

## GlobalSCAPE: successes and failures in connecting with science communicators around the world

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### Abstract

The GlobalSCAPE research project was tasked with engaging people working in science communication to better understand their views of the field. While being a European-based research project, GlobalSCAPE aimed to connect with science communicators across the globe. This practice insight paper reflects on the lessons learned from GlobalSCAPE, the successes and failures, and what might be done to continue the work of global science communication research projects. It is hoped that such learnings will be of broad interest to research and practice communities grappling with ways to fund and support science communication around the world.

### Keywords

Professionalism, professional development and teaching in science communication; Professionalism, professional development and training in science communication; Science communication in the developing world

### DOI

<https://doi.org/10.22323/2.23040801>

*Submitted:* 30th October 2023

*Accepted:* 20th March 2024

*Published:* 3rd June 2024

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### Introduction: European Funded Science Communication Research

Efforts to support and improve science communication have long been visible in the strategies of some of the most prominent research funding organisations in the world [Bell, Lewenstein, Shouse & Feder, 2009; Bubela et al., 2009; Palmer & Schibeci, 2014]. Despite this, support offered by research funders for large scale international collaborations in science communication is fragmented at best, with one exception being the world's largest multinational funder of research; the European Union [Abbott, 2020]. The European Union Framework Programme has been offering research funding for four decades, with a budget of three billion euros in its first framework programme in 1984, increasing to a budget of close to 100 billion euros for its ninth framework programme in 2021 [Ulnicane, 2023].

Science communication activities have been funded through coordination and support actions (i.e. non research-focused projects) by the EU's executive body, the European Commission, starting in the sixth framework programme under a new

funding pillar called ‘Science and Society.’ It launched in 2002 with a budget of €88 million, and was succeeded by the ‘Science in Society’ pillar in the seventh framework programme (launched in 2007), which included an increased budget of €280 million [Delaney & Tornasi, 2020]. This became ‘Science with and for Society’ (SwafS) in the EU’s eighth framework programme (known as ‘Horizon 2020’) and with an increased budget of €462 million, the final work programme of Horizon 2020 included a funding call for a specific research and innovation action to take stock and re-examine the role of science communication and identify “good practices and policy guidelines to increase the accuracy of (and therefore trust in) science communication” [European Commission, 2020, p. 56–57]. Around 50 proposals were submitted to this funding call over a three-year period from 2018 to 2020, with eight science communication research projects (CONCISE, RETHINK, QUEST, TRESKA, NEWSERA, ENJOI, ParCos and GlobalSCAPE — commonly referred to as the ‘SwafS-19 projects’ after the nineteenth topic of the final SwafS programme) sharing almost €10 million in research funding between them [Roche et al., 2021].

The eight projects spanned the COVID-19 global pandemic and were especially valuable for reinterpreting and rethinking science communication in light of an ever-changing landscape [Kupper, Moreno-Castro & Fornetti, 2021; Davies et al., 2021]. The research outputs of the projects were deemed to have “delivered innovative ways to open up science to society” [European Commission, 2022, p. 2], including studies of trust and public perceptions and opinions of science communication [Brondi, Pellegrini, Guran, Fero & Rubin, 2021; Delicado, Rowland & Estevens, 2021; Dziminska, Mendoza, Pellegrini & Rowland, 2021], the development of tools and indicators of quality in science communication [Mannino et al., 2021; Olesk et al., 2021], and examinations of digital media, reflexivity, and sensemaking in science communication [Weitkamp, Milani, Ridgway & Wilkinson, 2021; Roedema, Broerse & Kupper, 2021; Fähnrich, Riedlinger & Weitkamp, 2020; Fähnrich, Weitkamp & Kupper, 2023].

GlobalSCAPE was one of the final SwafS-19 projects to be funded and carried the additional responsibility from the previous seven projects to look beyond Europe and try to understand science communication in a global context. Given the focus of the SwafS-19 funding topic on policy and practice recommendations, the evaluation panel ranked GlobalSCAPE the highest of the 26 proposals received in the final round of SwafS-19 funding in 2020. GlobalSCAPE aimed to connect with people around the world working in science communication and analyse their experiences so as to better inform research, practice, teaching, training, and policy recommendations.

### **GlobalSCAPE: a Global Study of Science Communicators**

GlobalSCAPE was tasked with reaching beyond the European landscape of science communication, which itself can be “disparate and fragmented” [Davies et al., 2021, p. 5], to investigate the personal and professional experiences of science communicators in parts of the world that are often underrecognised in science communication research. Given this responsibility, GlobalSCAPE was designed with the goal of adhering to principles of social justice, where the specific policies and practices stemming from the project were framed in terms of equity and inclusion [Rodriguez & Morrison, 2019]. Specifically, the positionality of the research had to be considered. Positionality often encompasses the stance or views

that a researcher takes in relation to a study, discipline, or process and requires the examination of both identity and perspectives [Savin-Baden & Major, 2023; Wilson, Janes & Williams, 2022]. Positionality can be considered in a research process through adopting a reflective approach [Bourke, 2014], although exploring the positionality of an interdisciplinary research team is a complex task [Freeth & Vilsmaier, 2019]. GlobalSCAPE adopted an approach of “active reflexivity” whereby regular reflection was undertaken regarding the positionality of the research team as well as on the assumptions and perceptions of its members [Soedirgo & Glas, 2020, p. 527]. Given that the vast majority of the research team were either from Europe, or representing organisations based in Europe, an advisory board was put in place with members from outside Europe to ensure more global perspectives were taken into consideration.

Ethical approval for the study was granted by a research ethics committee at the coordinating university, Trinity College Dublin. The methodology chosen for engaging science communicators was a diary study, a large-scale programme of automated electronic reflections, with the goal of understanding the experiences of the participants and mapping their changing perspectives over time. Diary study methods, while untested in large-scale science communication research, have a relatively rich history in social science. Deliberate reflection on experience, with the goal of learning, led to the field of reflective practice being established to explore both personal and professional learning and the acquisition of knowledge [Dewey, 1933; Schön, 1983; Thompson, 2000]. Self-reflecting on practice has long been integral to professional development [Mann, Gordon & MacLeod, 2009]. The idea that reflective practice can facilitate professional development underpins journal and diary methods and has been incorporated into the professional education of careers such as teaching, nursing, and social work [Brookfield, 1995; Johns & Freshwater, 1999; Knott & Scragg, 2007]. Despite the evidence from these professions that “deliberate and critical reflection” can help researchers and professionals fulfil their potential, reflective practice methodologies are generally underutilised in science communication [Roche, 2022, p. 143].

Research methods that incorporate elements of reflective practice are key to developing socially just research projects [Dawson, 2014; Archer, Godec, Patel, Dawson & Calabrese Barton, 2023]. The power of diary-based methods is not only that they can provide a more equitable way of interpreting experiences, but those experiences can also be understood in the changing context of the day-to-day challenges that science communication professionals may encounter [Gable & Reis, 1999]. Analysing weekly reflections in diary or journal entries offers a comprehensive method for longitudinal and near real-time observations of professional experience, which provides deeper insights than once-off, cross-sectional methods that can have biases introduced through retrospective memories of activities and events [Nezlek, 2012]. Journal and diary writing are well regarded qualitative tools for interpreting and understanding experience [Hiemstra, 2001; Jones & Woolley, 2014; Hyers, 2018], especially when exploring stress [Travers, 2011], confidence [Shelton-Strong & Mynard, 2020], and professional development [Borg, 2001].

To understand the backgrounds of the potential participants, a baseline survey was developed as part of the diary study enrolment process. This survey was designed to examine the participants’ relationship with science communication as a field of

research and practice. Demographic data such as nationality, location, age, and gender were also collected. The questions were validated during a piloting stage that involved gathering feedback on the wording of the survey questions. 23 participants were recruited for the piloting stage through purposive and convenience sampling [Etikan, 2016; Obilor, 2023]. Data gathered from the piloting stage of the survey development are publicly available through Zenodo [see Jensen, Jensen, Noles & Pflieger, 2021]. The answers to the open-ended questions are removed to ensure anonymity. The questions themselves are also publicly available through Open Research Europe, with the original versions, final versions, and the changes suggested by the participants at the piloting stage, all included [see Jensen, Jensen, Noles & Pflieger, 2022].

Once the survey had been piloted and validated, it was shared with science communicators around the world, again using a combination of purposive and convenience sampling. This time, snowball sampling [Handcock & Gile, 2011] was also utilised with the GlobalSCAPE project consortium members sharing an online version of the survey with their networks which, in turn, shared the survey further with their communities of science communicators. While European-based, the GlobalSCAPE consortium had international reach due to having amongst its partners Trinity College Dublin and Leiden University (both considered high-ranking research performing universities), Qualia Analytics (an internationally active research company), Springer Nature (the multinational academic publishing company), SciDev.Net (a global development organisation specialising in science and technology journalism, see Dickson [2004] and Massarani [2004]), and Ecsite (a European network of science centres and museums, responsible for the biggest annual science engagement conference in Europe, see Roche, Davis, Stanley and Hurley [2018] and Mignan and Joubert [2022]).

As well as the diary study, the GlobalSCAPE project strived to offer activities and outputs that would be of value to the community, as viewed through a social justice lens. GlobalSCAPE offered ten science communication workshops in different parts of the world. Four of the workshops were held online (two for US/EU time zones and two for Asia-Pacific time zones), as well as six in-person workshops in Spain, South Africa, Colombia, Japan, India, and Australia. A mobility scheme was established to offer support grants from the project funds to help science communicators who wished to attend the workshops and meet other science communicators in their region. Virtual, in-person, and hybrid co-creation sessions were held with science communication researchers and practitioners to help develop policy recommendations. A 10 ECTS (academic credits) university module was developed and offered in Trinity College Dublin; the first time the oldest university in Ireland offered a science communication course in its 430-year history [McAteer, Roche & Kelly, 2023]. The project also included a global study of science communication university programmes [Massarani et al., 2023] which led to a special issue of the *Journal of Science Communication* dedicated to science communication teaching in higher education [Roche, Land-Zandstra, Lewenstein & Massarani, 2023]. This followed previous special issues in the *Journal of Science Communication* that had focused on some of the other SwafS-19 Projects including RETHINK, CONCISE, and QUEST [Kupper et al., 2021; Achiam, Kupper & Roche, 2022].

## Successes and failures

As with any large-scale international research project, GlobalSCAPE endured successes and failures. A diary study methodology had never before been tested in any global investigation of science communicators. While at the proposal stage the project had been designed to facilitate 100 science communicators in different parts of the world, the unexpected interest in the study caused the project team to greatly expand the parameters of the project to instead support more than 900 science communicators. The mushrooming of participation numbers became a strength of the project, but as the budget and resources did not expand with the workload, the project faced ongoing technical challenges, especially in terms of personnel resources and data processing. A failure to accurately predict the level of interest in the project can perhaps be mitigated by the fact that such a study had not been attempted before. In that regard, the successes and failures of GlobalSCAPE can be seen as experimental learnings for future international research collaborations.

Indeed, largely the most positive aspect of GlobalSCAPE was the interest in participation. Each key component of the project — the international workshops, mobility schemes, module development, policy recommendations, and data collection through the baseline survey and diary study — were oversubscribed. While this demonstrates a healthy appetite for international science communication activities, a concurrent negative aspect was the failure of the project to be able to accommodate every science communicator interested in participating. Despite the generous funding from the European Commission, international initiatives are often more expensive than local or national initiatives and will always face budgetary constraints. Still, 552 participants took part in ten virtual and in-person workshops held across five continents with 26 support grants offered from the project to support science communicators requiring assistance to travel to the workshops. Enrolment in the diary study lasted for one year (from the end of 2021 until the end of 2022) and of the 900+ participants, 29% were from Africa, 25% were from Europe, 15% were from Asia, with lower levels of participation from Oceania as well as North and South America [Roche, Jensen et al., 2023].

The original mission of the SwafS-19 funding topic — to assess science communication and how it is perceived by citizens, with an overall aim of building trust in science through responsible communication and engagement between all stakeholders — is more pertinent than ever. Despite this, ‘Science with and for Society’ was not included as a standalone pillar of research funding in Horizon Europe (the ninth funding framework programme of the European Commission that followed Horizon 2020) and, to-date, no dedicated funding has been allocated to science communication research and innovation actions in the current funding programme. Like most fields of research, access to funding can have a significant impact on science communication researchers [Koivumäki & Wilkinson, 2020]. It is critical to have strategies, support, and resources to bolster communities of researchers and practitioners at times when funding is scarce. The biggest failure of GlobalSCAPE, along with the seven other similarly funded SwafS-19 science communication research projects, was the failure to irrefutably demonstrate to the European Commission and similar international funding organisations that dedicated science communication research funding needs to continue if science communication as a field is to improve and grow in a responsible and equitable way.



## Discussion and conclusion: lessons learned

The existing models of funding and how collaborations are supported leaves science communication a field “deeply damaged by the ways power has been wielded,” a field plagued by “injustice and oppression” [Halpern & O’Rourke, 2020, p. 9]. GlobalSCAPE serves as an illustrative example of an attempt to apply a westernised model of research and practice from the Global North to understanding the issues facing science communicators in the Global South. While it achieved its goals in some respects, at least in the view of the funder (the European Commission), GlobalSCAPE failed its audience in others. In particular, the challenge of including the voice of the participants at every stage was not always possible. Thus, a key lesson learned from the demographic distribution of the science communicators who participated in GlobalSCAPE was that even though the project was designed to amplify underrecognised voices in the field of science communication, issues of entrenched structural inequality remained.

The application of models of science communication research that have been developed in the Global North do not guarantee they will succeed (or are even appropriate) in the Global South. Even the terminology of comparing Global North and South is not always helpful [Haug, Braveboy-Wagner & Maihold, 2021]. Disagreement over terminology, accessibility, and inclusive practice is something that affects not just the broader field, but individual science communication networks, conferences, and communities of practice [Davies, 2023; Roche, Barber et al., 2023]. Sultana [2007] suggests that international research projects that involve researchers from the Global North gathering and analysing data in and from the Global South have a responsibility to be “attentive to histories of colonialism, development, globalization and local realities, to avoid exploitative research or perpetuation of relations of domination and control” [2007, p. 375].

As a means of not just connecting science communicators around the world, but also of exploring and understanding professional practice, GlobalSCAPE has demonstrated the vast potential of international workshops, mobility schemes, and diary study research methods for investigating global science communication. It has also highlighted the immense challenges in trying to find ways to include the voice of participants, which is especially important when trying to mitigate issues of power [McDonald, Kidney & Patka, 2013; Seale, Gibson, Haynes & Potter, 2015; Tiselius, 2019]. When trying to address such issues of power in research, it is not just positionality that needs to be accounted for, there is also an obligation to bring a duty of care to the work [Reich, 2021], especially within and across cultures [Merriam et al., 2001; Ali, 2015]. This kind of large-scale, longitudinal research requires considerable funding support for it to be feasible — the kind of pan-European research funding provided by the European Commission in the eighth framework programme under the SwafS pillar of Horizon 2020 and which, for the moment at least, has not continued into the current ninth framework programme, Horizon Europe.

The inclusion of science communication as a fundable research topic under the SwafS pillar of the 2018–2020 Horizon 2020 work programme originally stemmed from an interim evaluation of the earlier Horizon 2020 work programmes, which suggested a need for greater engagement with civil society. Subsequently, science communication was recognised as being vital to the European Commission’s objective of building trust between science and society, to better address societal challenges [Delaney & Tornasi, 2020]. The legacy of the eight SwafS-19

projects — as the (to-date) only large-scale research-focused science communication projects funded by the European Commission — is their demonstration of what can be achieved when international science communication research initiatives receive significant funding.

The cooperation demonstrated by the eight SwafS-19 science communication research projects — which the European Commission highlighted: “in addition to their individual successes, the projects showed exemplary collaboration” [European Commission, 2022, p. 2] — led to the coordinators of the eight projects, along with several additional partners, being awarded a coordination and support action project (called ‘COALESCE’) tasked by the European Commission with “establishing a centre of knowledge, expertise, advice, resources, and tools on science communication” [European Commission, 2021, p. 128]. Until more significant resources are available for science communication research, the new centre will have the additional responsibility of trying to support science communicators in a field starved of funding.

The social justice component of GlobalSCAPE’s approach to engaging science communicators around the world was only made possible by the type of international support and resources that is engendered by funding opportunities such as those offered by the European commission. GlobalSCAPE was likely funded because (in the words of a European Commission results pack discussing the GlobalSCAPE project): “understanding the challenges and opportunities presented to science communication professionals working around the world is key to building trust between science and society, a critical European Union objective” [European Commission, 2022, p. 6]. The final key learning from GlobalSCAPE, and for other researchers who wish to carry out similar studies in a global context, is the unsurprising but still underutilised recommendation that if there are communities a research study seeks to engage, then giving agency to such people at all stages of the research project is the best way to ensure the project might succeed.

## Acknowledgments

The authors would like to extend their thanks to the global network of science communicators who took part in the study. The authors are grateful to Dr Aaron M. Jensen (Institute for Methods Innovation) for playing a central role in the GlobalSCAPE data collection and analysis, along with the wider GlobalSCAPE team: Laura Bell, Clara Boissenin, Dr Stephanos Cherouvis, Kali Dunne, Joanne Kashmina, Joffrey Plancharde, and Dr Fiona Smyth. This work was made possible with funding from the European Union’s Horizon 2020 Research and Innovation Programme under Grant Agreement No. 101006436 (GlobalSCAPE).

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## How to cite

Roche, J., Hurley, M., Jensen, E. A., Massarani, L., Russo, P. and Taylor, A. (2024). 'GlobalSCAPE: successes and failures in connecting with science communicators around the world'. *JCOM* 23 (04), N01. <https://doi.org/10.22323/2.23040801>.



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