation, DG Health and Food Safety, the Secretariat-General, the European Environment Agency and the European Research Executive Agency. For further information about the organisation of the European Commission, please consult the European Commission's website.

FIGURE 1. Water Reflections serious game, step 2: sorting and prioritising cases before investment.

Source: Authors

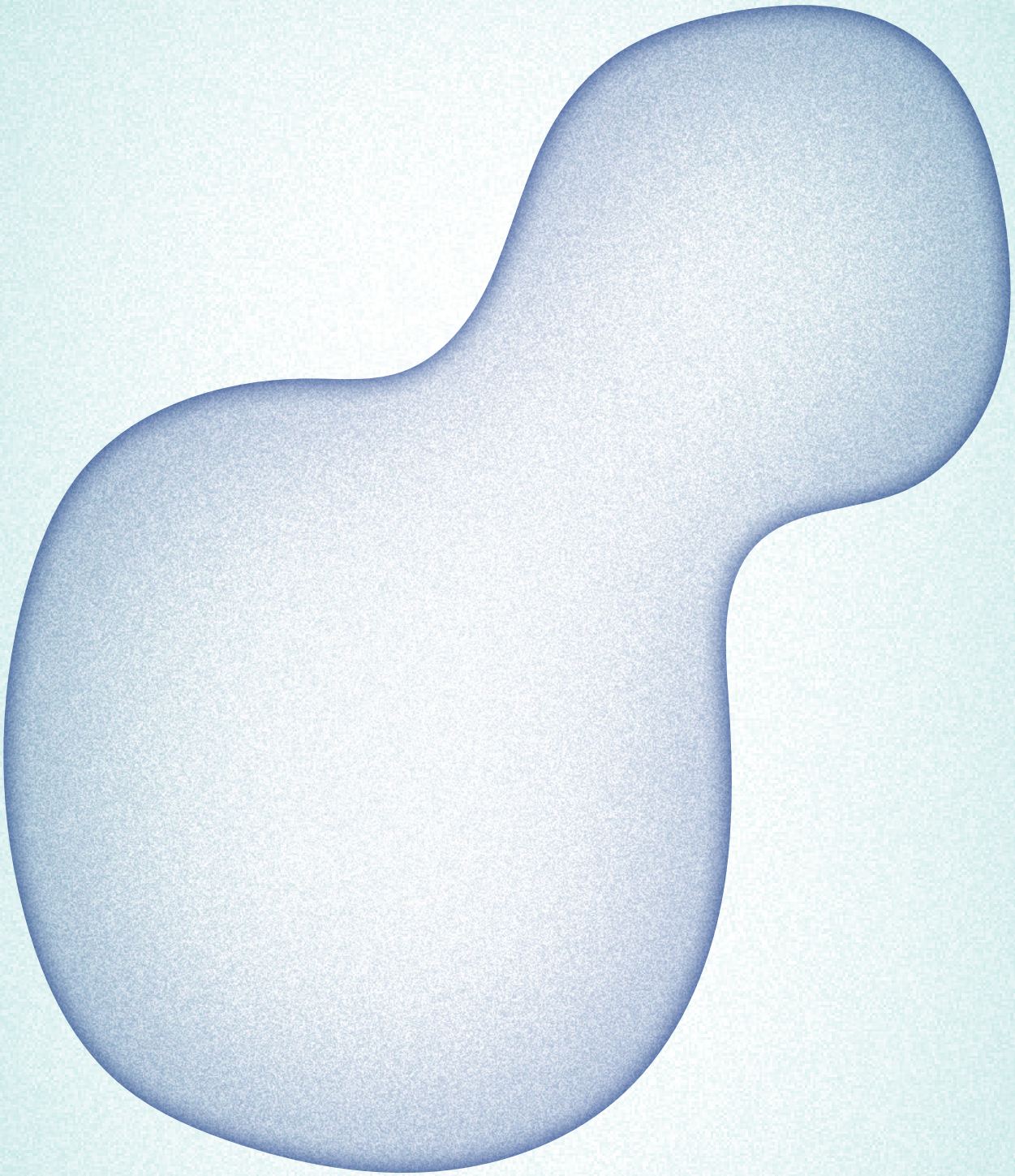
55 POLICYMAKERS	60 SCIENTISTS	2 666 CITIZENS
17 DGS	125 REGIONAL STAKEHOLDERS	5 INNOVATION LABS

FIGURE 2. The use of system mapping to reveal connections between actions and consequences.

Source: Authors

2

CONTEXT



2.1

WATER RESILIENCE AT THE EUROPEAN COMMISSION

Water resilience, as a concept and thinking tool, has become a key paradigm for decision-making and public governance of water while remaining a widely debated concept with multiple definitions (Rodina, 2019; Poch et al., 2023). At the European Commission, the water resilience concept started to be used in policy documents in 2010 and the concept has been widely mobilised since 2017, progressively integrating into policymaking discourses over the past decade[2]. During the summer of 2024, the JRC created a new working portfolio focusing specifically on water resilience. Importantly, with the announcement of the new Commission for 2024–2029, water resilience is now expressly indicated as part of one of the commissioners' portfolios[3]. Given the cross-cutting nature of water, in the Commission, like in all public administration at different levels, the responsibility for water and water-related policies falls under the remit of different DGs. While the bulk of the EU legislation in the field of water falls under the remit of DG Environment[4] and this DG also leads on other important legislation that has a direct impact on water (nature conservation and restoration legislation, chemicals legislation, industrial emissions legislation, etc.), other policies under the remit of other DGs also have an impact on water and water resilience (e.g. policies on agriculture, energy, industry, climate adaptation, navigation, research, regional policy and international partnerships). This institutional structure and division of policies, as many others, is continually being challenged by the complexity and interdependency of ecological and socioeconomic systems, as revealed by the environmental polycrisis.

Water resilience has, however, evolved: while it previously focused solely on adaptability to uncertainties and technology-driven problem-solving for restoring an original state, it now focuses on water as a social-ecological system (Saikia and Jiménez, 2023). This new paradigm highlights the dynamic adaptive capacity of both infrastructures and governance. As sociocultural transformations are identified as one of the most effective leverage points of systemic change (Baird et al., 2023), the interdependencies between social (human) and ecological (non-human) dimensions of water resilience are increasingly highlighted when tackling water crises. Human activities, pollution, cultural and social practices, and climate change are still not fully integrated into the global water cycle, making it difficult to demonstrate the contribution of human interactions to the global water crisis (Abbott et al., 2019; Gleeson et al., 2020). In this context, and as part of the overall landscape of public sector innovation, the increasing number of experimental cross-DG initiatives, along with social and human sciences, instruments, tools, creative methods and participatory platforms, allows a holistic and systemic approach to be taken in addressing the global water crises.

[2] We conducted keyword research on the European Commission's intranet platform Intracomm, the JRC Publications Repository and the EUR-Lex platform to identify documents mentioning the water resilience concept. Our pre-screening highlighted the following documents: a DG Climate Action in-house document for the United Nations Summit (2010), a JRC report entitled *The Challenge of Resilience in a Globalised World* (2015) and Definitive adoption (EU, Euratom) 2018/251 of the European Union's general budget for the financial year 2018 (2017). During 2017 and 2018, there were several internal documents mentioning 'water resilience'. In addition, the ad hoc task group on water scarcity and drought was established in 2022 and converted into an official working group in 2024; the List of voluntary commitments for the Water Action Agenda to be presented by the European Union for the UN 2023 Water Conference (New York, 22-24 March 2023); the JRC established a work portfolio dedicated to water resilience in the summer of 2024; and the 2024 Drought+10 Resilience Conference took place in the winter of 2024. Even though this approach was limited, it provided a brief overview of the concept's history at the Commission.

[3] As of October 2024, Jessika Roswall is Commissioner-Designate for Environment, Water Resilience and a Competitive Circular Economy.

[4] The water framework directive and the following related daughter directives: the drinking water directive, urban wastewater treatment directive, water reuse regulation, nitrates directive, floods directive, marine strategy framework directive and bathing waters directive.

WATER RESILIENCE, AS A CONCEPT AND THINKING TOOL, HAS BECOME A KEY PARADIGM FOR DECISION-MAKING AND PUBLIC GOVERNANCE OF WATER.

For the reasons described above, we focused on a holistic, cross-cutting and systemic understanding of water challenges. In this context, **holistic** means capturing and considering multiple perspectives, scales and entities – human and non-human (Tepes and Neumann, 2020) (e.g. water professionals, biodiversity in water bodies, ground water and humidity). **Cross-cutting** means connecting elements of the system that have traditionally evolved separately 'across government departments and levels of government' (Boyle, 1999) (e.g. drinking water, fishery policies, sociocultural dimensions of water and pollution). **Systemic** means considering interactions between and impacts on these elements by taking a global overview and looking beyond the details (Meadows, 1999) (e.g. urban density and water pollution). We could not cover all of these dimensions in all of the workstreams, but they provided us with an analytical framework and a guiding research question that steered the entire project: **How can a holistic, cross-cutting and systemic approach to water resilience be integrated?**

During the set-up phase of this work, we conducted both one-on-one interviews and group discussions with 24 policymakers and eight scientists across the European Commission. These initial interviews highlighted a few key challenges related to water resilience that went beyond the systemic change requirements and were therefore used to further define the goals of this work. The most common challenges and opportunity areas identified by the Commission policymakers working on the topic of water, from different sectors, enabled us to set the following priorities for the project.

- There is a need to address water-related policies in the Commission in a holistic way across DGs. It appeared that policymakers working on environmental cross-cutting topics such as water, as well as on the resulting policy tools, were lacking spaces to discuss, truly collaborate and co-decide. Due to their cross-cutting nature in particular, some of the topics and policy actions have fundamental repercussions across sectors, competencies and degrees of responsibility. It is therefore necessary to analyse these consequences and connections.
- The gap between water-related policies and implementation in EU Member States needs to be addressed. While it was agreed by most of the people involved that efforts at the European policy level were well explored, the following two points were prominent: first, the need to better understand Member States' reasons for the lack of implementation and, second, the need to identify leverages for actions. It was clear that, for the interviewees, practical learnings and possible interventions/approaches need to be identified. We therefore focused the work on better understanding how experience and maturity differ across governance levels.

The project investigates these two key challenges and, through a hypothesis-led approach, tries to identify possible ways to experiment and learn by mobilising design and behavioural science methodologies.

2.2

DESIGN FOR POLICY

One of the public sector transformation pathways to tackle complex and multi-faceted problems such as the ecological crisis, migration, ageing and equity involves using elements from the design field in public administrations (Kimbell, 2016; Hermus et al., 2020; Romme and Meijer, 2020). The design field is recognised as being in a position 'to deal with wicked problems and create more responsive policies and services' and 'to transcend organisational and procedural silos, established hierarchies or bureaucratic categories' (Hermus et al., 2020). Therefore, the design field's process, methods and tools are adopted by different levels of governance to improve public administrations' ways of working and services. In addition, public administrations' ways of dealing with solution-oriented problem-solving are also considered as a design science (Simon, 1969; van Buuren et al., 2020). This approach provides a complementary perspective and opportunity to drive innovation within the public sector. Over the last 20 years, the use of design for public sector transformation and policymaking has been crystallising into the field of 'design for policy'. However, at the European Commission, the design field – as a transformational practice and a form of research beyond graphic and communication design – is a recent and growing field of knowledge compared with other well-established areas, such as statistics and modelling.

Implementing the design field in public administration in practice involves ① setting up an iterative process with quick prototyping and early materialisation of ideas, allowing an anticipatory approach to be taken; ② deploying participatory practices by gathering diverse perspectives from a variety of citizens, stakeholders and affected communities, ensuring a multifaceted view of issues and opportunities and accommodating a wide spectrum of needs and challenges; ③ bringing rich ground-level data and experiential and embodied knowledge that quantitative approaches and statistics often cannot capture, reflecting local real-world views from a social and cultural perspective; ④ visualising, mapping and materialising information to change perspective, thereby revealing new knowledge; and ⑤ using visual tools, objects, gamification and creative methods to shift from linear and verbal thinking to exploring through making (Bason et al., 2014; Howlett and Mukherjee, 2018; Kimbell et al., 2023). In this initiative, we deployed these dimensions of the design field at different levels to explore a more socioecological approach to water resilience at the European Commission[5].

THE DESIGN FIELD IS RECOGNISED AS BEING IN A POSITION 'TO DEAL WITH WICKED PROBLEMS AND CREATE MORE RESPONSIVE POLICIES AND SERVICES'.

[5] A socioecological approach to water resilience refers to the idea that social systems (human communities, institutions, policies and cultural practices) and ecological systems (natural ecosystems, biodiversity and environmental processes) are interdependent and must be considered together to build resilience in water management. In contrast, for example, an ecological approach might neglect human social or economic systems' interactions with the water cycle and their impacts on water systems by focusing solely on non-human ecosystems.

2.3

BEHAVIOURAL INSIGHTS

Behavioural insights offer a crucial lens for understanding how human behaviour affects policy design, implementation and outcomes. Rather than assuming that people act purely rationally in response to policies, the behavioural insights approach recognises that human decisions are often influenced by emotions, cognitive biases, social norms and the complexity of information. For public administrations, this perspective allows ① policy design to more accurately reflect how people truly behave and perceive the world and ② improvements to be made to policymakers' own decision-making processes by addressing unconscious tendencies and institutional patterns.

In practice, applying behavioural insights to public policy involves several key elements (Dupoux et al., 2025c): ① identifying behavioural barriers that hinder decision-making, collaboration, policy effectiveness or implementation; ② finding behavioural levers to make both decision-making and policy interventions and implementation more effective; ③ recommending, designing and testing interventions, whether behavioural (e.g. nudges) or traditional (e.g. regulations and bans), to generate quantitative evidence on their effectiveness; and, when possible, ④ mapping behavioural systems to understand the relationships between key actors, behaviours and influences on behaviour, allowing better identification of leverage points and feedback loops.

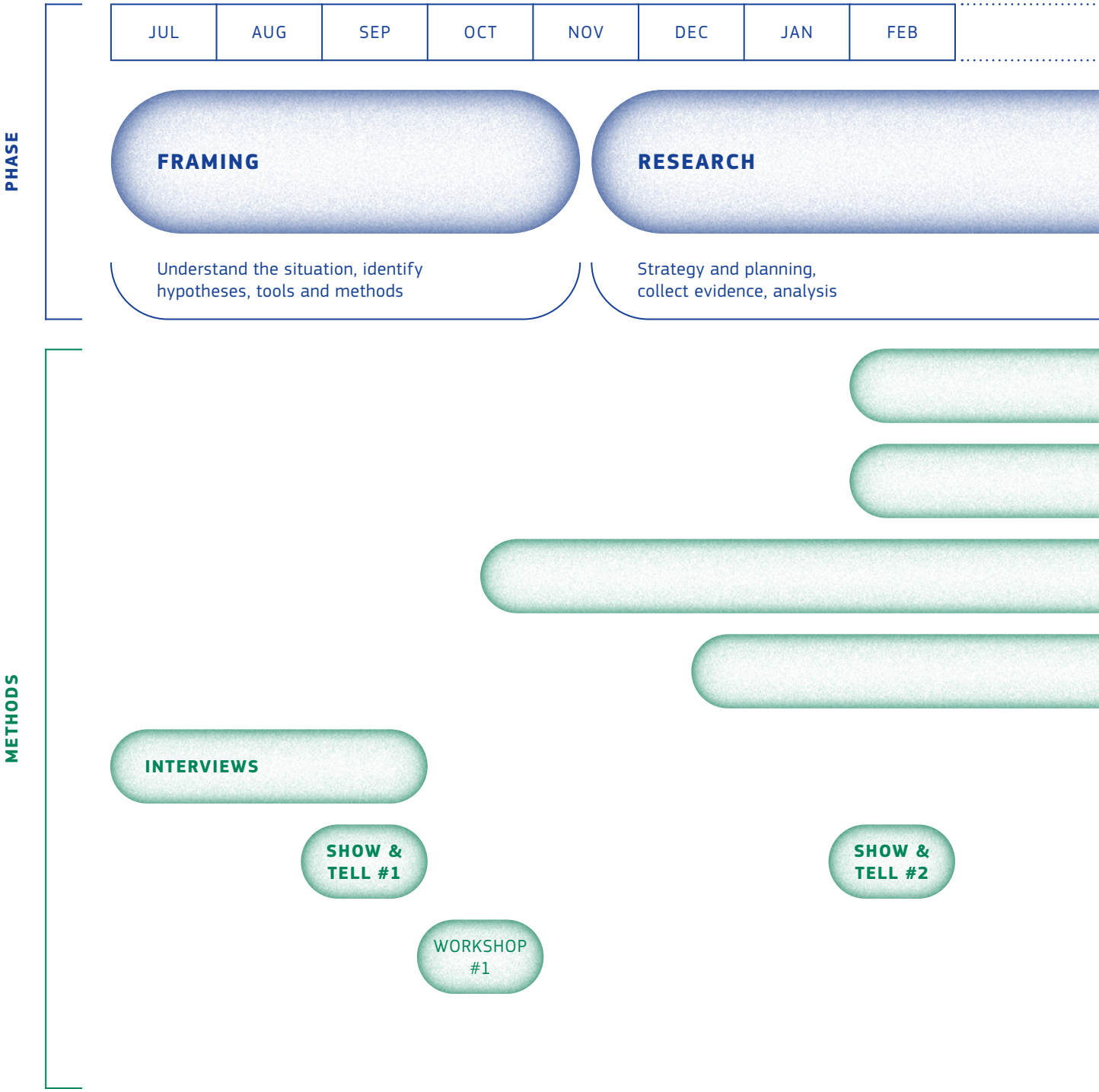
In this initiative, we focused primarily on the first dimension – identifying behavioural barriers to policy implementation and policymakers' perceptions of citizens' concerns – and have provided recommendations on how to move forward with implementing the second and third dimensions. The goal is to lay the groundwork for future behavioural research and interventions that are both behaviourally informed and systemically integrated. In the context of implementation of EU water policies, this ensures that we address not only the financial, political, technical and administrative barriers that Member States might encounter, but also the behavioural factors that shape these challenges. When it comes to citizens, behavioural insights helps us to understand their concerns, perceptions, willingness to act and behaviour, thereby supporting the development of communication strategies that are aligned with their perspectives.

BEHAVIOURAL INSIGHTS OFFER A CRUCIAL LENS FOR UNDERSTANDING HOW HUMAN BEHAVIOUR AFFECTS POLICY DESIGN, IMPLEMENTATION AND OUTCOMES.

3

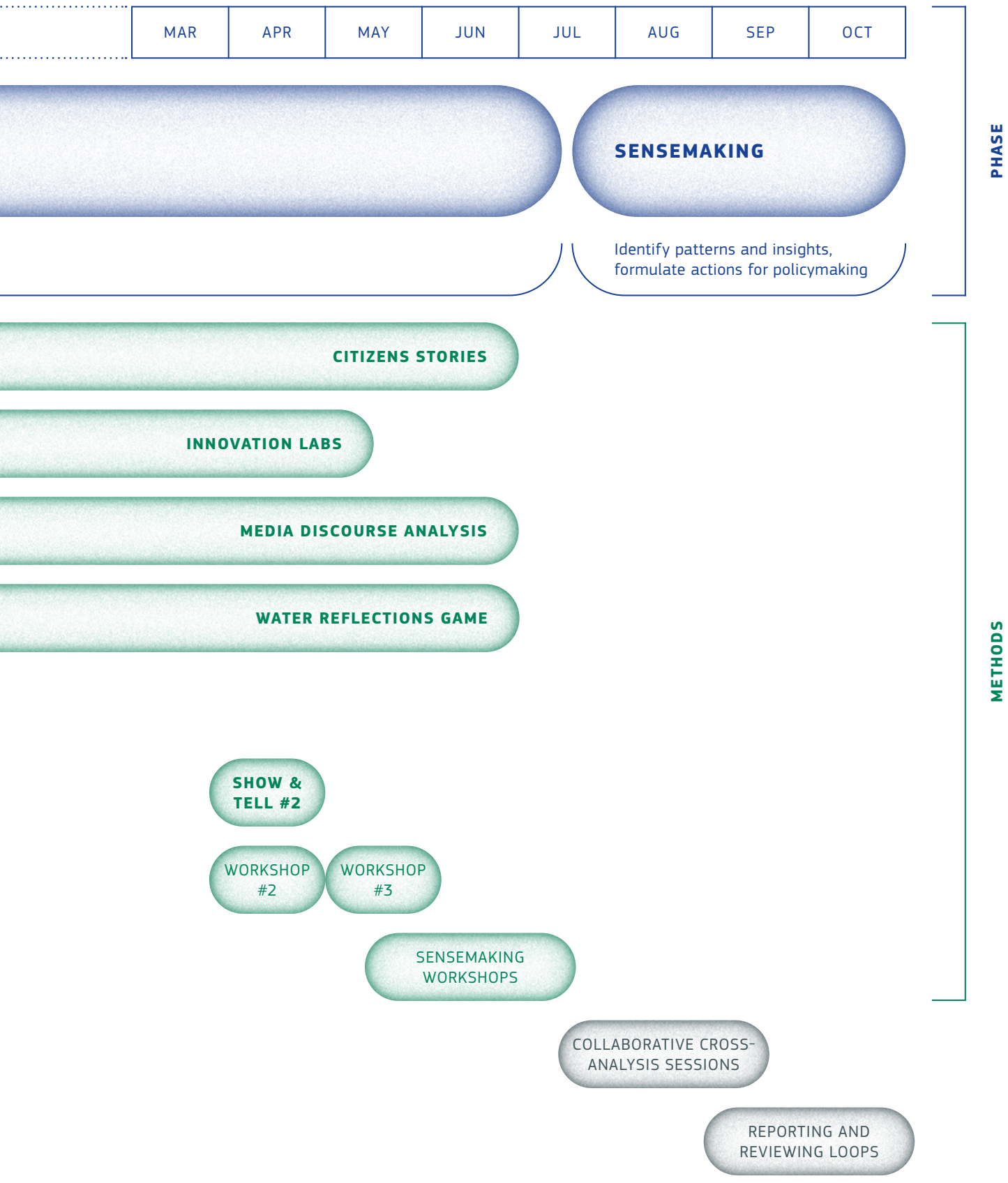
EXPERIMENTATION STRATEGY

We employed a design-driven exploratory strategy to meet the transformational needs of the existing organisational set-up and understand current situations and ways of working. In other words, while investigating water resilience, we also experimented with ways of working to tackle water resilience as a socioeconomic/ecological system at the European Commission[6]. The project timeline and phases are set out in **FIGURE 3**.



[6] This system integrates all pillars of sustainable development – economic, social and environmental – into the project.

FIGURE 3. An overview of project planning and the timeline.



Source: Authors' own conceptualisation

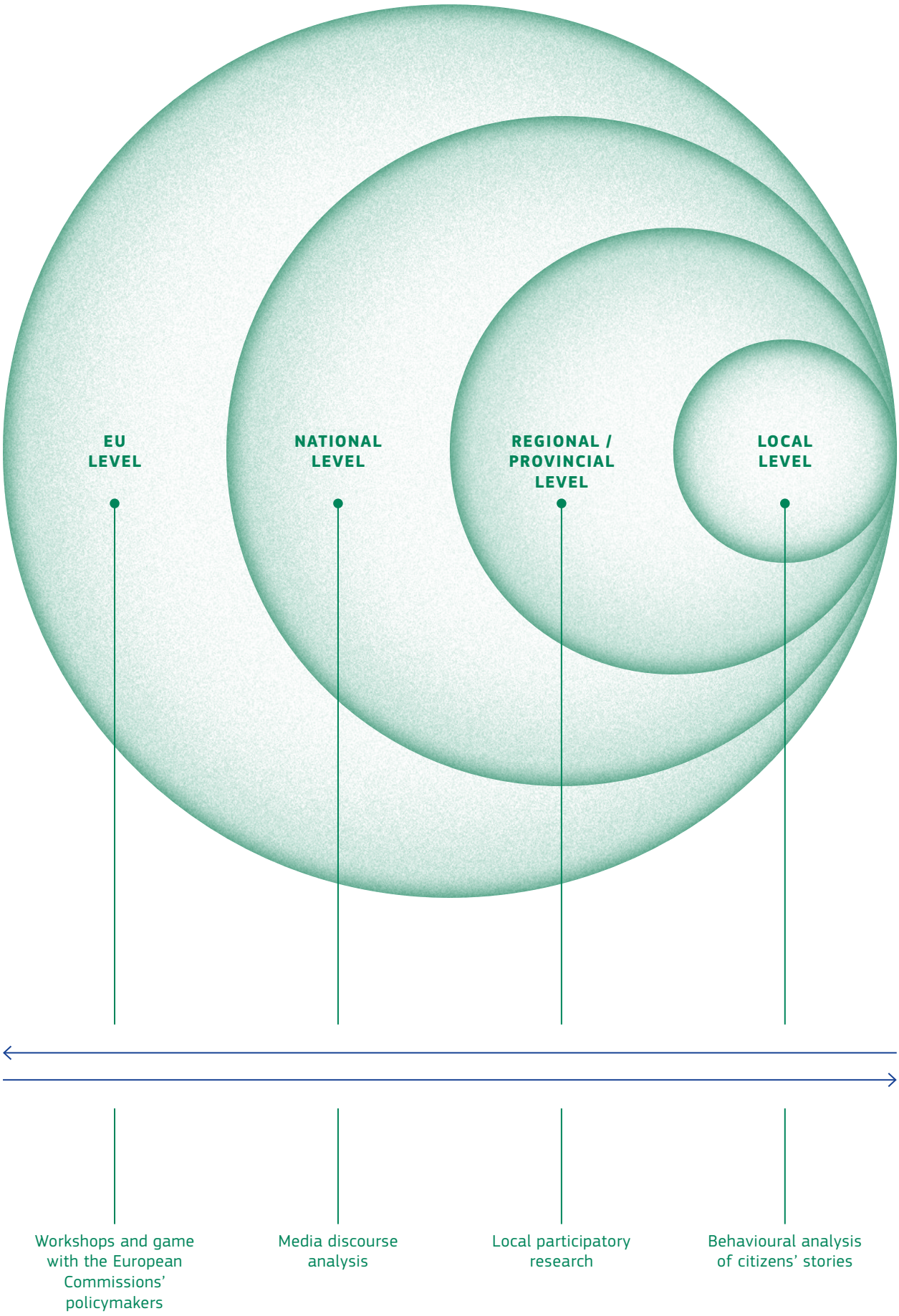
In this section, we present how we conducted this experiment and an overview of the methods deployed. We undertook a multisite fieldwork strategy inspired by multisite ethnography practices (Marcus, 1995) and multiscale governance theories (Allen et al., 2023; Piattoni, 2009) to engage stakeholders at multiple levels and mobilise different knowledge and experiences. This approach allowed us to build a holistic and systemic understanding of water-related issues, going beyond mere legislative framings. While investigating European policymaking, it is important to consider the challenges faced by different levels of governance beyond the EU (Matti et al., 2023), including Member States, regions, local authorities and citizens, particularly their limited capacity to manage a multitude of responsibilities (OECD, 2017). By interlocking the different levels of water governance, overarching political objectives can be adapted to the specific conditions of local contexts (OECD, 2011). **FIGURE 4** shows the interactions between the different areas of fieldwork and different levels of governance. **TABLE 1** provides an overview of the levels of governance that we covered and their focus, as well as the methods that we employed for each level.

TABLE 1. An overview of workstreams and the focus and methods of each.

GOVERNANCE LEVEL	FOCUS	METHODS
EU LEVEL	Organisational change at the European Commission. Understand how the water topic is addressed and how science can be more closely embedded in the policymaking process, going beyond recommendations.	Interviews, setting up a work team, workshops, serious game, show and tells, system mapping, data visualisations.
NATIONAL LEVEL	Understand how the water topic is addressed and experienced.	Media analysis based on the Latent Dirichlet Allocation model.
REGIONAL / PROVINCIAL LEVEL	Organisational change. Understand how the water topic is addressed and experienced.	Collaboration agreement with innovation labs, workshops in Member States with local stakeholders.
LOCAL LEVEL	Understand how the water topic is addressed and experienced.	Citizens' and stakeholders' stories collected with SenseMaker, a narrative-based method.

Source: Authors' own conceptualisation

FIGURE 4. Relations between the fieldworks.



Source: Authors' own conceptualisation

One of the characteristics of design-driven and behavioural methodologies is involving and studying the people affected by the topic. In other words, we employ a user-centric approach to water resilience. Our aim was to deploy participatory initiatives in each of these levels of governance to explore what different stakeholders in these places have to say about the current local water challenges that they are facing. Through the active engagement of stakeholders in design and research processes, the participatory dimension creates ownership of responsibility and allows rich, grounded knowledge from the people affected to be identified and collected. The European Commission, for ethical and procedural reasons, has long-established procedures and tools to engage citizens (e.g. public consultations through the 'Have your say' platform), as well as selected identified groups (e.g. Member States or sector representatives). We wanted to widely explore what different people, beyond the current groups and frameworks (e.g. consultation on existing policies), could bring to the internal discussion and how other methods and ways of working could change the integration of the insights and the work of policymakers.

ONE OF THE CHARACTERISTICS OF DESIGN-DRIVEN AND BEHAVIOURAL METHODOLOGIES IS INVOLVING AND STUDYING THE PEOPLE AFFECTED BY THE TOPIC.

This project is composed of four workstreams, mentioned under "Methods" in **TABLE 1** and briefly described in **ANNEXES I**, **II**, **III**, **IV** and **V** that are summarised in separate individual reports (Arrigoni et al., 2025; Dupoux et al., 2025a; Dupoux et al., 2025b; Hamarat et al., 2025). These reports provide an overview of how water is addressed and experienced at these levels of governance and outline objectives, processes, methodologies and learnings. We also include visuals of our tools and a summary of what worked and what did not to demonstrate how a design-driven project was implemented and the learnings.

In summary, the focus of the project is on collective intelligence, participatory sense-making and moving between European and local insights. These methods come from social and human sciences and allow for the collection of a mix of qualitative and quantitative evidence. Beyond their design and behavioural perspectives, the methodologies were also selected based on other factors, such as ① previous experience with some methods providing rich and insightful evidence (SenseMaker tool), ② the internal availability of some tools (data mining), ③ collaboration opportunities (the internal need to build a design network) and ④ the capability of grouping and considering various countries in a short period of time (Europe Media Monitor and SenseMaker tool). The participatory dimensions could not be integrated into all scales of the experiment; therefore, we found ways of using the results of these studies in participatory set-ups with policymakers. In addition, during this experiment, we could not cover the global international governance level beyond the EU. However, we identified some insights related to global water challenges.

THE FOCUS OF THE PROJECT IS ON COLLECTIVE INTELLIGENCE, PARTICIPATORY SENSE-MAKING AND MOVING BETWEEN EUROPEAN AND LOCAL INSIGHTS.

3.1

DESIGN AND BEHAVIOURAL DIMENSIONS

This section provides an overview of the design and behavioural dimensions of the water resilience experiment.

TABLE 2. An overview of the design and behavioural insights methods deployed during the water resilience experiment.

GOVERNANCE LEVEL	METHODS	DESIGN AND BEHAVIOURAL DIMENSIONS
EU LEVEL	19 interviews, setting up a work team, five workshops, three serious game sessions, four show and tells, three key system mapping and data visualisation sessions at the European Commission.	Gamification, data visualisation, co-analysis of different evidence tracks by policymakers, co-design and participatory activities, decision through making. Analysis of policymakers' perceptions.
NATIONAL LEVEL	Media analysis (latent Dirichlet allocation) of the six most spoken languages in the EU, covering eight Member States.	Data visualisation, sense-making and clustering of results and their use in workshops with policymakers. National communication patterns.
REGIONAL / PROVINCIAL LEVEL	Collaboration agreement with five innovation labs from five Member States. Workshops in Member States with local stakeholders.	Co-design of methodologies and research strategy with the labs and participatory approaches. Design process, visualisation and mapping.
LOCAL LEVEL	2 751 citizen and stakeholder stories collected from 27 Member States using SenseMaker, a narrative-based method.	Self-interpretation of citizens' stories. Analysis of behavioural drivers in citizens' stories. Focus on and detailed description of experiences and storytelling, as well as sense-making and analysis by policymakers.

Source: Authors' own conceptualisation

AT THE LOCAL LEVEL

We collected stories to explore how citizens and stakeholders across the EU experience water in their daily lives. This allowed us to collect both personal and professional life stories in which **citizens shared their individual experiences of water, providing us with an overview of how EU citizens connect to water and build their water culture**. Framed through a behavioural lens to identify patterns and attitudes, we collected 2 751 stories from EU citizens (2 666) and stakeholders (85) from all 27 Member States. Participants were presented with a prompting question to describe a 'moment or experience where they felt very aware of the importance of water' and were then asked to fill in further clarifying questions to help them self-interpreting their stories. We then analysed the patterns, trends and narratives behind the data. We also conducted a sense-making workshop with policymakers to delve deeper into specific sets of stories.

→ For further details, see the summary in **ANNEX I** or the full report (Dupoux et al., 2025b).

AT THE REGIONAL/PROVINCIAL LEVEL

We selected five innovation labs in five different Member States: Denmark, Croatia, Italy, Lithuania and Portugal. These labs collaboratively set up a multistakeholder design-driven participatory strategy and investigated different aspects of water resilience linked to their local area, involving citizens, local communities or key national stakeholders. The objective was to understand the perception and maturity of the response to water challenges across Member States and to identify the opportunities arising from the gaps in the implementation. An additional aim was to determine how actors at the subnational level are using the existing space to deal with the challenges, while gathering lateral insights on what the Commission could do, beyond the current frameworks and directives.

→ For further details, see the summary in **ANNEX II** or the full report (Arrigoni et al., 2025).

AT THE NATIONAL LEVEL

We used the Europe Media Monitor[7] to collect relevant articles related to water and explored how media outlets are reporting on water in the six most spoken languages of the EU (Dutch, French, German, Italian, Polish, and Spanish) covering eight Member States (Belgium, Germany, Spain, France, Italy, the Netherlands, Austria and Poland). **The objective was to understand how the media was discussing water and what issues were capturing public attention, which were critical for setting priorities.** Another goal was to anticipate areas of public concern, controversy and opportunities and to identify cross-country homogeneities and heterogeneities in the media discourse. By highlighting the dominant narratives and gaps in media coverage, media analysis can indicate where public discourse might be lacking or misaligned with policy needs.

→ For further details, see the summary in **ANNEX III** or the full report (Dupoux et al., 2025a).

AT THE EUROPEAN LEVEL

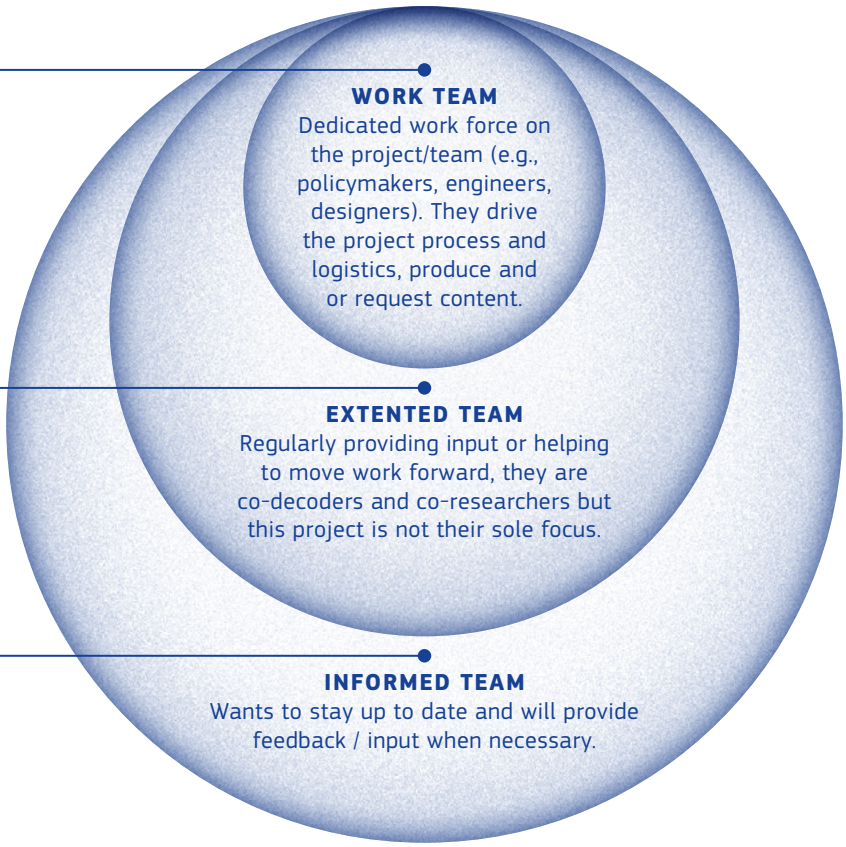
We deployed different strategies related to ways of working, collaboration and decision-making at the European Commission. We conducted 19 interviews (including one-on-one and in groups, with 24 policymakers and eight scientists). **These interviews allowed us to keep the initial discovery phase open and to follow an iterative design and research process**. It allowed us to collect and understand policymakers' perspectives and expectations regarding water resilience at the Commission and to reframe the project scope. In addition, these interviews allowed us to gather a wide group of multidisciplinary water experts across DGs. With regard to ownership of responsibility, which is one of the requirements of participatory design approaches, the core team also defined three different levels of engagement for these stakeholders across the Commission, as shown in **FIGURE 5**, to increase clarity on the collaboration requirements: ① a 'work team' to operationalise the practical delivery side required, ② an 'extended team' to engage in participatory activities and content work and ③ an 'informed team' to create feedback loops, share knowledge and follow the project through semi-regular show and tells and a digital space in a Microsoft Teams group.

[7] The Europe Media Monitor is a piece of text-mining software that analyses traditional and social media. The platform allows one to explore and understand current news reported by the world's online media. Monitoring thousands of news sources — in over 70 languages, the system uses advanced information classification and extraction techniques to automatically determine what is being reported in the news, where things are happening, who is involved and what they are saying. It provides a unique and independent viewpoint of what is being reported in the world right now.

FIGURE 5. The project's community and their engagement levels.

INSIDE THE EUROPEAN COMMISSION

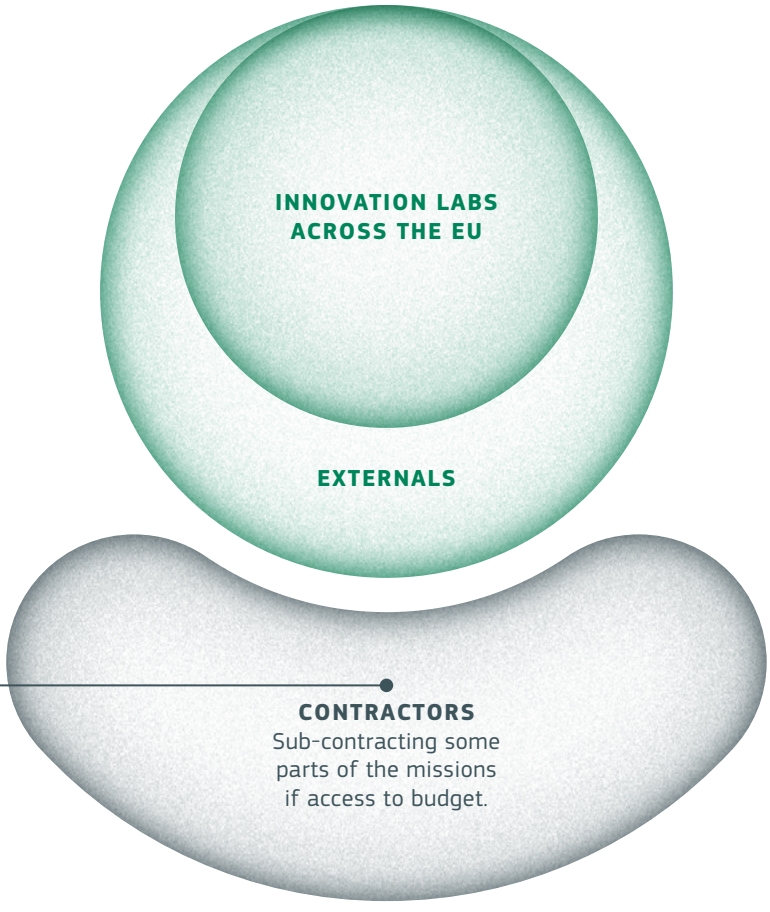
- Time: 1,5 day a week.
- Work time and meetings.
- Meeting: weekly working time 2h + catch up 30min.



- Time for participation and feedback / editing on content ~4h a month.
- European commission workshop / Other ad hoc interactions.

- Updates on teams.
- Monthly show and tell not mandatory.
- Occasional feedback & interactions in online platform.

OUTSIDE THE EUROPEAN COMMISSION



- External contractor voices that counts.
- External designer.
- External experts.

Source: Authors' own conceptualisation

Workshops

Workshops have become one of the primary and indispensable tools of participatory initiatives. Design-driven workshops have the particularity of bringing visual and systemic thinking together with collaboration through making using creative and playful tools, allowing participants to go beyond textual, linear and verbal reasoning to tackle complex contemporary challenges. During this project, five workshops with policymakers were organised. These collective moments created a safe and open space for policymakers to explore alternative ways of working, outside their usual meeting places, with different working tools and undefined deliverable objectives. Among other activities, we asked them to ① write water poems, ② co-analyse research data to build a shared understanding and collectively own the results **(FIGURE 6)**, ③ draw water bodies and ④ use systems mapping.

Visualisation and materialisation

Visualisation and materialisation are other characteristics of design-driven projects that allow a holistic and systemic approach to be taken for complex topics. We created three key mapping and data visualisation tools to promote visual and systemic thinking: we visualised and used the outcomes of the media analysis presented earlier in a media topic sheet **(FIGURE 7 AND 8)**, created a visual map of the European Commission's work on water, including DGs, units, policies, the water cycle and water bodies **(FIGURE 9)** and transformed the communication draft of the Interservice Group on Water Resilience into a visual map **(FIGURE 10)**.

→ For further details, see the summary in **ANNEX IV**.

FIGURE 6. Co-analysis of different data streams by policymakers.

Source: Authors

FIGURE 7. EU Media discourse analysis, overview of topics.

The blue dot indicates that water is central to the topic.
The percentage indicates the frequency of the topic in the whole corpus of articles we collected.
The emoji indicates the tone or sentiment associated with the topic.
One topic was deleted as it gathered articles with no specific topic.

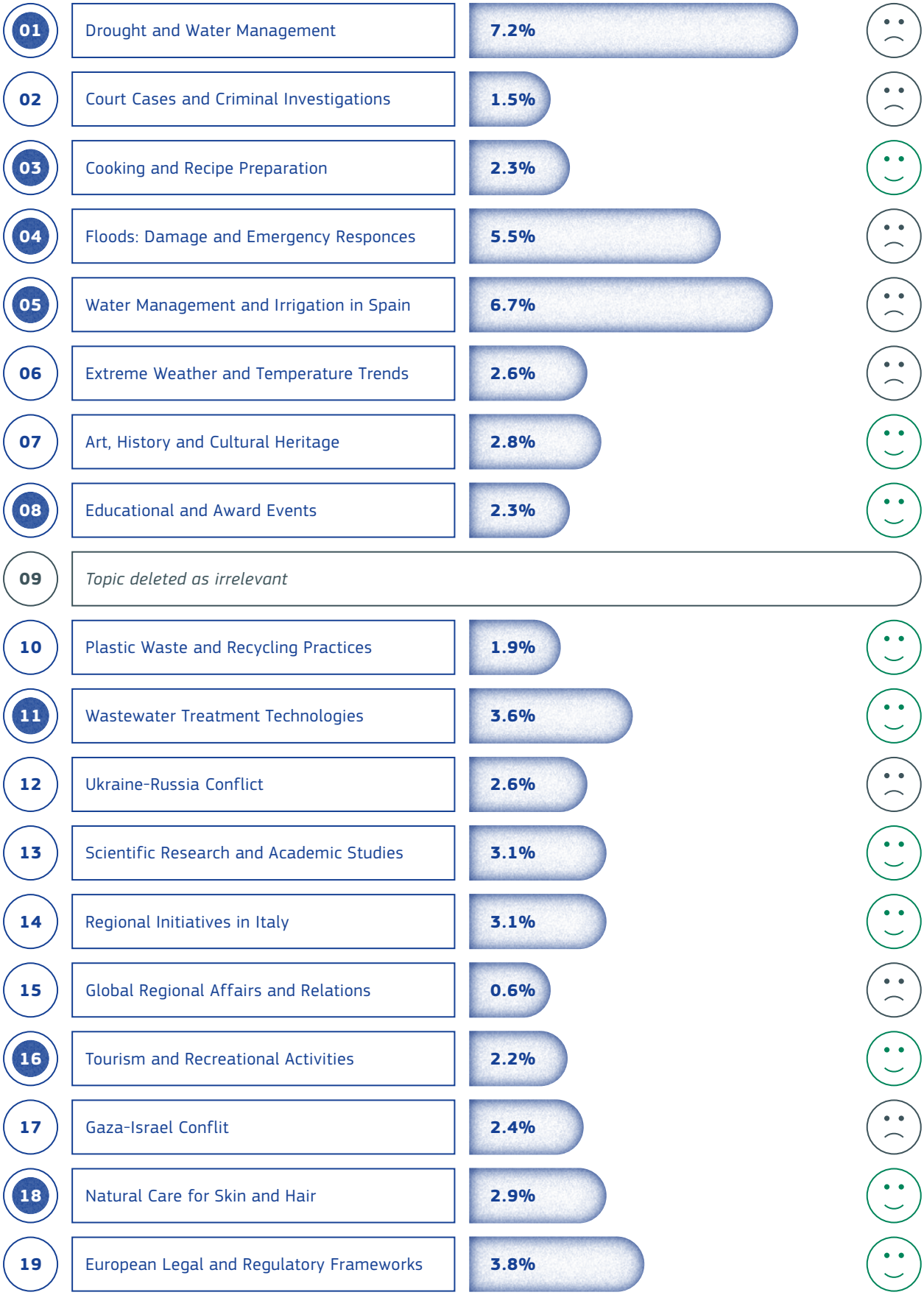
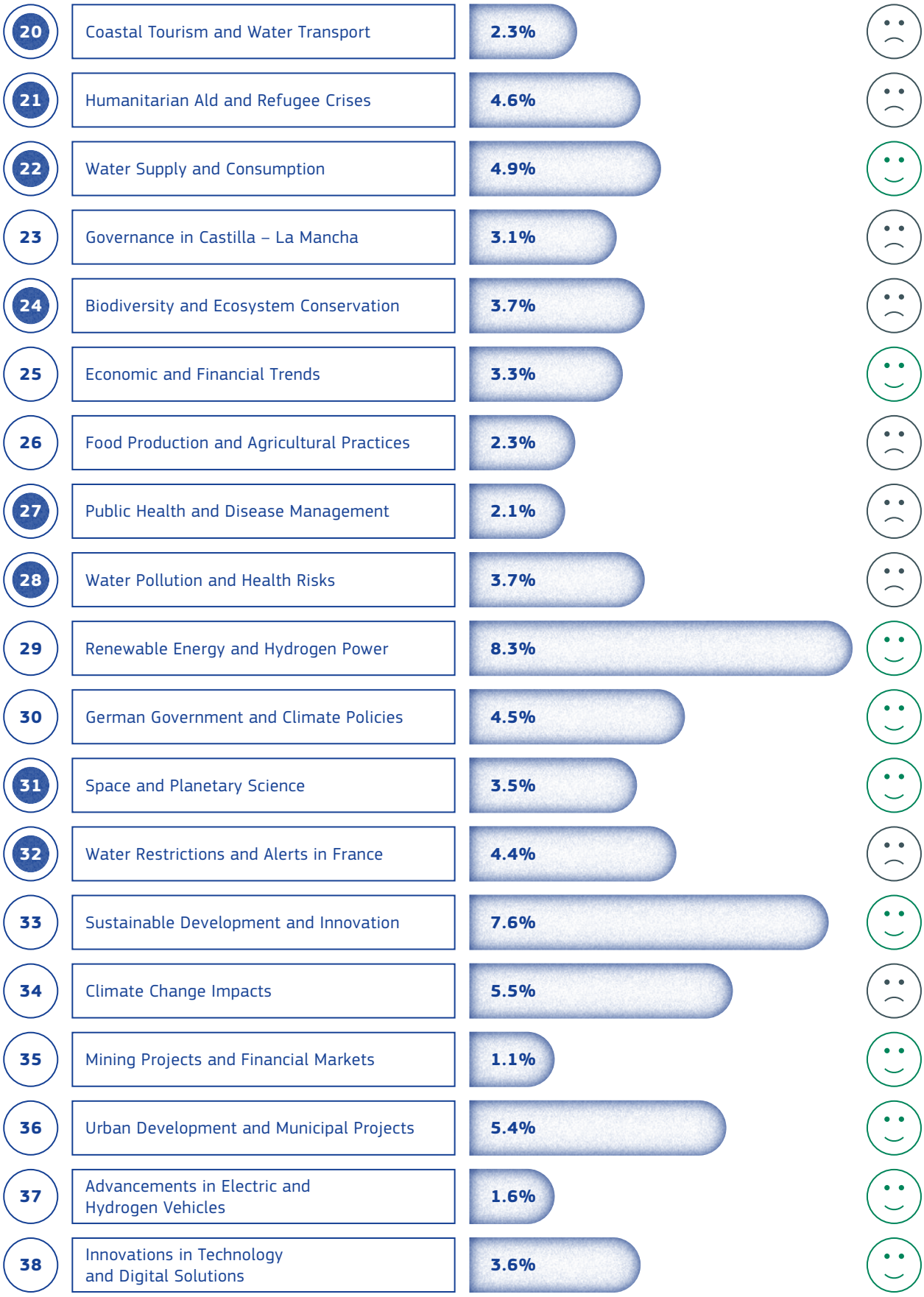


FIGURE 7. EU Media discourse analysis, overview of topics.



Source: Authors' own conceptualisation

THESE COLLECTIVE MOMENTS CREATED A SAFE AND OPEN SPACE FOR POLICYMAKERS TO EXPLORE ALTERNATIVE WAYS OF WORKING.

FIGURE 8. EU Media discourse analysis, topic sheets for workshop activities.

Source: Authors

FIGURE 9. Visual map of the European Commission's work on water.

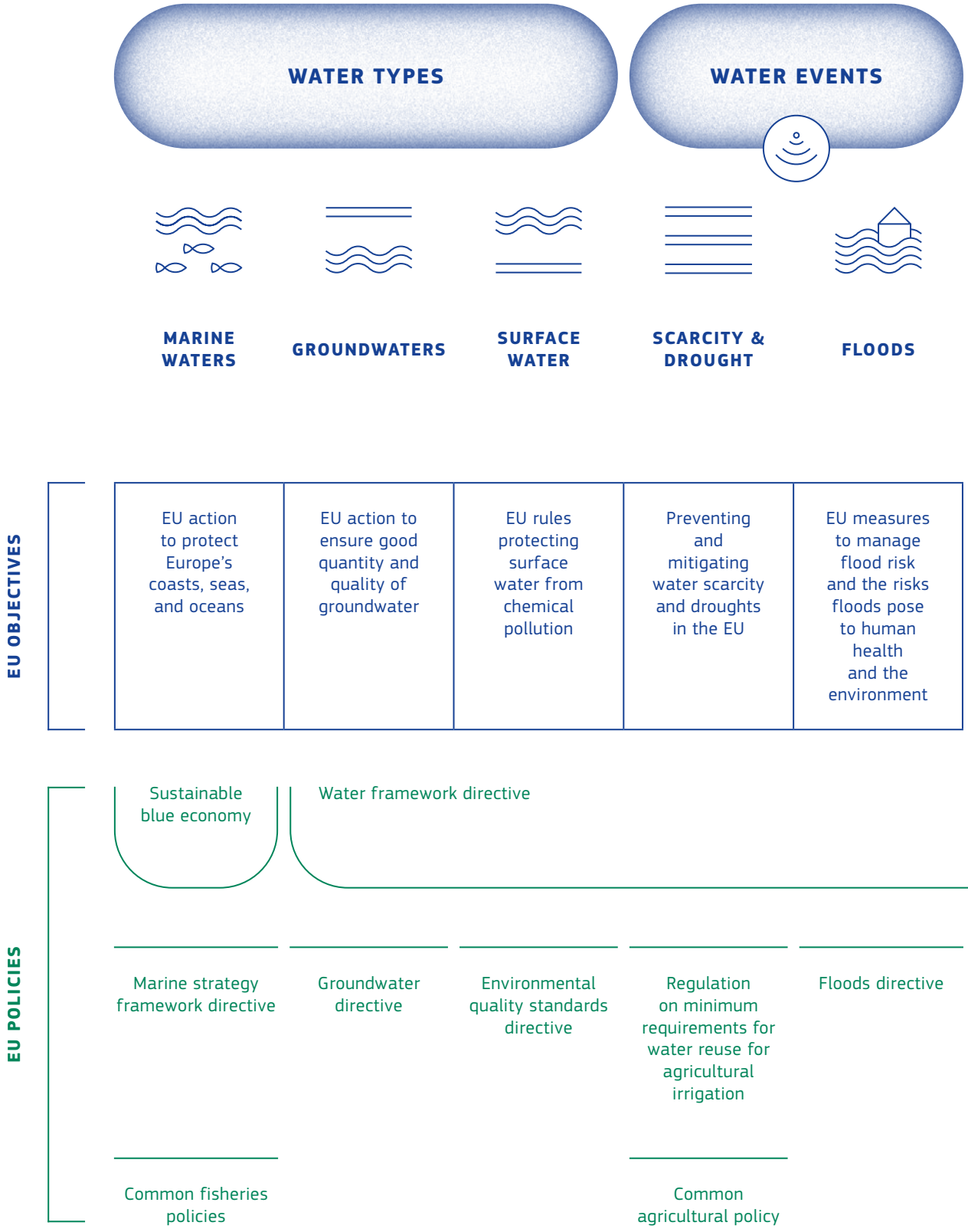
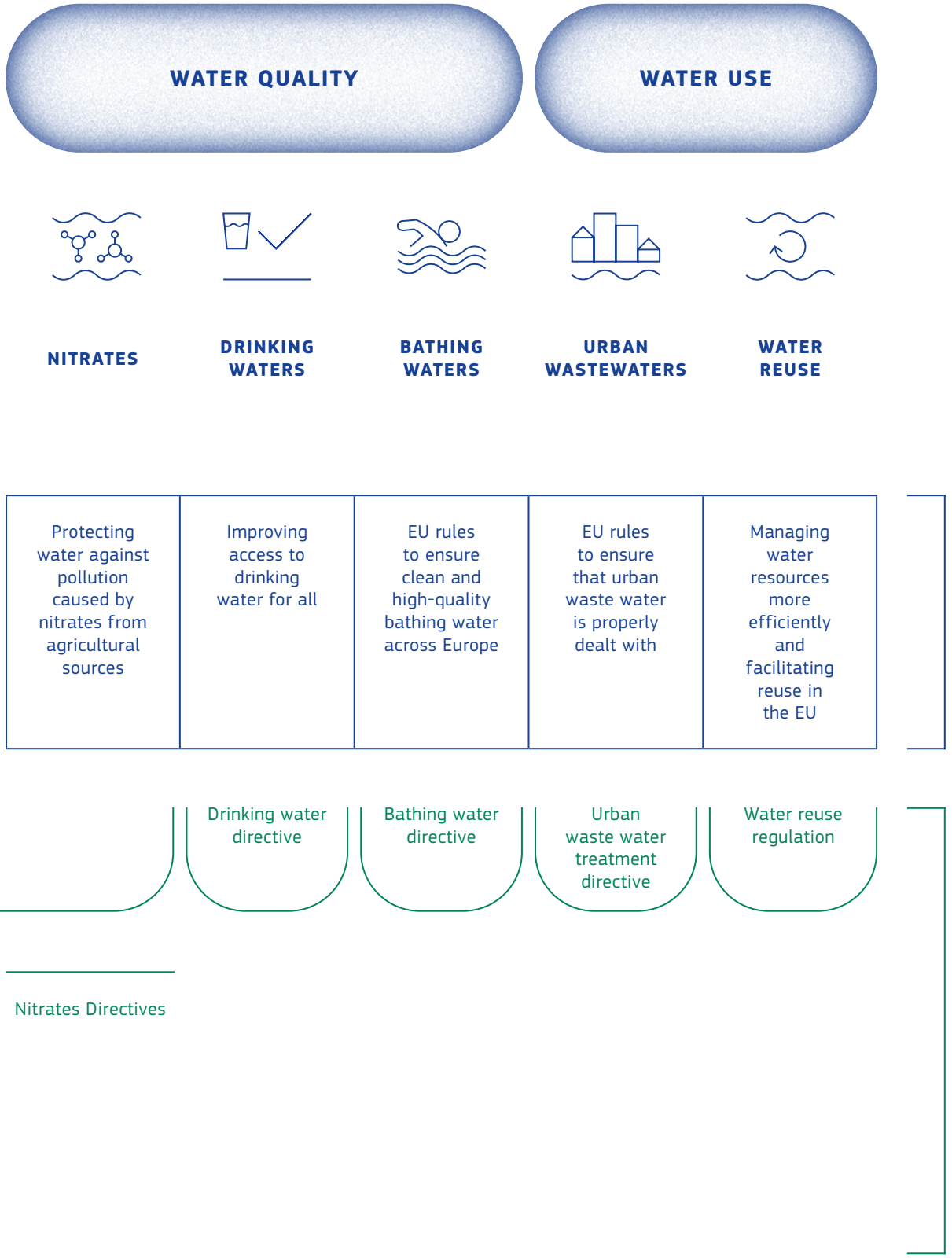


FIGURE 9. Visual map of the European Commission's work on water.



Source: Authors' own conceptualisation

FIGURE 10. Workshop in which participants analysed the communication draft crafted into a visual map using the theory of change format.

Source: Authors

FIGURE 11. Water Reflections serious game playing session.

Source: Authors

Gamification

Gamification is another creative way to unlock barriers to collaboration through visual tools and making (Xu et al., 2017). We designed Water Reflections, a two-hour role-playing strategy game for policymakers, with the purpose of enhancing the Commission's water resilience strategy. Serious games aim to ① engage users at a deeper level of knowledge, ② improve collaboration and work experience, ③ allow players to learn and use educational content, ④ allow players to practise problem-solving skills (in challenging problems) and ⑤ support behavioural change (Xu et al., 2017). This serious game aims specifically to provide players with scientific evidence from local initiatives (cards provide information on concrete projects related to water), improve collaboration between DGs (through role playing, sorting and playing), identify implementation avenues (by selecting and investing in cases to scale up or down these initiatives) and foster systemic thinking (by analysing the strategy through the systemic change theory of Donella Meadows (1999)). The game was played by 79 colleagues from the Commission between January and June 2024 **(FIGURE 10)**.

→ For further details, see summary in **ANNEX V** or the full report (Hamarat et al., 2025).

CROSS-ANALYSIS

By running multiple research workstreams at the citizen, regional and national levels, while conducting participatory workshops at the Commission level, we were able to identify key learnings across various aspects and groups. This approach helped us to identify patterns and insights, while also providing a comprehensive representation of perspectives from policymakers from different policy areas. In the following section, we provide a cross-analysis of the workstreams presented above. During two half-day sessions, the project work team core members (n = 3) conducted an inductive collaborative analysis and categorised the observations, learnings and actions that might contribute to a holistic, cross-cutting and systemic approach to water resilience at different levels of governance. This work was reviewed during two work sessions: one with two other work team members from DG Environment, who followed the entire project, and one with three colleagues from the EU Policy Lab. These sessions allowed us to update and reorganise the project outcomes, identify opportunities and prioritise specific dimensions.

4

OBSERVATIONS AND LEARNINGS

During the water resilience experiment, we identified three dimensions that have an impact on setting up a holistic, cross-cutting and systemic approach to water resilience in both specific and multiple levels of governance that we investigated. The first is the framing of the topic. The second is the internal organisation at the European Commission, which is likely to reflect similar patterns in national and regional/local administrations. The third is the implementation of EU policies in Member States and local knowledge. An overview of these dimensions, framed as observations and learnings, is presented in **FIGURE 11**.

The observations across the three dimensions are often interdependent. For example, the framing of the topic and the internal organisation are intimately interconnected. Work division, habits and tools might not allow the tackling of water issues from a water cycle perspective and may hinder a holistic approach. Similarly, the way the water topic is framed at different levels of governance (e.g. EU versus local) might have an impact on the collaborative efforts between levels and create gaps between policies and implementation.

Before presenting these observations, we want to highlight that some of these learnings are based on limited data and some are formulated using a hypothetical approach to avoid premature generalisations. We present them as working tools to contribute to internal organisational transformational initiatives. We provide a description and examples from our multilevel fieldwork for each observation and learning. In summary, the observations outlined above aim to provide a better understanding of how we can improve public administrations' ways of tackling water resilience with a holistic, cross-cutting and systemic approach.

Following these observations and learnings, eight practice-oriented transformative actions are proposed in Section 5 to contribute to the European Commission's water resilience strategy.

PROVIDE A BETTER UNDERSTANDING OF HOW WE CAN IMPROVE PUBLIC ADMINISTRATIONS' WAYS OF TACKLING WATER RESILIENCE WITH A HOLISTIC, CROSS-CUTTING AND SYSTEMIC APPROACH.

TABLE 3. An overview of the observations and learnings.

FRAMING THE TOPIC	INTERNAL ORGANISATION	IMPLEMENTATION AND LOCAL KNOWLEDGE
The perception of water is often reduced to 'urgent and visible' water events across Europe	Interactions often focus on negotiation rather than collaboration	The behavioural dimension of EU policy implementation barriers is missing
Water is mainly seen as a resource for human activities	Initial project set-ups influence how diff erent DGs participate	Policymakers' assumptions about citizens' concerns are not always correct
Water discourses differ across European regions	Specific conditions motivate cross-DG initiatives	Integrating experiences of people and places could improve the public engagement approach
Specific water topics instead of broad concepts and framings enhance the quality of engagement	Visual tools help transform collaboration	There is a need for tailoring approaches to regional and local concerns
		Valorising local knowledge could help build trust across governance levels
		Water events can shape identities of places and help those affected to recognise the role of water in these identities

WORKING TOOLS TO CONTRIBUTE TO INTERNAL ORGANISATIONAL TRANSFORMATIONAL INITIATIVES.

Source: Authors' own conceptualisation

4.1

FRAMING THE TOPIC

The way we frame water-related topics significantly influences our understanding of and the way we tackle water issues. We observed four practices:

1. **the perception of water is often reduced to 'urgent and visible' water events across Europe;**
2. **water is mainly seen as a resource for human activities;**
3. **water discourses differ across European regions;**
4. **specific water topics, instead of broad concepts and framings, enhance the quality of engagement.**

1. THE PERCEPTION OF WATER IS OFTEN REDUCED TO 'URGENT AND VISIBLE' WATER EVENTS ACROSS EUROPE

The discussions undertaken and the data we collected at the different levels of governance primarily focused on specific water issues and lacked a holistic approach. Actions and decisions seem to be predominantly focused on immediate and urgent issues such as floods, droughts and water scarcity, as they are visible (in terms of impacts) events. We call these situations water-related events and they have their own timescales. **These urgent situations foster short-term thinking and decisions, and the interconnections between urgent water issues and broader and long-term ecological issues are often overlooked**.

For example, citizens very often mentioned water shortages when asked about an experience that emphasised the importance of water in their personal or professional lives. The most common association with water in media discourse revolves around natural disasters like floods and droughts, water management and citizens' preparedness in such events. Water pricing, water in international relations, water consumed or used for tourism, water conflicts and the destruction of water supplies in wars are less predominant topics. This is not surprising given the very different geographical, ecological economic and social circumstances of EU Member States and explain why in most cases EU water policies relies on a strong application of the principle of subsidiarity (e.g. directives rather than regulations) and the application of integrated water management at the level of river basins. The Water Reflections game results show that policymakers mainly focus on the first six categories of systemic transition[8] and neglect actions promoting the cultural change necessary to tackle water resilience with a sustainable long-term approach. In the game, policymakers selected, debated and invested in cases mostly related to infrastructures, information and regulations, focusing mainly on drinking water, restoration and depollution. Cases related to artistic initiatives, cultural beliefs, social constructions and water's legal entity were often discarded and were labelled as not a priority or urgency, thereby creating a barrier to tackling water resilience via a systemic and holistic approach.

ACTIONS AND DECISIONS SEEM TO BE PREDOMINANTLY FOCUSED ON IMMEDIATE AND URGENT ISSUES SUCH AS FLOODS, DROUGHTS AND WATER SCARCITY, AS THEY ARE VISIBLE.

[8] The Water Reflections serious game was designed using system change principles based on the work of Donella Meadows. For gaming purposes, we simplified the 12 leverage points into 7. See the detailed report for more information (Hamarat et al., 2025).

2. WATER IS MAINLY SEEN AS A RESOURCE FOR HUMAN ACTIVITIES

Even though environmental dimensions and orientations were dominant throughout the project, the discussions undertaken and **the data that we collected mostly focused on treating and reporting water as a resource for human needs and activities**. For example, in the workshops, the focus and discussions were related to human challenges, such as drinking water, cleaning, agriculture and heatwaves. Animals or the planet's biodiversity were barely evoked across workstreams. In the Water Reflections game, 'drinking water standards' was the most selected card; the second and third most popular cases were related to restoration and depollution of water, respectively. In only 8 % of stories did citizens select 'habitat of biodiversity' when they were asked to identify water's role in their stories, expressing a weak link with the non-human dimensions. Even when the role of water in 'supporting life' was selected by citizens, the stories mainly focused on human lives.

3. WATER DISCOURSES DIFFER ACROSS EUROPEAN REGIONS

We observed a noticeable difference in the most salient topics across countries (Belgium, Germany, Spain, France, Italy, the Netherlands, Austria and Poland) or region. For example, the media discourse differs between German-speaking (i.e. Germany and Austria) and Mediterranean countries (i.e. Spain, France and Italy), with opposite topics prioritised: **German-speaking countries have a stronger focus on water used in the energy and technology sector, while Mediterranean countries mainly focus on water management and related extreme events**. For example, articles mentioning water in the context of renewable energy and hydrogen power dominate the media discourse of German-speaking countries, accounting for approximately 20 % of the water-related media coverage. The second most prevalent topic is climate policy in Germany (13.5 %) and water in the context of economic and financial trends in Austria (7.7 %). In contrast, in Mediterranean regions, the most prominent topics include water restrictions and alerts in France (18.6 %), water management and irrigation in Spain (12.9 %) and regional initiatives on water management and infrastructure development in Italy (11 %). This discrepancy indicates that there are differing priorities and perspectives on water-related issues and opportunities across the EU. This is not surprising, given the very different geographical, ecological, economic and social circumstances of Member States. It also explains why, in most cases, EU water policies rely on a strong application of the principle of subsidiarity (e.g. directives rather than regulations) and the application of integrated water management at the level of river basins.

The varying focus across regions results in divergent policy directions and resource allocations. For instance, having one region pushing for technological investments in water-efficient infrastructure while another prioritises emergency-response systems for flood management requires a flexible and tailored approach at the EU level. At the same time, these observed disparities in regional media might make it difficult to reach a common EU-level narrative and mission and for there to be alignment on the path forwards for more collective action and coordination across the EU. This selective tailored media coverage, without an EU-level common mission, over time might be a barrier to building a holistic approach to water resilience.

EVEN THOUGH ENVIRONMENTAL DIMENSIONS AND ORIENTATIONS WERE DOMINANT THROUGHOUT THE PROJECT, THE DISCUSSIONS UNDERTAKEN AND THE DATA THAT WE COLLECTED MOSTLY FOCUSED ON TREATING AND REPORTING WATER AS A RESOURCE FOR HUMAN NEEDS AND ACTIVITIES.

4. SPECIFIC WATER TOPICS, INSTEAD OF BROAD CONCEPTS AND FRAMINGS, ENHANCE THE QUALITY OF ENGAGEMENT

Focusing on specific water-related topics and carefully framing these issues enhances the attention and willingness to act of citizens, the media, communities and policymakers. We can facilitate more engaging discussions between stakeholders through topics that are of interest to them and specific concrete situations. These create more collaborative environments and help to develop a shared understanding of challenges, setting the conditions for working on broader concepts.

The stories collected from citizens show that people feel empowered to influence water-related situations. They express motivation and a desire to act individually, sharing hope for the future. Their stories mostly relate to topics such as health and well-being, recreation and tourism, housing and living conditions, the environment and climate, and food and agriculture. In media discourse, the most common topics revolve around natural disasters like floods and droughts, associated water management and citizen preparedness for such events.

Beyond the specific topics, our observations during gaming and workshop debates revealed that the framing of these issues influences collaboration. Providing a specific set of challenging situations or cases to initiate cross-DG collaboration, rather than broad topics or concepts, facilitated the integration of diverse perspectives during discussions. Specific cases enabled more content-based debates, allowing knowledge and experience sharing to take place and smoothing communication and the practical grounding of the collaboration.

These insights might contribute to better shaping the 'economy of attention'[9] at different levels of governance when it comes to water. By acknowledging and leveraging these focal points, we can make use of the untapped potential to enhance engagement and action in water governance.

PROVIDING A SPECIFIC SET OF CHALLENGING SITUATIONS OR CASES TO INITIATE CROSS-DG COLLABORATION, RATHER THAN BROAD TOPICS OR CONCEPTS, FACILITATED THE INTEGRATION OF DIVERSE PERSPECTIVES DURING DISCUSSIONS.

[9] Economy of attention refers to the management of limited available human attention as hours in a day, treating it as a scarce commodity and valuable capital, specifically in the context of today's global digitalisation of information (Davenport and Beck, 2001).

TABLE 4. An overview of opportunity areas by governance level.

GOVERNANCE LEVEL	OPPORTUNITY AREAS
EU LEVEL: EUROPEAN COMMISSION POLICYMAKERS	The focus was on urgent and visible water events such as access to drinking water, droughts and floods, which were understood through the lens of water quantity, quality and accessibility and framed by the food, energy and health needs of humans.
NATIONAL LEVEL: EUROPEAN MEDIA DISCOURSE	Media discourse was focused mostly on drought and water management, followed by floods: damage and emergency response were both associated with a negative tone. Renewable energy and hydrogen power, and sustainable development and innovation were both associated with a positive tone.
REGIONAL/ PROVINCIAL LEVEL: INNOVATION LABS	The focus was on young people's connection with water, living labs, local and regional multistakeholder collaborations around water bodies, emergency responses for droughts, local identity and caring for water.
LOCAL LEVEL: CITIZENS	Stories were mostly related to health and well-being, recreation and tourism, housing and living conditions, the environment and climate, and food and agriculture. Access to water, primarily understood in citizens' stories as short- or long-term disruptions, was considered more important than water quality, which itself was prioritised over water quantity (interpreted as issues of water excess or scarcity but possibly misunderstood due to wording). This emphasis is more pronounced in certain regions.

Source: Authors' own conceptualisation

4.2

INTERNAL ORGANISATION

We observed four internal organisational practices that may have an impact on the development of a holistic, systemic and cross-cutting approach to water resilience:

1. **interactions often focus on negotiation rather than collaboration;**
2. **initial project set-ups influence how different DGs participate;**
3. **specific conditions motivate cross-DG initiatives;**
4. **visual tools help to transform collaboration.**

1. INTERACTIONS OFTEN FOCUS ON NEGOTIATION RATHER THAN COLLABORATION

During this project, we observed the strong role that negotiation plays in the relationships and collaborations between policymakers. During workshop activities and other interactions, the predominant approach to decision-making was to divide resources and negotiate an agreement, rather than decide collaboratively. To use an example, during a serious game session, instead of deciding collaboratively on how to invest the 10 tokens given to the players, two groups preferred to divide equally the 10 tokens so that they could individually decide in which cases to invest to ensure alignment with their DGs' interests.

This dynamic was also observed during other workshop debates, for instance when we asked policymakers in the first workshop to collaboratively map the common policy landscape and the interconnection of DGs. In this instance, each DG listed its own priorities and negotiated the correlation and connections with the others. We also observed that, during the game when role-playing (playing another DG's role), policymakers struggled to identify other DGs' missions and connections to water. They lacked a comprehensive understanding of the different priorities and missions, which led to a high-level, stereotyped view of others' work on water. This limited their reference to ongoing initiatives, often reducing their perspective to the common associations with directives or policies.

2. INITIAL PROJECT SET-UPS INFLUENCE HOW DIFFERENT DIRECTORATES-GENERAL PARTICIPATE

We observed three elements affecting the DGs' involvement in cross-cutting initiatives. The first is the origin of the project and its ownership by a DG. As the water resilience experiment was originally requested by DG Environment, this led to the project being labelled, for example, as an 'ecology-driven' project that, therefore, 'neglects economy'. Second, **the framing of the project and the initial composition of the project team sometimes acted as a barrier to a holistic approach**. For example, the cases initially selected for the serious game's first testing session were mainly environmental, and policymakers playing the role of DG Internal Market, Industry, Entrepreneurship and SMEs and DG Energy were struggling to find interest when playing. Third, tension exists between the past and future work of the DGs. DGs need to connect and give value to their past and ongoing work related to water while at the same time being part of and designing a coherent and collaborative water resilience strategy for the future. This situation creates tension, causing individual DGs' efforts to take precedence over collaborative approaches. As a result, documents and efforts intended to be collaborative become fragmented collections to showcase and valorise past and ongoing initiatives. Policymakers are then tasked with the difficult job of integrating these pieces to form a unified, collective approach for a future-oriented outcome.

THE VISUALISATION ALLOWED POLICYMAKERS AND SCIENTISTS TO COLLABORATIVELY ANALYSE THE COMMUNICATION, MAKING CONNECTIONS BETWEEN THE ACTIONS AND PRIORITIES IDENTIFIED, ON THE ONE HAND, AND THE OVERARCHING INTENDED IMPACT REQUIRED FOR THE SCALE OF THE CHALLENGE, ON THE OTHER, AS WELL AS THEIR INTERDEPENDENCIES.

3. SPECIFIC CONDITIONS MOTIVATE CROSS-DIRECTORATE-GENERAL INITIATIVES

We observed three main motivations for policymakers to participate in collaborative cross-DG initiatives. First, when the **content produced in these activities might be potentially useful for policymakers' own missions** and projects, policymakers take an active role and participate. Second, when leaders have **past participatory experiences** and know the value of these approaches, they encourage and create space for their teams to take part in the initiatives and they usually also follow this up. Third, when a policymaker is responsible for a topic (in this case water) in their DG, there is a **duty to follow up on the project** and engage, to defend or promote interests. In the third case, the policymaker's participation is more reactive. Policymakers seem to interact with content and work to ensure their priorities and interests are considered and visible.

4. VISUAL TOOLS HELP TO TRANSFORM COLLABORATION

We visually mapped the communication draft that the Interservice Group on Water Resilience was working on as a visual map based on the theory of change, breaking it down into actions, intended outcomes and impacts **(FIGURE 2 AND 10)**. We used this tool during two workshops to allow policymakers and scientists to focus on the existing and possibly missing correlations between the actions and the intended goals. The visualisation allowed policymakers and scientists to collaboratively analyse the communication, making connections between the actions and priorities identified, on the one hand, and the overarching intended impact required for the scale of the challenge, on the other, as well as their interdependencies.

4.3

IMPLEMENTATION AND LOCAL KNOWLEDGE

We highlight six observations and learnings related to dynamics between the different levels of governance, and specifically between EU and local knowledge, which in turn have an impact on the design and implementation of policies:

1. **the behavioural dimension of EU policy implementation barriers is missing;**
2. **policymakers' assumptions about citizens' concerns are not always correct;**
3. **integrating experiences of people and places could improve the public engagement approach;**
4. **there is a need to tailor approaches to regional and local concerns;**
5. **valorising local knowledge could help build trust across governance levels;**
6. **water events can shape identities of places and help those affected to recognise the role of water in these identities.**

1. THE BEHAVIOURAL DIMENSION OF EU POLICY IMPLEMENTATION BARRIERS IS MISSING

There is a gap between the barriers stated in official implementation reports (related to the water framework directive and the floods directive) and what EU policymakers perceive as the barriers to implementation. The former makes little or no reference to behavioural factors, while this project shows that policymakers raise a number of behavioural barriers. We analysed the implementation barriers mentioned in different documents related to the water framework directive and the floods directive [10]. While the **Member States' reports primarily focus on structural and financial barriers – lack of finance, governance issues, lack of mechanisms for implementing measures, unexpected planning delays, extreme events and lack of effective measures** – behavioural aspects may explain or interconnect with these identified barriers. This aligns with some of the conclusions in the 2019 fitness check [11] of four water policies [12] and the insights gained from the policymakers who participated in our first workshop: **behavioural factors were often perceived as an obstacle to policy implementation**. These included diverging values and priorities, political reluctance or avoidance, a lack of cooperation or resource sharing, a lack of awareness and communication, risk minimisation behaviour, resistance to change, deeply anchored habits and short termism. This lack of consideration might slow down the process of addressing implementation barriers by overlooking the behavioural roots of decision-making at various levels. The European Commission's influence on most behavioural barriers was considered low to medium by our workshop participants, highlighting the **importance of direct cooperation with Member States to effectively address these behavioural challenges**.

[10] See Member States' reports on the progress of the programmes of measures (POMs) during the second planning cycle of the water framework directive (Section 1.2 on obstacles to implementation of the POMs of the sixth implementation report (2021)). We also take account of the report from the Commission to the Council and the European Parliament on the implementation of the water framework directive (2000/60/EC), the environmental quality standards directive (2008/105/EC, amended by Directive 2013/39/EU) and the floods directive (2007/60/EC). All documents are available from the Commission website.

[11] A fitness check is a type of evaluation that assesses several related actions. It focuses on identifying how different laws, policies and programmes interact, any inconsistencies or synergies, and their collective impact.

[12] The conclusions include that there is resistance to change, a lack of political will and a lack of cooperation (see the full report).

2. POLICYMAKERS' ASSUMPTIONS ABOUT CITIZEN CONCERNS ARE NOT ALWAYS CORRECT

We asked 16 policymakers from various DGs, whose work relates to water, to predict the responses of 2 666 citizens to our water stories collection and questionnaire. We then compared their guesses to the actual answers. Although the ranking of topics differed slightly, policymakers were relatively successful in predicting the general themes that citizens would discuss. Policymakers also correctly anticipated that water availability would be a major concern for future water use according to citizens. However, an unexpected finding emerged: most citizen stories focused on access to water rather than its quantity or quality, which none of the policymakers had predicted. However, this discrepancy could be attributed to a lack of a clear definition of these categories in the survey or to a different interpretation of 'access to water' between citizens and policymakers, as highlighted in TABLE 3. For policymakers, access to water might be primarily associated with a lack of access to drinking water on a large scale or with a long-term, systemic issue such as affordability. In contrast, citizens often referenced short-term disruptions, such as interruptions to water supply for a few hours or days due to infrastructural problems. This difference may also reflect a broader distinction between **citizens' focus on practical, day-to-day challenges and policymakers' attention to systemic, long-term concerns**, such as affordability. This insight could prove useful for policymakers, allowing them to better align their strategies with the public's immediate concerns. Additionally, **policymakers predominantly expected expressions of fear for the future in the citizens' stories, whereas most citizens actually conveyed a sense of hope.** This divergence highlights the need for policymakers to understand the more optimistic outlook that many citizens have regarding water-related issues. Most importantly, only two policymakers predicted that citizens would be identified as the most influential actors in the stories, while the majority of citizens highlighted their own individual responsibility. Most policymakers, on the other hand, predicted that businesses and governments would be identified as playing a larger role, revealing a potential misperception of the public's sense of individual agency.

It is important to note that these insights are drawn from a very limited number of observations (16 policymakers), and therefore broader generalisations shall not be made.

3. INTEGRATING EXPERIENCES OF PEOPLE AND PLACES COULD IMPROVE THE PUBLIC ENGAGEMENT APPROACH

Personal beliefs and experiences largely influence people's perceptions of water and their capacity to act for water. More specifically, **both water disruption and water scarcity are important factors in the public consciousness, as observed in water stories from citizens**. Water use is also deeply integrated into daily routines and habits (e.g. drinking, cooking and cleaning). The disruption of daily habits, due to the absence of water, forces individuals to consciously reflect on its importance and their dependence on it. What mostly influences people's perceptions and actions in their stories is personal well-being and health, followed by personal life experience, environmental concern and climate change and, to a lesser extent, considerations for future generations. **Understanding people's experiences as reported in their narratives could help to foster a proactive, rather than reactive, public engagement approach**.

THE DISRUPTION OF DAILY HABITS, DUE TO THE ABSENCE OF WATER, FORCES INDIVIDUALS TO CONSCIOUSLY REFLECT ON ITS IMPORTANCE AND THEIR DEPENDENCE ON IT.

4. THERE IS A NEED TO TAILOR APPROACHES TO REGIONAL AND LOCAL CONCERNS

Concerns and motivators expressed by citizens, as well as by the people involved in the labs across Europe, depend on their surroundings and contexts. This is particularly noticeable as regards cross-border issues.

According to the citizens' stories, in the Mediterranean region, environmental and climate change concerns are most likely to shape people's perceptions, whereas health and water quality are more likely to play a role in people living in Baltic states. Another example is respondents living in/near rural areas, who have a slight tendency towards being more worried about the future, compared with respondents living in (sub)urban areas. Finally, **people living near freshwater tend to focus on conservation and mindful use, while those near the sea are more likely to appreciate its importance for life and enjoy recreational activities, reflecting differing perceptions based on their context**.

The media has also highlighted how different areas of the EU focus on different topics, showing that there are thematic similarities across geographical regions. German-speaking countries (Germany and Austria), for instance, focused more on energy, technology and innovation, while Mediterranean and southern countries (Spain, France and Italy), in general, mainly focused on water management, including related emergencies. What is communicated in the media, could influence the allocation of resources and the focus of the topics, as well as the public acceptance of action.

5. VALORISING LOCAL KNOWLEDGE COULD HELP TO BUILD TRUST ACROSS GOVERNANCE LEVELS

The collaboration deployed by innovation labs in their fieldwork shows that engaging communities and citizens and tapping into local knowledge could help to build trust and agency. Activating and empowering these groups contributes to a holistic approach to water resilience.

For example, **communities often establish informal support networks to provide care for each other, and they have cultural traditions and solutions for natural events and situations**. The concept of trust also emerged, specifically the perception of trust between the community and the local authorities, partially shaped by how effective and efficient the response to issues is. Quick and effective responses to emergencies, such as immediate rescue operations and relief distribution, demonstrate the skills of the local authorities, thereby building trust. However, local authorities might also face ethical dilemmas concerning the allocation of resources and the order of priorities, which can negatively affect trust levels.

WHAT IS COMMUNICATED IN THE MEDIA, COULD INFLUENCE THE ALLOCATION OF RESOURCES AND THE FOCUS OF THE TOPICS, AS WELL AS THE PUBLIC ACCEPTANCE OF ACTION.

6. WATER EVENTS CAN SHAPE IDENTITIES OF PLACES AND HELP THOSE AFFECTED TO RECOGNISE THE ROLE OF WATER IN THESE IDENTITIES

As emerged in almost all of the labs' fieldwork, **water events like floods, droughts and other phenomena transform the social, cultural and economic identity of places**. They often change the livelihoods and economic activities of communities that are dependent on water resources by banning, halting or diversifying certain economic activities. In addition, memories of floods or droughts have also become an integral part of local knowledge that have shaped the cultural identity of the place itself.

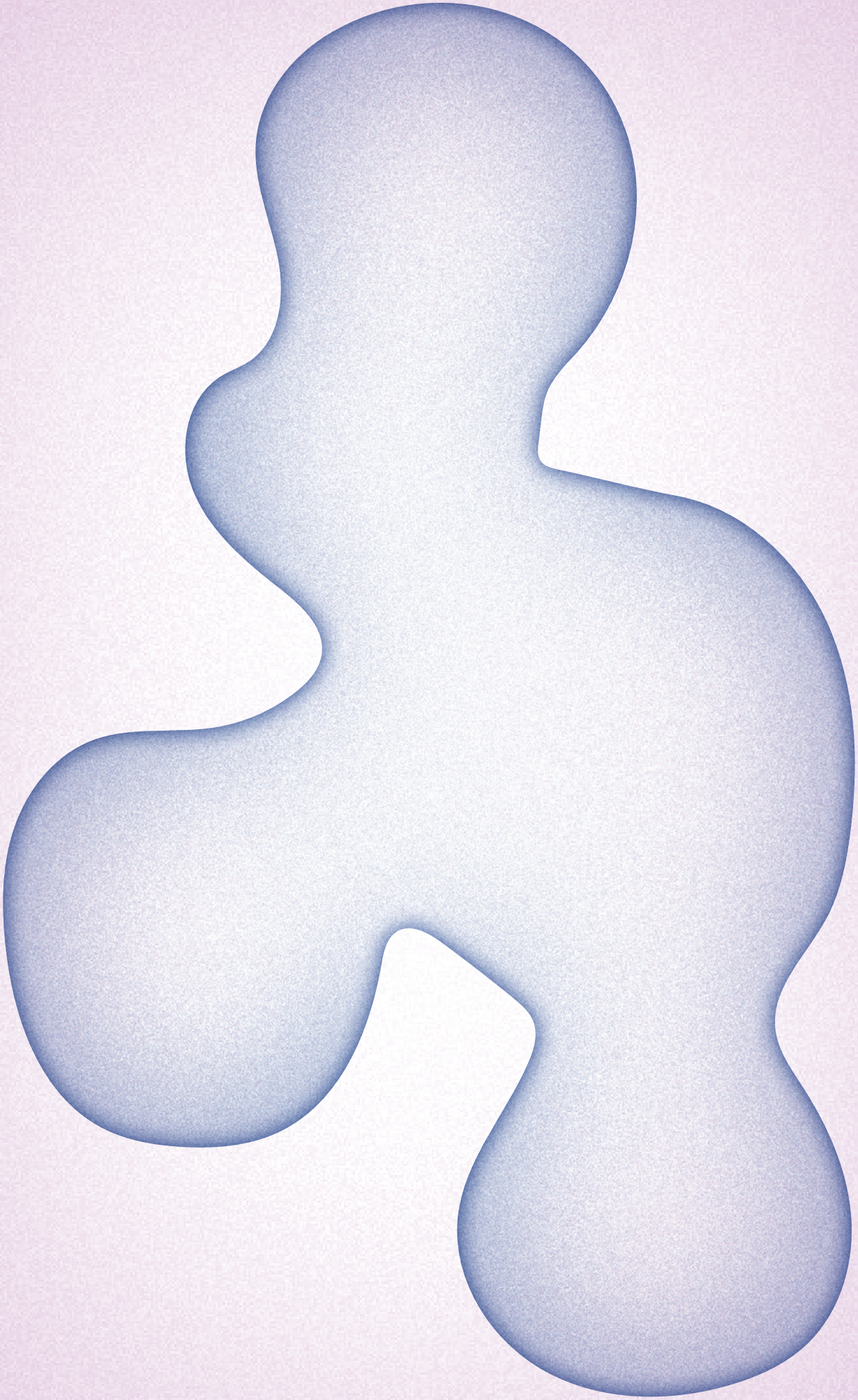
For instance, from the collaboration with the Lithuanian design lab, designing a flood management plan and early warning signs for all (see the UN early warnings for all initiative) that connects to local traditions and knowledge could enable a stronger understanding and deployment of how to integrate local knowledge in policymaking.

Promoting water identity has emerged as an entry point for taking care of water ecosystems. By acknowledging their unique identities, local actors can foster a deeper appreciation for the ecological significance of water ecosystems, promote sustainable management and care practices, and encourage community engagement. This construction of identity also varies through time because water events, issues and relations are also evolving. In some cases, the local identities built in relation to water have shifted from fishing to tourism. This link between water events and identity shows the deep cross-cutting and systemic dimensions of water resilience.

MEMORIES OF FLOODS OR DROUGHTS HAVE ALSO BECOME AN INTEGRAL PART OF LOCAL KNOWLEDGE THAT HAVE SHAPED THE CULTURAL IDENTITY OF THE PLACE ITSELF.

5

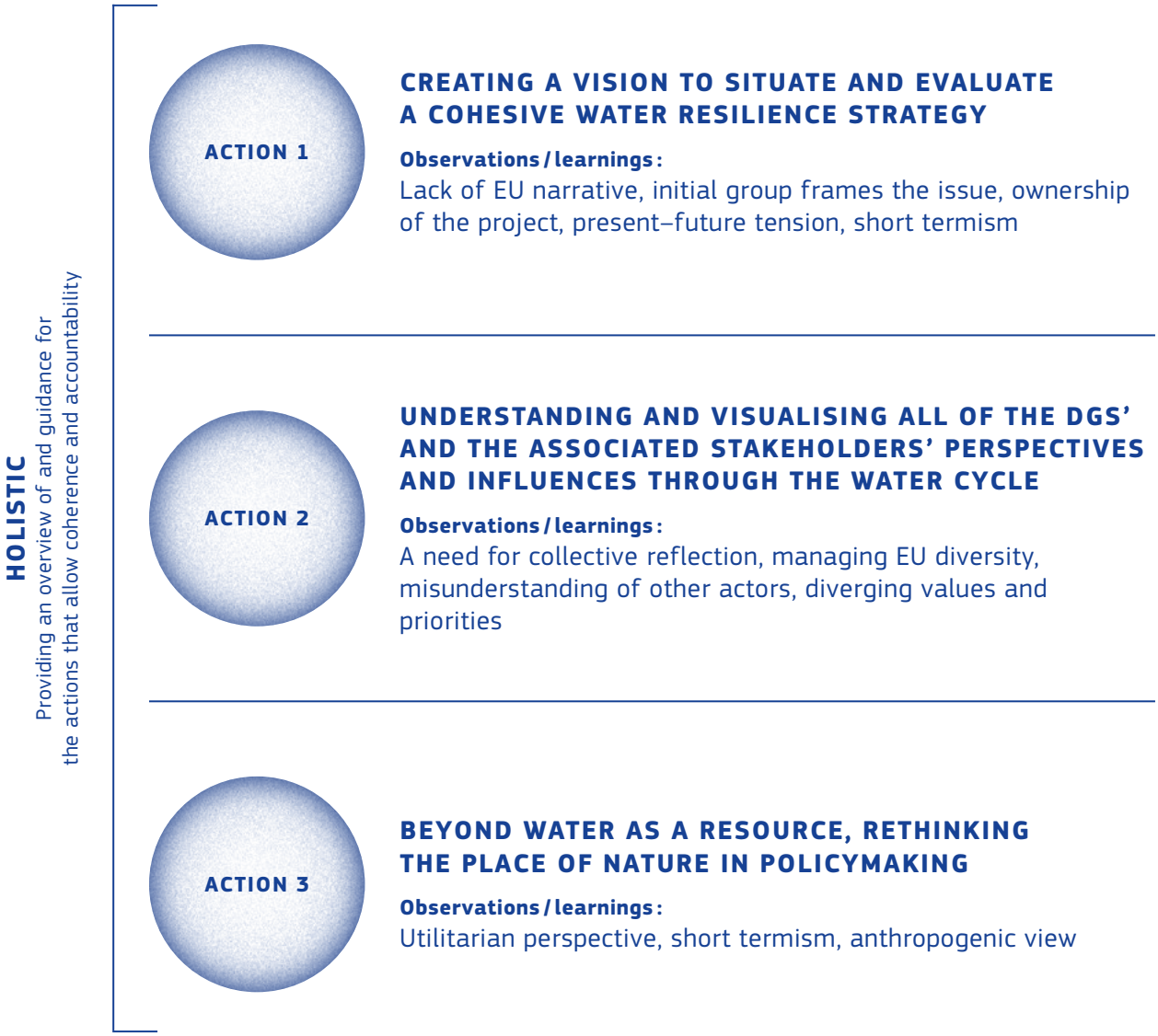
TRANSFORMATIVE ACTIONS FOR WATER RESILIENCE AND INNOVATIVE POLICYMAKING



To explore a holistic, cross-cutting and systemic approach to water resilience, we identified and here propose a set of tools and possible interventions based on this project's learnings. These proposals target individual policymakers, water-related groups and communities at the Commission (e.g. interservice groups, units and teams) and water-related groups and communities outside the Commission (Member States, international organisations, etc.).

Each proposal is drafted in the most practical way possible, to make it actionable, and each sets out why we are proposing it, who could benefit from it, when / for how long it could be done, what it might entail, how to deliver it and where to start. The main objective is to provide a set of actions and possible interventions that could improve current actions and encourage more participation, collaboration and integration of evidence into policymaking.

FIGURE 12. An overview of actions and possible interventions



CROSS-CUTTING

Connecting and coordinating actions across policy areas and levels to empower implementation

ACTION 4

COORDINATING ACTIONS AND LEARNINGS THROUGH PARTICIPATORY WORKSHOPS

Observations / learnings:
Policymakers divided by fields, reactive actions and strategy, lack of proactive change approach

ACTION 5

COLLABORATING WITH MEMBER STATE LABS AND ORGANISATIONS TO INTEGRATE LOCAL LEARNINGS AND FEASIBLE, SCALABLE BUSINESS MODELS

Observations / learnings:
A need to explore ways of collaborating and testing with Member State labs, local organisations and projects to integrate learnings and scalable models. Labs empower communities, informal support networks, leveraging local authorities' role

ACTION 6

ORCHESTRATING CITIZENS' AND COMMUNITIES' ACTIONS THROUGH INTEGRATING THEIR EXPERIENCES

Observations / learnings:
Water use engrained and hidden in daily lives, people's personal and sociocultural experiences, viewed through a health and wellness lens more than from a sustainability perspective, using behavioural evidence

SYSTEMIC

Integrating the multiplicity and interconnectedness of perspectives and views to enable system change

ACTION 7

INTEGRATING SYSTEMIC APPROACHES WITH BEHAVIOURAL INSIGHTS TO OVERCOME IMPLEMENTATION BARRIERS TO EU GREEN POLICIES IN MEMBER STATES

Observations / learnings:
Lack of understanding of behavioural aspects of implementation, political reluctance, lack of cooperation, lack of awareness, risk minimalisation, resistance to change

ACTION 8

USING SERIOUS GAMING TO FOSTER COLLECTIVE SYSTEMIC APPROACHES TO WATER RESILIENCE

Observations / learnings:
Preformed ideas and structures, a struggle to see others' perspectives, a need to integrate local knowledge

Source: Authors' own conceptualisation

TO EXPLORE A HOLISTIC, CROSS-CUTTING AND SYSTEMIC APPROACH TO WATER RESILIENCE, WE IDENTIFIED AND HERE PROPOSE A SET OF TOOLS AND POSSIBLE INTERVENTIONS BASED ON THIS PROJECT'S LEARNINGS.

FIGURE 13. Discussions generated by the systemic maps during workshop 2.

Source: Authors

5.1

HOLISTIC

PROVIDING AN OVERVIEW OF AND GUIDANCE FOR THE ACTIONS THAT ALLOW COHERENCE AND ACCOUNTABILITY

ACTION 1

CREATING A VISION TO SITUATE AND EVALUATE A COHESIVE WATER RESILIENCE STRATEGY

Observations / learnings:
Lack of EU narrative, initial group frames the issue, ownership of the project, present–future tension, short termism

WHY? To ensure the coherence of the Commission's water resilience strategy, it is necessary to understand and map different DGs' actions through a shared framework focusing on outcomes and consequences. The aim is to establish a clear and coherent vision that helps to position each DG's strategies within the European Commission's broader water resilience mission.

WHO? Different policymakers, especially heads or leads of interservice groups, working on water, including the less 'obvious' DGs regarding sectors that will be affected by water resilience challenges.

WHAT? This action involves using vision and theory-of-change tools to write a coherent water resilience strategy. The theory-of-change framework is applied to analyse each decision, action or policy, and it is assessed and evaluated according to the vision created and using the logical flow of the theory of change for the impact and the desired consequences/impact.

HOW? It is implemented by following a participatory research and design process to encourage policymakers to ① experiment with existing vision and theory-of-change tools during participatory workshops; ② co-design an adapted vision and theory-of-change tool for water resilience, integrating different actors and systemic change principles and thus enabling collaboration and coordination; ③ facilitate the organisation of sessions to evaluate DGs' decisions and actions with the tool; and ④ organise training sessions for policymakers to integrate the tool in their daily ways of working.

WHEN? Internal meetings, especially during the set-up phase of the collaboration, but also each time a new action or decision is undertaken.

WHERE TO START? Contact Maciej Krzysztofowicz (JRC S1 – EU Policy Lab) to discuss collaboration possibilities to experiment with existing frameworks.

SEE ALSO:

- The Future of Customs in the EU 2040 (Ghiran et al., 2020);
- Contact Snezha Kazakova (JRC S2) to facilitate the organisation of sessions on a participatory budget, allowing participants to assess the coherence of different actions.

ACTION 2

UNDERSTANDING AND VISUALISING ALL OF THE DGS' AND THE ASSOCIATED STAKEHOLDERS' PERSPECTIVES AND INFLUENCES THROUGH THE WATER CYCLE

Observations / learnings:
A need for collective reflection, managing EU diversity, misunderstanding of other actors, diverging values and priorities

WHY? The aim is to create a collective map and visual of the water cycle by engaging the different DGs and bringing together their work to put all of their diverse perspectives into context, as well as to better understand the influences and how to tackle diversity in the water discourse both internally and at the national level.

WHO? Policymakers who relate directly or indirectly to the water topic.

WHAT? A visual map of the water-related work of each DG is created in a way that is easily shareable and promotes peer learning. The final goal is to co-create an inclusive visual representation of the water cycle, reflecting the work of different DGs and showcasing overlaps, connections and opportunities. This will lead to a shared visual understanding of the Commission's approach to water governance and management. The visual maps will serve as both reflection tools and daily working aids for policymakers.

HOW? A graphic designer will be assigned to each DG for one month to visually map their work. These visual maps will then be circulated across DGs, allowing colleagues to revise, improve or enrich their own maps based on peer feedback. This process will foster integration of visual culture within the water community, helping to identify synergies between DGs over time. Additionally, three workshops will be held at which policymakers will explore past, present and future representations of the water cycle and co-design a unified visual that connects the Commission's landscape.

WHEN? Experiment to run for a six-month period.

WHERE TO START? Contact Maciej Krzysztofowicz (JRC S1 – EU Policy Lab) to discuss collaboration possibilities and to find the right fit from the design for policy framework contract.

SEE ALSO:

- → Visual toolbox for system innovation. A resource book for practitioners to map, analyse and facilitate sustainability transitions (De Vicente Lopez et al, 2016);
- → Value Network Mapping: A method for unravelling system relations (Galle and Matti, 2022);
- → Cristian Matti (JRC B7) for further information about visual tools for stakeholder mapping.

ACTION 3

BEYOND WATER AS A RESOURCE, RETHINKING THE PLACE OF NATURE IN POLICYMAKING

Observations / learnings:
Utilitarian perspective, short termism, anthropogenic view

WHY? The aim is to enable policymakers to consider water as not just a resource and to provide them with a common understanding of water beyond its utility. There is also a need for exercising and collectively intervening to shift the mindset and paradigm to a beyond-extracting approach.

WHO? Policymakers related directly or indirectly to the water topic, in individual DGs and collective cross-DG initiatives, for example interservice group meetings.

WHAT? A shift in thinking is encouraged, away from viewing water purely as a resource towards seeing it as part of a broader natural ecosystem. The themes addressed could include 'water as life', 'nature's cycles' and 'interconnected ecosystems' to highlight the intrinsic value of nature beyond its utility. Visual maps or narratives could illustrate how water interacts with the environment, cultural practices and ecosystems, moving beyond the 'resource extraction' mindset.

HOW? This action is implemented by conducting experience-oriented activities with policymakers at the intersection of art, design and science. Examples include ① nature-centric exercises engaging participants in hands-on activities; ② introducing policymakers to 'thing ethnography' and 'theory of parliament of things', that is, methods of exploring ways of integrating non-human perspectives in the policymaking process; ③ forward-looking experiences in which participants imagine a future where water is treated as part of a living system, not a commodity (e.g. using storytelling and artist approaches); and ④ immersive nature experiences using virtual rooms, allowing an exploration of the consequences of various actions (e.g. agricultural policy and industrial impact) on natural systems in a simulated way.

WHEN? At key points in time in the policy process, for example at an interservice meeting.

WHERE TO START? Contact Maciej Krzysztofowicz or Elahe Rajabiani (JRC S1 – EU Policy Lab) to hear more about the 'Futures Garden' project or the NaturArchy project.

SEE ALSO:

→ Contact Hannah Nohlen to enquire about the Misflood project. Researchers at the EU Policy Lab are investigating people's susceptibility to misinformation during a simulated flood event in virtual reality. They are creating an immersive virtual environment where participants receive visual and audio inputs through virtual-reality headsets, allowing them to 'move' and interact within the simulated space. This experience is typically perceived as highly immersive and enables participants to engage with a flood scenario without being exposed to the real-world risks that such an event would entail.

5.2

CROSS-CUTTING

CONNECTING AND COORDINATING ACTIONS ACROSS POLICY AREAS AND LEVELS TO EMPOWER IMPLEMENTATION

ACTION 4

COORDINATING ACTIONS AND LEARNINGS THROUGH PARTICIPATORY WORKSHOPS

Observations / learnings:
Policymakers divided by fields, reactive actions and strategy, lack of proactive change approach

WHY? There is a need for DGs' and Member States' actions to be understood and monitored through a shared and common framework focusing on outcomes and practical local learnings to ensure that the European Commission's water actions are coherent. There is also a need for stable collaboration and coordination on water within the Commission and with Member States to close the feedback loop and encourage stronger implementation informed by local learnings.

WHO? Policymakers related to the water resilience topic.

WHAT? This action involves using systemic approaches and mapping the current efforts and workstreams that the different key DGs are undertaking on water to create an overview and a strategy for water resilience. It also involves creating spaces for people to debate and focus on the specific topics, beyond editing common documents, and coordinating and running this group with regular cadence to enable a consistent approach.

HOW? This action is implemented by establishing ways of working and regular in-person workshops and by creating collaborative and thematic activities that are relevant for the different discussions, focusing more on active collaborations and content discussions rather than updates. There will be a co-chaired group with people from different DGs.

WHEN? A regular monthly two-hour meeting in person to collaboratively work on the common goal.

WHERE TO START? Contact Marco Inchingolo (JRC S2) for potential facilitation of these meetings. His project on collaborative policymaking could help to develop better interaction between DGs during these meetings.

ACTION 5

COLLABORATING WITH MEMBER STATE LABS AND ORGANISATIONS TO INTEGRATE LOCAL LEARNINGS AND FEASIBLE, SCALABLE BUSINESS MODELS

Observations / learnings:
A need to explore ways of collaborating and testing with Member State labs, local organisations and projects to integrate learnings and scalable models. Labs empower communities, informal support networks, leveraging local authorities' role

WHY?

There are a number of innovative technical and social interventions and solutions to water-resilience challenges for which practicalities and people's perceptions are not fully studied and tested. Action-based research to identify practicalities in the designing of business plans and interventions for water-resilience challenges could provide useful insights on the reasons for the lack of implementation and ideation of interventions. There is a need to focus on iterative experimentation of real-world practicalities to gather evidence on practical, scalable delivery needs at the local level. Building on the learnings of the labs experimentation, further experimentation and engagement with local organisations to test solutions in situ or to investigate sociocultural reasons could provide information on the system's requirements. For example, the following could be investigated locally: water reuse, system decentralisation, cultural barriers, water identities and the potential for defining business models to engage communities that are centred on water, such as being part of a 'river' community and identity.

WHO?

Partnership and collaboration with innovation labs and other local organisations.

WHAT?

This action involves supporting local water conservation projects, encouraging community-led water management, and fostering partnerships between government and grassroots organisations, for example by establishing a collaboration with the 'New European Bauhaus'[13] community with a focus on water. Experimentation could also take the form of establishing new relationships with Member States for administrative capacity support to enforce rules and implementation across Member States. Moreover, testing out possible solutions and interventions to plan for future consequences is key, as is closing the feedback loop and bringing learnings into the process in areas with a lack of implementation.

HOW?

It will be implemented by targeting both the labs already in the network and others to focus on this specific question in a participatory project involving actively learning and gathering transferable and scalable learnings. Organising and engaging communities and local projects could help in learning about effective methodologies and instruments that could be deployed. For instance, emergency governance models and case studies could be used to learn about and create models for delivery based on bottom-up needs. Investigating how place-based identities shape and are shaped by water events in turn allows an understanding to be gained of how this reflects on resilient communities.

WHEN?

A six-month experiment with a small budget in a sample of multiple locations to gather learnings by testing out potential policy interventions.

WHERE TO START?

Contact Ottla Arrigoni (JRC S1 – EU Policy Lab) to set up an action-based research project and for contact information for the existing network of labs.

[13] New European Bauhaus (NEB) is a policy and funding initiative that makes green transition in built environments enjoyable, attractive and convenient for all.

ACTION 6

ORCHESTRATING CITIZENS' AND COMMUNITIES' ACTIONS THROUGH INTEGRATING THEIR EXPERIENCES

Observations / learnings:
Water use engrained and hidden in daily lives, people's personal and sociocultural experiences, viewed through a health and wellness lens more than from a sustainability perspective, using behavioural evidence

WHY?

In the current public consultation process, citizens are asked to provide their input on existing and new EU policies. This approach might narrow the focus to people's experiences and current situations regarding what is provided, rather than giving a complete picture of people's perceptions on the topic. There is a need to generate both quantitative data on and qualitative insights into people's experience to create a comprehensive understanding of their values, perceptions, attitudes and behaviours. Studying and understanding people's experiences and following a human-centred approach that focuses on the lived experience and the needs of individuals and stakeholders could empower multilevel action change by making full use of policy levers to encourage changes in behaviours in society, especially through community- and citizen-driven solutions. This approach could complement traditional public consultations, ensuring policies resonate with and address more tangible aspects that the public can relate to.

WHO?

Policymakers interested in gathering citizens' and communities' insights through qualitative methods.

WHAT?

This action involves integrating other ways to engage with citizens beyond large-scale public consultations to understand cross-cutting issues and emerging experiences. Based on our findings, we recommend and encourage further exploration of the following approaches.

- **Leveraging hope and individual responsibility.** Capitalise on the optimism and sense of responsibility expressed by citizens by promoting and disseminating positive narratives on various water-related topics.
- **Focusing on access.** Better reflect citizens' immediate concerns about water access, ensuring alignment with their everyday needs.
- **Connecting invisible issues.** Highlight the connection between less visible water issues and daily activities to make these topics more relatable to the public.
- **Focusing on health and well-being.** When possible, frame communications about water through the lens of health and well-being, which resonates most strongly with people.
- **Understanding place-based identities.** Understand that identities can be shaped by water events and the resilience of communities.
- **Targeting communication.** Tailor communications to groups with a specific identity related to water, emphasising these identity aspects to build stronger public support, especially in communities where specific water issues are significant.

HOW? Contracting experts or companies that are able to collect qualitative data from citizens and communities could help interested policymakers to conduct alternative, more qualitative, studies. Representative samples and qualitative methods (e.g. story collection and the SenseMaker tool) can be used to investigate specific aspects. Transferable and scalable knowledge can be gathered to understand the changes needed for a shift in perceptions and attitudes. By identifying, mapping and analysing existing European Commission initiatives and policies, the policy feedback loop can be closed and local initiatives can be supported; if necessary, consider creating more platforms to empower citizens' action.

WHEN? Other ways to engage with citizens beyond large-scale public consultations are to be integrated at different stages of the policy cycle to understand cross-cutting issues and emerging experiences to close the feedback loop.

WHERE TO START? Contact Marion Dupoux (JRC S1 – EU Policy Lab) if you would like to obtain further details about the relevant insights, get access to the citizens' stories collected in 2024 or identify companies or experts that can collect data on these types of insights.

SEE ALSO:

→ #WaterWiseEU awareness campaign, managed by DG Environment. The water resilience experiment informed this campaign by inviting the DG Environment communication team to a workshop on the results of the water stories collection, providing them with access to citizens' stories and disseminating the analysis and conclusions of the water stories report prior to publication.

5.3

SYSTEMIC

INTEGRATING THE MULTIPLICITY AND INTERCONNECTEDNESS OF PERSPECTIVES AND VIEWS TO ENABLE SYSTEM CHANGE

ACTION 7

INTEGRATING SYSTEMIC APPROACHES WITH BEHAVIOURAL INSIGHTS TO OVERCOME IMPLEMENTATION BARRIERS TO EU GREEN POLICIES IN MEMBER STATES

Observations / learnings:
Lack of understanding of behavioural aspects of implementation, political reluctance, lack of cooperation, lack of awareness, risk minimalisation, resistance to change

WHY? There is a lack of consideration of behavioural dimensions in the implementation of water policies, which may hinder efforts to address implementation barriers (e.g., financial, governance) effectively.

WHO? EU policymakers working on Green Deal or related policies and public administration representatives and officials in Member States.

WHAT? A comprehensive approach to investigate behavioural drivers leading to systemic issues slowing down the implementation of policies within the green transition context. By the green transition, we mean all initiatives aimed at environmental sustainability and combating climate change. This includes EU Green Deal policies but also sector-specific legislation (e.g. energy, agriculture and transport) and more cross-cutting legislation such as the water framework directive. Financial, technical and administrative barriers are often identified in Member States' implementation reports, highlighting the cross-cutting nature of these issues and justifying the broader focus on the green transition (rather than water) for this new project. This action also involves enabling systemic interventions to strengthen multilevel governance models covering different areas for collective action.

HOW? This action involves mapping the journey of a policy after its adoption to identify the crucial steps and actors that influence implementation and to find the leverage points where behavioural and systemic approaches can make a difference (Dupoux et al., 2025c). It also involves developing behavioural interventions and traditional policy instruments to unlock the barriers identified and accelerate the implementation process. Engagement across Member States would be a key aspect in this process. Identifying representative Member States would strengthen the crucial role of regions and cities in creating synergies between place-based innovation strategies and industrial and regional ecosystems.

WHEN? This can be performed at different stages of the policy process. However, given the numerous policies adopted but not implemented, it would be ideal to investigate specific clusters of unimplemented policies to identify the current barriers.

WHERE TO START? Contact Marion Dupoux if you would like to follow or be involved in this ongoing project in collaboration with The Reform and Investment Task Force. A workshop prepared the ground for this project (Dupoux and Martens, 2025). The project is scheduled to begin in spring 2025.

SEE ALSO:

→ Strategic Foresight Report 2023.

ACTION 8

USING SERIOUS GAMING TO FOSTER COLLECTIVE SYSTEMIC APPROACHES TO WATER RESILIENCE

Observations / learnings:
Preformed ideas and structures, a struggle to see others' perspectives, a need to integrate local knowledge

WHY?

The aim is to support cross-DG collaboration, bring qualitative research into the decision-making process, identify concrete actions for water resilience and train policymakers on the systemic change principles. The game has already been played by more than 100 policymakers and scientists, with positive experiences and feedback.

WHO?

Policymakers related directly or indirectly to the water topic in individual DGs and collective cross-DG initiatives, for example interservice group meetings.

WHAT?

Water Reflections is a two-hour role-playing strategy game for policymakers and water-related professionals. It is based on real cases, initiatives and practices deployed across the globe to tackle water-related challenges. The game has six steps: individual, collective, competitive and collaborative moments; prioritisation; and investment decisions. The game's outcome is a water resilience strategy based on cases that the players decide to scale up or down across the EU to implement water-resilient actions by the Commission. At the end of the game, the players' water resilience strategy is analysed using the systemic change principles of Donella Meadows to reveal missing actions for sustainable transition.

HOW?

This action is implemented by identifying an internal or cross-DG meeting and requesting that the meeting participants dedicate one of the meetings to the game. The same colleagues can also be invited to a lunchtime game. However, for more impact, the game should be organised in formal, already-established interservice and official meeting groups.

WHEN?

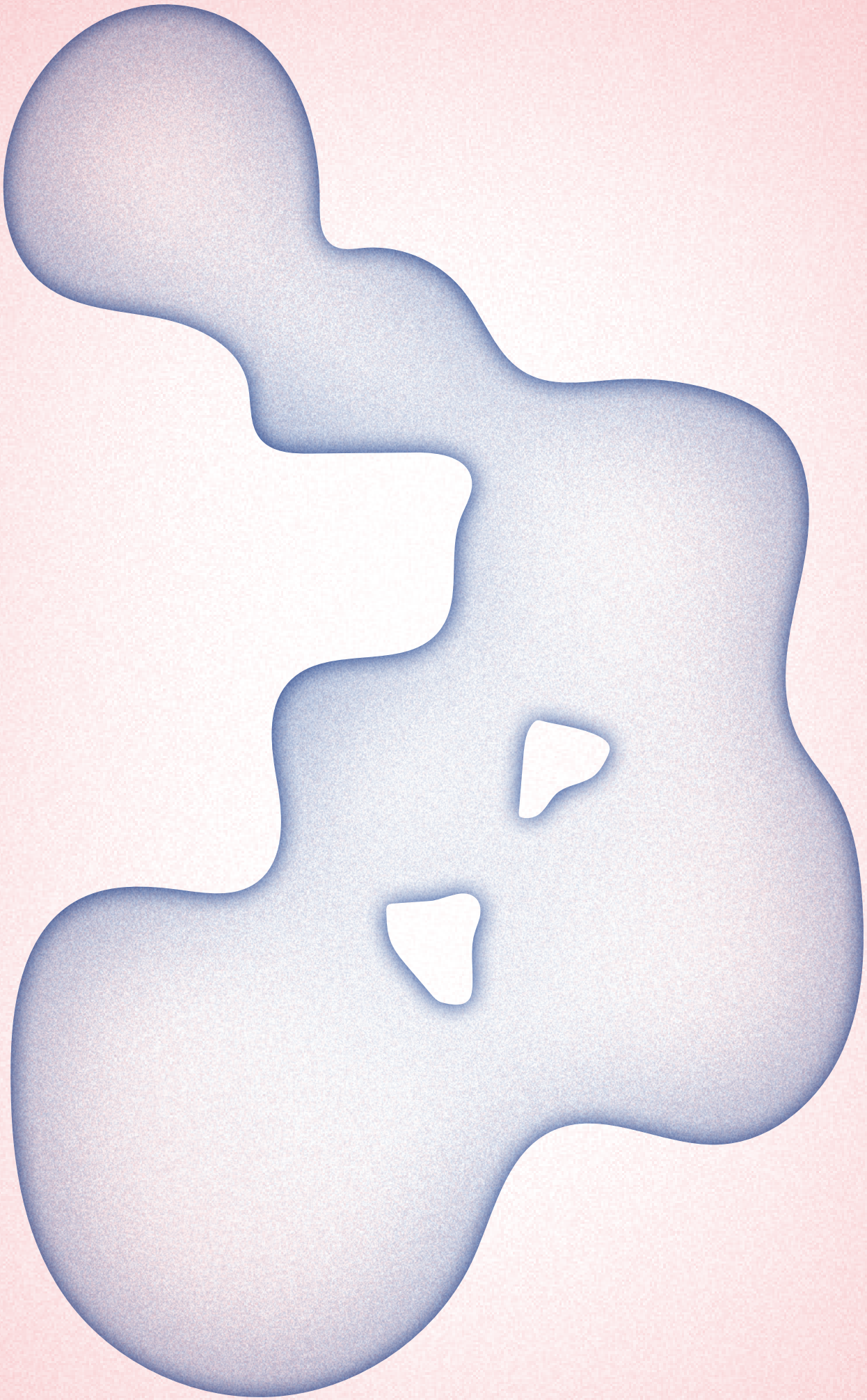
The game can be played during meetings, water-related Commission events, unit and directorate gatherings, and collaboration with external entities. During autumn 2024, the EU Policy Lab organised three gaming sessions in the Commission buildings.

WHERE TO START?

Join one of the collective sessions organised by the JRC EU Policy Lab or contact Alessandro Borsello to request a single kit or several kits to organise a larger session. The EU Policy Lab will support you with the kits and facilitation.

6

CONCLUSIONS



The water resilience experiment provided a unique set-up to explore alternative possibilities of what holistic, cross-cutting and systemic approaches could look like for water resilience.

The experiment was designed and run taking an interdisciplinary approach, using an approach based on design for policy and behavioural insights and focusing on participatory, visual and experience-oriented dimensions. It uncovered insights on multiple scales and from various stakeholders, including citizens, regional innovation labs, national media discourse and European policymakers. This approach allowed us to analyse and learn from the various actors in the system, specifically on how they currently interact, their learnings and experiences from across the EU, and how they could potentially align with and provide feedback to the Commission for a more holistic, cross-cutting and systemic water resilience policy landscape at the European level.

Our findings emphasise the need for the European Commission to transform both internal and external working practices, diversify methodologies and create spaces for collaboration with Member States and regions to learn and address implementation challenges.

One key takeaway is the importance of participatory, visual and exploratory methods to help policymakers to integrate these approaches into existing policy processes and tools. However, incorporating these new methods into established workflows is complex and requires solutions to be co-designed with policymakers from various DGs. This shift involves moving from a client-service model to a model of co-ownership of innovative initiatives, thereby opening up the policymaking process.

The transformative actions aim to internally trigger new practice-oriented collaboration paths with interservice groups, DGs and relevant stakeholders to follow up on this work for water resilience. The actions also need to include both internally facing and externally facing actions, the provision of supporting tools and documents through the EU Policy Lab, suggestions for alternative methods that complement traditional tools used by the Commission, and the initiation of projects that can support the implementation process by incorporating quickly and more regularly into the policymaking process any feedback on where the policy is or should be implemented.

Beyond water resilience, this experiment has provided valuable insights for imagining and experimenting with other policy areas using a wide lens. By building on these learnings and taking transformative actions as a basis for discussion, this project hopes to provide both evidence and solutions regarding possible internal interventions and more holistic, cross-cutting and systemic approaches at the Commission.

REFERENCES

- Allen, C., Malekpour, S. and Mintrom, M. (2023), 'Cross-scale, cross-level and multi-actor governance of transformations toward the Sustainable Development Goals: A review of common challenges and solutions', *Sustainable Development*, Vol. 31, No 3, pp. 1250–1267, https://doi.org/10.1002/sd.2495.
- Abbott, B. W., Bishop, K., Zarnetske, J. P., Hannah, D., Frei, R. et al. (2019), 'A water cycle for the Anthropocene', *Hydrological Processes*, Vol. 33, No 23, pp. 3046–3052, https://onlinelibrary.wiley.com/doi/full/10.1002/hyp.13544.
- Arrigoni, O., Rajhi, A., Hamarat, Y., Almeida, R.P., Borg Christensen, J., Cipriani, L., Costa Monteiro, R., Gaižauskienė, D., Jacobsen, P., Leoni, F., Nižić, M. and Urbis, V. (2025), *Local Participatory Research on Water in Member States*, Publications Office of the European Union, Luxembourg, JRC140373.
- Baird, J., Dale, G. and Pickering, G. (2023), 'Attitudes toward water resilience and potential for improvement', *Global Sustainability*, Vol. 6, e23, https://doi.org/10.1017/sus.2023.23.
- Bason, C. (2014). Design attitude as an innovation catalyst. In Public innovation through collaboration and design, Routledge, pp. 209-228.
- Boyle, R. (1999), *The Management of Cross-cutting Issues*, Committee for Public Management Research Discussion Paper 8, Institute of Public Administration, Dublin, https://edoc.vifapol.de/opus/volltexte/2009/1102/pdf/The_Management_of_Cross_Cutting_Issues1.pdf.
- van Buuren, A., Lewis, J. M., Guy Peters, B. and Voorberg, W. (2020), 'Improving public policy and administration: Exploring the potential of design', *Policy & Politics*, Vol. 48, No 1, pp. 3–19. https://doi.org/10.1332/030557319X15579230420063.
- Davenport, T. and Beck, J. (2001), *The Attention Economy – Understanding the new currency of business*. Harvard Business School Press, Cambridge, MA.
- De Vicente Lopez, J. and Matti, C. (2016). Visual toolbox for system innovation. A resource book for practitioners to map, analyse and facilitate sustainability transitions. Transition Hub Series. EIT Climate KIC, Brussels 2016. https://tinyurl.com/2yydzhy8.
- Dupoux, M., Ashour, R., Arrigoni, O. and Hamarat, Y. (2025a), *EU Water Media Discourse Analysis*, Publications Office of the European Union, Luxembourg, JRC140284.
- Dupoux, M., Arrigoni, O. and Hamarat, Y. (2025b), *Water Stories from EU Citizens*, Publications Office of the European Union, Luxembourg, JRC140374.
- Dupoux, M., Gaudeul, A., Baggio, M., Bruns, H., Ciriolo, E., Krawczyk, M., Kuehnhanss, C. and Nohlen, H. (2025c), *Unlocking the full potential of behavioural insights for policy: From influencing the individual to shaping the system*, Publications Office of the European Union, Luxembourg, https://data.eu-ropa.eu/doi/10.2760/7367599, JRC138028.
- Dupoux, M. and Martens, D. (2025), *Barriers to implementing EU green policies*, Publications Office of the European Union, Luxembourg, https://data.europa.eu/doi/10.2760/1709887, JRC139792.
- Galle W. and Matti. C. (2022). Value Network Mapping: a method for unravelling system relations. VITO and EIT Climate KIC, https://tinyurl.com/2rby5pfd.
- Ghiran, A., Hakami, A., Bontoux, L. and Scapolo, F. (2020), *The Future of Customs in the EU 2040*, EUR 30463 EN, Publications Office of the European Union, Luxembourg, ISBN 978-92-76-26299-2, doi:10.2760/29195, JRC121859.
- Gleeson, T., Wang-Erlandsson, L., Porkka, M., Zipper, S. C., Jaramillo, F. et al. (2020), 'Illuminating water cycle modifications and Earth system resilience in the Anthropocene', *Water Resources Research*, Vol. 56, e2019WR024957, https://doi.org/10.1029/2019WR024957.
- Hamarat, Y., Borsello, A., Martens, D., Arrigoni, O., Dupoux, M. and Armas Del Rio, S. (2025), *Water Reflections Game*, Publications Office of the European Union, Luxembourg, JRC140288.
- Howlett, M., and Mukherjee, I. (Eds.). (2018). Routledge handbook of policy design, Routledge, London, pp. 136-144.
- Hermus, M., van Buuren, A. and Bekkers, V. (2020), 'Applying design in public administration: A literature review to explore the state of the art', *Annual Review of Policy Design*, Vol. 8, No 1, pp. 1–20, https://ojs.unbc.ca/index.php/design/article/view/1814.
- Kimbell, L. (2016). Design in the time of policy problems. Proceedings of DRS2016: Design+Research+Society-Future-Focused Thinking, 8.
- Kimbell, L., Durose, C., Mazé, R. and Richardson, L. (2023), *Design and Policy – Current debates and future directions for research in the UK*, report of the AHRC Design|Policy Research Network, University of the Arts London, London.
- Marcus, G. E. (1995). Ethnography in/of the world system: The emergence of multi-sited ethnography. Annual review of anthropology, 24(1), 95-117.
- Matti, C., Jensen, K., Bontoux, L., Goran, P. et al., (2023). *Towards a fair and sustainable Europe 2050 – Social and economic choices in sustainability transitions*, Publications Office of the European Union, https://data.europa.eu/doi/10.2760/804844.
- Meadows, D. (1999), *Leverage Points – Places to intervene in a system*, The Sustainability Institute, Hartland, VT.
- OECD (Organisation for Economic Co-operation and Development) (2011), *Water Governance in OECD Countries – A multi-level approach*, OECD Studies on Water, OECD Publishing, Paris, https://doi.org/10.1787/9789264119284-en.
- OECD (2017), *Multi-level Governance Reforms – Overview of OECD country experiences*, OECD Multi-level Governance Studies, OECD Publishing, Paris, https://doi.org/10.1787/9789264272866-en.
- Piattoni, S. (2009), 'Multi-level governance: A historical and conceptual analysis', *Journal of European Integration*, Vol. 31, pp. 163–180.
- Poch, M., Aldao, C., Godo-Pla, L., Monclús, H., Popartan, L. A. et al. (2023), 'Increasing resilience through nudges in the urban water cycle: An integrative conceptual framework to support policy decision-making', *Chemosphere*, Vol. 317, 137850 https://www.sciencedirect.com/science/article/pii/S0045653523001169.
- Rodina, L. (2019). Defining "water resilience": Debates, concepts, approaches, and gaps. Wiley Interdisciplinary Reviews: Water, 6(2), e1334.
- Romme, A. G. L. and Meijer, A. (2020), 'Applying design science in public policy and administration research', *Policy & Politics*, Vol. 48, No 1, pp. 149–165, https://doi.org/10.1332/030557319X15613699981234.
- Saikia, P. and Jiménez, A. (2023), 'Governance attributes for building water resilience: A literature review', *Water International*, Vol. 48, No 7, pp. 809–838, https://doi.org/10.1080/02508060.2023.2274162.
- Simon, H. A. (1996). The sciences of the artificial. (3rd edition). Cambridge, Mass., MIT Press.
- Tepes, A. and Neumann, M. B. (2020), 'Multiple perspectives of resilience: A holistic approach to resilience assessment using cognitive maps in practitioner engagement', *Water Research*, Vol. 178, 115780, https://www.sciencedirect.com/science/article/pii/S2590332221000555.
- Xu, F., Buhalis, D. and Weber, J. (2017), 'Serious games and the gamification of tourism', *Tourism Management*, Vol. 60, pp. 244–256, https://www.sciencedirect.com/science/article/abs/pii/S0261517716302369.

LIST OF FIGURES

LIST OF TABLES

ANNEXES

ANNEX I
WATER STORIES FROM EU CITIZENS

WHY? THE VALUE, AIM AND OBJECTIVES

The study aimed to explore how citizens and stakeholders across the EU experience water in their daily lives, both personally and professionally (Dupoux et al., 2025b). It sought to understand what the triggers were of awareness of water's importance and to identify the key drivers shaping perceptions, thoughts and actions related to water. Additionally, it considered the diversity of perspectives from different Member States, highlighting regional variations in water experiences and concerns. The study was framed through a behavioural lens to identify behavioural patterns and attitudes. This can be crucial for designing policies and communication strategies that align with citizens' views and behaviours and that are more likely to be adopted by the public.

WHAT DID WE DO AND WITH WHOM? METHODOLOGY, PARTICIPANTS AND LIMITS

Via the SenseMaker tool, we collected 2 666 stories from EU citizens across all 27 Member States, facilitated by our contractor, Bilendi Belgium. Additionally, we gathered 85 stories from stakeholders who participated voluntarily, with dissemination assistance from various DGs, including DG Environment, DG Agriculture and Rural Development, DG Regional and Urban Policy, DG Maritime Affairs and Fisheries, DG Internal Market, Industry, Entrepreneurship and SMEs, DG Energy and DG Research and Innovation. Participants responded to the following prompting question: 'Think of one moment or experience where you felt very aware of the importance of water in your personal or professional life. Describe that moment and explain why it is important to you. How has it shaped or influenced your perceptions, thinking and/or actions?' They then answered further clarifying questions to help them to self-interpret their stories with a primary focus on the behavioural components of the narratives (emotions, hopes/fears, individual responsibility, social norms, personal beliefs and habits). Voices That Count created the questions and analysed patterns, trends and the narratives behind the data. It also conducted a sense-making workshop with European Commission policymakers to delve deeper into specific sets of stories. A dashboard with all of the data (stories, patterns and socio-demographics) is available upon request.

The study's methodology emphasises personal stories, providing specific insights into water's importance in people's lives but not general public opinions. The data are slightly limited for some countries (Estonia, Latvia, Lithuania, Slovakia and Sweden), which affected the depth of the analysis. Stakeholder representation across sectors was uneven, influenced by voluntary participation and varying DG cooperation in survey dissemination.

WHAT DID WE LEARN? INSIGHTS

Insight 1. In EU citizens' and stakeholders' stories, water is predominantly linked to health and well-being, highlighting its fundamental importance for survival and comfort. This theme appears in 37 % of stories, with 70 % expressing a positive sentiment. People acknowledge water's critical role in hydration, cleansing and stress relief, finding comfort in activities like swimming. The stories also underscore the importance of clean water access and infrastructure. There is a shift occurring towards viewing water as a core part of personal and community identity.

Insight 2. Water-related concerns vary by region, emphasising the role of context. In the Baltic states, water quality and pollution are key concerns, while the Mediterranean region focuses more on environmental and climate change issues. The latter region also reports higher levels of worry and sadness linked to water scarcity and its effects on living conditions.

Insight 3. Personal beliefs and experiences shape perceptions of water issues, with both short-term disruptions and long-term scarcity evoking strong emotional responses. These experiences highlight water's integral role in daily life and prompt reflection on its importance when disrupted. Countries more exposed to water scarcity issues tend to be less positive in their stories.

Insight 4. Half of the participants felt that they could have a significant impact on the situation in their water story, often through educational efforts to encourage change in others. This is supported by the fact that citizens are identified as the most influential actor in stories.

Insight 5. There is little mention of economic issues in water stories, especially at sectoral levels. Only a few people link their stories to industry, trade, economy, finance or mobility and transport. The link that is sometimes made is through water bills or cost-saving measures.

REFLECTIONS AND RECOMMENDATIONS

Framing communications. Communication strategies should consider the diverse personal beliefs and experiences that influence water-related attitudes. By framing narratives that resonate with people's experiences and concerns, as expressed in this study, it is possible to build greater awareness and encourage behaviour change. For example, if water pricing is a future necessary water policy, then the economic aspects should be more prominent in communications. As water is often taken for granted, more emphasis should be put, for example, on the link between water coming from the tap and its source.

Complementing policy measures with bottom-up approaches. There is untapped potential in citizen influence on water-related situations, highlighting the value of engaging and empowering citizens in addressing water challenges and promoting sustainable practices. Fostering community involvement and leveraging individual actions can enhance the effectiveness of water management strategies. The EU strategy represents a promising avenue to expand both community-driven initiatives and cross-border coordination.

Supporting mental well-being. There is a pressing need to support mental well-being in regions with high environmental concerns to mitigate the rise of eco-anxiety among the population. The EU4Health 2023 work programme is contributing to this. We recommend that European Commission policymakers take a position (e.g. through recommendations to Member States) on the growing matter of eco-anxiety.

NEXT STEPS

Given the extensive number of data collected, we will make them available upon request for researchers to explore as regards their specific areas of interest. The interactive dashboard has been shared with various policy DGs, and we will continue to disseminate it to facilitate more targeted analyses.

ANNEX II
LOCAL PARTICIPATORY RESEARCH ON WATER IN MEMBER STATES

WHY? THE VALUE, AIM AND OBJECTIVES

The study's objective was to understand the perception and maturity of the response to water challenges across Member States, the opportunities arising from the gaps between policy and implementation, and how actors at the subnational level are using the existing space to deal with the challenge (Arrigoni et al., 2025). In tandem, the study aimed to gather lateral insights on what the Commission could do, beyond the current frameworks and directives.

WHAT DID WE DO AND WITH WHOM? METHODOLOGY, PARTICIPANTS AND LIMITS

Five labs, which were identified and selected through an open call, led participatory processes in their local areas on different aspects related to water resilience. The labs were invited to identify urgent water-related issues in their Member States through a participatory approach involving citizens, local communities and/or key national stakeholders. Due to the limited amount of time and research set-up, each lab selected the topic it wanted to explore based on its local area, previous knowledge and network of stakeholders. Each lab brought unique perspectives and expertise to the research work.

- **Denmark:** effective innovation collaboration in 'water living labs'. The non-profit organisation Water Valley Denmark explored means of making a water living lab attractive for companies and students to join, with a special focus on SMEs and start-ups.

- **Croatia:** the position of communities in revitalising riverscapes. The research, led by the non-governmental organisation Urbani Separe, investigated how to bridge bottom-up and top-down efforts to revitalise rivers and make coalitions to establish sustainable collaborations between local stakeholders.

- **Italy:** facing drought through collaboration in Milan. The research, led by the Design Policy Lab, part of the Polytechnic University of Milan, involved developing a case study on the learnings of the city of Milan (Food Policy Office) during the drought crisis of 2022.

- **Lithuania:** what does the level of water say about care? The focus of the research, defined by the private consulting firm Viktorija, Vilis & Co, was on how to care for water in rural areas in the west of Lithuania through local responses to water events such as floods.

- **Portugal:** young people forge specific connections with water, intertwining notions of well. The environmental and community non-governmental organisation Rio Neiva Community Lab investigated how the younger generation interacts with and perceives the value of surrounding water ecosystems.

The EU Policy Lab research team held regular online co-designing interactive sessions with all the labs across the EU to collaboratively design the research strategy, support them in the delivery and foster exchange and learnings across them. The project process consisted of three steps.

1. Pre-fieldwork. The labs defined and coordinated their efforts towards the research approach. This included setting out the strategies, participants, tools and methods according to the collective and individual needs.

2. During fieldwork. The Labs carried out their research activities, transcribed the data and drew their conclusions/insights, supported by the team, and shared the learnings with the other labs.

3. After fieldwork. Collective sense-making and reporting took place between design team members and insights from each lab were discussed and cross-checked.

The study's **limitations** include ① the selection of the labs through the means of an open call; ② the specific types of labs engaged, their previous experience and their geographical areas, which influenced the selection of the topics and types of insights; and ③ the limited amount of time allowed for this work, which resulted in the engagement also being limited and affected the depth of the insights.

WHAT DID WE LEARN? INSIGHTS

Each lab identified the key insights generated from its research. To draw overarching learnings from the work, the research team ran a cross-analysis and generated the following key insights: ① engaging communities and tapping into their local knowledge fosters trust and accountability and encourages agency; ② place-based and alternative governance models can deploy efficient emergency responses and water management; ③ identities of places are shaped by water events, and recognising an identity to water shapes people's response; and ④ shifting narratives on water could foster deeper understanding, creating stronger connections and collective actions.

REFLECTIONS AND RECOMMENDATIONS

Integrating the power of local knowledge and communities in the response. This approach could enhance resilience and recovery efforts by fostering engagement and transparency to enable agency and a sense of control over safety, and would establish a culture of communication and accountability about resource allocations and decisions.

Creating roles and defining alternative delivery models and cooperation. This involves considering actors' different protocols and instruments to enable parallel efforts. It would help stakeholders to retain a level of autonomy and the outline of clear, well-defined roles, while pursuing a collective common outcome. It also involves rebuilding relationships between local actors to align priorities and experimenting with models as nature based-solutions that support climate resilience, ecosystem services and policies centred on young people.

Exploring and integrating water identities. Acknowledging and integrating identities related to water is key to promoting sustainable management and care practices, both in community engagement and in national and regional strategies.

Examining water narratives and connected values. Water is acknowledged as a source of well-being, health and beauty, as a connector of geographical spaces and as an element affected by destruction and pollution. These different narratives can promote environmental education programmes and models of place-based approaches that value the relationships between communities and their water ecosystems.

NEXT STEPS

The following are potential next steps: focusing on practical, specific strategies to finding solutions in the research space; focusing on solutions/incentives in local places; using simple tests to provide actionable and scalable learnings (e.g. creating delivery models on how to integrate local traditional knowledge with policy and defining models for engagement based on water community identities).

ANNEX III
EU WATER MEDIA DISCOURSE ANALYSIS

WHY? THE VALUE, AIM AND OBJECTIVES

The objective of the study was to understand how the media discusses water and what issues capture public attention, which can be critical for setting priorities, especially in terms of communication and public engagement strategies (Dupoux et al., 2025a). Additional goals were to anticipate areas of public concern, controversy and opportunities and to identify cross-country heterogeneities in the media discourse. By highlighting the dominant narratives and gaps in the coverage, media analysis can indicate where public discourse might be lacking or misaligned with policy needs.

WHAT DID WE DO AND WITH WHOM? METHODOLOGY, COUNTRIES AND LIMITS

We identified prevalent topics in the media coverage related to water, assessed the frequency of these topics in the media discourse and determined how central water was to each topic. Additionally, we evaluated the associated sentiment, whether positive or negative, linked to these topics.

Given the extensive volume of water-related articles in the media, we focused on the eight Member States with the most widely spoken languages in the EU (Belgium, Germany, Spain, France, Italy, Austria, the Netherlands and Poland) and the period January 2019–January 2024 (five years), resulting in 383 749 articles.

We used the Europe Media Monitor to collect these articles using specific keyword-based queries for inclusion and exclusion. To analyse the data, we applied latent Dirichlet allocation, a technique that uncovers hidden topics within a large collection of text, such as media articles. Finally, we interpreted the topics generated by the model with the assistance of ChatGPT, ensuring accuracy through human verification. We made an interactive platform available, through which users can explore the keywords associated with each topic identified.

The study's limitations include the potential for bias due to the five-year data range, which may not represent longer term trends. Additionally, the dataset includes both newspaper and scientific articles without distinction, although the latter represents a small proportion of the articles.

WHAT DID WE LEARN? INSIGHTS

The latent Dirichlet allocation model identified 37 relevant topics **(FIGURE 7, PAGE 31 AND 32)**. Note that, in **FIGURE 7**, a blue dot covering topic number indicates whether water is central to the topic. The percentages displayed show the frequency of the topic in the entire corpus of media articles collected. The face icon represents the associated sentiment, indicating whether the topic is perceived positively or negatively.

For each of the topics identified, topic sheets were created to show how central water is to the topic, the emotion associated with the topic, its media coverage both overall and in the different countries, and an example of an article illustrating this topic **(FIGURE 8, PAGE 33)**.

Topics were then clustered according to the three sustainable development pillars, showing a relatively good balance across pillars.

Insight 1. In EU media, water is most associated with natural disasters like droughts (water scarcity, topic 1) and floods (water excess, topic 4), both of which are viewed negatively. This highlights the public's focus on water conservation and disaster preparedness.

Insight 2. About a quarter of articles emphasise the positive role of water in sustainable development, particularly through technology and innovation in areas like energy, water management and climate change (topics 29, 33, 37 and 38).

Insight 3. Media coverage shows a contrast between Germanic countries (Germany and Austria), which focus on renewable energy and technology, and Mediterranean countries (Spain, France and Italy), which emphasise water management due to regional challenges like water scarcity and pollution. This reflects diverse environmental challenges and policy needs.

Insight 4. Along with energy, agriculture and food production (topics 1, 5 and 26) are also significant topics, especially in countries like Spain and the Netherlands. This highlights water's crucial role in food production and the need for targeted actions across sectors to raise awareness and address water issues effectively.

REFLECTIONS AND RECOMMENDATIONS

Enhancing public engagement and education. Public awareness campaigns could focus not only on crises and urgent issues but also on everyday water conservation, sustainable practices and the importance of proactive water management. The insights from media coverage could be used to tailor these campaigns to regional perceptions and concerns.

Leveraging technology and innovation. We have highlighted the public interest in technological and innovative solutions, suggesting a receptive audience for policies promoting these areas. This insight is valuable to policymakers, as it can justify investments in research and development or new technologies.

Strengthening support for regional and local initiatives. While there is EU-level recognition of the need for region-specific water policies that address local challenges, we recommend that policymakers strengthen frameworks for cross-boundary water management, particularly in regions like the Mediterranean, to address shared challenges such as water scarcity.

NEXT STEPS

Recommendations drawn from media analysis should be seen as one part of a broader decision-making process. It is crucial to complement media analysis with other data sources, such as public surveys, expert consultations and scientific research, to gain a comprehensive view of the issues. Parts of the water resilience experiment complement each other and highlight the need for new evidence on specific aspects.

ANNEX IV
INTERNAL ENGAGEMENT OF THE EUROPEAN COMMISSION'S POLICYMAKERS

WHY? THE VALUE, AIM AND OBJECTIVES

The aims of the internal engagement with policymakers were to ① achieve organisational change through tools and methods that policymakers might use to experience and experiment with holistic, cross-cutting and systemic approaches to water resilience; ② understand the current situation and practices by observing and analysing ways of working and identifying enablers and obstacles to cross-DG collaboration; and ③ gather learnings from the use of design methods and tools, combined with behavioural insights, to understand under what conditions these methods are most insightful and improve policymakers' work, the policymaking process and outcomes. Participatory practices also provide alternative and creative spaces and working methods for policymakers to tackle complex policy topics without the objective of producing a traditional deliverable of policymaking or legislative processes. This allows policymakers to experiment with different ways of working and to explore different policy options.

WHAT DID WE DO AND WITH WHOM? METHODOLOGY, PARTICIPANTS AND LIMITS

The internal investigation and participatory activities included ① one-to-one and group interviews with 24 policymakers and eight scientists working on water-related topics and policies; ② a multilevel project management initiative with different levels of engagement and tools (working groups, Microsoft Teams Groups, and show and tells); ③ three workshops with policymakers and scientists to experiment with ways of working and co-analysing different evidence tracks; and ④ a reflexive analysis of design, behavioural insights and institutional tools when deploying participatory initiatives.

WHAT DID WE LEARN? INSIGHTS

The internal engagement process allowed policymakers to learn and collaborate in cross-DG set-ups, providing alternative ways of working together. Interdisciplinary collaboration and knowledge sharing between policymakers, scientists and stakeholders remain key aspects of improving the policymaking process. The importance of participatory governance, effective communication and awareness-raising strategies was also emphasised for water resilience. The experiment highlighted the need for a more comprehensive and coordinated approach to water management in the EU, addressing the interconnectedness of water with other sectors such as energy, agriculture and climate change. The difficulty in implementing policies at the local level, due to conflicting priorities, short-term thinking and a lack of resources, was also noted. The use of design-driven participatory workshops, system mapping and theory-of-change tools facilitated the exploration of alternative ways of collaborating and decision-making between different DGs and stakeholders.

REFLECTIONS AND RECOMMENDATIONS

Internal design-driven participatory activities are key to deploying transformative actions within the Commission when investigating topics. They allow research to be conducted and for the transformation of public services. However, deploying participatory practices requires the time of and commitment from both the project team and policymakers who participate. It necessitates developing the project with the participants throughout the process, which requires flexibility, adaptation and management of uncertainties. This demands a new project culture focusing on the process instead of the outcome. However, the project culture remains focused on deliverables at the European Commission, which creates difficulties in implementing process-oriented approaches.

ANNEX V
WATER REFLECTIONS GAME

WHAT IS IT?

Water Reflections is a two-hour role-playing strategy game for policymakers and water-related professionals (Hamarat et al., 2025). It is based on real cases, initiatives and practices deployed across the globe to tackle water-related challenges. The game has six steps, which offer different decision-making experiences: individual, collective, competitive, collaborative, through prioritisation and investment of resources. The game's outcome is a water resilience strategy based on real cases that the players decided to scale up or down across Europe to implement water-resilient actions. At the end of the game, the players' water resilience strategy is analysed through the systemic change principles of Donella Meadows to reveal missing actions for sustainable transition.

WHY? THE VALUE, AIMS AND OBJECTIVES

Serious games are 'a set of cognitive design properties to focus on changing user behaviour and transferring knowledge instead of the mere entertainment function of traditional games' (Xu and Weber, 2017). Gaming engages users at a deeper level of knowledge, improves experience, improves learning and collaboration, allows problem-solving skills to be practised and supports behavioural change (Xu and Weber, 2017). We used serious games during the water resilience experiment for organisational change and research purposes. The game aims to bring scientific evidence from local perspectives and experiences into European Commission policymakers' discussions, support collaborative policymaking between DGs, improve decision culture regarding and empathy for different DGs' needs, identify concrete actions and implementation avenues for water resilience, and bring systemic thinking into the policymaking process for a sustainable transition.

WHAT DID WE DO AND WITH WHOM? METHODOLOGY, PARTICIPANTS AND LIMITS

We conducted desk research to identify inspiring and controversial cases implemented worldwide to tackle contemporary water challenges. We designed and improved the game rules, steps and materials through collaboration and testing sessions. We organised five gaming sessions; in total, 17 groups played the game, nine of which were cross-DG groups. As a result, 83 European civil servants from the European Commission experienced an alternative way of working on, collaborating on and debating water resilience. There were 28 players in a cross-DG set-up (DG Agriculture and Rural Development, DG Energy, DG Environment, DG International Partnerships, the JRC, DG Migration and Home Affairs, DG Maritime Affairs and Fisheries, DG Mobility and Transport, DG Neighbourhood and Enlargement Negotiations, DG Structural Reform Support, DG Regional and Urban Policy, DG Research and Innovation, European Research Executive Agency, the Secretariat-General and the European). The quality of the shared collective experience was generally good: laughing, debating, sharing and confronting points of view. Of the nine cross-DG groups, seven indicated that they had a positive gaming experience. At the end of the game sessions, the players produced water resilience strategies based on cases that they selected collaboratively. We observed players' ways of playing and took notes and photographs of their discussions and decisions. We analysed our data and drew hypotheses based on these limited sessions. We also set up an online board to monitor past and future gaming sessions' results (Figure A16).

WHAT DID WE LEARN? INSIGHTS

The results of the role-playing game revealed several key insights into the players' understanding of the European Commission's DGs and their approaches to water resilience. Players struggled to identify other DGs' missions and connections to water and often held stereotypical views of their work. However, they were surprised by the diversity of topics that each DG could tackle. During the game, players preferred to play the roles of DG Health and Food Safety, DG Environment and DG Agriculture and Rural Development, which were seen as more relevant to water resilience. The cases generated vivid debates, with some cards crystallising divergencies and leading to compromises. Players were more likely to make compromises on subsequent cases after there had been a highly debated case. The decision-making process was often characterised by negotiation. Some groups split tokens without collaborating on decisions. The players mainly focused on the first six categories of systemic change, neglecting social and cultural issues and paradigm shifts. The most supported cases were drinking water standards, watershed restoration, the removal of pharmaceuticals, river contracts initiatives and underwater gardening. Drinking water standards received the most investment, despite an expert later highlighting that drinking water quality is already good without standards. Players had difficulties understanding water resilience and prioritised tangible and visible problems. Some players associated their DG with specific stakeholders and expressed accountability towards them. Overall, the game highlighted the need for a common understanding of water resilience and more collaboration between DGs to address this complex issue.

REFLECTIONS AND RECOMMENDATIONS

The experiment highlights the importance of understanding the systemic change principles in relation to water resilience. The game showed that players mainly supported cases related to urgent, visible and tangible water problems related to human needs and were often short-term oriented. We need to develop more internal experiences and activities, allowing policymakers to understand and apply systemic change and the diversity of leverage points for ecological transition.

NEXT STEPS

In September 2024, the game was broadcasted via the *Commission En Direct* (the internal online communication media via *My IntraComm*, the intranet of the European Commission and its Executive Agencies). Several gaming sessions were organised with policymakers from different DGs. The objective is to reach out 100 players gaming in cross-DG sessions during 2025. The project also plans to provide an overview of the results, assess the quality of discussions and experiences, and identify patterns for action to feed into innovative policymaking research at the European Commission.

GETTING IN TOUCH WITH THE EU

In person

All over the European Union there are hundreds of Europe Direct centres. You can find the address of the centre nearest you online (european-union.europa.eu/contact-eu/meet-us_en).

On the phone or in writing

Europe Direct is a service that answers your questions about the European Union. You can contact this service:

- by freephone: 00 800 6 7 8 9 10 11
  (certain operators may charge for these calls),
- at the following standard number: +32 22999696,
- via the following form:
  european-union.europa.eu/contact-eu/write-us_en

FINDING INFORMATION ABOUT THE EU

Online

Information about the European Union in all the official languages of the EU is available on the Europa website (european-union.europa.eu).

EU publications

You can view or order EU publications at op.europa.eu/en/publications. Multiple copies of free publications can be obtained by contacting Europe Direct or your local documentation centre (european-union.europa.eu/contact-eu/meet-us_en).

EU law and related documents

For access to legal information from the EU, including all EU law since 1951 in all the official language versions, go to EUR-Lex (eur-lex.europa.eu).

Open data from the EU

The portal data.europa.eu provides access to open datasets from the EU institutions, bodies and agencies. These can be downloaded and reused for free, for both commercial and non-commercial purposes. The portal also provides access to a wealth of datasets from European countries.

Science for policy

The Joint Research Centre (JRC) provides independent, evidence-based knowledge and science, supporting EU policies to positively impact society

EU Science Hub
joint-research-centre.ec.europa.eu

Publications Office
of the European Union