

POLICY BRIEF ON

excellent science communication for urgent societal challenges

Version 1.6



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1 Introduction

The challenges we face as a society are becoming increasingly complex. Urgent societal issues, such as climate emergency or Artificial Intelligence, contain economic, social, cultural, ethical, scientific, and political dimensions. These so-called ‘wicked problems’¹ do not have a straightforward solution, cannot be easily demarcated, and involve many different stakeholders – all with their own perspective, values, interests, demands and work practices. This means that **wicked problems are often characterised by conflicts, controversies, ambiguities, and uncertainties.** It is also difficult to find solutions for wicked problems, as any proposed solution often results in new challenges. Because urgent societal issues involve many different voices, solutions need to address and incorporate a large diversity of values, emotions, and worldviews – which may conflict or even contradict each other.

The uncertain and interrelated nature of urgent societal issues makes the theory and practice of the field of science communication more important and relevant than ever. At the same time, **supporting constructive dialogue and exchange between different types of knowledge and expertise while maintaining trust is challenging** – especially in an era of misinformation and polarisation. This policy brief summarises the outcomes from a series of individual



interviews and topic-based workshops that investigated **how science communication can contribute to navigating complex, urgent societal issues in four topic areas:** 1) Climate emergency, 2) Water, oceans and soils, 3) Health & vaccines, and 4) Artificial intelligence & digital transformation.

These 4 topics were prioritised considering major global challenges and foreseen polycrisis², as well as to align with European Commission priorities (such as the EU Green Deal) and the EU Missions’ support in Europe’s transformation (into a greener, healthier, more inclusive and resilient society), and the role science communication can play in multiple stakeholder interfaces to promote co-creation and citizen engagement and increase trust in science.

The interviews and workshops were conducted as part of COALESCE, a four-year project funded by the European Commission tasked with establishing the European Competence Centre for Science Communication and an associated

¹Rittel, H. W. J., & Webber, M. M. (1973). Dilemmas in a general theory of planning. *Policy Sciences*, 4(2), 155–169. <https://doi.org/10.1007/bf01405730>

²<https://www.weforum.org/agenda/2023/01/polycrisis-global-risks-report-cost-of-living/>

Science Communication Academy. At the heart of the COALESCE project is a desire to shift towards a new science communication ecosystem; one that is more reflective and adaptive to the complexity of urgent societal issues, and at the same time reliable and trustworthy.

This policy brief is the first in a series of three documents. In this first release, we untangle the conflicts and controversies in wicked problems, by exploring the perspectives of different stakeholders involved in urgent societal issues in the

four topic areas. Ultimately, we explore the question “**what is effective science communication for urgent societal issues?**” Together with multiple-field experts, we set an agenda to support the field of science communication in reaching its full potential as a mediator in science-society and science-policy interactions, as well as public discussions on science, which can strengthen the future of European democracies.

2 Evidence and main findings

Effective science communication needs to do justice to the complexity and interconnectedness of urgent societal issues by addressing the various worldview, values and emotions, and context of relevant stakeholders, specially in times of crisis. In order to effectively communicate about science, it is helpful to first **identify tensions and conflicts in different domains and between different forms of knowledge and expertise.**



In the current study we have identified multiple stakeholders’ problem-framings and perceptions of possible solutions to wicked problems. We further untangled conflicts, controversies, and interaction dynamics in light of the topic-related urgent societal issues, prioritised under COALESCE. Our main findings are presented here below.

1. STAKEHOLDER PROBLEM-FRAMINGS

Study participants perceived and defined urgent societal issues in different ways. We identified **three main ‘dimensions’** where stakeholders’ problem-framing differed, and that hold ramifications for the field of science communication: how to navigate the uncertainty inherent to urgent societal issues, the degree of **responsibility**, and how to facilitate **trust**.

2. UNCERTAINTY

Uncertainty may exacerbate complexity, but it is not a requirement (i.e. issues can be complex AND certain). For example, while it is certain (*high confidence*, according to the last IPCC report, AR6, 2023³) that human activities have unequivocally caused global warming and that we need to dramatically decrease carbon emissions, how to accomplish this quickly enough is complex. Study participants highlighted a **difference between perceived and actual uncertainty**, especially in the context of controversial policies. Problems can quickly arise when policy decisions are based on small sample sizes or low-confidence models (possibly because these are the only data available) and then presented to the public with more certainty than is deserved. A perhaps overused but relevant example: the flip-flopping policies and subsequent public debates surrounding face masks during the COVID-19 pandemic.

Study participants also indicated that science communication can help navigate the ambiguities and uncertainties involved in urgent societal issues. **Science communication can help different audiences make sense of scientific information in times of crisis**, by highlighting contradictions and inherent uncertainties, by clearly communicating the *actual* uncertainty to the public in an easy-to-understand way, and by connecting to different personal situations and social contexts. At the same time, **uncertainty was considered one of the most difficult aspects for science communication practitioners to address**.

3. RESPONSIBILITY

Many participants felt that urgent societal problems are a collective responsibility, while also acknowledging that collective approaches may be inappropriate in the early stages of a crisis, given the urgency. Collective approaches require time to coordinate between many different perspectives, needs, and demands, but they can also make for better decision-making. Here, participants pointed again to **science communication as a field that can mediate constructive exchange between different stakeholders**. At the same time, important questions were raised about how science communication can and should facilitate this exchange, such as:

- Whose voices are heard, seen as relevant and credible, and included in public discussions on urgent societal issues?
- How can science communication best investigate and connect to the different values, emotions, and worldviews present in society, regarding urgent societal issues?

³ IPCC, 2023: Summary for Policymakers. In: Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, pp. 1-34, doi: 10.59327/IPCC/AR6-9789291691647.001

- Who should be responsible for prioritising the relevancy of different types of knowledge and expertise?
- How can the field of science communication be supported, as a field that facilitates exchange between stakeholders around scientific knowledge and expertise on urgent societal issues?

4. NAVIGATING MISINFORMATION & FACILITATING TRUST

Participants voiced concerns regarding how science communication can compete with misinformation or pseudoscience in the digital sphere. They were also strikingly unified in their perspective on how science communication could help our society navigate an era of misinformation. Participants highlighted a best-practice for navigating misinformation: **avoid immediately explaining scientific “facts”,** and instead **focus on connecting to lived experiences, worldviews, and values** (which could be in conflict with scientific information) and **acknowledge emotions and impact on personal situations.**

Dialogical and co-creative forms of science communication are important for science communication practitioners to be able to connect to a wide diversity of publics. Participants pointed to the **importance of establishing a trusting relationship** between science and society, as well as between stakeholders such as policymakers, industry, media and citizens.

However, stakeholder groups had different ideas about the role of science communication in establishing trust and the timing thereof. Some felt that scientific information about a specific urgent societal problem should be communicated to the public as early as possible (even if the science was not ‘established’ yet); others thought it was more important for governments to delay a response to allow for a stronger and more united stance. Hence, **communication about scientific uncertainties should consider contextual factors such as timing, culture, recent events, and existing stakeholder relationships.** In any case, participants agreed that **excellent science communication should focus on nurturing trust.** Prioritising **‘feelings over facts’** and **connecting to personal stories and experiences is an important step to building trust.**

5. IMPLICATIONS OF STAKEHOLDER PERSPECTIVES FOR SCIENCE COMMUNICATION

The different perceptions of stakeholders with regards to urgent societal issues hold important ramifications for the practice of science communication.



On the one hand, some stakeholders voiced a need for immediate, clear, and top-down messaging in times of crisis. From their point of view, there is no time for a nuanced and extensive dialogue that includes many different voices and perspectives.

On the other hand, highlighting a plurality of values, emotions and worldviews is especially important in the case of urgent complex, social, or wicked problems. This means that effective science communication for urgent societal issues must consider **different contexts, communities' genuine concerns and wishes, and include a wide diversity of perspectives**, both in practices and outputs. Careful attention should be paid to connecting different types of knowledge and expertise. Participants voiced that such **science communication facilitates constructive exchange between different stakeholders and publics – and hence, does justice to the complexities and interconnectedness of crises**.

In a similar vein, the participants in this study indicated different needs when navigating urgent societal issues:

Science communication professionals need their skills and services to be valued and legitimised by organisations and government in the form of funding, time, and recognition.

Journalists need more clarity and certainty about scientific topics in order to produce informative articles, since many journalists writing about science are generalist journalists and do not have any formal education in the topic area. They need to be able to access several scientific sources in order to increase their trust. They also need more time and funding to produce higher-quality, in-depth pieces. This is called 'slow' journalism. Moreover, mental health issues in journalists connected to harassment needs bigger awareness, policies and practices for prevention.

Academics and researchers have concerns about reputation; many want to collaborate with media but are concerned that their data and/or words will be misunderstood or misrepresented. Many of them do not trust journalists, meaning that the lack of trust is both-sided. They also feel that policymakers sometimes misinterpret or ignore scientific advisors. They need to be trusted and to feel that they are listened to – although they need to understand that policy decisions can not be taken only based on scientific evidence and that more variables are to be considered, specially in times of crisis.

Policymakers need a clear, concise and relevant communication to access conclusions obtained from scientific evidence in connection with the wicked problem or crisis. Moreover, this needs to be communicated in a timely manner and connected to their policy agendas, to inform decision making processes and make relevant and durable policies. They also need to clearly understand the certainty or uncertainty associated with the scientific knowledge available, and this uncertainty needs to be clearly communicated to citizens. They voiced a desire and interest to establish a more trustworthy relationship with citizens, where science communication offers potential, specially to strengthen interactions around

urgent societal issues, and wherein – different ideas about the credibility of – scientific information play an important role.

Citizens need to receive clear messages in a transparent way to be able to trust information and advice from the authorities, including the associated uncertainty of the findings related to the crisis. This can help them understand the complexity of the decisions to be taken. On the other hand, they also need their concerns, values, and priorities to be heard, respected, and represented by authorities, as well as science communication practitioners.

6. SUPPORTING PREPAREDNESS: INSPIRING EXAMPLES/POSITIVE OUTCOMES FROM CRISIS

The participants also provided several examples where different types of science communication played a positive role to address complex and urgent issues such as climate, water, oceans and soils, health and vaccines and AI and the digital transformation.

<p>CLIMATE Climateeurope2 festival⁴ poses an innovative event concept to bridging science, services and standards for a climate-resilient future. To achieve effective climate communication, collaborations between scientists, communication professionals and journalists are fundamental for compelling stories, showcasing climate science's achievements and impact on society, and communicating uncertainty as a fundamental aspect of scientific research.</p>	<p>WATER, OCEANS & SOILS <i>Ocean Space</i>⁵ catalyses critical ocean literacy, collaborative research, and environmental advocacy through the arts for collective action. Their initiative Ocean Archive forms a digital laboratory to facilitate discovery, cooperation, and knowledge co-production. Art can serve as a 2-way scicomm vehicle to foster citizen participation and at the same time increase citizen literacy, further deep diving into legal jargon and international relationships/politics.</p>
<p>HEALTH & VACCINES During COVID-19, WHO trainings in infodemic management⁶ and established community of practice, allowed upskill and mutual learning of professionals on global and region-specific topics to apply interventions and practice to promote resilience of individuals and communities to infodemics, including health misinformation, and building trust via community engagement.</p>	<p>AI & DIGITAL TRANSFORMATION Vera.ai⁷ aims to develop AI solutions to counter disinformation, building on previous projects focused on verification of information. This project focuses on countering digital disinformation as it threatens democracies, public discourse, and social cohesion. The project makes use of technology solutions to better detect communication that is not supported by science in an accessible manner.</p>

⁴ <https://climateeurope2.eu/news-events/events/events/climateeurope2-festival-1>

⁵ <https://www.ocean-space.org/>

⁶ <https://www.who.int/news/item/26-09-2022-the-who-global-infodemic-manager-community-of-practice-is-growing-and-tackling-COVID-19-monkeypox-and-other-outbreaks>

⁷ veraai.eu



3 Policy recommendations

In future urgent crises, to ensure multiple stakeholder engagement and response, including the public being better informed, engaged in dialogue and mobilised, and to avoid losing trust, two priority areas in science communication should be strengthened:

1. SUPPORT SCIENCE COMMUNICATION AS A FIELD THAT NURTURES RESILIENCE IN NAVIGATING MISINFORMATION & ESTABLISHING TRUSTWORTHY RELATIONSHIPS

- Policymakers and researchers must consider and recognise the concerns and values of citizens in the way they communicate about urgent societal issues. Science communication professionals can support these stakeholders in achieving communication that starts from a point of empathy and is more likely to lead to constructive exchange, considering contextual issues.
- Communicating scientific uncertainty in a clear, understandable and transparent way is of utmost importance to avoid losing citizen trust in science in times of crisis. This will also contribute to fight or avoid misinformation as the clarity of the message and its perceived reliability will increase.
- Trust needs to be built outside times of crisis, not only during. Governance bodies and funding agencies should support cooperation between science communication professionals and civil society organisations that involve local leaders to build trust in research. By taking cultural, linguistic, and other social differences into account, this work can help support mutual recognition, respect, solidarity, citizenship, equality and fairness: values that are fundamental to the process.
- Social scientists and anthropologists are needed to understand public behaviour and social needs in times of crisis. Governance bodies and funding agencies should support cooperation between science communication professionals and social scientists, together with scientific experts on the topic, to ensure an interdisciplinary approach.
- Scholars in the field of science communication should be recognized and rewarded for creating new knowledge together with practitioners, to make their knowledge more socially robust and truthful to practical realities.

2. SUPPORT SCIENCE COMMUNICATION AS A FIELD IN FACILITATING CONSTRUCTIVE EXCHANGE AND STRENGTHENING PUBLIC DISCUSSIONS ABOUT SCIENCE

- Policymakers and funding bodies should create support mechanisms for science communication professionals that facilitate constructive dialogue with the public around urgent societal challenges. They can play a key role in strengthening public discussions about – sometimes contested – science that includes the public's ethical and moral concerns, and to see their (tacit) knowledge as equally relevant in urgent societal issues.
- Coordination in (science) communication activities should be ensured across neighbouring countries and sectors (and globally when needed) to guarantee a coherent approach to science communication in the context of international crisis, as well as future anticipated scenarios of polycrisis and permacrisis. This is important to minimise instances of contradicting evidence-informed measurements implemented in urgent societal issues.
- Relatedly, science communication professionals should focus their efforts on reaching out and supporting citizens, make sense of and embrace inherent ambiguities, uncertainties and contradictions that may emerge in times of crisis. Best-practices, training and education materials are needed to assist science communication professionals develop and nurture such practices.
- Funders should support the creation and strengthening of spaces that facilitate or enable different stakeholder groups to engage in dialogue, co-creation and constructive exchange, not only during but also outside times of crisis.
- Funders should support bottom-up approaches to encourage finding common ground on understanding, defining and identifying crises. This could involve neighbourhood assemblies and citizen science approaches to public engagement.



4 Sustainability and legacy

Crisis, risk, and uncertainty are universal in urgent societal issues. They entail many different dimensions, such as ethical, economic, political, social and cultural factors to address them. Furthermore, they require the involvement, knowledge and expertise of multiple stakeholders, all with their own perspectives, interests, demands and values. Digitalisation, misinformation, and the rapid evolution of AI further complicates interactions around urgent societal issues and can undermine trust. Altogether, these factors both highlight the potential of supporting effective science communication as a field that facilitates constructive exchange between stakeholders and strengthens public discussions on – sometimes contested – science. For future coordinated efforts at all levels, in order to strengthen the role of science in tackling societal challenges, such as those highlighted in this policy brief, science communication is key, as well as considering the multiplicity of actors and their target audiences involved. Nothing less than the future of democracy is at stake.

Complementary to this policy brief, the COALESCE Project, currently working on the consolidation of previous knowledge generated under the eight H2020 SwafS-19 projects funded by the European Commission on science communication, and reinforcing the involvement of pre-existing and new communities of practice, will provide a roadmap and action plan for the rapid mobilisation of science communication in times of crisis, providing evidence-based information, practices and resources. Together with other practical tools, and a Science Communication Academy, these will be included in the virtual platform, home to the future European Competence Centre for Science Communication. The platform will be connected to a network of national and regional hubs, which will act as physical spaces to test and replicate the project actions in EU-27 and beyond, providing a centralised structure for excellent science communication and contributing to its professionalisation across the ERA.

5 Methodology

This policy brief is based on state of the art review, interviews and topic-related workshops with participants from quadruple helix stakeholder groups (academia, industry, citizens, and policymakers), science communication professionals and journalism working in four topic topics (climate, AI & digital transformation, water, oceans and soils, and health & vaccines).

Semi-structured interviews were conducted to individuals representing each stakeholder group to identify their problem-framings and perceptions of possible solutions to wicked problems. The results informed the design of four topic-related multi-stakeholder dialogue sessions, to untangle conflicts, controversies, and

interaction dynamics in light of urgent societal issues.

This policy brief is the first in a series of three. The series follows three phases of an action-oriented and transdisciplinary research approach: 1) exploratory and agenda-setting phase; 2) experimenting and reflecting phase; and 3) iterating and validating phase. For this, we will set four pilots together with topic-related networks currently working in the prioritised areas. In this first policy brief, we untangle conflicts and controversies in wicked problems, by exploring the problem-framing and solution-finding perspectives of multiple stakeholders involved in urgent societal issues.

6 Acknowledgements

The COALESCE consortium acknowledges all the representatives of the quadruple helix (citizens, researchers, policymakers and industry), science communication professionals and journalists, and members of the COALESCE community of practice, that were involved in the interviews and workshops for their generous contributions.

7 Project details

PROJECT NAME Coordinated Opportunities for Advanced Leadership and Engagement in Science Communication in Europe (COALESCE)

PARTNERS



WEBSITE <https://coalesceproject.eu>

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