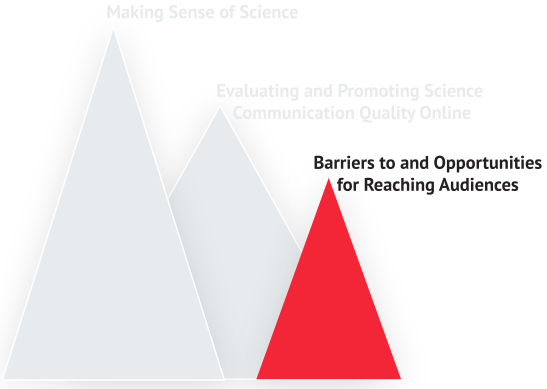
# Barriers to and Opportunities for Reaching Audiences






## Question in focus

Who is addressed by science communicators across Europe?

What enables and hinders dialogue and interaction between science and society in the digital media environment?

## Empirical approach

- Survey of science communicators across Europe
- Case studies

## Core findings

- Most important audiences: university students, school teachers, researchers, policymakers, non-governmental organisations, businesses
- Important motivations to communicate science: inform and educate, create conversations between researchers and the public, encourage evidence-based attitudes and behaviours as well as counter misinformation
- Barriers to science communication (lack of time, resources and support) and barriers to communication and interaction (competition for attention, lack of interest, speed of online communication, missing knowledge and uncertainty regarding how to reach out to specific audiences)

## Future directions

- Develop science communicators' roles as an opportunity to foster mutual exchange between science and society

## Objectives and Approach

In science communication, the question of how to reach audiences and how to get them engaged in dialogue is a core concern. Against this backdrop, our aim was to understand what enables and what hinders the interaction of science and society in the digital media environment.

To respond to this question, research within RETHINK looked at different aspects that together help to identify and tackle science communication barriers and to use opportunities to reach audiences. The research focused on working practices and motivations as well as barriers across a wide range of science communicators. This provided insights into the nature of contemporary science communication and delivered comprehensive information on those involved in it. Eventually, we concentrated on science communication roles and aimed at developing role models who are appropriate for the changing science communication landscape.

We used different empirical approaches and research designs to respond to the research questions. Most importantly, we conducted a survey of science communicators (n = 778) in seven European countries: Italy, the Netherlands, Poland, Portugal, Serbia, Sweden and the UK. Moreover, case studies were conducted with science communication practitioners from the different countries.

It is important to recognise that digital technologies allow anyone to be a content producer (Wilkinson & Weitkamp, 2016). Those who were once science information consumers can now also be producers. As noted by Fahy and Nisbet (2011), today, 'scientists journalists, advocates and the people formerly known as audiences are all content contributors' (p. 782). Such content production may take the form of creating content about contested science issues, such as vaccines (Milani et al., in press). To do justice to this diversifying landscape of science communicators, we included a broad range of different actors, as shown in Figure 1.

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## Which Audiences and Why?

The term 'the audience' can be contentious in itself (Wilkinson & Weitkamp, 2016). 'Audience' can imply a passive role for recipients of information, whereas the affordances of online platforms such as news websites and social media mean that they may actively seek out information (Howell & Brossard, 2020). Some may also go beyond simply listening to or seeking out information by actively contributing to it through participation in public engagement activities. The term 'audience' is used here in the broad sense to denote all recipients of (science) information while recognising that they may have played a role in seeking out information or contributing to its development to varying degrees.

We attempted to understand the intended audiences of a wide range of actors engaged in science communication, the nature of the connections they have as well as the barriers they experience in forming or developing these connections.

To shed light on these questions, survey respondents were asked about the audiences that they addressed with their communication efforts. All respondents indicated a desire to reach particular audiences. Most respondents, however, ticked a wide range of audiences they were trying to reach, with only a few respondents selecting three choices or fewer. University students, school teachers and/or researchers were targeted by more than half of the respondents in most countries. Overall, 52.2% (n = 229) of respondents aimed at reaching policymakers, whereas fewer targeted non-governmental organisations (31.9%, n = 140) and businesses (31.4%, n = 138).

Moreover, we asked respondents why they communicated science, technology or health information. To inform (90.9%) was the most frequent answer in every country except Poland, where 96.6% (n = 28) of respondents said they wanted to educate the public. Informing and educating suggest modes of communication more oriented to deficit model framings of science communication (Wilkinson & Weitkamp, 2016). Nevertheless, science communicators in our sample also recognised the value of dialogue, with around two-thirds indicating that they sought to create conversations between researchers and the public (65.4%, n = 302). Encouraging evidence-based attitudes and behaviours was also selected by 57.4% (n = 265) of respondents. Other com-

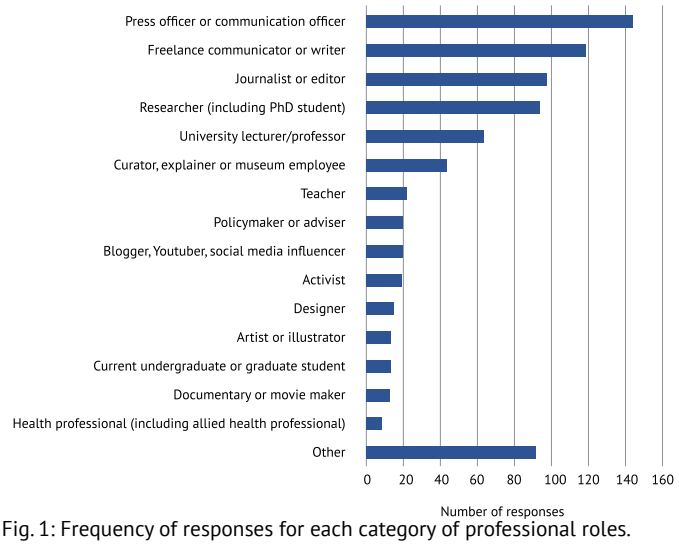


Fig. 1: Frequency of responses for each category of professional roles. Q) How would you describe yourself? Please select a maximum of three answers.

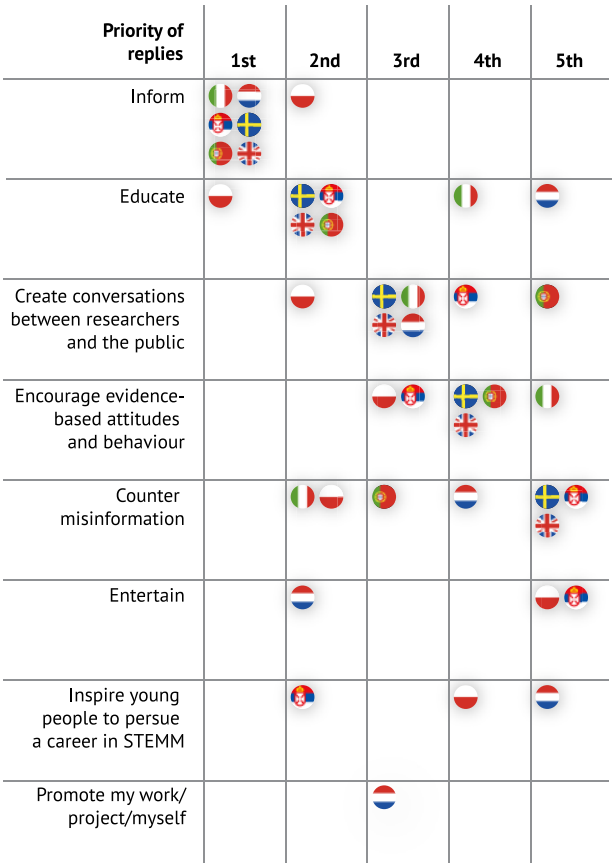


Fig. 2: Priority of replies for each country about what the respondents are hoped to achieve by communicating about science, technology and/or health topics.

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mon reasons for communication included to inspire young people to pursue a career in science (52.8%, n = 244) and to entertain (42.2%, n = 195). The responses to influence the public's view on the topic and to reach underserved audiences were both selected by under a quarter of respondents (22.7%, n = 105). Very few said they aimed to persuade their audiences to adopt their point of view (3.0%, n = 14). Figure 2 gives an overview of priorities per country.

## Barriers to Science Communication

In recent years, there has been a strong movement to foster and increase science communication both in academia as well as in politics in many countries across Europe. Whereas public engagement has been considered to be the gold standard, of science communication, challenges and barriers to actually reaching and involving audiences (Chilvers & Kearnes, 2016) have oftentimes been overlooked or neglected. Against this backdrop, our research investigated science communicators' perceived barriers to communicating effectively. To respond to this question from a training context, we suggest distinguishing between two different kinds of barriers: barriers to science communication (What are the barriers that stop science communicators from communicating?) and barriers to communication in general (What are the barriers to communication itself?).

Regarding the barriers to science communication, the survey showed that lack of time (47.0%, n = 211) and lack of resources (29.8%, n = 134) were the main barriers that prevented respondents from being more involved in science communication activities. Among the respondents, 19.2% (n = 86) mentioned that they were prevented from doing more science communication activities because it was difficult to get others involved and 16.5% (n = 74) said there was insufficient encouragement from funders for science communication work. Respondents also indicated that they did not do more science communication work because there was not enough financial reward (16.9%, n = 76) and a lack of reward and recognition for it (15.8%, n = 71). Some barriers were related to the respondents' organisational roles, with 14.7% of respondents saying they received insufficient support from their manager or organisation (n = 66), and 9.4% received insufficient support from other staff at their organisation (n = 42). Respondents also mentioned that insufficient communication specialists at their organisation (13.4%, n = 60) prevented them from being more involved

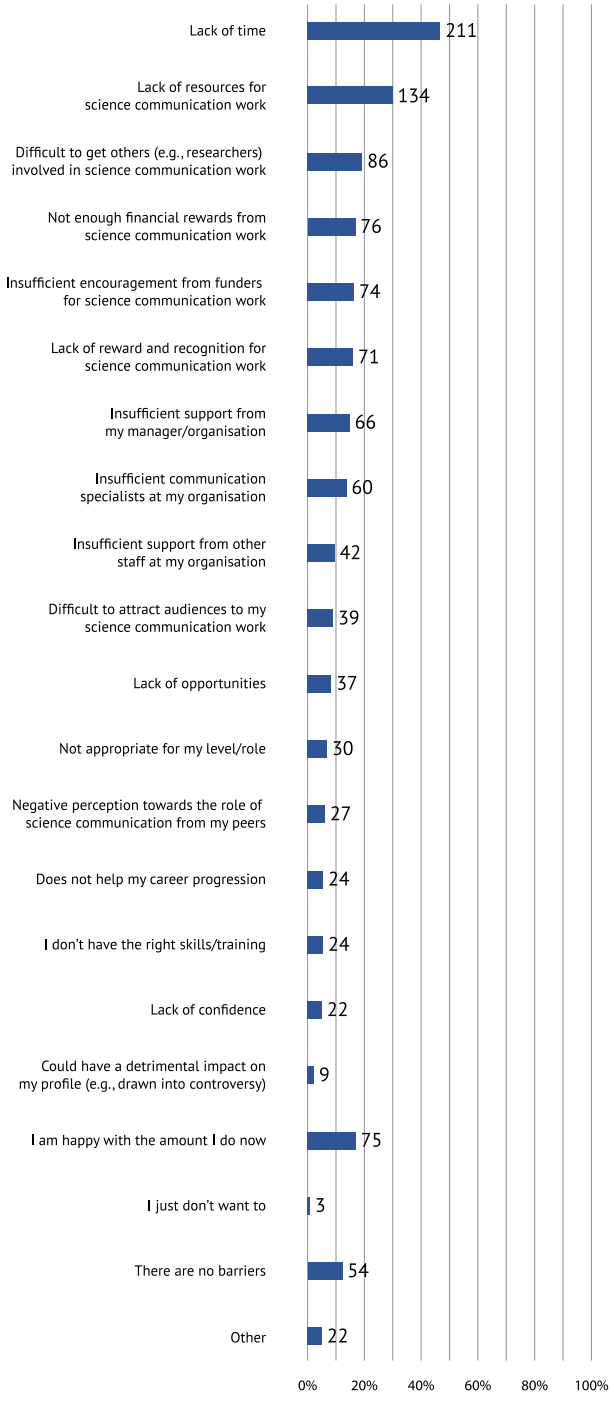


Fig. 3: Barriers to communicating science, technology and/or health topics. Q) Which of the following are the most important reasons that prevent you from getting more involved in activites to communicate science, technology and/or health topics? Select max. three choices. Total respondents: 449; bars: percentage of respondents who ticked the choice: x-axis frequency of responses for each category.

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in science communication activities. Among all respondents, only 12% (n = 54) said that there were no barriers preventing them from being more involved in science communication work, while 16.7% (n = 75) said they were happy with the amount they did.

Apart from these structural barriers, we inquired as to how the characteristics of digital communication itself might hinder dialogue and interaction between science and society. In conducting case studies with science communication actors in the different countries involved in RETHINK, we attempted to explore these factors in more detail. Many communicators reported a sense of disconnect from their audience. There were also indications that while digital media, such as social media, offers a mechanism for two-way interaction between the communicator and audience, in practice this often did not happen. More precisely, the following (further) barriers were mentioned. These included:

- Competition for attention (e.g., with other communicators/media/contents),
- Audience targeting (esp. lack of knowledge of the style of content and language that appeals to specific audiences),
- Time constraints and speed of online communication (e.g., longer interactions would be necessary to build solid connections),
- Overall communication habits (e.g., 'browsing through') and
- Prejudice against science communication and lack of interest (e.g., perception of science as difficult to understand).

These findings have implications for the connection between science and society, since they imply that the connections are not equal across all of society. Instead a linear relationship between science and the public persists, even with the existence of the digital media context and its opportunities for interaction.

## Outlook: Developing science communication roles as an opportunity for science communication

The term 'role' is used to describe a characterisation of the activities of an individual engaged in science communication that encapsulates several aspects of what they do (Pielke, 2007). Role characterisations are often used to create typologies that describe different roles that actors within a particular field of work enact. They are often used to explore how roles are evolving. Fahy and Nisbet (2011), for example, explored the changing roles of science journalists online due to growth in the number of actors, such as amateur bloggers and scientists, now engaged in online science communication. They developed a role typology for today's science journalists that included the role of the watchdog (holds scientists, scientific institutions and industry accountable) and the civic educator (informs audiences about the methods, aims and limitations of research). The impact of digital transformation makes contemporary research into science communication working practices essential. Existing roles have evolved, boundaries between the work-related activities of different actors have shifted and entirely new roles have appeared. There is evidence of many science communicators taking on a civic educator role (Fahy & Nisbet, 2011), seeking to inform people about how science is doneand its limitations. Accordingly, many survey respondents stated that communicating scientific processes, scientific uncertainty and the enjoyment and enthusiasm of doing science were important. Countering misinformation was important to survey respondents in terms of what they were trying to achieve in their communications, which also provided evidence of a watchdog role for science communicators (Fahy & Nisbet, 2011). There is also evidence of conceptions of a more blurred line between science and society from the respondents who said they aimed to facilitate conversations between researchers and the public and thus take on the role of a bridge builder (Turnhout et al., 2013). However, this was somewhat less prevalent among the survey respondents.

How these changing and emerging roles for science communicators can help them to reach their audiences and to engage with them in dialogue is an essential question worth discussing with prospective science communicators.

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## Recommended readings

**On working practices and barriers experienced by science communicators:**

Bauer, M. W., Howard, S., Romo, R., Yulye, J., Massarani, L., & Amorim, L. (2013). *Global Science Journalism Report: Working Conditions and Practices, Professional Ethos and Future Expectations*. Our learning series, Science and Development Network.

Weitkamp, E., Milani, E., Ridgway, A., & Wilkinson, C. (2021). Exploring the digital media ecology: insights from a study of healthy diets and climate change communication on digital and social media. *Journal of Science Communication, 20*(03), A02. https://doi.org/10.22323/2.20030202

**On shifting roles of science communicators:**

Jarreau, P. B. (2015). Science Bloggers Self-Perceived Communication Roles. *Journal of Science Communication 14*(4). https://jcom.sissa.it/archive/14/04/JCOM_1404_2015_A02

Milani, E., Ridgway, A., Wilkinson, C., & Weitkamp, E. (2021). *Reaching Underserved Audiences: How Science Communicators are Making New Connections Using Innovative Techniques*. European Commission deliverable report. https://www.rethinkscicomm.eu/wp-content/uploads/2021/04/RETHINK_Derivable_D1.4_V11_FINAL-1.pdf

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Chilvers, J., & Kearnes, M. (Eds.). (2016). *Remaking participation: Science, environment and emergent publics*. Routledge.

Fahy, D., & Nisbet, M. C. (2011). The Science Journalist Online: Shifting Roles and Emerging Practices. *Journalism. 12*(7), 778-793.

Howell, E. L., & Brossard, D. (2020). Science engagement and social media. Communicating across interests, goals, and platforms. In Todd P. Newman (Ed.). *Routledge studies in environmental communication and media. Theory and best practices in science communication training,* (pp. 57-70). Routledge.

Milani, E., Ridgway, A., Wilkinson, C., & Weitkamp, E. (2020a). *Investigating the Links Between Science Communication Actors and Between Actors and Their Audiences*. European Commission deliverable report. https://www.rethinkscicomm.eu/wp-content/uploads/2020/06/RETHINK_-D1.3-Report-on-links-between-the-different-actors-engaged-in-science-communication-and-how-the-actors-foster-connections-with-their-audiences-1.pdf

Milani, E., Ridgway, A., Weitkamp, E., & Wilkinson, C. (2020b). *Report on the Working Practices, Motivations and Challenges of those Engaged in Science Communication*. European Commission deliverable report. Available online at: https://www.rethinkscicomm.eu/wp-content/uploads/2020/06/RETHINK_-D1.2-Report-on-the-working-practices-and-motivations-and-challenges-of-those-engaged-in-science-communication.pdf

Pielke, R. A. (2007). *The honest broker: Making sense of science in policy and politics*. Cambridge Univ. Press. https://doi.org/10.1017/CBO9780511818110

Turnhout, E., Stuiver, M., Klostermann, J., Harms, B., & Leeuwis, C. (2013). New roles of science in society: Different repertoires of knowledge brokering. *Science and Public Policy, 40*(3), 354–365. https://doi.org/10.1093/scipol/scs114

Wilkinson, C., & Weitkamp, E. (2016). *Creative Research Communication: Theory and Practice*. Manchester University.