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DECOLONIALITY IN SCIENCE COMMUNICATION

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ABSTRACT

This study explores the impact of decoloniality in science communication in climate resilience projects, highlighting the challenges of accessibility, comprehensibility, and the integration of indigenous knowledge. It argues that while Western scientific communication methods, such as academic publishing and media briefings, have become dominant, they often fail to resonate with local communities, particularly in Africa. By reviewing current science communication practices and the role of coloniality in shaping these practices, the study identifies strategies for improving communication, such as incorporating indigenous knowledge, using simplified language, and engaging local communities. Data for this study was collected through surveys and interviews conducted during a summer school on decoloniality and science communication held in Mombasa, Kenya in 2024. As part of decoloniality in scientific research, a "35 mapping lessons-game" was designed and used to facilitate interactive learning and reflection on decoloniality and science communication. The game was used to engage participants and collect their proposed learnings and changed perspectives from the summer school. Findings revealed that many researchers struggle with effectively conveying scientific knowledge to diverse audiences. The study calls for a decolonial approach to science communication that fosters inclusivity, participatory methods, and culturally relevant content to enhance the effectiveness of climate resilience strategies.

Key Words: *Decoloniality, Science Communication, Climate Resilience, Indigenous Knowledge*

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INTRODUCTION

Research and innovation systems have the crucial role of generating new knowledge and can transform fundamental scientific knowledge into concrete applications. Societal challenges, such as pandemics, artificial intelligence, big data, food security, or energy and climate threats highlight the importance of investment in research and of research-informed evidence. Mostly, this research is conducted in full observation of research methods and ethics to bring forth conclusions and worthy recommendations. However, according to Schäfer & Fähnrich (2020), great science does not speak for itself: it is critical that scientific evidence is readily available and easy to understand.

Bucchi and Trench (2014) define Science communication as the practice of informing, raising awareness of science-related topics, and also getting involved with audiences that include, at least in part, people from outside the science community. Societal issues obtain solutions by conducting research to first determine the intrigues causing the challenge as well as recommending evidence based remedies to the issue. Climate change is a phenomenon that wouldn't have easily been understood were it not for research of the causes, and recommendation of mitigative and adaptive climate actions for resilience. It is thus imperative to ensure that communication of scientific activities during research, and scientific findings is impactful. The extent of impact in terms of changing people's behaviour and perceptions as envisioned by researchers is pegged on their abilities to communicate science, especially to the non – scientists.

Science communication has evolved over time, bringing forth newer methods especially aligned to the growth in information communication technology. According to Schäfer (2017), the variety of science communication activities and channels increase as new communication services emerge and offer new ways of interacting with people. Covid 19 spurred innovative approaches to science communication that were convenient for limited mobility due to the pandemic. It highlighted the critical need for translating complex scientific information into accessible formats for diverse immobile audiences. Efforts included leveraging digital platforms, visual tools, and community engagement to address rapidly changing public health guidance and combat misinformation (WHO, 2022). The relevance of science reaching the public was more apparent with many political measures to fight the pandemic which was informed by science. The ability of stakeholders' execution of the intended recommendation has been drawing attention to science communication. The push for better science communication, especially in climate resilience economies demands for a thorough exploration of what it actually achieves, whom it reaches and the impact it has. The call for consideration of methodologies and challenges of evaluating science communication in emphasizing the need for strategic planning, establishment of clear goals and systematic evaluation practices to enhance the impact of communication efforts is also becoming louder (Ziegler, Hedder and Fischer, 2021).

Appropriate science communication is key to research-informed policy making, and societal debates. Communication and interaction with various audiences, including other research stakeholders and citizens, should take place at all stages of the research process to contribute to excellent science.

The African heritage has been maintained over time due to the ancient methods of communications established then, that were both impactful and inclusive. After the colonial era, the ancient methods of communication have gradually been phased out in science communication and western methods of science communication have been gradually embraced and popularized. Science communication has often prioritized Western methods such as academic publishing, media briefings, and standardized education models, while disregarding ancient and indigenous communication practices that are deeply rooted in oral traditions, storytelling, and communal discourse which is more accessible and identifiable with Africans (Smith, 2012). This has made science communication inaccessible and incomprehensible, leading to less impact.

There have also been many wide-ranging effects of colonialism on science in today's world, many of them detrimental to developing scientific communities outside the Western world, Fassin (2003). This study aimed to highlight the impact of coloniality in science communication with an attempt to search for appropriate

decoloniality pathways.

Objectives of the Study

The objective of the study was broken down to specific objectives;

- To interrogate the common practices in science communication
- To discuss coloniality and knowledge systems
- Determine the extent to which science communication is accessible and comprehensible to the stakeholders.
- To determine whether science communication influences policies.

METHODOLOGY

This study employed a desktop review of literature on the evolution of science communication. The review highlighted the critical role of science communication in addressing societal issues, though it underscores the challenges faced in achieving meaningful behavioral and perceptual changes in society. Climate change, a key issue affecting the livelihood and quality of life for present and future generations, has prompted the adoption of resilience strategies as a means of survival and mitigation. Significant research has suggested both adaptive and mitigative measures, though their effectiveness varies. Fleerackers et al., (2019) highlighted that while the public values science for improving quality of life, effective communication remains challenging. The lack of formal training among scientists and their struggle to convey ideas beyond academic settings create barriers to public understanding of science. This reflects the broader issue of ensuring scientific communication translates into impactful behavioral changes. Impact Unit, Wissenschaft im Dialog (2020) emphasized the challenges in aligning science communication strategies with defined objectives, noting that vague project goals and a lack of clarity in communication targets limit the ability to evaluate and achieve intended impacts. This is particularly significant in creating behavioral shifts. Recently, there has been a growing emphasis among donors on "impact communication"—a form of science communication intended to lead to tangible societal change. The effectiveness of impact communication is largely dependent on the modalities through which science is communicated.

In August 2024, climate action stakeholders convened a summer school to evaluate the challenges posed by coloniality to impactful science communication. As part of the event, participants were administered a questionnaire on the final day to gather insights into how colonial frameworks hinder effective dissemination and understanding of scientific information. Additionally, interactive activities, including educational games, were employed to collect qualitative data on participants' lessons learned during the program. This dual approach—quantitative data through questionnaires and qualitative insights via participatory games—sought to comprehensively assess coloniality as a barrier to successful science communication, particularly in the context of fostering climate resilience strategies.

Data Collection

The African Centre for Technology Studies (ACTS) hosted a summer school aimed at strengthening the capacities of stakeholders engaged in climate resilience economies programs. Participants included early-career researchers, seasoned academics, policymakers, and practitioners, reflecting a diverse group of experts. The theme of the event was "Decoloniality of Science Communication," focusing on addressing the colonial influences that shape the communication of scientific knowledge.

To align with the study's objectives, a questionnaire was developed and administered to collect participants' views on the subject matter. The data gathered was analyzed using descriptive statistics to identify trends and key insights.

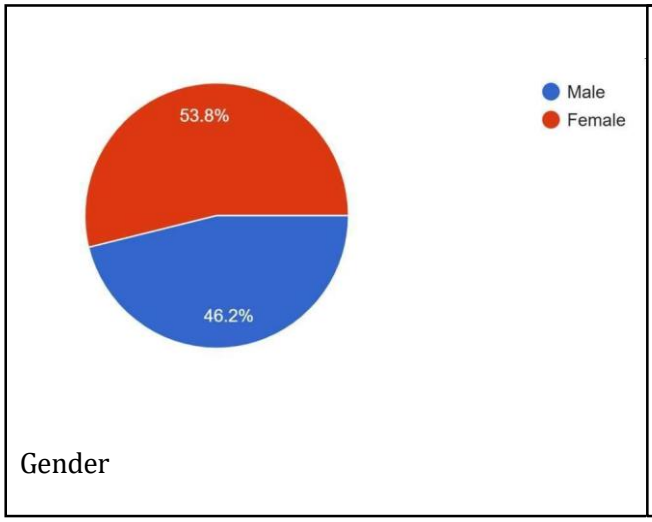
In addition to the questionnaire, through a decoloniality lens, the study employed an interactive game, 35

activity goal game, which involved 35 predefined activity goals. Flashcards were distributed to each of the participants to share the key lessons they had learned. Each of the participant was allowed time to write down the greatest lesson learnt from the summer school (The key take away).

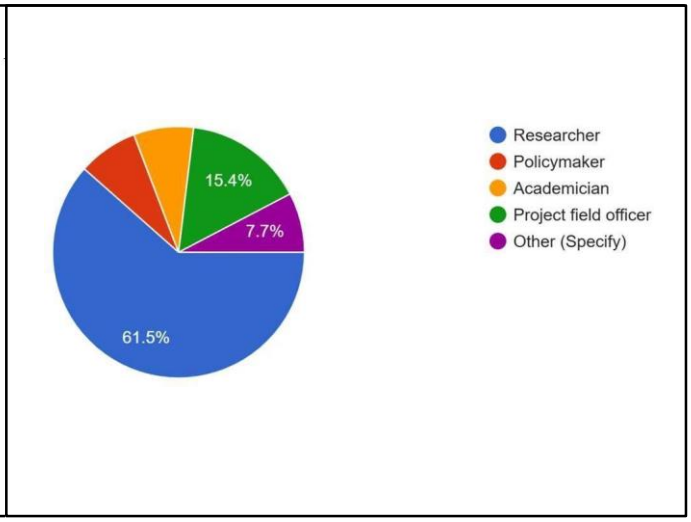
The flashcards were then collected and the participants grouped into groups of five. The flashcards were then redistributed, and participant groups scored each lesson on a scale of 1 to 5, with 1 being the lowest and 5 the highest representation of the lesson's impact. This process was repeated seven times, with the total points for each card calculated. Cards scoring 25 points or more were highlighted and discussed with participants to identify the most impactful lessons. This method was designed to ensure participant engagement and to effectively capture the most significant takeaways from the summer school.

RESULTS

The respondents were diverse in terms of gender, nationality and stakeholder position. In terms of gender, women were more than men, whilst in terms of nationality, there were representatives from Uganda, Kenya, Benin and Ethiopia, with Kenyans being the majority. The majority of stakeholders were researchers with between one to three years of experience in research.

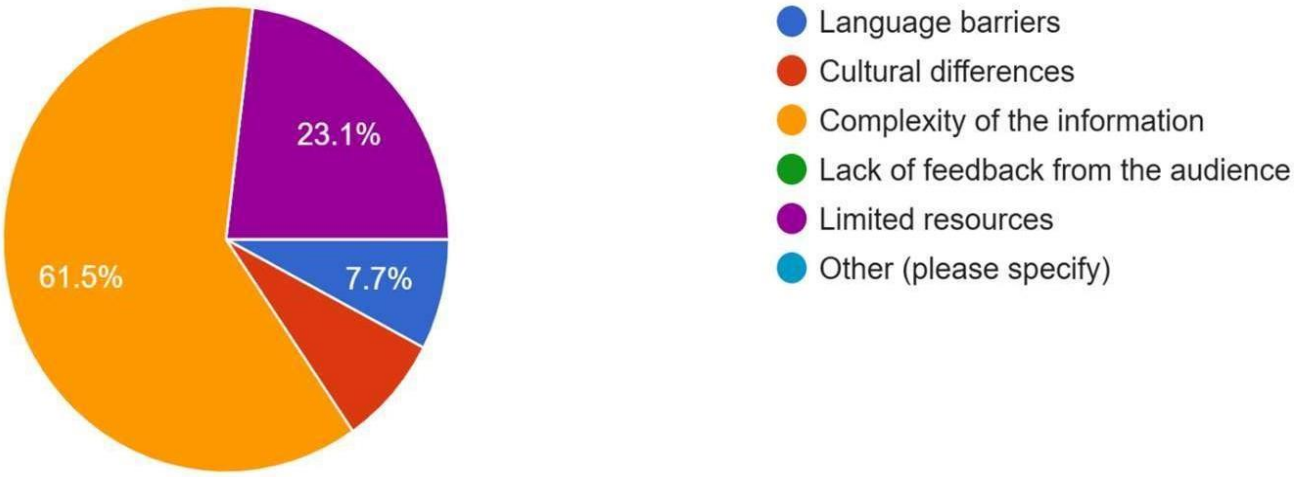


Gender



The campaign on science communication especially to the non-specialist audience focusing more on the decolonial modalities, the respondents were asked to indicate their strategies of communicating science. Workshops/training sessions and use of visual aids such as infographics and videos were mostly preferred. Other strategies include written reports, public talks and use of social media to communicate scientific findings.

Communicating Science to different populations was found to be a challenge due to the issue of diversity. The respondents were asked to determine the challenges they encountered in communicating scientific knowledge to different populations. From the results, complexity of information was found to be the greatest hindrance followed by limited resources. Cultural and language barriers came out as the least of challenges.



Respondents were asked to explain how they ensured that the communication of scientific findings were culturally sensitive. Consultation with local communities and use of local languages were most preferred methods by the respondents. Collaboration with local experts and adaptation of content to local norms were also mentioned as useful ways of ensuring that the strategies used to communicate science are culturally sensitive. It was also mentioned that replicating previously used strategies may be good enough.

On use of indigenous knowledge, the respondents were asked to indicate how frequently indigenous knowledge is integrated in their climate resilience projects. More than half of the respondents indicated that it is used sometimes while 15.4% indicated that it is rarely included. Only 23.1% reported an often inclusion of indigenous knowledge in their projects.

The respondents were requested to choose the measures they use to ensure accessibility of scientific information. 92.3% preferred the use of simplified language while 69% preferred providing translations. Conducting information sessions/workshops also had 61.5% preference. The output of these results shows that many researchers use more than one strategy to enhance accessibility of scientific information.

The study sought to understand how frequently researchers gather feedback from the communities on the clarity and usefulness of the information they receive. 38.5% of the respondents indicated that they often gathered feedback while another 38.5% of the respondents indicated that they sometimes seek feedback. 15.4% of the respondents reported that they always seek feedback while 7.7% often sought feedback from the communities on the clarity and usefulness of the information they received.

On impact and policy, the study sought to establish the means used by researchers to measure the impact of their science communication efforts on target populations. 30.8% of the respondents used interviews while 23.1% used focus groups, and performance metrics each. 23.1% didn't mind about the impact as long as they did their research. It was also observed that 38.5% rarely had their research outputs influencing policy while 30.8% sometimes had their research influencing policy. 23.1% often ensured that their research output influenced policy decisions in climate resilience. 7.7% of the respondents reported that their research outputs always influence policy decisions in climate resilience projects.

The study sought to find out the recommendations of respondents on decolonization of science communication in climate resilience projects. 46.2% of the respondents recommended incorporating indigenous knowledge in scientific outputs, while 46.2% recommended strengthening community engagements.

The 35 Activity Goal game meant to bring out the greatest lessons learnt. Those that got over 25 score are as listed;

- When doing research, there is always the host community from whom we collect data. It is important to give them feedback and communicate the research findings. It would also be good enough to

involve them in decision making.

- It is imperative to do a follow up study on the impact of the research findings and recommendations to ensure sustainability and offer mentorship and hand holding. If possible, look for funding to support the community.
- Researchers need to create a culture of objectivity in research especially in critical thinking to avoid personal biases, accept criticism, limit racism and accept inclusivity.
- There is need to include diverse perspectives in science communication by including indigenous knowledge.
- Research should be conducted for the interest of the people who endure the "research problem" and not for selfish interests of the donors. Thus, communication of research output should be more considerate of the community and not the donor.
- Feedback is part of the research process. It must be done in forms and ways palatable to the recipient.
- Community engagement should be a pivotal part of the research process for communication purposes and inclusion of indigenous knowledge.

CONCLUSION

The persistence of colonial methods in communicating scientific knowledge presents a significant barrier to achieving meaningful engagement and understanding within diverse communities. These approaches often prioritize top-down dissemination, using language, formats, and frameworks that exclude indigenous knowledge systems and fail to resonate with local contexts. This disconnect not only limits the accessibility of scientific information but also undermines its potential to drive behavioral and societal change. Embracing the decoloniality of science communication is essential to address these challenges. It calls for a shift towards inclusive, participatory, and culturally contextualized communication practices that acknowledge and integrate indigenous knowledge and local experiences as valuable components of the scientific discourse. This transformative approach ensures that science communication is not only accessible but also empowering, fostering mutual understanding and actionable impact.

On Interrogating Common Practices in Science Communication, it was revealed that workshops, training sessions, and visual aids like infographics and videos are the most preferred strategies for communicating science. Traditional methods, such as storytelling, written reports, public talks, and modern approaches, like social media, are also employed but less frequently. This indicates a blend of approaches targeting diverse audiences, with a focus on engaging and interactive methods.

The study aimed to discuss coloniality and Knowledge Systems. It was highlighted that the integration of indigenous knowledge in climate resilience projects is still limited, with only 23.1% of respondents often incorporating it. While more than half include it occasionally, a notable 15.4% rarely consider indigenous knowledge. This underscores the ongoing challenge of decolonizing science communication, as respondents also emphasized the importance of culturally sensitive strategies, including consulting local communities, using local languages, and adapting content to local norms.

Accessibility and Comprehensibility of Science Communication was also studied with results indicating key strategies to ensure accessibility included the use of simplified language (92.3%) and translations (69%), complemented by workshops and information sessions (61.5%). Despite these efforts, the complexity of information and limited resources remain significant barriers to effective science communication. Cultural and language barriers were reported as less impactful but still present. Feedback mechanisms are underutilized, with only 15.4% of researchers always seeking community input on the clarity and usefulness of their communications.

The study found limited influence of science communication on policy decisions, with only 7.7% of respondents reporting that their outputs always influenced climate resilience policies. Most researchers (38.5%) reported rare instances of policy influence, while others (30.8%) observed occasional impacts. Additionally, some researchers (23.1%) admitted indifference to measuring the impact of their communication efforts. This highlights a critical gap in aligning scientific outputs with policy-making processes.

RECOMMENDATIONS

The respondents suggested three major strategies to enhance decolonization in science communication:

- Incorporating indigenous knowledge into scientific outputs.
- Strengthening community engagement efforts.
- Giving scientific knowledge to the communities using locally established communication Channels

These recommendations reflect the need for inclusive approaches that respect and integrate local knowledge systems while fostering partnerships with target populations. These conclusions align with the study's objectives and emphasize areas needing improvement, particularly in integrating indigenous knowledge, simplifying complex information, and ensuring that scientific communication informs and influences policy effectively.

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