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A critique of climate objectivity in the context of global injustice

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Abstract

As climate science intersects with rising political urgency and global ecological crisis, calls for 'neutrality' risk obscuring the field's entanglement with systems of power, historical dispossession, and structural inequality. This article challenges conventional framings of scientific objectivity, arguing that justice, accountability, and epistemic pluralism are not threats to scientific credibility but conditions of its ethical and societal relevance. Drawing on interdisciplinary insights, it advances a vision of climate science that is reflexive, engaged, and responsive to the unequal burdens of climate disruption. Amid compounding climate injustices, detachment is not a position of neutrality but a failure to engage with the responsibilities of knowledge production.

1. Introduction

Persistent calls to maintain a rigid boundary between climate science and activism [1] reflect a narrow understanding of scientific objectivity—one that overlooks the complex entanglements between knowledge production, political power, and societal values. Historically dominant framings of climate science—such as those in IPCC reports—have emphasised apolitical, 'policy-relevant but not policy-prescriptive' approaches, reinforcing an ideal of value-free science that can marginalise justice-oriented perspectives [2, 3]. While often framed as a defence of impartiality, such perspectives risk reinforcing dominant epistemologies that marginalise diverse ways of knowing and obscure the lived realities of climate injustice [4, 5]. These framings underestimate the democratic urgency of climate action and mischaracterise the role that value-driven science can and should play in ethically responsive research.

This article argues for a more reflexive and justice-oriented approach to climate science—one that recognises its inherently political dimensions without compromising epistemic integrity. Insights from decolonial thought, political ecology, feminist science studies, and the sociology of science reveal that scientific inquiry is never value-free but shaped by institutional norms, funding structures, and broader geopolitical agendas [6–8]. Positivist assertions of neutrality are often value-implicit, concealing normative assumptions, whereas values-explicit approaches emphasise reflexive transparency around positionality, ethical commitments, and societal impacts [9, 10]. The insistence on a strict separation between science and activism [1] overlooks the urgency of the climate crisis and the moral responsibility of scientists to engage with its socio-environmental dimensions. Far from undermining scientific rigour, value-laden research is central to the ethical and democratic imperatives of climate scholarship. Recognising the political character of climate science affirms its public accountability, enhances its relevance, and enables a more equitable response to the intersecting crises of global degradation and structural injustice.

2. Climate science is political

A persistent binary in climate discourse frames science as inherently 'neutral' and treats activism as a deviation from objectivity [1], thereby obscuring the complex interplay between knowledge production and sociopolitical responsibility. As Büntgen [1] argues, climate scientists should 'refrain from

engaging in activism' to preserve the 'credibility' of science—a view that reiterates a positivist belief in value-free inquiry. Similarly, Pielke [11] champions the 'honest broker' role for scientists, contending that advocacy compromises the neutrality essential to informing policy. This binary is most clearly articulated in statements that emphasise the need for science to remain independent of political influence in order to maintain public trust [12]. While rhetorically compelling, such statements produce a false dichotomy between epistemic integrity and political responsibility. A common defence of scientific neutrality holds that in a politicised environment, explicit engagement risks fuelling accusations of bias from powerful denialist or anti-science interests. Indeed, climate scientists have faced systematic politicised attacks accusing them of 'alarmism' or 'advocacy' [13, 14]. However, equating reflexive engagement with partisan alignment conflates value transparency with political capture.

As philosopher Heather Douglas [15] argues that acknowledging the role of values in guiding research does not make science political in a partisan sense; it renders it ethically accountable. Similarly, Elliott and Steel [16] demonstrate that social values are inescapable in scientific reasoning, and that their explicit articulation strengthens rather than weakens objectivity. However, science does not—and cannot—exist outside the world of values, institutions, and power. The idea of 'value-free science' is a philosophical ideal that has long been contested across disciplines, from the philosophy of science to critical theory. As scholars like Jasanoff [17] and Latour [18] have demonstrated, scientific knowledge is not discovered in a vacuum but is co-produced with societal norms, institutional structures, and political cultures. Jasanoff, in particular, critiques the ideal of value-free science as not only empirically untenable but also politically naive, given its entanglement with systems of power and governance [19].

To presume neutrality is not only philosophically naive, but strategically harmful in the context of a global crisis where knowledge is instrumental to policy, justice, and survival. It is a fundamental misconception to believe that science can operate in isolation from social, political, and ethical values, or that it functions as a wholly neutral entity [20]. Climate science in particular operates at the intersection of planetary systems and political economies, making its production and dissemination inescapably embedded in contested terrains of governance, risk, and justice. For example, appeals to scientific neutrality often defer to technocratic economic models that prioritise cost-benefit analyses and market efficiency—approaches frequently framed as value-neutral [21]. Yet, these models embed an implicit commitment to continued economic growth, thereby marginalising transformative responses such as degrowth, post-growth, or reduced consumption pathways [22, 23]. Framing economic imperatives as apolitical obscures how scientific knowledge production is entangled with capitalist assumptions and institutional power. In contrast, engaging with diverse epistemologies—such as Indigenous relational ontologies or feminist ecological economics—opens space for alternative values, ethical priorities, and imaginaries of sustainability [24–27].

To deny the political dimensions of climate science is not a gesture of epistemic purity, but a retreat into abstraction that masks the real-world consequences of inaction and inequity [28]. Political ecology has long demonstrated that environmental knowledge is shaped by asymmetrical power relations, wherein dominant institutions and epistemologies marginalise subaltern, Indigenous, and 'Global South' perspectives [29, 30].

From IPCC assessments to national climate models and carbon accounting frameworks, what counts as credible or actionable knowledge is negotiated through processes imbued with scientific reasoning, economic rationality, and geopolitical interest [20, 31]. Carbon offset markets offer a clear example: they rely on models that frame emissions reduction as objective and quantifiable yet embed politically charged economic assumptions [32]. These frameworks often universalise values like discount rates while ignoring social and historical contexts. As a result, many offset projects have led to Indigenous land dispossession, reinforcing colonial dynamics under the guise of climate action—a pattern increasingly critiqued as new carbon colonialism [32, 33]. Recognising this does not undermine science—it reveals its social embeddedness and the need for greater reflexivity, epistemic humility, and accountability—not silence, retreat, or disengagement. In the face of a planetary emergency, calls for neutrality may themselves become ideological, serving to insulate dominant systems rather than interrogate them.

Climate change is not simply an environmental phenomenon; it is a deeply political process rooted in histories of colonisation, unequal development, and extractive capitalism, reflecting and reproducing global asymmetries in power, responsibility, and vulnerability [30, 34, 35]. Decisions on mitigation, adaptation, loss and damage, and whose knowledge are prioritised in policymaking are shaped not only by scientific evidence but by contested ideologies, economic interests, institutional agendas, climate models, and emissions data [36, 37]. In this context, neutrality becomes less a shield for science than a strategy of insulation—one that risks legitimising the very structures that exacerbate injustice [38, 39].

3. Decolonial insights: Whose science? Whose crisis?

Dominant framings of climate science often universalise the Western scientific canon while disavowing the rich traditions of environmental stewardship rooted in non-Western epistemologies. Decolonial scholars argue that modern science has historically functioned as an 'epistemicide'—suppressing Indigenous cosmologies and frameworks that present alternative relationalities between humans and nature in the service of extractive and colonial regimes [40, 41]. This epistemic violence is not merely a relic of the past; it continues to shape whose knowledge is recognised as legitimate and whose realities are rendered invisible in global climate governance [35]. The very temporal framing of the climate crisis—as an impending or future catastrophe—reproduces colonial erasures, ignoring that for many Indigenous Peoples, the experience of ecological collapse began with colonisation itself [42]. This challenges the presumed universality of climate crisis narratives and underscores that for some communities it has long been 'too late.' [42] Detachment from engagement often stems from positions of privilege—especially within the 'Global North'—where academic distance is more accessible. But for scientists in the 'Global South' or those embedded in frontline communities, climate advocacy is not an ideological luxury but a moral and material imperative [4]. Despite its global authority, the IPCC continues to reflect epistemic imbalances, with underrepresentation of 'Global South' scholars shaping dominant framings [43]. Scholars warns that even gestures toward inclusion—such as the inclusion of Indigenous knowledge in climate assessments—risk perpetuating extractive logics when such knowledge is treated as data inputs rather than as parts of sovereign, relational systems of governance [42].

The roots of climate injustice lie not only in emissions or policy failures, but in the enduring legacies of colonialism, dispossession, and racial capitalism—systems that have historically shaped who is exposed to climate harms, whose knowledge counts, and whose claims are marginalised [44]. These are not only ecological injustices but 'relational tipping points'—ruptures in the ethical relations among peoples, lands, and more-than-human worlds that climate justice must seek to repair [42]. In climate contexts, this is not a theoretical abstraction. For instance, Indigenous communities have consistently warned of ecological thresholds through seasonal knowledge, phenological indicators, and cultural land practices—insights now increasingly valued by transformative climate research and Earth system scientists [30, 45]. Although institutions like the IPCC have begun to acknowledge the epistemic legitimacy of these perspectives [31, 46], but the persistence of 'neutrality' discourse continues to act as an epistemic gatekeeper.

Calls for 'apolitical' science often act as gatekeeping mechanisms that render plural worldviews peripheral, further entrenching the dominance of technocratic, carbon-centric approaches to climate governance. A pluralistic and decolonial climate science would not merely include Indigenous knowledges as ancillary data points but would co-construct paradigms of planetary stewardship rooted in reciprocity, interdependence, and historical accountability [47]. Such paradigms require renewing relational responsibilities that have been broken by colonial modernity—recognising that the climate crisis is not only ecological but also a crisis of relationship and justice [42]. To frame science as detached from the crises it seeks to address is to erase the structural injustices that define whose climate is at stake—and whose survival is most imperilled.

4. The misuse of 'activism' as epistemic othering

The framing of climate advocacy as a threat to scientific objectivity reflects a deeper epistemic misrecognition, invoking a familiar enlightenment dichotomy between reason and emotion—one historically mobilised to delegitimise social movements rooted in moral urgency. This rhetorical framing functions as a form of epistemic othering to delegitimise forms of public engagement rooted in ethical commitment and lived experience, particularly when voiced by youth, Indigenous communities, and scientists from the 'Global South' [41]. By casting advocacy as 'dogmatic' or 'quasi-religious,' critics implicitly mark these actors as irrational or politically impure, while shielding dominant paradigms from scrutiny [48]. Such moves function as epistemic othering: they disqualify dissent not through argument but by questioning its legitimacy as knowledge.

This framing also obscures empirical reality. The assumption that advocacy undermines scientific credibility is not borne out by data. On the contrary, studies have shown that transparent, values-driven communication can enhance public trust, particularly when scientists acknowledge uncertainty and moral stakes [4, 20]. In contrast, the perception of disengagement or detachment may erode confidence in science's relevance to pressing societal concerns.

The conflation of distinct forms of public engagement—activism, science communication, policy advising, and public scholarship—blunts the nuance necessary for democratic scientific practice. Scientists who participate in climate strikes, advise policymakers, or disseminate findings through accessible platforms are not compromising their

objectivity [49]. They are enacting a form of 'public science' akin to Michael Burawoy's 'public sociology,' wherein scholarly expertise is mobilised in service of transformative societal engagement [50]. In this light, responsible advocacy is not a deviation from scientific integrity but a reaffirmation of its ethical and civic responsibility.

5. Rethinking 'objectivity' in the age of climate crisis

The prevailing expectation that scientists should remain disinterested observers—detached from the societal implications of their research—draws on an outdated ideal of objectivity that has been critically interrogated across the humanities and social sciences. Foundational work by Donna Haraway on 'situated knowledges' dismantles the myth of the neutral observer, emphasising that all knowledge is produced from specific social, cultural, and geopolitical positions [51]. Sandra Harding critiques 'strong objectivity,' pointing out that traditional claims to neutrality often obscure the dominant social positions—typically Western, male, and elite—from which much scientific authority has historically emanated [52]. In the context of climate crisis, the notion of political neutrality is not only untenable, but ethically precarious, and risks perpetuating the very injustices that climate science seeks to address.

Climate knowledge has never been ideologically neutral; it has emerged through paradigms shaped by extractivism, colonial governance, and carbon capitalism, often excluding Indigenous epistemologies and the lived experiences of frontline communities [41, 53]. Building on this critique of neutrality, climate-science institutions, such as the IPCC, face growing calls for more 'solution-oriented' assessment, challenging the idea of a detached observer and demonstrating that science is never neutral in the sense of being politically inert [54]. Climate scenarios and pathways possess a world-making power [55], actively shaping policy and societal futures rather than merely describing them. These analyses illustrate that claims to neutrality often overlook the real-world impacts and ethical responsibilities inherent in climate research, reinforcing the importance of a more engaged and reflective scientific practice. To insist on a depoliticised climate science is to perpetuate an epistemic narrowing that privileges dominant worldviews while obscuring the structural drivers of climate vulnerability and marginalising alternative, yet equally valid, ways of knowing.

The epistemic authority of climate science is not rooted in ideological distance, but in the convergence of empirical evidence and methodological rigour. The overwhelming scientific consensus on anthropogenic climate change is not a matter of opinion but the result of decades of accumulated, peer-reviewed research—not political allegiance [56]. Emphasising uncertainty without contextualising its scope and significance can inadvertently legitimise denialist narratives and delay urgent policy responses. Particularly troubling is the dismissal of extreme event attribution research, a field that has advanced sophisticated methodologies to assess the influence of climate change on specific weather events. The dismissal of extreme event attribution studies as a 'pseudo-scientific chase' undermines a critical and rapidly advancing area of climate science [20, 57, 58]. These studies play a vital role in quantifying the links between climate change and extreme weather, informing risk assessments, resilience planning, economic evaluations, decision-making processes, and legal accountability [57, 58]. Undermining such research not only disregards scientific progress but weakens society's ability to respond to escalating climate hazards. Rethinking objectivity today demands not withdrawal, but a more honest, situated, and ethically engaged form of scientific practice.

6. Ethical imperative of engagement

Concerns that advocacy compromises scientific neutrality often rest on an ideal of objectivity that ignores the lived stakes of climate breakdown. But we must ask: what is the cost of silence? In the face of escalating climate impacts, disproportionately borne by the world's most vulnerable populations, often those least responsible for emissions [59, 60], scientific detachment is not a virtue but a failure of moral imagination [61]. Climate change is not merely a technical or environmental issue; it is a deeply ethical and political crisis that amplifies existing inequalities along lines of race, class, gender, caste, and geography [57, 62].

Philosopher Heather Douglas has argued for the concept of *inductive risk* (similar to the concept of iatrogenic risk in a health context), where the potential consequences of being wrong—particularly in matters of public health or planetary systems—require scientists to be transparent about the value judgments embedded in their work [63]. In contexts of high uncertainty and high stakes, the abdication of responsibility in the name of objectivity is ethically untenable. Scholars of feminist science studies have emphasised responsible knowledge practices—forms of inquiry that are not only empirically robust but socially responsive and accountable [7, 51].

Critics may argue that acknowledging the politics of science weakens its credibility in hostile political climates. However, transparent engagement with values has been shown to enhance, not erode, public trust—particularly when scientists communicate openly about uncertainty and ethical stakes [15]. Engagement is not the antithesis of scientific integrity; it is often its most principled expression. To engage publicly, to challenge misinformation, and to

advocate for just transitions is not to politicise science, but to practice a science that is aware of its social consequences and historical responsibilities [64]. Silence in the face of planetary crisis—particularly by those with the epistemic authority to speak—is not a form of neutrality; it is a form of complicity. In moments of crisis, scientists are not only responsible for conducting robust empirical research but also for actively engaging with society by situating their findings within shared moral and social concerns—challenging the premise that engagement must be value-neutral [20]. As the climate crisis deepens, the ethical imperative for scientists is not to retreat into detachment, but to step forward with clarity, humility, and conviction.

7. Climate knowledge as actionable, situated, and plural: a way forward

Climate change is not merely a scientific phenomenon; it is a profoundly social and political crisis, marked by uneven distributions of vulnerability, responsibility, and power. Political ecology has long demonstrated how environmental degradation is entangled with histories of land dispossession, state violence, and corporate extraction [29, 62].

To move forward, a pluriversal approach would enable climate scientists, institutions, funding agencies, and knowledge networks to more effectively understand and address the problem of climate change and its solutions—one that recognises the legitimacy of multiple knowledge systems and centres the voices of those most affected by climate disruption. This requires a shift from extractive models of knowledge production to collaborative, justice-oriented practices. Institutional reflexivity plays a vital role in advancing more equitable climate research. This includes critically attending to how race, class, gender, caste, and geography inform the epistemic assumptions, methodological choices, and policy orientations of research institutions. Fostering knowledge pluralism may be effectively advanced through transdisciplinary collaborations that include Earth system scientists, Indigenous knowledge holders, and social movement actors [65, 66]. Such partnerships enable the co-production of knowledge that is both scientifically rigorous and socially grounded.

Equally important is a transformation in how science engages with the public. Communication must move beyond one-way dissemination to become a participatory dialogue that centres lived experience and community agency. Rather than enforcing a rigid boundary between science and activism, cultivating a model of engaged scholarship that is both reflexive and responsive may offer a more ethically attuned and socially relevant approach. This includes promoting awareness of how assumptions, funding structures, and communication strategies shape research outcomes; building alliances across disciplines to contextualise technical findings within broader sociopolitical realities; and supporting participatory methodologies that empower communities in shaping climate responses.

8. Conclusion

In a time of increasing ecological crisis and democratic uncertainty, the insistence on a rigid separation between science and activism is both conceptually untenable and ethically insufficient. Climate science needs to evolve beyond outdated ideals of neutrality toward a paradigm grounded in epistemic accountability, relational ethics, situated knowledge and solidarity with those on the frontlines of climate disruption. This shift does not constitute a rejection of objectivity, but rather a deepening of its meaning—one that recognises knowledge as situated, value-laden, and responsive to the demands of justice. What is needed is not disengagement, but a science that steps forward with clarity of purpose, humility, historical awareness, and solidarity with those most affected. In doing so, climate science can fulfil its highest potential—not only as a generator of knowledge, but as a catalyst for just and transformative change.

Data availability statement

All data that support the findings of this study are included within the article (and any supplementary files).

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Conflict of interest

The author declares no financial or non-financial competing interests.

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References

[1] Büntgen U 2024 The importance of distinguishing climate science from climate activism *npj Clim. Action* **3** 36
[2] IPCC 2023 *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* ed Core Writing Team, H Lee and J Romero (IPCC) pp 35–115
[3] Beck S and Mahony M 2017 The IPCC and the politics of anticipation *Nat. Clim. Change* **7** 311–3
[4] Anguelovski I, Corbera E, Conde M, Walter M, Sekulova F, Kotsila P, Pascual U and Brockington D 2025 The activism responsibility of climate scientists and the value of science-based activism *npj Clim. Action* **4** 40
[5] Kallergi A and Landeweerd L 2025 Science, activism, and climate action: navigating credibility, responsibility, and engagement *J. Acad. Ethics* **23** 1–21
[6] Singh L *et al* 2024 Ethical and epistemic costs of a lack of geographical and cultural diversity in developmental science *Dev. Psychol.* **61** 1–18
[7] Lefebvre S and Giddings L 2023 The necessity of pursuing feminist pedagogy in economics *Rev. Political Econ.* **35** 614–33
[8] Valderrama J G 2025 Values and global science: the epistemic and social relevance of geographic diversity Doctoral Dissertation Universidad de los Andes (Colombia)) (Accessed on 15 October 2025)
[9] Longino H 2020 Science as social knowledge: values and objectivity in scientific inquiry (available at: www.torrossa.com/gs/resourceProxy?an=5576082&publisher=FZO137)
[10] de Melo-Martín I and Intemann K 2018 *The Fight against Doubt: how to Bridge the Gap between Scientists and the Public* (Oxford University Press)
[11] Pielke R A 2007 *The Honest Broker: Making Sense of Science in Policy and Politics* (Cambridge University Press)
[12] British Academy 2024 *Public Trust in Science-for-Policymaking: Understanding and Enhancing the Role of Science in Public Policy Debate in the UK* (The British Academy) (available at: https://www.thebritishacademy.ac.uk/documents/5185/Science-Trust-and-Policy-report.pdf) (Accessed on 20 October 2025)
[13] Oreskes N and Conway E M 2010 Defeating the merchants of doubt *Nature* **465** 686–7
[14] Lewandowsky S and Oberauer K 2016 Motivated rejection of science *Curr. Dir. Psychol. Sci.* **25** 217–22
[15] Douglas H E 2009 *Science, Policy, and the Value-Free Ideal* (University of Pittsburgh Press) (https://doi.org/10.2307/J.CTT6WRC78)
[16] Elliott K and Steel D 2017 Current controversies in values and science *Current Controversies in Values and Science* (Routledge) (https://doi.org/10.4324/9781315639420)
[17] Jasanoff S 2012 *Science and Public Reason* (Routledge)
[18] Latour B 2004 *Politics of Nature* (Harvard University Press)
[19] Jasanoff S 2004 *States of Knowledge* (*The Co-Production of Science and the Social Order*) (Taylor & Francis) pp 1–317
[20] van Eck C W, Messling L and Hayhoe K 2024 Challenging the neutrality myth in climate science and activism *npj Clim. Action* **3** 81
[21] Malik I H and Ford J D 2024 Addressing the climate change adaptation gap: key themes and future directions *Climate* **12** 24
[22] Kallis G *et al* 2018 Research on degrowth *Annu. Rev. Environ. Resour.* **43** 291–316
[23] Hickel J 2020 *Less Is More: How Degrowth Will Save the World* (Random House)
[24] Salleh A 2017 *Ecofeminism as Politics: nature, Marx and the Postmodern* (Zed Books Ltd)
[25] Escobar A 2019 *Designs for the Pluriverse: Radical Interdependence, Autonomy, and the Making of Worlds* (Duke University Press) pp 355–7
[26] Malik I H *et al* 2025 Monitoring climate change impacts, Indigenous livelihoods and adaptation: perspectives from Inuit community of Hopedale, Nunatsiavut, Canada *Cambridge Prisms: Coastal Futures* **3** e10
[27] Malik I H and Ford J D 2024 Monitoring climate change vulnerability in the Himalayas *Ambio* **54** 1–19
[28] Lie J 2024 *The Global Environmental Crisis: The Limitations of Scientific Knowledge and the Necessity of Utopian Imagination* (Taylor & Francis)
[29] Malik I H 2024 Can political ecology be decolonised? A dialogue with Paul Robbins *Geo* **11** e00140
[30] Malik I H and Ford J D 2025 Understanding the impacts of arctic climate change through the lens of political ecology *Wiley Interdiscip. Rev. Clm. Change* **16** e927
[31] Coninck H *et al* Strengthening and implementing the global response *Global Warming of 1.5 °C. An IPCC Special Report on the impacts of global warming of 1.5 °C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*
[32] Bumpus A G and Liverman D M 2008 Accumulation by decarbonization and the governance of carbon offsets *Econ. Geogr.* **84** 127–55
[33] Sultana F 2022 The unbearable heaviness of climate coloniality *Polit. Geogr.* **99** 102638
[34] Huber A, Gorostiza S, Kotsila P, Beltrán M J and Armiero M 2017 Beyond "socially constructed" disasters: re-politicizing the debate on large dams through a political ecology of risk *Capital. Nat. Social.* **28** 48–68
[35] IK and LK Dialogues 2025 *Indigenous Knowledge and Local Knowledge Dialogues. Global Environment Outlook 7* (CopItarXives) (available at: https://copitarxives.fisica.unam.mx/SC0011EN/SC0011EN.pdf) (Accessed on 20 October 2025)
[36] Dellmuth L M and Gustafsson M-T 2021 Global adaptation governance: how intergovernmental organizations mainstream climate change adaptation *Clim. Policy* **21** 868–83
[37] Malik I H and Ford J D 2025 Barriers and limits to adaptation in the Arctic *'Curr. Opin. Environ. Sustain.* **73** 101519
[38] Hulme M 2023 *Climate Change Isn't Everything: Liberating Climate Politics from Alarmism* (Wiley)
[39] Castree N *et al* 2014 Changing the intellectual climate *Nat. Clim. Change* **4** 763–8
[40] de Sousa Santos B 2015 *Epistemologies of the South: Justice against Epistemicide* (Routledge)
[41] Whyte K 2017 Indigenous climate change studies: indigenizing futures, decolonizing the anthropocene *Engl. Lang. Notes* **55** 153–62
[42] Whyte K 2020 Too late for indigenous climate justice: ecological and relational tipping points *Wiley Interdiscip. Rev. Clm. Change* **11** e603
[43] Corbera E, Calvet-Mir L, Hughes H and Paterson M 2016 Patterns of authorship in the IPCC working group III report *Nat. Clim. Change* **6** 94–99
[44] Coolsaet B, Agyeman J, Kashwan P, Rivera D Z, Ryder S, Schlosberg D and Sultana F 2025 Acknowledging the historic presence of justice in climate research *Nat. Clim. Change* **15** 121

[45] Orlove B et al 2023 Placing diverse knowledge systems at the core of transformative climate research *Ambio* **52** 1431–47
[46] Rashidi P and Lyons K 2023 Democratizing global climate governance? The case of indigenous representation in the Intergovernmental Panel on Climate Change (IPCC) *Globalizations* **20** 1312–27
[47] David J O 2024 Decolonizing climate change response: African indigenous knowledge and sustainable development *Front. Sociol.* **9** 1456871
[48] Boykoff M and Oonk D 2020 Evaluating the perils and promises of academic climate advocacy *Clim. Change* **163** 27–41
[49] Dablander F, Sachisthal M S M and Aron A R 2025 Out of the labs and into the streets: effects of climate protests by environmental scientists *R. Soc. Open Sci.* **12** 241001
[50] Burawoy M 2021 *Public Sociology* (Wiley)
[51] Haraway D 2013 Situated knowledges: the science question in feminism and the privilege of partial perspective *Women, Science, and Technology* (Routledge) pp 455–72
[52] Harding S 2013 Rethinking standpoint epistemology: what is "strong objectivity"? *api.taylorfrancis.com* pp 49–82
[53] Escobar A 2019 Thinking-feeling with the earth: territorial struggles and the ontological dimension of the epistemologies of the South *Knowledges Born in the Struggle* (Routledge) pp 41–57
[54] Beck S and Mahony M 2018 The IPCC and the new map of science and politics *Wiley Interdiscip. Rev. Clm. Change* **9** e547
[55] Beck S and Mahony M 2018 The politics of anticipation: the IPCC and the negative emissions technologies experience *Glob. Sustain.* **1** e8
[56] Myers K F, Doran P T, Cook J, Kotcher J E and Myers T A 2021 Consensus revisited: quantifying scientific agreement on climate change and climate expertise among Earth scientists 10 years later *Environ. Res. Lett.* **16** 104030
[57] Adger W N, Brown I and Surminski S 2018 Advances in risk assessment for climate change adaptation policy *Phil. Trans. R. Soc. A* **376** 20180106
[58] Rising J, Tedesco M, Piontek F and Stainforth D A 2022 The missing risks of climate change *Nature* **610** 643–51
[59] Makharia G K, Sadeghi A, Leddin D and Costello A 2023 Impact of climate change on vulnerable populations *Gut* **72** 2201–4
[60] Ngcamu B S 2023 Climate change effects on vulnerable populations in the global south: a systematic review *Nat. Hazards* **118** 977–91
[61] Lederach J 2005 *The Moral Imagination: the Art and Soul of Building Peace* (Oxford University Press)
[62] Robbins P 2019 *Political Ecology: A Critical Introduction* (Wiley)
[63] Douglas H 2021 The rightful place of science: science, values, and democracy: the 2016 Descartes lectures (Consortiumfor Science, Policy & Outcomes) (Accessed 15 June 2025)
[64] Ulrich A 2022 Communicating climate science in an era of misinformation *Intersect: Stanf. J. Sci. Technol. Soc.* **16**
[65] Mansur A V, Neidig J, Zafra-Calvo N and Males J 2025 Challenges of pluralizing knowledge (s) in climate related decision-making *PLoS Clim.* **4** e0000658
[66] Ford J D, King N, Galappaththi E K, Pearce T, McDowell G and Harper S L 2020 The resilience of indigenous peoples to environmental change *One Earth* **2** 532–43