

DIALOGUE OPEN ACCESS

The Future of Environmental Geography

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ABSTRACT

Around the world, the environmental crisis is deepening. Rising global temperatures are fuelling socioecological threats and damage with distinctly uneven geographical consequences. Although rapid and drastic reductions in carbon emissions are critical to preventing climate breakdown, our institutional, societal and individual responses have to date fallen short of what is needed. In the context of this urgency, how we respond now will profoundly reshape the geographies of our lives and will continue to do so far into the future. As geographers, we have a crucial role to play not only in analysing and anticipating these changes but also in advocating, as researchers, collaborators, teachers and citizens, for more sustainable futures. Here our speakers—all leading thinkers in environmental geography and currently shaping agenda-setting themes in *Geo: Geography and Environment*—address the place of geography in advancing and advocating for more sustainable, lower carbon and fairer socioecological places and futures. They will reflect on their own experiences and research interests and, in doing so, address questions and debates that speak directly to the vision of geography as a space for new, critical and underrepresented ideas in pursuit of fresh viewpoints and solutions to the world's most pressing environmental problems.

1 | Geography and the Climate Crisis

Around the world, the environmental crisis is deepening. The years 2023, 2024 and 2025 were the three hottest on record (Met Office 2026), with rising global temperatures fuelling socioecological threats and damage with distinctly uneven geographical consequences. Almost 40% of the global population, 3.6 billion people, are already highly vulnerable to climate change, a figure set to rapidly rise in the coming decades (Lee et al. 2023). Although rapid and drastic reductions in carbon emissions are critical to preventing climate breakdown, our institutional, societal and individual responses have to date fallen short of what is needed, failing even to mention fossil fuels in the COP 30 agreement of November 2025. Indeed, reflecting global anxieties more broadly, the summit was described as a 'reality check on just how much global consensus has broken down over what to do about climate change' (BBC 2025).

Amidst this disintegration of the old confidences, present actions will profoundly reshape the geographies of our lives and continue to do so far into the future. As geographers, we have a crucial role to play not only in analysing and anticipating these changes but also in advocating, as researchers, collaborators, teachers and citizens, for more sustainable futures. Yet, what this role will be remains unclear. Geography is a discipline founded as a bridge between the natural and social sciences (Castree et al. 2016, 1); one in which human–environmental relations are a 'central organising concept'. Yet, despite almost a century and a half of scholarship since Halford Mackinder set out to 'bridge one of the greatest of all gaps' between the study of the earth and its human inhabitants (Mackinder [1887], cited in Castree et al. 2016, 1), a sturdy and uncontentious ford between these hemispheres of knowledge has yet to be erected: a persistent challenge that has garnered introspection. Can a discipline whose colonial legacy (Craggs and Neate 2023; Driver 1992) in some ways underpins

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the current climate crisis find solutions to the problems it helped to create?

If so, it will require a new form of integration. Indeed, as Gary Kass (2025, 1) put it recently in this journal, 'it is now widely acknowledged by many academics, practitioners and policymakers that working across the boundaries of disciplines, sectors, and institutions is vital if we are to effectively address the challenges of sustainability in practice'. This capacity for integration is an attribute that geography has always prided itself on (Bulkeley 2019; Thrift 2002). Yet, the sheer diversity that characterises the discipline can make it difficult to grasp a sense of collective endeavour. With so many parts of environmental geography urgently striving towards new means of doing and thinking, how can we be sure that all are pulling in the same direction?

A particular point of contention arises around the solutions that we as environmental geographers advocate. For example, an especially fertile field in recent years has been that urging a decolonial perspective on the environment (Sultana 2022; Chao and Enari 2021), which will ask questions of justice, ethics and values such as 'whose growth in whose planetary boundaries?' (Sultana 2023). Yet, in the present era, the epistemology of climate change finds itself grappling with other questions also. Outright attacks on scientific capacity (Kozlov et al. 2026), including the defunding of the Mauna Loa observatory which provides a central pillar of global carbon emissions tracking (Gupta et al. 2025), have made the very practice of geoscience a political act.

At the same time, questions of energy policy—once a largely technical matter—have become an ideological battleground of contested futures (Keay 2016), as questions of equity and development grapple with debates on vulnerability and planetary breakdown (Ramasar et al. 2022). Amidst this maelstrom, the very practice of geography is rightly at issue, not just in research terms, but through our engagement with the next generation of the discipline. What values and ethics should underpin fieldwork? What position should we impart to students on the fundamental trade-offs between deep engagement and conscious restraint?

The only consensus that links this knot of disciplinary questions is the need for foundational thinking. This paper presents the proceedings of their four interventions, each of which addresses the place of geography in advancing and advocating for more sustainable, lower carbon and fairer socioecological places and futures. Reflecting on their own experiences and research interests, each speaker also speaks directly to the vision of *Geo* as a space for new, critical and underrepresented ideas in pursuit of fresh viewpoints and solutions to the world's most pressing environmental problems. Overarchingly, the goal is thus to consider the value of environmental geography at present and the values it should take into the future.

1.1 | Kathryn Yusoff: The Tick-Tock of the Colonial Clock

I would like to begin with the tick-tock of the colonial clock: this question of colonial time that haunts environmental

declarations and temporal horizons. We are in a time of what we might call *geocide*, which sits somewhere between *ecocide* and *genocide*, where the actual destruction of geography and geography as a cohesive and coherent possibility for many people is being experienced. So, we can think about this sort of geocide as a voiding of geography, a relation and execution of a relation to groundedness—a groundedness in and of the earth—that is both imaginative and a geophysical event. So, geocide is an event that happens in geographical imaginations (through political doctrines of invasion and the dehumanising speech-acts of politicians and pundits) and it coheres in the geophysical world (as an enactment of those wills through violence in its different forms). But if we go back to this tick-tock of the colonial clock that instigated the geocide of environments as part of its weaponisation and enactment of the doctrine of colonialism, with what lines of thought do we respond to this temporality of planetary alarm with?

So often, if you have a panel on the environment, the public question is often framed in the normative, 'what is to be done?' rather than what *has* been done (and to whom and by what). And so I think when we consider this moment of *geocide* at a planetary scale, we also need to put on our deep time glasses and really understand something of how our disciplines and forms of sociality with the earth were generated out of the seventeenth-century geographies of colonialism that still shape our practice today, academically and structurally. As a journal like *Geo* is trying very hard to agitate at those disciplinary boundaries for a progressive idea of geography as a place in which to have 'difficult conversations', there is both an opportunity and a responsibility to be vigilant to the structure of epistemic histories that inform the sedimentation of the problem space of environmental geography. And in framing this conjecture, there is a need to both question the 'object' of study (earth/environment/planet/colonialism) and how it is known, epistemically, through the conjoined empirics of colonial metaphysics (theories of the human) and geophysics (theories of the earth).

We can think about these geohistories in terms of how a certain metaphysics of the human (namely White, western man) became the basis for the enactment of a then, new geophysics of the earth (the earth that colonial geology made through its extraction practices, economic botany and racialising praxis) and thus produced an overrepresentation of colonial approaches to the environment as a that which constituted the realm or habitus of environmental concern. For example, consider how unnatural a term like natural resources is, as a descriptor of the earth and in its overrepresentation of defining an extractive and objectifying understanding of a propertied relation with the earth. Yet, natural resources are so naturalised to the very configuration of entities, of environments, of labour and of national representation (countries identified through natural resources and resource nationalisms) that they possess a 'common sense' that is already a form of governance of the earth that prioritises extractive modes of apprehension and flattens a whole host of other reciprocal relations to the earth. It also makes certain places a target for geopolitical contestation that rarely engage principles of self-determination. Apprehension is both an aesthetic practice of recognition and an affectual practice of appropriation of earth into land, into resource, into inhuman property. This is why I think a critical approach to geographical imaginations

of the problem space of the environment is crucial to both addressing embedded practices of epistemic violence and generating less deadly imaginaries of world-building. So, instead of an extractive worldview of natural resources, how do we begin to work and generate against the forms of built-in languages that organise the world as a kind of negotiable externality? The ground, as we know as a fact of deep-time histories and as climate change is telling us in its event-horizon, is a non-negotiable (i.e., it can only be made an externality or alterity through fictioning practices). So, the question for environmental geography is first to address what structures of economy made the earth into such an entity that it became able to be represented as a negotiable structure (rather than an entity that was changed by but not external to, or containable by, colonial epistemologies of geology).

This comes back to the seventeenth-century practices of colonialism and the pulling apart of *geos* and *bios*, and the foci on a particular kind of *bios* (life as separated from and with autonomy over *geos*), and this privileged form of life was represented as whiteness, and through white law that externalised the earth within the domain of property (along with enslaved persons, who also became categorised under the sign of inhuman property). So, this making of *property* was a form of making *nullius* (*terra nullis*, *res nullis* and *servus* in the *partus sequitur ventrem* of the enslaved as his master's property). We can think about the shared legacy of the erasure of life (as *bios*) in both the terms of personhood and earth in colonial categorisations of inhuman property. And in all the ways in which pre-colonial worlds were folded into a colonial vision of extractable property to be acquired through invasion and the geocide-ing of worlds that made life liveable (the result of which was famine, displacement and genocide). So, this division between *bios* and *geos* that we're still grappling with at the moment, and which informs any conversation about environmental geography, always places an idea of life, a select *bios* in Sylvia Wynter's terms (2003), as a central figure of whiteness outside of the earth. So, one of the things, one of the questions I've been continuously interested in is how does whiteness float, how does it allow, epistemically aesthetically, affectually, this division between the itself and the earth? And what would it mean to return to the earth and confront the racial praxis of historic environmental geographies? What does it mean to mitigate against geocide in the practice and theory of environmental geography?

One of the things that I've been thinking about recently is why, as geographers and as geoscientists, do we not have a geoethical version of the Hippocratic oath? If you're a doctor, you have an oath to do no harm. Why is it that, as geographers and geoscientists, we have no such commitment to doing no harm, particularly in the light of the colonial foundations of the discipline in genocide, enslavement and geocide? And now the transformation of the planet through extraction practices? Although the Hippocratic oath stems from a recognition in Greek times of the power of physicians and the need to both exert governance and imagine an ethical relation, medical ethics has a more localised history in scientific research that comes out of a colonial history of human experimentation and its afterlives, especially on racialised and marginalised peoples. That's one of the questions that I want to raise as an opening and opportunity for geographers from all sub-fields to think about working towards, as a

collective project of geoethics that engages a reparative epistemic and ethical response. But also to think about, again, the tick-tock of the colonial clock that frames the environmental crisis. What did people who were fighting against colonialism and its epistemic empire know about environmental practice that was excluded from knowledge? If you look at all the decolonial movements in the Caribbean, in Africa, in Latin America, what was completely understood was the indivisibility of the environment from a politics of liberation, from a politics of independence. And thinking with those histories alongside colonial histories, we can begin to learn some of the strategies of what the Guinea Bissau president Amílcar Cabral suggested was a 'return to the source', a way of reconnecting and rethinking the possibilities of environments within revolutionary change.

The environmentalism of decolonial movements is not accidental. Many African and Caribbean decolonial fighters/leaders were both poets and politicians because they understood you needed a new linguistic framework to comprehend subjectivity, a political subjectivity outside colonialism's deep rifting of a privileged subject (*bios* or whiteness) and the earth (*geos*). And you have to remember that colonial geology placed colonised peoples in the category of *geos*, not of *bios*. Racialised peoples were placed in the category of the inhuman as a justification for the dehumanisation of colonial authorities. Those incorporated into the strictures of colonial epistemes suffered the category effects of environmental exposures as hunger, thirst, bodily violence, pollution and geocide. So, one of the things that we might think about is a decolonisation of a coercive and normative set of languages that configure the geographical imagination of the environment as a political space. And this is why I use the term inhuman, because it's counterintuitive, but it also speaks to those histories, those inhumane histories and the coupling of colonised subjects and earth within the inhuman category (which is not to conflate the two in a configuration or sentimentality of a 'closer to the earth' genre). The inhuman also gives us another way to come back to subjectivity, where the non-included are not just outside colonial epistemic structures of *bios* but within a geography (as those racialised as such are within the production of whiteness itself). We can think about Caribbean writers, for example, like Franz Fanon, Suzanne and Aime Césaire, Édouard Glissant, as 'new materialists', as writers who were inscribing a new materialism into their political and poetical language in order to fight against and within the ways in which colonial subjectivity had been cordoned off from the earth. In this sense, these Caribbean new materialists recognised the weak theory of colonial geology and its pathological apartheid from the earth. They understood that you needed the earthquake, the black beach, the earth, and the undersea subterranean communication to reconfigure the imposition of colonial categories, and they invented new forms of materiality to imagine and to change the world with. So, these decolonial environmental histories of liberation also exist (albeit underrecognised as environmental pedagogy) within the histories of environmental thought and studies and offer a possibility to both be attentive to those projects of liberation and to understand how to fight the continuation of colonial geologic extractivism that characterises the problems that we face today.

So, in terms of what I'd like to offer is that we think seriously about a Hippocratic oath for geographers and geoscientists, as a

pedagogy of decolonial geophysics. As an addendum, we might also question why is it that human geographers have to complete institutional ethical processes and physical geography colleagues do not? And, to extend the reach of the discipline of environmental geography, what would it mean collectively to think about what this Hippocratic oath might look like with people in geologic industries who are at the forefront of extraction, alongside understanding how the poetry and politics of geographical description need to retool our affectual languages of environments and the geographical imaginations of earth? We are at this kind of critical conjecture, with big tech producing our geographical imaginaries and new, devastating geographies of extraction, largely from Western-located corporations. So, in thinking about how we counter *geocide*, one of the ways in which as environmental geographers we might think about the geographical imagination is to reclaim the space of producing a world picture of critical environmental studies, but a world picture that battles against and retools the sedimented languages of disciplinary colonialisms of the earth, for want of a better word.

1.2 | James Dyke: There Must Be a Future That We Can Choose for Ourselves

Consider Pablo Gargano's (1996) classic track *Everyone's Future*. I mention it because of the sample it takes from the cinematic interpretation of Katsuhiro Otomo's (1988) manga epic *Akira*: 'There must be a future that we can choose for ourselves'. The first time I heard this I thought it was really important, and I still do because much of what I'm interested in terms of the Earth system's future is how it is coupled with the agency that we as humans, as individuals and as a society, collectively can exercise on the Earth system, given the things that we have done and are doing? We seem to be in a strange situation. We've already heard about the wild promises of artificial intelligence. Artificial intelligence is going to solve everything. It's going to solve all of humanity's problems, but it's also accompanied by tremendous amounts of energy and water consumption. We seem to be accelerating towards utopia or a potential overshoot and collapse and dystopia.

This is a simulation, in extremely high resolution, of carbon dioxide being emitted over time (NASA's Goddard Space Flight Center 2026). You can see it's a daily cycle because of the pulse. There are pulses from photosynthesis on land. But you can also see point plumes from actual power stations. Most of those large plumes here are coal-fired power stations in North America. And you can see how the carbon dioxide is being emitted in a particular place, but then it becomes quite rapidly globally mixed. And so we have a situation of a global forcing operating over vast global inequalities. I really like this one; it shows there's vast pulses in the tropical rainforest belts in Southeast Asia along with the huge plumes coming up from industrial processes in China.

As you know, we've changed the Earth's climate. The Earth's climate has been in a relatively stable period for the last 11,000 years or so. There's no coincidence that this is when we see the emergence of complex societies; the emergence of civilisation. The next ice age was probably going to appear within the

next 10,000 years or so, but that's been suspended indefinitely. And we could be in the process of ejecting the earth from the climatic state of the last, say, 2.5 million years.

The increasing concerns that we had about climate change have been trundling on in international climate negotiations. Consider the Paris Agreement of 2015. The global community agreed that it would do whatever it takes to limit warming to well below 2°C. Subsequent to that, in 2021 the Glasgow Accord codified that as 1.5°C. 1.5 to stay alive. That was the clarion call. Unfortunately, warming has already, at least for a year, exceeded 1.5°. 2024 was actually 1.6° warmer than the pre-industrial average. If we were trying to limit warming to no more than 1.5°, then we would have needed to rapidly decarbonise, to undertake accelerating mitigation. And if we'd have started mitigation, let's say, back in the year 2000, we could have undergone a relatively modest rate of decarbonisation. It would still have meant challenging the current geopolitical neoliberal consensus. But the longer you leave it, you need to accelerate faster and faster. And eventually you get to the point when the budget is simply gone and you cannot limit warming to no more than 1.5°C. Every time I give this talk, I have to update the numbers because the years remaining in the carbon budget become smaller and smaller and smaller. The 50% chance for limiting warming to 1.5°C will be exceeded within the next five years. It's actually possible we've already exceeded it. So, 1.5°C, here we come.

The reason, as you know, is because of rising fossil fuel emissions, and it's not as if we've actually bent the curve. 2024 also saw the highest rate of carbon dioxide emissions from industrial processes of all time. And we know that there is a vast inequality underlying the drivers of climate change. When you're looking at consumption-based emissions, about 50% come from a relatively small fraction of humanity. Generally speaking, the richer you are, the more that you're going to emit. And there is a vast inequality in terms of wealth, as well as a vast inequality in terms of climate change vulnerabilities. So how can politicians still say that 1.5 is still alive? That's because it relies on recovery from overshoot. They claim we are going to be removing potentially tens of billions of tons of carbon dioxide from the air every year in order that what goes up equals what goes down. Then you hit a net zero. And if we can do that by about the middle of the century, then we limit warming to no more than 1.5.

I think that should insult your intelligence because there's no way that we're going to do that. There's currently no credible way that we can remove carbon dioxide at that scale from the atmosphere. I call it the wacky races because there are lots of different ways being proposed to do that. There are nature-based approaches to carbon dioxide removal, such as afforestation or reforestation. The problem with that, under the climatic conditions we now face, is that they burn down and then they release the carbon dioxide. So, really, we need permanent geological sequestration. You've got to get the carbon out of the atmosphere, out of the biosphere, out of the oceans and back into the rocks. And you can do that through various engineered approaches. The one that's getting most funding and interest and attention is direct air capture, which unfortunately requires tremendous amounts of energy in its current evolution and is probably not going to have any kind of role when it comes to recovering from overshoot. It's only been relatively recently that the academic

community has woken up to that though, whereas policymakers have taken the idea of carbon dioxide removal and overshoot and run with it far beyond anything that the evidence can actually support. So now we're seeing increasing numbers of publications which are saying, hang on, you might not be able to remove 10 billion tons of carbon dioxide from the atmosphere every year. So, the only way to limit overshoot is to limit greenhouse gas emissions. And this has been a really quite late development in the literature, in my opinion.

So, what's next? Well, given that we're not going to be able to remove carbon dioxide and given that emissions are continuing to go up and not even stabilise, and therefore warming is going to increase and therefore result in loss and damages, there is now increasing interest in the other version of geoengineering, which is solar radiation management. Perhaps an increasingly desperate effort to stabilise temperatures, we will attempt to block out a certain proportion of the energy from the Sun. The leading candidate at the moment is sulphate aerosol injection. You can think of large fleets of customised wide-body aircraft spewing out sulphuric acid or sulphurous compounds into the high portions of the atmosphere that will form reflective drops, which will therefore reduce energy incident on the surface of the earth and reduce temperatures potentially quite dramatically. And as you can imagine, there's a whole series of concerns around that. But it is gathering force. One reason it's gathering force is because there's increasing evidence that 1.5 isn't even safe, that beyond 1.5°C, we may see the activation of certain tipping points in the earth's climate: the collapse of ocean currents, the dieback of Amazon rainforest, the release of methane trapped in ice, which could significantly amplify and accelerate whatever humans do. So even if you were to reduce emissions to zero, it doesn't really matter anymore. The Earth system is entrained into a much warmer and more dangerous state. And of course, climate change is not the only thing that we're doing to the Earth's climate. We're also, at the moment, entering one of the earth's great mass extinction events: the Holocene extinction, largely driven by habitat destruction. And we are also, of course, having profound impacts on the hydrological cycle.

So that was all the good news. The bad news is that at a time when you thought that policymakers and wider society would be responding to increasing crises and risks by doing things to mitigate them, we are actually beginning to see an unfolding and rolling back of net zero action. Just look at the insurance industry. I think there's a significant underestimation of loss and damages resulting from climate change that is going to destroy communities. It's going to increase displacement and forced migration; it's going to increase internal geopolitical conflict, and then also increase the potential of conflict over resources and also the movement of people. So what we see is an emergent polycrisis, where the consequences of climate change actually destabilise societies, and undermine or degrade their abilities to actually deal with the causes of climate change. And this is something that I call derailment risk. It's a class of polycrisis. So, when we are thinking about the future, when we're thinking about the future of environmental geography or maybe even humanity, it is a moment of understanding that we have this agency, but how do we decide to exercise it? Because when you're looking at what industrialised societies are doing, such

as in the United Kingdom, and certainly in the United States, it seems to be targeted not at solutions, but interference.

1.3 | Ankit Kumar: Breaking the Fear of Environmental Justice

So, Kathryn has already mentioned this idea of a kind of Hippocratic oath for geographers, but unfortunately geoscientists are becoming one of the leading proponents or exponents of geoengineering, which is further interference in the Earth's system in order to try to cancel out the previous destabilising interference. And perhaps that's one thing that we could consider in our discussion. I want to talk today about something that I have been grappling with in the last years related to environmental justice, or more specifically related to what I see around myself: the fear of environmental justice. In the last decade, the term 'climate justice', currently one of the most popular enunciations of environmental justice, has rapidly risen in scholarly and public imagination (see Carbon Brief 2021). Although legal and policy documents, climate conventions and various agreements consistently recall justice, they also spend considerable time and effort devising language, 'practices and enactments of justice' that do not challenge and often maintain and enhance 'elite power and dominant orthodoxies' (Newell et al. 2021, 2).

So, we talk about justice, but we don't do justice. A useful example of this is the Paris agreement on climate change, which mentions climate justice only in the preamble and not in the substantive legal text. And this is important because there was clear pushback from countries like the United States during the regime of what people would call the pro-climate President Obama to include justice in any substantive text. Studies have found that 'climate narratives focusing on social justice polarized a UK audience along political lines' (Ogunbode et al. 2024). And we see the same thing in the United States, but it works a bit differently in countries like India, where right-leaning folk support climate justice at an international level but refuse it at a national level. So, I've been struggling to understand what explains this disjuncture: the increasing invocation of climate justice as an idea, alongside a growing pushback against climate justice as an achievement. My suggestion here to you is that there exists a fear of justice and it is that fear that might be one of the key things that future environmental geography work might need to tackle.

I would argue that a root cause of this culture of fear is the cultural colonisation of the world by the dominant civilisational model of the West, its 'dominant modelo civilizatorio' as Escobar calls it (Escobar et al. 2022, 104). And within this dominant civilisational model, there are two conflicting ideas that it puts in place. One is the idea of universal justice, which I appreciate in theory, but not so much in its current empirical instantiation, which makes justice a part of geopolitics. And the second is the idea of modernity and, with it, constant progress, growth and consumption. This conflict of justice and growth is present in sustainable development goals and also global climate change agreements. It is through this conflict that the fear of justice arrives. Justice promises the same life to everyone in the world, and progress, growth and consumption become providers of that.

But what does this mean for climate justice? Chancel (2022) reports that globally, the bottom 50% income groups emit just 1.4 tCO₂e/year and contribute only 11.5% of the total global greenhouse gas emissions. As opposed to this, the middle 40% emit 6.1 tons, and the top 10% emit 28.7 tons, 40.5% and 48% of the global share, respectively. Average per capita emissions are lowest in sub-Saharan Africa, only a tenth of the middle 40% on average, followed by South and Southeast Asia, which are around one-fifth of the middle 40% (Chancel 2022), two world regions with countries with some of the highest population growth rates. On the other hand, according to the International Energy Agency, 85% of the top 10% greenhouse emitters live in advanced economies, while the IEA also reported that carbon footprint of the top 1% of emitters was a thousand times greater than that of the bottom 1% emitters (Cozzi et al. 2023). And at the same time, it is worth noting that almost 0.6%, and maybe more now, of the world population, about 46.4 million people, are categorised as millionaires or billionaires (The Economist 2019).

What does this mean for justice with infinite progress and growth? Logically, I would say that the emissions of the bottom 50% low-emitting income groups must rise, most of this coming from sub-Saharan Africa and Asia. Having been sold particular Western ideas of the good life, many people in the Global South—and I can definitely say this of my country, India—aspire to achieve those same levels of consumption that we see in the West. This form of justice unfolds as a massive overshooting of global greenhouse gases, which then bumps into shrinking global carbon budgets. A fear of this kind of justice then unveils, as Farhana Sultana has put it very nicely, ‘the capture and colonisation of women’s bodies and knowledges ... as well as in control of women’s bodies through overpopulation narrative’ (Sultana 2022, 5–6). And that’s why I mentioned earlier that these two regions with the lowest per capita emissions have higher population growth: because this is made into the issue. The argument is made that there are too many people emitting greenhouse gases, that the key problem of climate change is that there are too many people who need justice and that we can’t deal with it (Kumar 2025). So, while frequently presented in the mainstream liberal discourse as a justice question, as Sultana (2022, 6) explains, ‘this is driven by ecofascist and neo-Malthusian ideologies, as well as white anxiety in a brown planet’. This kind of justice is dead on arrival.

Another pathway to justice is to think about consumption justice. Disproportionate consumption and a colonisation of the carbon space by some have brought about the problem of climate change, which not only threatens marginalised Others more but also prevents them from achieving higher levels of consumption and standards of living. For example, all IPCC scenarios project ‘substantial inequalities in per capita energy consumption’ with developed countries ‘consuming well above regions of the Global South even by 2050’ (Kanitkar et al. 2024). Yet, *just consumption* can not only rapidly reduce emissions and raise living standards, but as Büchs et al. (2023, 763) argue, ‘targeting high energy users while supporting needs satisfaction for all’ would make sustainable consumption interventions more acceptable, more widely. So people who might aspire for the same kind of life that is lived in the West might think about it differently. When I go to India and I talk about conspicuous consumption

and rising emissions with my more privileged country folk, they point their finger to the West and say, go talk to them first. And as Amitav Ghosh (2022) has said, these patterns of consumption are mimetic. So, we look at others and we try to emulate them.

But dominant consumption patterns are linked with particular, prevalent ideas of Western modernity, good life, progress and growth. A reframing of what the good life is about is urgent. This might be a life of limited resource consumption that perhaps is also of less comfort for many. But it will free up resources for others while changing the dominant cultural notions. However, a need for such reframing also creates a situation of uncertainty, insecurity, fear and anxiety, which we now also see in the idea of climate anxiety, particularly in the West (Sultana 2022). Anxiety leads to pushback against an attempt, as a society, to rethink. Justice for all is, again, dead on arrival.

Instead, justice becomes a tug of war in which many in the Global South think that the West is attempting to block them from reaching the same stage of life that the West has long ridiculed them for not being able to reach. And at the same time, those in the West think that the Global South is attempting to take away their gains made over the last several decades (Ghosh 2022). In these contradictions, justice gets squeezed and the elites who consume, emit and extract indiscriminately win, which is great for them.

So, my suggestion today to speak to this theme is that a key part of the work of environmental geographies is to break this fear of environmental justice. This means breaking environmental justice policy and practice work out of the clutches of the elites. And it means going back to the past, to the point where people from whom environmental justice as an idea emerged. It means coalition building between groups that might only be considered opposed or are kept systematically fractured by elites for elite benefits. So, this would need a lot of work from us as environmental geographers, but I think it is important future work for us to do.

1.4 | Lynda Yorke: Breaking the Business-as-Usual Fieldwork

My big thing and the thing that I’m really passionate about is fieldwork and how we do and think about fieldwork. And I am thinking about fieldwork futures because we really need to question how we do it in the context of environmental and climate considerations. Fieldwork is such an important part of geography. We see it as a signature pedagogy. It’s how we learn the environment; it’s how we investigate it and it’s been a really strong driver of the discipline. But personally for me—and I think for a lot of people—the pandemic was quite transformational in terms of how we think about what we do and how we do it. And it’s prompted some really interesting discussions. I run a project called Cultivate, which was about cultivating a better environment for doing fieldwork (Yorke et al. 2024). Because I don’t think anybody was questioning it until the pandemic came along. It was like, okay, we’re just going to take you here as a group of students or a group of researchers. We’re going to parachute ourselves into a space, we’re going to investigate it, you’re going to get on with it, you are going to love it. It’ll be great,

the best week you've ever had, etc., etc. As part of the project, we talked to a lot of academics across the United Kingdom and there were questions about how we did fieldwork: Could we do it virtually? Is it the same experience? Can students learn from this experience actually? Should we be going to certain places? And I think this was kind of the start of, of a journey for me.

A lot of what we think about when we think about doing environmental geography is wrapped up in the SDGs. And, I have a slight problem with that in some ways because I think a lot of us pop an SDG badge on things and say 'We've done it. Isn't that brilliant?'. People are keen to label their research or teaching, even their websites, as addressing SDGs, letting others know that something we're discussing, researching is linked to addressing an SDG, showing that we're being environmentally conscious. But, I think there's an awful lot of issues that exist with SDGs (Munro 2024) and that really need unpacking, so if we're going to produce researchers for the future, we need to be attentive. So, I'll start off with JEDI: it's not a Star Wars acronym; it means justice, equality, diversity and inclusion. And I think it's really high on the agenda for absolutely the right reasons. But you know, we really do need to be thinking about how we're doing it, questioning our very nature, because it's very extractive in terms of how we do fieldwork, how we go to a place and take knowledge. The attitudes we bring to that are quite important, not only from staff but also from students. You have interesting conversations between staff and students about how they see fieldwork and the importance of it. And if we're trying to look at how we engage with the environment, how we think about these big, global challenges, then we've really got to be questioning it from the bottom up.

So, what are the expectations of fieldwork? I think if you think about the average young person now, the expectation is that we do travel, that people are having micro holidays. I was reading something last week about people who like to go on extreme day trips to Europe! And so, if you think about who young people are coming into contact with at university, is it not an expectation that they want to have a highlight trip? There have been a lot of questions asked about that within institutions; there obviously are driving imperatives through the business-as-usual model, which I dislike, but which we all seem to stick to. It's difficult to make change. It's difficult to think about the way that we *do* geography. So, when we're thinking about sustainability and the SDGs, where are we going? How sustainable is it? There is a lot of discussion around a mobility climate hypocrisy: that you come to do a degree in geography or environmental sciences and then we say 'let's go on a trip to Tenerife' or 'we're gonna go to New Zealand'—and actually how does that square with what we're trying to do?

If we're going to think about how we're redesigning fieldwork and how we're going to have a curriculum that's really fit for the twenty-first century and that is actively transformational, then we really do have to have these kinds of discussions and really think about a universal design for learning. It is really about challenging our business-as-usual model, the 'we've always done it this way' attitude and trying to move some road blocks. I'm based in Wales and I often think about when we visit Welsh-speaking communities, and whether we just parachute in and we are doing the narrative creating, or are we working with local

communities? Are we hearing it from their perspective? And I think, it's not just about thinking about the carbon footprint, but also trying to make us feel better about the fact that we're actually caring about the environment here. A lot of what came out of the research that I sort of started a few years ago was really thinking about it from that bottom up. If we had to design something from scratch, if we weren't just inheriting the way that we do stuff, how would we actually design it?

And actually, if you are not enjoying the environment, if it's not being designed for you, if it's not being designed to be inclusive and accessible, then really how are we going to change things for the better? So, I wonder if we should be asking this question, what is the purpose of fieldwork in the twenty-first century? Is it that we just want students to go and look at a glacial environment and go, 'wow, that's amazing!', or are we actually thinking about engaging with the environment? Are we asking the right questions about how we're understanding it? Are there better ways? We've been experimenting with VR headsets and creating virtual alternatives and live broadcasts, ways of trying to be more inclusive, more attentive to some of those environments and enabling students to do fieldwork that works for them. We can go out and we can talk about decolonisation, but actually is that the right thing? Should it be more student-driven and focused on empowering young people, students, emerging new researchers, just to really think about why we're doing and how we're doing it and get that bottom-up grassroots?

And I think I'm quite passionate about the grassroots because it's much easier than redesigning it. I want to break the model. We all have institutional ways of doing things that are quite different to how students want it done and how staff want it done. For example, we do co-development in research, where we think about projects where we work with different communities, and yet we've never really thought about that being necessarily for fieldwork and co-designing with students. Instead, we have this really funny situation where actually everybody's competitive. I've been in discussions recently thinking about if we could partner up to do a live broadcast from Wales to a group that's in the North of England, for example. But universities don't (or are unable to) necessarily work as a partnership because naturally everybody's looking to look after their own students. Whereas I think as academics and researchers, we are very collaborative, we're very partner driven.

And I think when we are thinking about the future of fieldwork, we do need to think about that collaborative approach: how we work with our students, how we work with our institutions to better enable an environmental understanding of those big global challenges. And if we're not getting the fieldwork right, we're not thinking about how we do fieldwork, how can we really talk about tackling these challenges? Universal design for learning (Levey 2021) is a really important step because it's thinking about how you immediately take those barriers out. Although virtual fieldwork has its place, I don't think it necessarily needs to replace fieldwork. We are having conversations around slow travel: should we travel by train? Is that a good way to go versus flying? Should we just do local trips? But does that mean that we're taking something away from students, that they won't be able to experience other places, other cultures, other ways of doing things? And is that just as bad as not working with

partners abroad and parachuting ourselves in and saying we're the expert. So, for me, these are the key questions we have to address: what is the future of fieldwork? Is there a future for fieldwork at all? Is it all smart fieldwork, or do we lose something important by moving in that direction? There are more questions than answers, but I'm going to leave it there.

2 | What Is the Future to Environmental Geographers?

That each of the above interventions has raised more questions than answers is no accident. As environmental geographers, we have entered a period of reflection, the better to confront the various contestations and contradictions we face in our discipline and our world. And in facing up to these challenges, geographers have begun to ask a fundamental question: 'do we need to (re)imagine how we, as social scientists, do things in a climate-changed world?' (Kumar et al. 2025, 2). The answer, increasingly, seems to be yes. The challenges we face require geographers, environmental scientists, sustainability scientists, policymakers, government actors and community stakeholders 'to be more willing and better able to step across the boundaries within and around their disciplines, and to work with those in other fields, sectors and institutions' (Kass 2025, 10).

And geographers are exceptionally well placed to do this. As a nexus field, geographers 'contribute decisively to all sustainable development goals and targets'. Yet for this same reason, the shortcomings of those same goals and targets in practice cannot be assigned to external actors alone. On the contrary, any critique of the politics of climate policy necessitates from geographers a healthy dose of reflexivity as to why our 'planetary analytic has failed to do the work to properly identify its own histories of colonial Earth writing, to name the masters of broken Earths, and to redress the legacy of racialised subjects' (Yusoff 2018, 13). This is both an active legacy, in the form of the type of vocal racism that is becoming increasingly prominent amongst global political leaders (Piazza and Van Doren 2023), but perhaps more importantly still, it is a passive legacy too. The explicit logics of environmental determinism may have been loudly disavowed by many geographers, but in many cases, the questions needed to replace them remain unasked. When it comes to climate breakdown, it is not enough to know *what* is happening and *how*. We need also to consider *why* persist in this system and *for whom*?

A failure to reflect on such questions is embedded deep into the mathematical architecture of our thinking on climate change. The 'doublethink' of overshoot thinking, whereby future scientists' capacity to deploy hitherto non-existent 'planetary-scale carbon dioxide removal dragging temperatures back down by the end of the century' is not only assumed, but factored into almost every calculation that underpins contemporary sustainability planning (Dyke et al. 2021b, 1). This 'dangerous trap' (Dyke et al. 2021a, 1) plays a key role in locking in fossil fuel path dependency by legitimising carbon intensive growth. It is, in other words, an effective way to square the circle of the 'growth versus environment dilemma' (Holum and Jakobsen 2024) on paper, but only on paper, as the solutions on which it relies, for

the most part, do not exist (Dyke et al. 2021b, 1). As geographers, we have a duty to reflect on our role in fomenting conceptual shortcomings of this sort.

Indeed, the fundamental question we face is not what is the future of environmental geography? But what does the future hold for environmental geographers? How and why do we envisage it in the way that we do and could we do so differently? In a climate-changed world, these questions take on an especially acute importance. As George Monbiot (in Dyke and Monbiot 2024, 3) concisely puts it, 'all we need to do is nothing to ensure that the greatest crisis we've ever faced materialises'. So, change is essential. Yet, geographers' ongoing intellectual negotiation and contestation over which future to aim for shows the critical importance of engaging with issues of epistemology and research praxis.

In one sense, this is already happening, as 'scholarship illustrating the immense value of geographic approaches, concepts, tools and techniques' breaks down boundaries into once purely technocratic realms, infusing crucial developmental questions with the language and politics of justice (Ptak et al. 2025, 2). Yet, this is only the beginning of a deeper disciplinary reckoning with the future, much of which depends on the messages we as geographers relay to the next generation of students and scholars. Indeed, 'given the scale of the challenge that we've got, what do young people need to know about this thing that we call the climate and ecological crisis? What kind of things should they be learning at university?' (Dyke, in Dyke and Monbiot 2024, 3).

To lay the foundations for a sustainable future, 'dilemmas around geographic fieldwork should be explored as part of students' learning' in order for students to understand the value and relevance of trade-offs, constraints and the political ethics that underpin them (Cotterill et al. 2026, 11). This is not only a question of carbon. Rather, as universities work to decolonise and move away from a Eurocentric curriculum, it is also important that field teaching does not become narrowly focused on Western environments, problems and solutions, particularly when environmental education needs to be opening students' eyes to global environmental challenges and injustices' (Hurrell et al. 2025, 5). Squaring this circle is genuinely difficult, if not impossible, so rather than working to the expectation of a one-size-fits-all solution to fieldwork and pedagogy, it is preferable to confront and engage students with these imperfect pathways.

There is not, in other words, a single future for environmental geography, but many. What matters is that geographers at all levels be aware epistemologically, ethically and politically of the consequences of their framings of these futures. Whether this means critiquing problematic assumptions in modelling, engaging with the technicalities of energy futures in areas of geography to which such questions may be new or confronting the trade-offs which underpin our production of knowledge, environmental geographers must become comfortable with the ways in which their scholarship not only describes but also creates the futures they imagine. The tick-tock of the colonial clock, as Kathryn Yusoff began this set of interventions, is not a rhythm remembered from the past, but one which haunts environmental horizons. And these politics of time have never beaten so loudly as they do today.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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