AUTHORS:
Mehita Iqani[1]
Anna Feigenbaum[2,6]
Jennifer Rudd[3]
Dominic A. Okoliko[4]
Phillipa K. Gillingham[5]

AFFILIATIONS:
[1]South African Research Chair in Science Communication, Department of Journalism, Stellenbosch University, Stellenbosch, South Africa
[2]Department of Communication and Journalism, Bournemouth University, Poole, United Kingdom
[3]School of Management, Swansea University, Swansea, United Kingdom
[4]Department of Journalism, Stellenbosch University, Stellenbosch, South Africa
[5]Geography and Environmental Studies, Bournemouth University, Poole, United Kingdom
[6]Current: School of Social and Political Sciences, University of Glasgow, Glasgow, United Kingdom

CORRESPONDENCE TO:
Mehita Iqani

EMAIL:
mehita@sun.ac.za

Is evidence enough? Rethinking climate action as communication

Significance:

As humanity faces climate change, interdisciplinary conversations about how climate research is produced are significant, as they offer researchers and activists opportunities to consider knowledge from different research traditions. This Structured Conversation explores the perspectives of three experts working in the field of climate change on how climate evidence is taken up by policy actors to exert influence and by activists to protest and empower.

Introduction

Mehita Iqani (M.I.) and Anna Feigenbaum (A.F.): This article reports on a structured conversation on the theme of climate justice as part of the Evidence and Power roundtable webinar series co-hosted by the South African Research Chair in Science Communication (Stellenbosch University) and the Centre for Science, Health and Data Communication Research (Bournemouth University) in June 2024. The Evidence and Power series aims to foster an ongoing, critical dialogue about the role of evidence, data and research within broader scientific projects. Rooted in science communication for social justice ethic, the series critically engages with two key theoretical frameworks that inform science communication. First, we ask what constitutes evidence, and how its definitions vary across different disciplinary perspectives. Second, we explore how power shapes, influences or mobilises evidence within the scientific landscape, particularly in science communication.

These questions are broad and cannot be definitively resolved one-off, hence our ongoing series of roundtables. Each session brings a set of diverse disciplinary perspectives to encourage reflection, debate and engagement on the dynamics of power and evidence in relation to science communication and the broader process of knowledge production. Here we report on a webinar organised around the theme of climate justice, held on 18 June 2024. The aim was to explore how evidence and power intersect in shaping societal responses to the challenges of climate change, and to consider how these dynamics can inform new research directions and critical theoretical frameworks. The full webinar recording is available on YouTube.

The discussion centred on three themes: (1) the quantity and quality of climate evidence, (2) barriers to governance and (3) the use of evidence in activism. Structured as a panel-like discussion, it was facilitated by M.I. and A.F., with three speakers drawn from among practitioners and researchers in climate change communication in Africa and the United Kingdom. Jennifer Rudd started her academic career searching for technical solutions to climate change but has recently moved into the social sciences to understand the human aspect of climate action, with a focus on climate change education. Dominic Okoliko is an interdisciplinary researcher specialising in environmental communication, climate change governance and public engagement, with a regional focus on Africa. Pippa Gillingham is an ecologist with an interest in social science, whose research interests concern where species are found and why, how this will change with climate change, and finding win-win solutions for biodiversity and climate change that work for people.

Together, the conversation summarised here offers insights into the nature of evidence and the ways in which power dynamics shape how societies engage with it in the context of climate change. The remainder of the article is organised around the three themes, with the facilitators guiding the discussion and the panellists responding.

The quality of climate evidence

M.I. and A.F.: As climate change builds in evidence and impact, it is critical to track and evaluate the quality of information available in the public domain. As such, the first talking point to the invited speakers was to ask them to reflect on the current quantity and quality of climate change evidence that is available, and to consider the reach and possible take up of that information by broad audiences. This is crucial, as the communication of climate science is at the heart of building understanding and activism.

Dominic Okoliko (D.O.): Over the past 5 years, my work has primarily focused on the intersection of public sense-making, particularly in relation to communication and language, and how these elements interact with environmental governance, especially concerning climate change. Reflecting on this question, I am particularly struck by the abundance of evidence sources currently available in the public domain. We have a plethora of resources, including the scientific reports produced by the Intergovernmental Panel on Climate Change (IPCC), notably their sixth report.[1] Each time the report is published, there are specific regional footnotes, such as Chapter 9, which focuses on Africa.[2] My research in recent years has always centred on Africa, so my perspective is largely shaped by that focus. Research outputs, such as publications and reports, generate scientific evidence and make it available to the public. However, does this necessarily translate to substantial public and media access to that evidence? Non-governmental organisations (NGOs) and media organisations, particularly through alternative platforms, provide some support in bridging this gap. In the African context, Greenpeace has made notable efforts to highlight climate change issues relevant to the region.[3] Initiatives such as the Africa Climate Reality Project and the African Rainfall Project championed by the World Community Grid also contribute to this effort.

In preparation for this discussion, I conducted quick searches on Google Scholar, Web of Science (WoS), and Scopus using the term "climate change" to assess the volume of available publications on the topic. The results were notably

high, with Google Scholar returning approximately 3 300 000 results, WoS (Topic) yielding 514 609 and Scopus 605 443 (all searches, 17 June 2024). For context, in 1990, Scopus recorded only 933 documents, while WoS had 3480 in 2003. While this growth is commendable, it is important to recognise the disparities in knowledge production and the representation of perspectives across different regions. For instance, when I compared document counts in Scopus for up to 15 countries, South Africa ranked the lowest (the only African country in the list), while the USA led by a significant margin. Thus, when evaluating the quantity of publicly available information and evidence, we must consider the geopolitical factors that shape where and how research is published.

It is also important to consider the technical nature of scientific outputs and how the public can access them. Barriers exist due to the complexity of the information in these publications, making it difficult for the general public to interpret and engage with the content. Paywalls further restrict access, particularly for individuals in developing countries, many of them in Africa.

Regarding media coverage, South Africa has seen notable progress in terms of the volume of attention given to climate change. Data from Media Monitoring Africa, released in 2020, indicates that the number of climate-related articles in South African news media surged from fewer than 1000 before 2015 to 8870 in 2019.[4] There are also reports suggesting a slight shift from purely disaster-focused reporting toward increased coverage of mitigation and adaptation in Africa, as well as a move away from reliance on foreign news toward more local perspectives.[4]

Despite these improvements, media coverage in some African contexts remains largely event-driven, with climate issues framed episodically in response to specific crises and climate events like the annual Conference of the Parties (COP) meetings. Additionally, coverage is concentrated in wealthier, urban-focused outlets, leaving lower-income communities and local media largely excluded from the conversation.[5] This exclusion is significant, as studies show that non-urban populations tend to have lower awareness of climate change compared to their urban counterparts.[6]

There is also a clear bias in whose voices are amplified in climate stories. In our comparative study of media coverage in South Africa, Nigeria and Kenya[7], we found that government actors dominated the discourse, followed by experts. Civil society, businesses and ordinary citizens received far less attention. This elite-driven narrative risks alienating the public by framing climate issues as matters for technocrats rather than shared societal challenges.

Thus, while the quantity of climate-related information and sources in the public domain has increased, improvements in quality and access remain limited. Notable gaps persist in the inclusivity of coverage, and on social media, misinformation is a palpable concern.

Jennifer Rudd (J.R.): I have quite an interdisciplinary background: I have a PhD in chemistry, have been involved in projects ranging from next-generation solar panels to carbon reduction, and was very involved in school outreach. I currently am involved in climate change education. My answer to the question is from an expert's perspective, as that is the evidence to which I am mostly exposed, and is therefore most likely not representative of how the general public views the issue. I recently looked at the newly added climate section on BBC News and realised that a significant fraction of the articles is outdated and only a limited number of updated articles appear on the site. On another note, there is a prevalence of right-wing newspapers that disseminate false and incorrect information, particularly on renewable energy initiatives, and have a higher chance of reaching a wider audience.[8] Thus, many efforts from experts are targeted at debunking the false claims that are made by a large proportion of the press. Moreover, the UK government appears to continue to endorse narratives that are not based on evidence.[9] In my personal opinion, the current quality of climate change evidence is extremely inadequate. A prime example is that of the Extinction Rebellion protests in which thousands of people descended on England's captial – although there was mass press coverage on both protests and climate change[10], little press discussion covered the scientific basis of climate change. Although we have more coverage in terms of quantity with things like Extinction Rebellion, it does not translate to informing people using evidence.

Pippa Gillingham (P.G.): I approached this question from the lens of public domain research. Increased access through open access information and improved publishing agreements is increasing the available information in the realm of climate science. The IPCC reviews and summarises existing science. Information is presented in reports from three working groups, plus a synthesis report. Available evidence is summarised by scientists with the aim of analysing the quality and quantity of that evidence. Information on the impacts of climate change, its effects on the environment and species and on the ecosystem, health and food is abundant. The IPCC reports serve to summarise a lot of information and the fact that this is done by experts contributes to the quality of evidence.

There is abundant evidence out there in the field of climate science, and there are numerous summarised reports aimed for policymakers to try and make decision-making easier (e.g. POSTNotes in the UK, https://post.parliament.uk/type/postnote/). However, there is a geographical publishing bias in most science towards Europe, North America and Australia.[11] Therefore, less knowledge is available from the developing world, and there is a lack of evidence serving those places. In addition, not all science information is published, and there sometimes is a language barrier to getting published. This complicates the argument that there is a large quantity of evidence available and should push us to ask what evidence is being missed.

Some topics are fairly new, such as climate change adaptation, both in terms of how humans will cope with the climate change that is happening, and ways of capturing which climate change adaptation action is being taken. There are databases that detail adaptation actions (e.g. Climate-ADAPT) but there is limited evidence of what is working. There is not entirely an absence of evidence; however, in topics such as biodiversity conservation and in relation to the natural world, we do not yet know what adaptive success looks like.[12] This is likely partly because we are still developing indicators of what works.[13] In England, the government's advisor for the natural environment, Natural England, have now begun to think about how to include climate change in nature reserve management targets.[14]

There is much less evidence on the topic of climate justice. The IPCC only recently started to include climate justice in the last (sixth) report. Again, this is a developing field in which there is limited evidence about which actions are just and would lead us to a just transition to a low emissions future. Therefore, despite the large amount of evidence in the public domain, the bigger question is then: what is still lacking?

M.I. and A.F.: As the discussion so far has shown, the various interpretations of the public, such as that related to the IPCC, is considered part of the public domain in the sense that its reports are accessible for public consumption. However, this differs from the public domain of information disseminated through news media, which individuals are exposed to daily. It is important to clarify which aspect of the public domain is being referenced in discussions about climate evidence. Additionally, the 'bubbles' we inhabit – whether social, informational or ideological – further limit the scope of perspectives with which we engage. This issue ties into the question of whose voices are represented and the significant skew in the representation within these domains. These dynamics raise critical considerations, particularly regarding inclusivity and equity in information dissemination and representation.

Barriers to governmental action

M.I. and A.F.: There is already significant evidence proving the existence of the problem of climate change, which of course comes with nuance about how the available evidence represents different geographies, cultures and societies globally. While it must be acknowledged that imbalances in the availability and use of evidence exist, additional considerations arise regarding access to evidence and the ways in which it is made public. These modes of dissemination may, at times, be exclusionary, elitist, overly complex, or, conversely, oversimplified. Furthermore, evidence may be shaped by biases, raising important questions about the politics embedded within the evidence itself. Speakers were next asked to consider the obstacles that might hinder the translation of evidence into practice, policy, regulation or political action at high levels (governmental and

inter-governmental). What are the biggest obstacles facing the enactment or the implementation of the necessary changes that can drive us towards a more sustainability trajectory for humanity and Earth? What is it that stops those in power from responding to the publicly and widely available scientific evidence?

D.O.: Three key factors contribute to inaction on climate change, particularly at higher levels of governance: political will, economic constraints and weak governance systems. While other factors also play a role, these three stand out in my perspective, particularly in the African context.

Political will is a critical driver of climate action, both nationally and internationally. At the global level, the lack of political consensus continues to hinder effective responses to climate change. For example, recent climate summits, such as the June 2024 Bonn Climate Change Conference, have underscored this challenge. Discussions focused on transitioning from previous financial commitments for adaptation to the development of a new agreement on loss and damage financing, set to be signed at the subsequent major climate meeting. However, the meeting ended without consensus, as stakeholders debated responsibility-sharing and financial commitments. For many African nations, adaptation is an urgent priority due to the increasing frequency of extreme weather events, but action is often contingent on external funding. This dependency leaves African countries waiting for decisions and commitments from wealthier nations, further delaying progress.

At the national level, the absence of political will is particularly evident during election campaigns, where climate change is rarely prioritised. Politicians often avoid the topic altogether. For instance, in Nigeria's 2023 elections, none of the top four presidential candidates made climate change a central campaign issue. The eventual winner dismissed climate action as a Western problem, stating that if the West wanted Africa to address the issue, it would need to provide financial resources.[15] This rhetoric shapes public perception, reducing urgency for domestic climate action. Similarly, in Zambia, climate change was notably absent from electoral discourse.[16] Politicians often sidestep climate-related issues during campaigns, fearing voter backlash, particularly in regions where fossil fuel industries play a significant economic role.

Economic constraints present another major barrier. The financial resources needed for a sustainable energy transition and other climate initiatives are substantial. In Africa, national budgets for environmental issues remain minimal, reflecting a lack of prioritisation. Limited fiscal capacity, coupled with slow global financial commitments, further impedes progress. Additionally, many African economies are heavily dependent on fossil fuels, creating entrenched interests that resist transformative change. Nigeria and Angola, for example, rely heavily on oil revenues, while South Africa's energy system depends on coal, which supplies over 80% of the country's energy.[17] These industries exert significant influence on policymaking, often obstructing efforts to transition to sustainable alternatives.

Weak governance systems further compound these challenges, undermining public trust and support for climate initiatives. In our recent study on South Africa's energy transition efforts during COP26 in 2021, public scepticism was a recurring theme.[17] While some recognised the need to reduce coal reliance following the announcement of a USD8.5 billion deal from international partners for South Africa's just energy transition, many doubted the government's ability to manage the transition effectively. Concerns over corruption and mismanagement dominated public discourse, with widespread fears that any allocated funds would likely be misused. This lack of confidence in governance structures erodes public support for necessary but difficult reforms. Addressing climate change requires urgent action, but weak governance remains a fundamental obstacle to building public trust and securing the kind of transformative change our world needs today.

J.R.: The Welsh context presents a particularly intriguing case study in governance and climate action within the UK. England, Scotland, Northern Ireland and Wales comprise the UK, and each has varying degrees of devolved powers. Wales, while governed by its own Welsh Government, retains limited autonomy as many powers remain centralised in Westminster under the UK Government. Nevertheless, areas such as farming, education and the National Health Service fall under devolved powers, enabling the Welsh Government to make independent decisions in these domains.

Politically, Wales is led by a Labour government, which leans slightly left, contrasting with the increasingly right-wing UK Government in Westminster (true until the 2024 UK general elections which returned a Labour government). This difference has both facilitated and hindered Wales' pursuit of more progressive policies, particularly on climate change and sustainability. Notable examples include a moratorium on road building (except in exceptional cases), substantial investment in improving the train network in South Wales, the implementation of a default 20-mile-per-hour speed limit across the country, and the introduction of sustainable farming subsidies.[18] These subsidies aim to mitigate the adverse effects of Brexit on Welsh farmers by offering financial incentives to increase tree cover and enhance natural habitats, such as hedgerows. However, these initiatives have faced considerable backlash. While the train system has generally been well received, other measures have sparked public dissent. The road-building moratorium and 20-mile-per-hour speed limit have met resistance from portions of the general population, while some farmers have vocally opposed the proposed subsidies, citing concerns about feasibility and economic impact. This backlash underscores broader challenges in climate communication. If the public does not fully grasp the consequences of climate change, the potential benefits of adaptation, or the necessity of mitigation strategies, political will for bold, transformative actions diminishes.

The controversy surrounding the 20-mile-per-hour speed limit exemplifies this tension. The cabinet member championing the policy faced significant public criticism, ultimately leading to their exclusion from the new cabinet following a leadership change. This reflects the broader political cost of advancing long-term climate initiatives in the face of public opposition. A further challenge lies in the inherent tension between short-term political cycles and the long-term nature of climate solutions. For instance, the Valleys Metro project – a major overhaul of South Wales' train network – has cost over GBP1 billion and spanned more than 5 years, extending beyond a single governmental term.[19] While this initiative promises long-term benefits – such as reduced emissions, improved public health through active travel, enhanced mobility and greater social justice in historically disadvantaged ex-mining areas – it has necessitated immediate budgetary trade-offs, including reallocations from critical sectors like the National Health Service. Communicating these long-term benefits to the public and securing trust remain critical obstacles.

More importantly, Wales is guided by the *Well-being of Future Generations Act 2015* which mandates that the Welsh Government and public bodies prioritise the well-being of future generations over short-term gains.[18] This legislation requires decision-makers to consider the impacts of their policies on future populations and establishes an independent Future Generations Commissioner to hold the government accountable. Despite its groundbreaking nature, the Act's principles require significant time to gain widespread acceptance and integration into societal norms.

Complicating matters further was the 14-year discord between the Labour-led Welsh Government and the Conservative-led UK Government, resulting in conflicting narratives that create cognitive dissonance for the Welsh public. The inability to shield the population from Westminster's contrasting messaging undermined efforts to build a unified vision for long-term, progressive climate action. This has changed slightly since the UK General Election in 2024, which returned a Labour Government to Westminster. The Welsh Labour and UK Labour Governments have since worked together more closely, although there are still ideological differences in some key policy areas, such as climate change. Ultimately, Wales provides a compelling example of the opportunities and challenges inherent in devolved governance, progressive policymaking and climate communication. The Welsh Government's ambitious initiatives demonstrate a commitment to sustainability and long-term planning, yet public resistance, political tensions and communication deficits highlight the complexity of achieving transformative change in a polarised context.

P.G.: The electoral cycle, which typically lasts 4 or 5 years in many democracies, including the UK, presents a significant obstacle to sustained climate action. Until recently, climate change was often perceived in the UK as a distant issue, affecting other parts of the world more acutely. However, recent extreme weather events such as consecutive drought years, prolonged winters and devastating flooding have brought the immediacy of

climate impacts to the public's attention. These events, such as crop failures reported by farmers, underscore the urgency of action. Despite this, the short-term focus of election cycles, coupled with competing crises such as Brexit, the cost-of-living crisis and energy price volatility, has diluted the political will to act decisively.

One major barrier is the difficulty of convincing the public to prioritise climate action when they are grappling with immediate economic hardships. For example, food insecurity linked to crop failures caused by climate change exacerbates the cost-of-living crisis.[20] This interdependence highlights the complexity of creating public buy-in for climate policies amidst pressing socio-economic challenges. Another issue lies in decision-making at the government level. In the UK, just over a quarter of MPs have a background or interest in STEMM subjects[21] which means almost three quarters may not have the ability to interpret and therefore trust scientific evidence. While independent bodies, such as the Climate Change Committee, provide comprehensive risk assessments and hold the government accountable, progress has been slower than necessary.[22] This is partly due to conflicting incentives and the influence of industries resistant to change.

For instance, energy companies profited significantly during the global energy price surge, while households required government subsidies to manage heating costs.[23] Although the introduction of a windfall tax on energy companies marked progress, it faced significant initial resistance. Similarly, subsidies for renewable energy have fluctuated over the years, reducing their effectiveness. Fossil fuel subsidies, deeply entrenched in the system, remain a major barrier, sustained by powerful industry lobbies that resist reform.

At the local level, councils often face significant resource constraints, despite many declaring climate emergencies.[24] Limited budgets force them to prioritise other pressing issues over implementing environmental initiatives. This lack of funding severely hampers the ability to enact meaningful change. Furthermore, public pushback can stymie local climate measures. In Dorset, for instance, initiatives such as creating cycle lanes or establishing wind farms often face resistance, either due to perceived threats to drivers' convenience or concerns about preserving the aesthetic of the countryside.

Using evidence in activism

M.I. and A.F.: It is fascinating to be more cognisant of the dynamic between the Global North and South. In the Global North, there is often a rhetoric and sometimes policies that acknowledge climate change, however limited by political cycles, economic priorities and public resistance. Meanwhile, in the Global South, leaders often downplay climate change, framing it as the responsibility of wealthier nations and the need to focus on more socio-economic issues. Highlighting the dissonance of governments when navigating climate change rhetorically and strategically. Moreover, the main aim seems to be power and re-election. This brings up the question of what ordinary people can do in response to the threats of climate change. How might evidence about climate change be used as an instrument of empowerment or resistance by ordinary people?

J.R.: I will use two examples to illustrate the innovative ways in which climate change evidence has been put into action. The first is the Extinction Rebellion movement, which began in 2018 as a response to growing frustration with government inaction on climate change.[25] Extinction Rebellion embraced a strategy of disruptive, non-violent direct action to demand systemic change. Activists would occupy major spaces in London, such as Oxford Circus, blocking roads and camping on streets for extended periods. Their tactics included large-scale art installations, such as a massive pink boat placed in the middle of the city, and creative reimagining of familiar symbols, such as transforming traffic warning signs into messages about rising temperatures and sea levels. This approach was effective in several ways. First, it communicated the urgency of climate action without relying on complex scientific language, making the issue accessible to a broader audience. Second, Extinction Rebellion's highly visible art demonstrations attracted significant media attention, spurred public discourse and mobilised tens of thousands of people who might not previously have engaged with climate activism. For instance, spikes in online searches for climate-related topics corresponded with Extinction Rebellion's actions, underscoring the impact of their campaigns on public awareness.

Another overlapping movement, School Strike for Climate, spearheaded by youth activists, complemented Extinction Rebellion's efforts by amplifying the global call for climate action. Together, these movements demonstrated how disruptive yet creative methods could galvanise public engagement at an unprecedented scale. The second example highlights how localised initiatives can foster grassroots climate action.[26] In Shrewsbury, a small town on the England-Wales border, a friend of mine participated in a project called Climate Fresk. This initiative uses interactive workshops grounded in visual aids and peer-to-peer learning to engage local communities in discussions about climate change. By avoiding didactic approaches, the workshops empower participants to take ownership of their learning and decision-making processes. The ripple effects of this community-driven initiative have been significant. Local organisations in Shrewsbury increasingly requested Climate Fresk workshops, leading to greater awareness and collective action. For example, a group of residents convened to explore ways to decarbonise their homes. Collaborations with suppliers resulted in discounted services for participants, creating tangible incentives for action. This local momentum has since extended to businesses and neighbouring areas, illustrating how science communication at the community level can evolve into sustained, transformative action: a transition from the traditional science communication to radical action within local areas towards broader areas. It is interesting to consider empowerment both from local and more global scales.

D.O.: When considering the use of evidence to empower, influence and resist in the context of climate action, several notable trends emerge in Africa. A promising development at the community level is the critical role of awareness and education in driving action. Recent initiatives demonstrate how such approaches are reshaping local responses to climate challenges.

I am aware of several group-based climate talks and workshops being organised and led across Africa. One example is Climate Fresk, an interactive, game-based programme designed to build climate knowledge while motivating participants to act. Having participated in several awareness programmes, including Climate Fresk, I observed that participants who initially seemed uncertain about key climate change issues left the sessions feeling more informed and empowered.

At Stellenbosch University, I led a group of students in a similar cross-university climate talk initiative in 2021. This engagement led to the formation of Climate Justice Colleagues, a student-led advocacy group that has since undertaken significant efforts. Over the past few years, they have organised several campus-based campaigns and, along with other organisations, lobbied the university to quantify its carbon footprint and divest from fossil fuel industries – demonstrating how awareness initiatives can translate into meaningful local action.

Beyond educational programmes, numerous NGOs across Africa are playing a crucial role in raising awareness and fostering community engagement. Organisations such as Greenpeace Africa and the South African Climate Action Network have been instrumental in promoting climate education and advocating for sustainable practices, particularly in sectors like agriculture. During my research on the representation of climate change in Kenyan newspapers, I identified several local initiatives effectively leveraging media to educate communities and drive change.[7]

On the subject of resistance, grassroots movements have also demonstrated considerable influence. The Fridays for Future Global Climate Strike, for instance, galvanised activism worldwide, with Africa playing a significant role. In Cape Town, we participated in several related movements between 2021 and 2022, underscoring the continent's engagement in global climate advocacy. Evidence-based resistance has also empowered communities and NGOs to take legal action against environmentally harmful practices. A prominent case occurred in 2016 when Earthlife Africa Johannesburg sued the Ministry of Environmental Affairs for failing to incorporate climate change considerations into the environmental impact assessment for a proposed coal-fired power plant in Limpopo.[27] The court ruled in favour of Earthlife Africa, setting a precedent for similar cases.

Another example is the coalition of NGOs in the Eastern Cape that successfully opposed Shell's attempts to explore for gas in the region.[28] These actions illustrate how evidence-based advocacy can

drive resistance against environmentally detrimental projects. Activist organisations across the continent continue to champion similar efforts, reinforcing the power of evidence in shaping climate action.

P.G.: I have observed that my students are particularly engaged when considering solutions to environmental challenges when I talk about those that resonate with 'ordinary' people, both within and beyond the academic setting. When I task students, including those not pursuing environmental degrees, to design projects aimed at engaging the public on climate and environmental solutions, the ideas that consistently capture their attention are those rooted in practical everyday actions. Two themes stand out: reducing food waste and reducing meat consumption. These are tangible behaviours that individuals can change immediately, and they create a sense of empowerment because the impact feels both immediate and achievable.

The appeal of these solutions lies not only in their accessibility but also in their significant environmental benefits. For example, livestock production is a major contributor to greenhouse gas emissions, while food waste, if considered as a single emitter, would rank among the largest emission sources globally.[29] These staggering statistics often inspire students, and subsequently the public, to recognise the importance of addressing these issues. Over the years, I have supervised countless projects designed by students that aim to convince others of the importance of such actions. A common thread in their success lies in emphasising co-benefits. Reducing meat consumption, for instance, aligns not only with environmental goals but also with health benefits, as plant-based diets rich in fruits, vegetables and nuts are associated with improved well-being.[29] Similarly, tackling food waste offers clear economic incentives; saving money resonates strongly with individuals, making it a compelling driver for change.

In recent years, social media and technological innovations have amplified these messages, making them more relatable and actionable. Apps like Too Good To Go, which has gained significant traction in the UK, offer creative solutions to food waste by connecting consumers with surplus food at reduced prices. Social media platforms play a key role in promoting these initiatives, with users sharing their experiences, such as showcasing the high-quality produce they have acquired at minimal cost. These platforms also incorporate feedback loops, such as indicating the energy saved through reduced food waste, fostering a sense of environmental accomplishment alongside economic benefits. While these solutions may seem relatively unremarkable or even 'unsexy', their simplicity and practicality are precisely what make them so effective. They prompt the question: why are we not doing this already? For instance, food waste remains a persistent issue despite its apparent avoidability. Many students share my perspective, shaped by upbringing or cultural practices, that wasting food feels inherently wrong. Yet, the systemic nature of the problem underscores the need for continued education and advocacy to shift norms and behaviours.

Ultimately, what I have observed is that empowering individuals to take simple, meaningful action whether by reducing meat consumption, addressing food waste or engaging in similar initiatives can significantly contribute to fostering a sense of agency in tackling climate change. Such approaches underscore the importance of connecting environmental solutions to tangible benefits, both personal and collective, in driving meaningful change.

Conclusion: Is evidence enough?

M.I. and A.F.: There are many valuable points that have been offered here: the role of governments in protecting the rights of future generations, as well as the role of citizens and activists in lobbying for their governments to do the right thing in relation to climate change. We have explored questions of agency and how it relates to structures of power. And we have considered what kinds of climate evidence should be widely communicated, and how those forms of evidence can feed into new forms of action as well as political value systems.

A recurring theme in the comments of our speakers is the role of young people in climate action. It is quite evident from a brief look that young people have become central figures in addressing climate change. More importantly, they play a central role in speaking truth to power and mobilising discourses and evidence to challenge the status quo. Youth

are not only amplifying the urgency of climate action but are also actively participating in reshaping narratives around the issue. This is an inspiring and hopeful observation, especially in a space where systematic inertia can sometimes overshadow progress.

This brings us back to a broader, somewhat troubling question: is evidence enough? There is enough evidence to support a clear understanding of the systemic changes required to address the climate crisis. These include actions like embracing renewable energy systems and investing in their infrastructure, grounding private jets, drastically reducing middle-class air travel, eliminating food waste and rethinking our dependence on meat-heavy diets. The solutions are tangible and achievable, and the evidence supporting these actions is abundant and undeniable. Yet, despite this clarity, we remain entrenched in patterns of inaction. Governments, preoccupied with political survival and catering to shifting voter bases, often fail to enact meaningful change. Communities are mired in 'NIMBYism' – resisting wind farms or renewable infrastructure while clinging to conveniences that maintain the status quo. It is as though we can see the destination and understand the evidence, but we lack the capacity or will to mobilise effectively. This leads to a second, equally pressing question: is activism enough? At this stage of the climate crisis, should we be considering forms of resistance that go beyond conventional activism? Activism has undoubtedly been transformative in many ways, but given the persistent inertia of those in power, do we now require more acute, perhaps even disruptive, forms of resistance to compel action where it has long been delayed? These questions are not easy to answer, but we believe they are critical as we collectively navigate the escalating challenges of the climate.

As this conversation suggests, communication is a pivotal avenue to addressing climate justice. It is a core instrument to addressing these pressing challenges. This perspective stems from the understanding that communication is at the core of both the production of scientific knowledge and how the knowledge interfaces with every other facet of society. The climate crisis permeates lived experience in complicated and uneven ways and the communication task related to it goes beyond a question of quality of messages, audiences and access. Communication is not a simple, linear or static practice, it should be understood to be complex, dynamic and multi-directional. Communication practices and strategies can and should be at the heart of the project of connecting scientific evidence with social justice: the climate crisis is an urgent example of the need for science, as well as the pitfalls of not contextualising and framing it in relation to the complex power struggles that define social life. We call on the community of climate scientists to develop collaborations with critical communications scholars, so that new interdisciplinary methods can be invented to help raise awareness, understanding and action in relation to climate justice. Likewise, we call on communications researchers to work with scientists to imagine new ways to advocate for this crucial issue, which is linked to the survival of all humanity. We need to forge new ways to integrate the narrative and emotional appeal in climate communication. Climate evidence on its own is insufficient; it needs to be integrated with powerful messages that connect sensemaking with personal and collective investment in the environments that sustain human and non-human lives.

Declarations

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