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Shifting Narratives: The Role of Science Slams in Climate Mobility Communication

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Abstract

Effective science communication is essential to bridge the gap between science and the public, especially regarding complex, highly politicized topics such as climate mobility. This study examines the effectiveness of a Science Slam as a tool for communicating scientific evidence, a format often overlooked in the academic literature. A short survey was conducted before and after the Science Slams on climate mobility narratives, and a discussion was facilitated at the event's conclusion. The findings reveal a significant impact of the Science Slams on the audience support for narratives addressed during the event, while the support for not-discussed narratives remained unchanged.

Keywords

science slam, science communication, climate mobility, climate change, migration, securitization

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Introduction

The calls for effective science communications have become louder not only from academia but also from policy, media, and society. The so-called third mission of higher education institutes requires more interaction between science and society, including the transfer of scientific knowledge (Compagnucci & Spigarelli, 2020). This aim is still far from being reached (Pinheiro et al., 2015). Hence, the need to communicate and translate scientific knowledge for other fields, such as policy, industry, or the general public, remains high (Böhme & Stehr, 1986; M. B. Hill, 2022). Scientists are increasingly pressured to share their findings with a broader, non-scientific audience to secure legitimacy and support in a society that increasingly views itself as participatory and competent to join important discussions (M. Hill, 2018; Wilke & Lettkemann, 2018). This need is further amplified by the proliferation of fake news, which often infiltrates media, policy, and public discourse, distorting scientific evidence and hindering informed decision-making. Improving knowledge transfer from science to the public is especially relevant for topics, such as human (im)mobility in the context of climate or, in short, climate mobility, that are highly politicized and polarized in the public area, often not accurately representing scientific evidence (Ayeb-Karlsson et al., 2018; Krzyżanowski et al., 2018). Legal and symbolic frameworks of Fortress Europe that differentiate between community members and those "who do not belong" continue to favor climate mobility narratives based on securitization and fear (Güell & Garcés-Mascareñas, 2024). Hence, formats need to be found to reach a wider audience, including stakeholders in policy, media, and civil society organizations (CSOs), specifically the general public, to promote climate mobility narratives that represent more nuance and complexity.

A Science Slam is one possible entertaining format for science communication. Alexander Deppert founded this format in 2006 in Germany, building on Poetry Slams, which have been in place for more than 50 years. Variations on the idea of Science Slams exist all around the globe but seem to be most common in Germany. This explains the limited number of studies on Science Slams overall, particularly those published in English. There is no official definition of a Science Slam; however, organizers often adhere to three key criteria: (a) 100% original research, (b) a 10-minute time limit, and (c) unrestricted knowledge-sharing methods, provided they comply with fire safety rules. This event has a competitive character as the audience votes on the "best" performance. The often laymen audience judges whether a presentation strikes the right balance between science and entertainment, relying not only on institutional trust (Giddens, 2007; Luhmann, 1989) but also on the speaker's perceived trustworthiness (Shapin, 1990). Beyond expertise and

affiliation, trust is shaped by face-to-face interactions, where rhetorical strategies and embodied engagement play a crucial role in connecting with the audience (M. Hill, 2015). A multi-method analysis of three Science Slams examined that attendees join a science slam predominantly for entertainment but also because of interest in the scientific content (Niemann et al., 2020).

In this commentary, we address the gap in the literature regarding the use of Science Slams as a format to communicate scientific evidence to a broader audience effectively. The organized and assessed Science Slam in Marburg focused on the polarized and interdisciplinary topic of climate mobility. Our analysis draws on a short survey, discussions with Science Slam participants, and reflections from the author team.

Method

Science Slam

The author team organized a Science Slam as part of a project named "Facts First: Untangling Climate Mobility Narratives in Europe" funded by the DAAD (German Academic Exchange Service). The Science Slam took place on the 5th of December 2024 in Marburg, Germany. The project was a collaboration between Philipps-Universität Marburg, Germany (PUM) and the University Institute of Lisbon, Portugal (ISCTE). Its main objective was to explore the existing narratives on climate mobilities, accounting for migration, displacement, relocation, and immobility in the context of changes in climate. As part of the project, Link et al. (under review) established six distinct climate mobility narratives based on multiple expert panel discussions: (1) Mass Climate Migration, (2) Crisis & Threat, (3) Climate Denial, (4) Victim & Humanitarian, (5) "Success" Story, and (6) Nuance & Complexity Narrative. Each narrative is framed from the ally's perspective, with certain elements (associated discourse, problem definition, cause, victim, solution) taking prominence depending on the narrative (Table A1 in the Supplementary Material). Narratives one to three primarily emphasize the problem, often portraying the Global North as the victim, while narratives four centers on the victim, and narratives five and six focus on solutions. Notably, opposing groups with different objectives may adopt the same narrative. For example, both far-right parties and international organizations use the mass migration narrative—far-right groups advocate for stricter borders wheras for example international organizations aim to garner support for solutions in origin and destination countries.

The project received Ethical approval from Philipps-Universität Marburg. The Science Slam was a 3-hour event on the evening of the 5th of December 2024, with a short introduction about the format and the project, a total of four Science Slam contributions, and a discussion at the end with

participants. The event took place at the Alte Aula in the Philipps-Universität Marburg with an audience of roughly 70 people.

The four Science Slams were conducted by two students from each participating institution in the DAAD project. Reflecting the internationality of Science Slammers, the organizers chose to conduct the event in English. The Science Slammers were selected after interested students performed their Science Slams, which were evaluated by the research leaders (Thais França, Thomas Brenner, and Ann-Christine Link).

As an introduction for the Science Slam, a slide on human (im)mobility accompanied by a brief statement on human (im)mobility in the context of changes in climate was shown to the audience. This statement clarified that changes in climate are considered to only be one of the many potential drivers of human (im)mobility, which includes migration, displacement, planned relocation, and immobility—distinct from transportation. Following this, the first part of the survey was introduced and distributed to the audience. The first Science Slam involved an overview of the five narratives by a female student from ISCTE, followed by a Science Slam by a male student from PUM on Narratives 1 (Mass Climate Migration Narrative) and 2 (Crisis & Threat Narrative). After a 15-minute break, a male student from ISCTE gave a Science Slam again on Narratives 1 and 2 and the final Science Slam was done by a male student from Marburg about Narrative 5 (“Success” Story Narrative). All Science Slammers indirectly addressed the Nuance & Complexity Narrative by advocating for more nuance and complexity when talking about climate mobility. All slides are available for reference in the Supplementary Material. After the Science Slam contributions and the completion of the second part of the survey, we opened the floor for discussion and questions, which lasted around 45 minutes.

Survey

The survey’s main objective was to examine whether the Science Slams impacted participants’ perceptions of climate mobility. The survey is based on only five narratives, Narratives 1, 2, 4, 5, and 6, as the survey was created before the Climate Mobility Denial Narrative was added to the set of climate mobility narratives. The survey was anonymous, and each participant entered an individual code for both surveys and answered five questions about how much they agreed or disagreed on a scale from 0 to 10 with newspaper headlines intended to represent the five climate mobility narratives. The survey was available in German and English. The second survey included one additional question where participants could share their experiences of participating in the Science Slam.

Headline	Rating (0-10)
"Global warming turns millions into climate migrants who will make their way to Europe."	
"The climate refugee crisis is here, and Europe is not ready."	
"Europe is proud to be the savior of climate migrants and refugees in their fight for survival."	
"The success stories of climate migrants matter."	
"Nuanced approaches are necessary to fully understand the complexities of climate migration and displacement."	

The survey included the following question: How much do you agree on a scale from 0 (*strongly disagree*) to 10 (*strongly agree*) with the following newspaper headings on climate migration and displacement?

For a descriptive presentation of the support of each narrative before ($n = 42$) and after ($n = 45$), all responses are included (Figure 1, Supplementary Material Table 1). A statistical analysis using the Software RStudio (Version 4.1.1) was conducted to determine whether ratings on the different climate mobility narratives changed due to the Science Slams. Only entries where the personalized codes can be found in the survey before and after are included ($n = 39$). A Shapiro-Wilk test was conducted to assess the normality of the data. As only the "before" values for Narratives 2 and 4 met the normality assumption ($p > .05$), a Wilcoxon signed-rank test was used to determine whether support for each narrative changed significantly due to the Science Slams.

Methodological shortcomings are related to the sample size, the lack of participant diversity, and survey questions. The sample size of 45 participants is relatively low. At the same time, we had a relatively homogeneous group of participants, mainly students who had partly participated in Science Slams before and expressed interest in this topic. The participants also seemed to not have been radical in their views, for example, climate mobility denial or climate change denial. Furthermore, the authors are aware that the newspaper headlines included in the survey do not represent all the elements of the identified narratives. However, to keep the survey short, this is one possible way to test people's perceptions of climate mobility narratives without naming and describing the narratives, which could introduce bias.

Results

Science Slam

Around 70 participants attended the Science Slam. By a show of hands, the vast majority of participants were students from Marburg, followed by a

small portion of family members of students who presented. No stakeholders from policy, media, the public, or CSOs were present. The research team used several modes of advertising in an attempt to reach the different stakeholder groups (Table 1).

Students and employees at PUM were targeted using multiple email chains from the geography department where the project and the Science Slam are situated. Flyers were also hung in the Geography department. A press release for everyone at PUM, advertisements during the teaching of the author team, and one social media post by the student council attempted to invite students and employees at PUM. The modes of advertisement for the other stakeholder groups were more limited, predominantly using direct Emails or personal invites in the case of the public. In total, around 75 invite Emails were sent to local political stakeholders from every party located in Marburg, local and regional media representatives, and local CSOs working in the fields of sustainability, climate, and migration. A half-page article was published in *Oberhessische Presse* four days before the event, providing an overview of the project and the Science Slam and concluding with an invitation to attend. We also tried to leverage limited personal contacts at each stakeholder group. We received almost no responses, and if we did receive a response, it was saying that they currently do not have availabilities to join such an event.

Survey

Of the roughly 70 Science Slam participants, 42 filled out the survey before the Science Slam presentations, and 45 filled it out afterward. The overview of the descriptive results of the survey is found in Table 2 of the Supplementary Material. Before the Science Slams, Narrative 3 (Humanitarian & Victim)

Table 1. Overview of Modes of 5 Advertisement to Reach Different Stakeholder Groups (Students/Employees, Public, Policy, Media, CSOs).

Mode of advertisement	Students/ employees	Public	Policy	Media	CSOs
Emails	x		x	x	x
Newspaper article	x	x	x	x	x
Flyers at University	x				
Press release at PUM					
Teaching	x				
Personal invites	x	x			
Social media post	x				

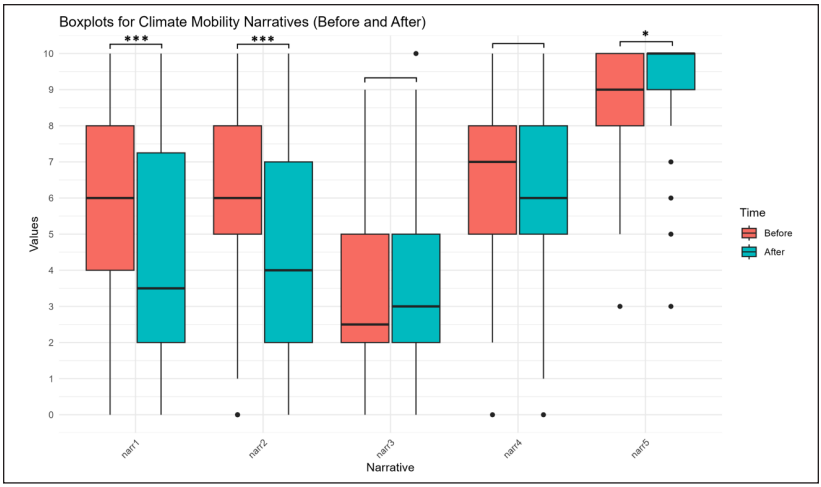

Figure 1. Support for Each Narrative Before and After Science Slam Contributions With Significant Changes From Before to After Indicated as Follows: *$p < .05$, **$p < .01$, ***$p < .001$.

received the lowest support (3.3), and Narrative 5 (Nuance & Complexity) received the largest support (8.57). This is still the case after the Science Slams. The support for Narrative 3 remains low (3.4), and the support for Narrative 5 (9.3) is now even higher.

When comparing the support for the five climate mobility narratives using the Wilcoxon signed-rank test before and after the Science Slams, we find significant impacts of Science Slams on the audience's support for narratives directly addressed during the event, while narratives not discussed remained unchanged. The significant decreases in support are equally strong for Narrative 1 (Mass Climate Migration; $p < .000766$) with −1.45 and Narrative 2 (Crisis & Threat; $p < .000633$) with -1.41. Two Science Slammers covered both narratives. A significant increase of support (+0.73) for Narrative 5 (Nuance & Complexity; $p < .0426$), which all four Science Slammers indirectly addressed, was also found. The support for each narrative before and after in the form of boxplots is displayed in Figure 1.

Discussion

The support for Narrative 1 (Mass Climate Migration) and Narrative 2 (Crisis & Threat) before the Science Slam suggests that participants perceive mass climate migration in Europe, involving millions or billions of people as a

reality, along with the associated crisis. These narratives are highly prevalent in Western media and policy, highlighting their significant role in shaping public perceptions, even though such claims lack scientific support. The substantial decrease in support for these narratives after the Science Slams demonstrates that Science Slams can enhance scientific understanding of complex, interdisciplinary, and polarized topics like climate mobility. The already strong support for Narrative 5 (Nuance & Complexity) increased significantly due to the Science Slams. Hence, our study shows that Science Slams are a way to influence public opinion and transfer scientific knowledge. The overall impact of the event depends not only on the quality of the science slams and their ability to resonate with the audience, but also on who is reached and how many people the event manages to engage. Hence, other approaches might have similar or even stronger effects. As this study focused on a single Science Slam with a relatively small number of participants and could not account for social desirability biases, the findings are not necessarily generalizable.

Generally speaking, we received mainly positive feedback on the format of a Science Slam from attendees. They liked the structure of a short intro, Science Slam contributions, discussions, and food and drinks afterward. They also felt that a 3-hour Science Slam was well-timed and appropriately long, with four Science Slam contributions being an ideal number of contributions. They also liked the interactive and entertaining format of the Science Slam, which is very different from the University's usual formats. Many attendees asked us whether other Science Slams would follow this event. Many also appreciated the option of asking questions after the Science Slam to the three organizers (Thomas Brenner, Thais França, and Ann-Christine Link).

However, based on the direct feedback from participants during the discussion of the Science Slam and afterward, the fact that no one from the media, policy, CSOs or the broader public showed up, and the author team's reflection, a few things around the Science Slam could have been improved:

1. A shift from English to German as the primary language could encourage broader participation by people with German mother tongue and the main target audience of the respective Science Slam. While students and employees are generally comfortable with English, some members of other stakeholder groups feel more reluctant to engage. This was also confirmed by the respective stakeholder groups from policy and media. Switching to German could create a more inclusive and accessible environment for everyone involved.
2. It would have been beneficial to ensure that the topic of climate mobility is presented in a more balanced manner by

highlighting possible negative impacts of human (im)mobility on migration origins, destinations, and mobile and immobile people. A more critical engagement with these issues before and during the Science Slams could have stimulated deeper discussions.

3. A well-targeted outreach campaign is needed to attract a larger and more diverse audience. As students from Marburg were highly overrepresented and no one from media, policy, CSOs or the public was present, different advertisement channels would have been needed to attract these stakeholders to attend the Science Slam.
4. Offering the Science Slam in a hybrid format would have also been an option to allow for the participation of a broader and more inclusive audience. Hybrid formats allow more flexibility for participants and speakers, possibly accommodating those facing geographical, time, or logistical constraints.

In short, this study shows that Science Slams can effectively improve science communication on climate mobility, leading to a more scientific-based understanding of participants around climate mobility. The Science Slams, as intended, decreased the support of narratives around securitization and fear and increased the support for narratives that strive for a more complex and nuanced coverage of climate mobility. Furthermore, according to the received feedback, Science Slams are a form that people enjoy attending. However, it is important to emphasize that organizing the Science Slam required significant resources—not so much financially, but in terms of human resources. Particularly, administrative tasks such as coordinating invitations to stakeholders, organizing the room, and supervising the Science Slammers have been extremely time-consuming. Given the limited time and capacity researchers typically have, additional efforts, such as further advertisement, were simply not feasible. Hybrid formats can be challenging for organizers, as they require additional resources, such as technical support and equipment, but also for participants. Hybrid formats may reduce audience engagement, with virtual participants often feeling less connected to the event's atmosphere and interactive elements compared with in-person participants. An option to address these limitations would be a central organization of a Science Slam series, which would cause economies of scale in various organizational tasks as well as a higher awareness among stakeholders. In addition, there is a need to explore effective strategies for engaging a broader audience, including policymakers, media stakeholders, CSOs, and the general public. While the Science Slam successfully engaged already interested students, the challenge remains in reaching other stakeholder groups to whom the topic's relevance is not obvious. In addition, individuals skeptical of

climate change or climate mobility are unlikely to attend such events, further limiting outreach. Understanding how to overcome these barriers and connect with more diverse audiences would make events like these even more impactful and inclusive.

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Author Contributions

Conceptualization: AL, TF, MV, TB; **Data curation**: AL, MV; **Formal analysis**: AL; **Funding acquisition**: AL, TF, TB; **Investigation**: AL, TF, MV, TB; **Methodology**: AL, TF, MV, TB; **Project administration**: AL; **Software**: AL; **Supervision**: AL; **Validation**: AL; **Visualization**: AL; **Writing—original draft**: AL; **Writing—review & editing**: AL, TF, MV, TB.

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Ethical Approval and Informed Consent Statements

This project and survey received Ethical approval on the 19th of August 2024 by the Ethics Committee of the School of Business and Economics at the University of Marburg. Informed consent was acquired from each survey participant on the first page of the survey.

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Data Availability Statement

The datasets generated during and/or analyzed during the current study are available in the Data Repository of Philipps-Universität Marburg upon publication.

Supplemental Material

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