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Social Policy and the Determinants of Vulnerability – Missing ‘Race’ in Climate Adaptation

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This article stresses the need for climate adaptation to better grasp the social dynamics of vulnerability to climate change. It argues that prevailing approaches in the UK have been inattentive to the social determinants of vulnerability for ethnic and racial minorities. The article begins by setting out the ways in which adaptation is understood and interpolated across multiple levels in the policy process, before discussing why prevailing approaches struggle to recognise that certain social dynamics render some populations more vulnerable to the ongoing effects of climate change. Following this, it will focus on domains of housing and health to reinscribe vulnerability in adaptation as a multidimensional concept, something that registers differentiated levels of structured adaptive capacity by focusing on racialised communities. It concludes by elaborating ways forward in climate adaptation planning and action.

Keywords: Adaptation; climate change; race; social policy; vulnerability

Introduction: Clarion calls and wicked problems

Described by the UN secretary-general António Guterres as a ‘final warning’ (United Nations, 2023), the most up to date synthesis report from the International Panel on Climate Change (IPCC) (2023) provides bleak reading. In even the most ambitious scenario of global warming by no more than 1.5 degrees Celsius, for example, the extent of carbon use already ‘locked in’ to the atmosphere will herald catastrophic losses in marine biodiversity due to increasing acidification in the planet’s oceans (IPCC, 2023). As perhaps the most existential ‘wicked problem’ (Rittel and Webber, 1973) facing the world today, 159 countries first ratified The United Nations Framework Convention on Climate Change (UNFCCC) in 1992. More than thirty years later, as the world’s ‘hottest day’ was broken twice (on consecutive days) in 2024 (Copernicus Climate Change Service, 2024), we are poised to exceed in this decade what the IPCC (2023) deem the ‘carbon budget’ necessary to limit both the frequency and intensity of storms, floods, droughts, and heatwaves. Clarion calls for coordinated climate action, therefore, have not been met with the necessary design and implementation of policy that is capable of addressing the challenge.

While the impacts of climate change are obviously global, however, they are also characterised by a *multifinality* where the same causal mechanisms herald different social outcomes (Kay and Baker, 2015). Global South scholars and practitioners have long stressed this concern and mobilised a burgeoning evidentiary base that is incrementally apparent in treaty negotiations (Heede, 2014; Shue, 2017; Acosta and Abarca, 2018). For example, climate science shows that according to population share Global North countries have been responsible for more than ninety percent of excess greenhouse gas emissions in the last century (Dehm, 2020; Hickel, 2020; Our World in Data n.d). It is in formerly colonised Global South countries, however, that regions are

deemed uninhabitable due to anthropogenic climate change. Described as ‘global sacrifice zones’, these are disproportionately found in the ancestral lands of indigenous peoples and territories of the Small Island Developing States (SIDS) (Pardikar, 2020).

An argument made by Global South scholars is that climate approaches forged in the Global North, and advanced through international political and development agencies, are typically a-historical and weighted in their own favour, unable (or unwilling) to register the differential vulnerabilities established by racism and colonialism (Bassey, 2012). The matter of ‘Loss and Damage’ is also illustrative in highlighting the power and resource imbalances in negotiating adaptation actions, and the means to hold respective parties accountable (Burkett, 2016).¹ At the most recent Conference of the Parties (COP 28), the creation of a loss and damage fund of \$700m (£556m) was estimated to represent less than 0.2 per cent of what is required (Lakhani, 2023). As the UN Special Rapporteur E. Tendayi Achiume (2022: 19) has observed, it is not only that ‘states in the Global North are typically capable of fielding large negotiating teams and relying upon well-resourced national bureaucracies’, but that ‘Global South states have no effective, reliable means of holding Global North states accountable for failing to meet their climate obligations or to provide reparations for historical and ongoing climate injustice’. This is precisely why the late Archbishop Desmond Tutu often used his platform to call attention to the ways in which ‘climate adaptation is becoming a euphemism for social injustice on a global scale’ (Tutu, 2007: 126).

These critiques are important in themselves and helpful to our discussion in two ways. Firstly, they help make visible a pattern in which we can observe that approaches to climate change overlook the racial dynamics of vulnerability. This is the main focus of this article. Secondly, global south critiques carry larger conceptual implications for the disciplinary tradition, and which is important to register if future scholarship is sufficiently able to address the first issue.

Beginning with the second point, Social Policy typically extrapolates normativity from a Global North perspective, in which descriptive knowledge becomes universally evaluative, something neatly captured in the title of Esping-Andersen’s (1990) landmark account of the ‘three worlds’ of welfare capitalism. Without seeking to reduce this or other profoundly enlightening and nuanced accounts of welfare approaches, it is notable and somewhat astonishing how little has been written in mainstream Social Policy to register the emergence of such European welfare regimes in the context of European imperial assets and colonial relations of extraction (Schmitt, 2015; Bhambra, 2021; Meer, 2022a). This is despite, and as Schmitt (2015: 332) drawing on Midgley (2011) has shown: ‘Half of all social security programs in former colonies were introduced before those countries gained independence.’ The racialised assumptions made by progenitors of social policy as a disciplinary tradition are in plain sight, including in Titmus’s (1943: 9) view that ‘Western civilisation slowly evolved a higher way of life and it was our duty to help and guide the teeming millions of India and Africa to a more abundant life’. To treat these as the vestige of a bygone age may leave in place ‘blind spots’ (Schmitt, 2015: 332) in what became epistemological frameworks on how social welfare is produced, distributed, and consumed (cf Williams, 1987). This after all was the argument of the UK Social Policy Association (SPA)-commissioned report *The Missing Dimension*, which described the status of race scholarship within UK social policy as ‘not regarded in any sense as mainstream’ (Craig *et al.*, 2019: 17; cf Meer, 2020). That is to say that while race is a social construct it has real social policy consequences, and if we therefore choose to ignore race in public policy, we also ignore how racial inequalities are embedded and reproduced in the routine practices of societies (Meer, 2022b).

Foregrounding inquiry into racial disparities on increasingly salient topics of social policy relevance, therefore, may also help and cultivate the ideational feedback that such recognition heralds for the disciplinary tradition (cf Snell *et al.*, 2022). This article contributes to this by stressing the need for climate adaptation to better grasp the social dynamics of race in present vulnerability to climate change. As such it takes up the compelling invitations from Snell, Anderson and Thomson (2023) and Williams (2021), respectively, in seeking an ‘[i]mproved understanding about the current risks that climate change poses to vulnerable groups, with

recognition that these risks are evolving and interlinked' (Snell *et al.*, 2023: 15). Specifically, it argues that prevailing adaptation approaches in the UK have been inattentive to the social determinants of vulnerability to climate change for ethnic and racial minorities. In the next section, it sets out how this has come to pass is partly explained by what operates as the criteria of relevance. It then turns to domains of housing and health to reinscribe vulnerability in adaptation as a multidimensional concept, something that registers differentiated levels of adaptive capacity by focusing on racialised communities. The article is primarily a conceptual intervention, one that draws on empirical illustrations from the UK to better orient contemporary and future inquiry, and concludes by registering the impediments to this, and elaborating ways forward in a social policy approach to climate adaptation planning and action.

Chameleonic concepts

Motivated by a need to think in terms of consequences, namely by anticipating the negative impacts of global warming and accordingly adopting proactive measures, the language of 'adaptation' has become key in policy approaches tackling climate change (Berrang-Ford *et al.*, 2019). Sometimes discussed alongside the very different objective of 'mitigation' (concerned with reducing of overall greenhouse gas emissions either by cutting sources or enhancing 'carbon sinks'²) (IPCC, 2023: 126), it is important to be clear about their fundamentally different orientations, even while recognising their shared provenance (Denevan, 1983; Kellogg, 1987) and trajectory into the global policy lexicon. For example, in their study of the developing emphasis of the aforementioned United Nations Framework Convention on Climate Change (UNFCCC), Venturini *et al.*, (2019: 1) note that while '[a]daptation and mitigation issues are both visible in the UNFCCC negotiations', mitigation has 'from the very beginning been a top priority', and that adaptation activities only came to prominence 'when countries began to fail to achieve their mitigation objectives'. Thereafter, adaptation has been a staple of each landmark global climate change agreement (United Nations Development Programme (UNDP), 2007; Mor, *et al.*, 2023). Hence the 'Adaptation Fund' established in the 1997 Kyoto Protocol was reaffirmed in the Copenhagen Accord in 2009 and Paris Agreement in 2016, even while the Kyoto Protocol was widely deemed unsuccessful in light of omitting the US and China (Victor, 2004; Owen, 2020).

It is through this route that its adoption by bodies such as the Intergovernmental Panel on Climate Change (IPCC) has been received with a justified urgency, and in ways that have seen adaptation enlisted by a diverse constituency of actors (including supranational organisations as well as national governments) and across a variety of approaches – much as if it were a 'chameleonic' concept. That is to say, and borrowing from Smith's (2010: 181) study of policy ideas, stated goals the means to pursue them, approaches called adaptation appear 'able to move further into policy either because they overtly complement institutionalized ideas' or have 'chameleon-like qualities which facilitate their translation into policy' (*ibid.*). This understanding helps explain the seeming appeal of the concept but, and as shown below, also contains clues as to why prevailing adaptation approaches have been inattentive to the racial determinants of vulnerability to climate change.

For example, the IPCC defines adaptation as a 'process of adjustment to actual or expected climate change and its effects, which seeks to moderate harm or exploit beneficial opportunities' (IPCC, 2022: 2898). It is 'chameleonic' in that we can include short-term behavioural change such as shading windows and drinking water in heat events, keeping warm and using home energy efficiently in cold weather; public education promoting broader community awareness and knowledge of weather-related risk at a population level, as well as large-scale infrastructure agendas, emergency management, hazard planning and associated risk assessments (Berrang-Ford *et al.*, 2019). In their systematic review, Porter *et al.* (2014) usefully distinguished between four types of action deemed as adaptation, comprising: (1) the aforementioned *behavioural* actions,

(2) *technical and infrastructural* actions seen in planning and construction, (3) *institutional* responses such as creating policies, programmes, regulations, and procedures, and (4) *ecosystem- or nature-based responses* such as the regeneration of flora and the use of green and blue spaces (especially in cities).

Notably, *The UK Climate Change Act* (CCA) (2008) appeals to a mixture of these adaptation actions in providing a legally binding framework. It foregrounds as a priority better in-land flood defences and preparedness for coastal erosion, energy security and the possible implications for agriculture. The United Kingdom (2008) moreover places a legal burden on the UK Government to undertake a Climate Change Risk Assessment (CCRA) every five years, before rolling out a National Adaptation Programme (NAP). The governance of these commitments are partially devolved to the four administrations of the United Kingdom. In this respect, and as a policy variable that might alternate and operate at multiple levels in the UK, and in the case of Scotland there is a devolved statutory framework on adaptation set out in *the Climate Change (Scotland) Act* (2009).

The Scottish Government has on occasion hinted at a distinctive approach. For example, it has stated that ‘climate change poses risks to Scotland beyond those identified in the UKCCRA [UK Climate Change Risk Assessment], including the unequal impacts of climate change on the most vulnerable in our society’, and implied that ‘an outcomes-based approach’ pursued in Scotland ‘allows us to address this’ (Scottish Government, 2019: 21). As we approach the end of Scotland’s current adaptation programme, however, the Scottish Government has signalled alignment with Westminster through the adoption of ‘carbon budgets’ used by both the UK and Welsh governments, as well as in forgoing its ambitious flagship target of reducing greenhouse gas emissions by 75 per cent by 2030. Moreover, its five-year *Climate Change Adaptation Programme 2019–2024* contains not one single mention of either race or ethnicity in its 229 pages, even while it states that ‘The Scottish Government champions climate justice, and promotes a people-centred, human-rights approach that shares the benefits of equitable low carbon development, and the burdens of climate change fairly’ (ibid. 10). In this respect it is consistent with the same absences in the UK Government’s (2023) National Adaptation Programme (NAP3) and the Fourth Strategy for Climate Adaptation Reporting discussed further below. The importance of these oversights can be shown through an understanding of multifinality and vulnerability.

Multifinality and vulnerability

Despite the variety of ways in which adaptation approaches have been understood, and how adaptation has been interpolated in the policy process, the key issue of *multifinality* in the impacts of climate change continues to be peripheral. With a provenance in systems theory (Von Bertalanffy, 1968) multifinality describes the different outcomes of a common cause. In this usage, multifinality recognises how in social systems ‘the effect on functioning of any one component’s value may vary’ (Cicchetti and Rogosch, 1996: 598), and that these ‘effects will depend on the conditions set by the values of additional components with which it is structurally linked’ (ibid). Its adoption in policy studies retains the core analytical concern, namely as to how ‘the same mechanism can generate differential policy outcomes dependent on the context in which it operates’ (Kay and Barker, 2015: 7). For the purposes of this article, it helps grasp how certain social dynamics render some populations more vulnerable to its effects. What however is meant by *vulnerability*?

Borrowing from Kelly and Adger (2000: 328), vulnerability refers to ‘the ability or inability of individuals and social groupings to respond to, in the sense of cope with, recover from or adapt to, any external stress’. The key point to emphasise here concerns the way vulnerability is describing a structured capacity to respond to climate change and not the anticipation of likely adaptive behaviour. This is what is meant by the social determinants of vulnerability, and in which direct and indirect racial inequality operates at a systemic level. It is very rare, for example, to hear

concepts such as that of ‘weathering’ the ‘life-course’ within adaptation approaches, even though a large body of inquiry has established that the accumulated social stresses these terms denote come with being a racial minority (Phelan and Link, 2015; Geronimus *et al.*, 2020; Razai *et al.*, 2021). The need to connect a multifinality in exposures to differential vulnerabilities is also found in Schlosberg *et al.*’s (2017) work on climate justice research with Aboriginal communities in Australia. These authors insist on the need to include more than a ‘focus on the biophysical risks of climate change’ and expand to consider ‘the more organic concern with vulnerability in everyday life illustrated by community groups’ (ibid. 420). These are especially helpful emphases because the challenge in addressing racially structured differences requires us to think of vulnerability in adaptation approaches as something akin to a multidimensional concept that harnesses our existing knowledge on inequalities as well as established approaches to addressing these. This would allow us to better register differentiated levels of adaptive capacity for racialised communities, the structural impediments to this, and how these may be incorporated (or overlooked) within prevailing climate adaptation planning and action strategies, and that corresponding strategies meet the issue of climate change without accounting for existing social inequalities across domains.

There has hitherto been no consideration of this in the UK by either the Westminster or devolved administrations. The UK Government (2022: 10) has stated ‘a need to address the interdependency and inequality of risks’ but makes no further mention of what these are and how they may be understood. Signalling a misalignment between policy aspirations and community experience, The Technical Report for the third UK Climate Change Risk Assessment (CCRA3) (2022) identifies sixty-one climate risks cutting across multiple sectors of society but contains not a single mention of race (or possibly cognate means of discussing this in terms of ethnicity or structural discrimination). This is despite the UK Environment Agency warning that even in its core areas of focus, ‘social vulnerability to flooding highlighted the disproportionate disadvantage experienced by ethnic minorities, particularly black ethnic groups (sic)’ (Henstra *et al.*, 2020; Environment Agency, 2021). Such oversights are unlikely to be addressed while progress and implementation instruments reproduce the gaps. For example, in the most recent and otherwise comprehensive 364-page report to the UK Parliament by the UK Climate Change Committee (CCC) (2023), the country’s leading climate scientists reporting on adaptation progress, made not a single mention of race and only one reference to ethnicity, and which itself was accompanied by a recognition that ‘there is limited data available to assess progress in achieving enablers for this outcome’ (ibid. 264).

Racial determinants

The prevailing omission of race in UK adaptation approaches is not unconnected to the dearth of research on the differential impact of climate change in this country. This situation makes for a striking contrast with the US where it is long established that differences in the health risks of climate change are significantly higher for racial minority groups (Brodine, 1972; Higgins, 1993; Tuana, 2019). This has given rise to a broader analysis of political economy, racial disparities, and climate justice, especially in the ‘critical environmental justice studies’ scholarship (Pellow and Brulle, 2005: 18). Something illustrated in Pulido’s (2017: 524–525) connections between climate vulnerabilities with what she has termed the ‘environmental racism gap’, and which she uses to describe persistent inequalities in environmental outcomes for minoritised groups as being ‘manifest in practices, regulations, and outcomes’.

Despite fewer such studies in the UK, what social policy approaches allow us to grasp is how prevailing inequalities establish likely differential racial vulnerabilities to climate change, not least by connecting these inequalities across multiple social domains. Social policy as a disciplinary tradition is able to span the study of public policies, market operations, and personal and social

relationships as these mediate, and are mediated by, state institutions and welfare services. If we are to take seriously the earlier discussion that vulnerability to climate change must include a description of a structured capacity, then this requires us to focus on residential settlement and housing, typically viewed as a key means of gauging the distribution of social goods and life chances (Somerville and Spriggs, 2005). This reveals, for example, that Black and ethnic minority residents in cities have significantly less access to green spaces than white residents (in one study this was eleven times less) (Dobson *et al.*, 2019). This is especially relevant in the context of consistently warmer surface and/or air temperatures in UK cities compared with suburban and rural surroundings and the rise of Urban Heat Islands (UHIs). These are a progressively common feature of urban life and are due to a concentration of dark surfaces and lack of vegetation, encouraging greater heat absorption during the day and increased re-emission during the night (Sandink, 2013). Black and ethnic minorities are disproportionately resident in the locations of prominent urban heat islands in London, Birmingham, Manchester, Leeds and Liverpool (Chowienczyk *et al.*, 2020: 527; cf Manon Burbidge *et al.*, 2022), and which have long been connected with health impacts and elevated rates of heat-related mortality and co-morbidities, and are part of a wider pattern in which heat-related deaths increased by 68 per cent between 2000–04 and 2017–21 (Romanello *et al.*, 2022).

Access to green spaces is therefore crucial, and yet the Office for National Statistics (ONS) (2020) reports that ethnic and racial minorities are nearly four times as likely as white people to lack access to outdoor space at home such as a garden (private or shared), patio, or balcony, and two and a half times less likely than those of white ethnicities to have a private garden, even when comparing people of similar age, social grade, and living situation (such as location and living with or without children) (cf Glover, 2018; Haycox and Meer *et al.*, 2024). At the same time, we know that these same groups have significantly less access to public green spaces more broadly (Groundwork UK, 2021: 3). This is partly about proximity, as they 'are less likely to live within short walking distance of a green space than people that identify as White (39 per cent compared to 58 per cent)' (ibid. 3). It is also related to documented local and national housing strategies that have resulted in 'territorial stigmatisation' (Hill, Meer and Peace, 2021), and includes Black and ethnic minority respondents feeling 'out of place' in rural and country settings (Collier, 2019; Foster, 2021; Haycox and Meer *et al.*, 2024).

Presently, nearly 97 percent Britain's Black and ethnic minorities live in urban and peri-urban settings (ONS, 2020, 2022, 2023) and, as Morris and Naz (2021: 42) have argued, this locks in 'certain forms and activities, and impedes or prevents others', and reflect 'both structural conditions as well as constraints'. That there is a societal pattern in which ethnic and racial communities bear greater burdens of urban exposure, however, has typically been understood in terms of socio-economic status and health inequalities (Jerrett *et al.*, 2001, 2004; Marshall, 2008; Richardson *et al.*, 2013). To think about social determinants otherwise requires us to use concepts and categories that hold an explanatory function in detailing how racial injustice is almost in 'the design of things' (Gilmore, 2021). This is not straightforwardly easy to quantify, but the argument in this article is that we should seek to make connections, across histories and across social domains, to recognise the accumulated disparities that help explain vulnerabilities. For example, the experience of residing in UHIs is not only moderated by good access to green spaces, but also the quality of housing and degree of insulation to keep homes cooler (in addition to greater energy efficiency in colder climates). Notably, Barnes *et al.* (2008: 28) show that Black families are particularly likely to experience persistent bad housing with poor insulation, with one in ten such household compared with one in twenty for their white counterparts. This is therefore not a direct measure of the impact of climate change on households, but a means of gauging unsatisfactory housing that makes these groups more susceptible to its impact. It is precisely the connections between different social policy domains in which racial inequalities are entrenched and reproduced, and in which the racial determinants of vulnerability to climate change too become apparent *and remain prevalent despite compounding factors and variations* (Meer, 2022b).

Ella's story

These concerns can appear abstract but are prominent in the vulnerability of exposures to air pollutants, since '[a]ir pollution and climate change are deeply interconnected because the chemical species that lead to a degradation in air quality are frequently co-emitted with greenhouse gases' (Pinho-Gomes *et al.*, 2023: e727). Road traffic, for example, is the single largest generator of nitrogen dioxide and particulate matter in British cities (Lee, 2022) and illustrates that while 'substantial risks to the population are associated with air pollution and climate change separately, each can exacerbate the effects of the other' (Pinho-Gomes *et al.*, 2023: e727). The story of Ella Kissi-Debrah, a young girl from Lewisham in South London, is therefore salutary.

In keeping with something of a narrative turn in policy studies, and a range of scholars emphasising the importance of episodic storytelling for grasping policy problems (see, for example, Polletta, 2006; McBeth *et al.*, 2014; Kubin *et al.*, 2021; Fraser and Gillon, 2023), Ella's story is presented as a narrative that elucidates a specific issue as the first person in Britain to have air pollution listed as a cause of fatality. Her story is not cited as a representative sample but rather as a landmark case that is 'characterised by very low levels of disagreement' on the facts involved (Jones *et al.*, 2014: 6). It is also a policy relevant story as her family's campaign to reopen the coroner's inquiry into her death, initially attributed to acute respiratory failure, has become a reference point to a variety of stakeholders (Carrington, 2023). In this regard, and as Houston and Vasudevan (2018: 248) have argued, '[s]torytelling is not just about narratives, it is about recognising emergent cultural, temporal and environmental realities shaped by the material presence of toxics and toxic environments.'

Three weeks after turning nine, Ella suffered a fatal asthma attack in her home. Ella had been a healthy child, played football and practiced gymnastics, with no underlying issues prior to exhibiting breathing difficulties when at the age of seven she was diagnosed with asthma. In the two years that followed, her mother Adoo describes how Ella would cough 'so much she blacked out', experiencing what she came to know as a "coughing syncope" caused by lack of oxygen to the brain' (Ella Roberta Family Foundation, 2023). All of Ella's short life had been spent in Lewisham, a historically multi-racial borough which also has one of the highest densities of traffic in any urban setting in Britain today. Growing up near the South Circular, 'one of London's most notoriously congested roads' (Marshall, 2020), and travelling to her school a 'half-hour walk away, mostly on the pavement beside nose-to-tail traffic' (ibid), meant that Ella's exposure of both outdoor and indoor traffic-related air pollution (TRAP) was total, with no respite from the associated mixture of gasses and fine particulate matter (National Toxicology Program, 2019). Indeed, on revisiting the circumstances of her death, the Coroner, Philip Barlow, concluded that:

"Air pollution was a significant contributory factor to both the induction and exacerbations of her asthma. During the course of her illness between 2010 and 2013 she was exposed to levels of nitrogen dioxide (NO₂) and particulate matter in excess of World Health Organisation Guidelines. The principal source of her exposure was traffic emissions. During this period there was a recognised failure to reduce the level of NO₂ to within the limits set by EU and domestic law which possibly contributed to her death" (Courts and Tribunals Judiciary, 2021).

The coroner's findings were consistent with research from the US, for example, which has long established clear links between minorities, high traffic neighbourhoods, and respiratory issues in children (Gilliland *et al.*, 2001). Most obviously, this work has established that children living near busy roads are at an increased risk of developing asthma, and specifically that respiratory health in children is adversely affected by outdoor NO₂ (Gauderman *et al.*, 2005), including when children play outdoor sports (McConnell *et al.*, 2002). In the UK, there is a limited literature typically focused on London, but which is unambiguous in reporting that the highest levels of air pollution can be found 'in ethnically diverse neighbourhoods, defined as those where more than 20 per cent of the population are non-white' (Wong, 2015).³

One of the consequences of overlooking racialised geographies, is that the racialised inequalities they contain are reproduced in adaptation strategies expressed in approaches to urban greening, which have been especially prominent in some economic attempts to address the twin objectives of economic renewal and net zero commitments (Haycox and Meer *et al.*, 2024). Sometimes pitched as a ‘green industrial revolution’, the possibility that the economic, ecological and social benefits of greening initiatives are unequally distributed, especially with respect to the accessibility and utility discussed earlier, and so may risk exacerbating existing disparities and vulnerabilities (Anguelovski and Connolly 2021).

Conclusion

The UN Special Rapporteur E. Tendayi Achiume (2022: 19) recently argued that ‘[e]nvironmental, climate and racial injustice are the institutionalised status quo’ (Achiume, 2022: 3). This article responds by making the case for social policy to be at the forefront of rethinking climate adaptation approaches, namely by foregrounding the social determinants of vulnerability. Focusing on Black and ethnic minorities in Britain, it has insisted on the need to pursue this by connecting up *differential exposures* with *differential vulnerabilities* and *differential access* to space and services. What adaptation approaches urgently require, therefore, is consistent recognition of the ways in which existing racial disparities contribute to climate change vulnerabilities, and in ways that do not uncouple from one another their constituent parts.

At the same time, this is also a challenge to climate change researchers and funders to prioritise primary research which examine how adaptive measures can attend to these inequalities across hazard, planning, social vulnerability, and long-term risk assessments. Multidisciplinary work spanning environmental and social science, the physical environments of cities and their biophysical attributes, are still a relatively small component of research funding allocations, even while the incorporation of perspectives on social drivers, such as the economy, policy, and culture are deemed inseparable to how climate change is experienced. This is no less a priority in grasping how an increasing awareness and knowledge of weather-related risk and emergency management is also attentive to existing ethnic and racial disparities. It includes prevailing impediments in the urban environment, and where adaptation policies can exacerbate existing inequalities. As Manon Burbidge *et al.*, (2022: 163) have argued, current approaches are inadequately ‘weighted in the actual political, social and economic decisions that are made about how to manage, reduce, and adapt to risk on a community level’. The status quo is further illustration of how approaches to public policy that originate only from institutionally privileged locations, ignore those hurt by public policy designed and implemented without the inclusion of their experiences.

A sustained space for understanding the relationships between environmental science, urbanisation, and stratification is therefore critical to addressing policy approaches to adaptation. Social policy is equipped to pursue this by foregrounding the social conditions that heighten vulnerabilities to climate change. It is especially well placed to consider how prevailing approaches to climate change might better address both existing inequalities, and which are further compounded by environmental challenges, but also be alert to the possible unintended consequences of interventions that further exacerbate these. Much as we accept that the impact of poverty can manifest across different domains over the life course, and indeed might be transmitted from one generation to the next, and therefore require context specific interventions, so we must be open to the ways in which racialisation plays a cumulative role. It is very rare, for example, to hear concepts such as that of ‘weathering’ the ‘life-course’ within adaptation approaches, even though a large body of inquiry has established that the accumulated social stresses, which these terms denote, come with being a racial minority (Razai *et al.*, 2021; Geronimus *et al.*, 2020; Phelan and Link, 2015). Specifically, the long-term impact of the compounding effect of discrimination and social stress, differences in residential exposures,

income and housing conditions, and differential vulnerabilities in underlying health conditions and comorbidities, as well as differential access to treatment and other forms of support. This last point is important because we should ask why we would expect disparities in labour markets, health, and housing not to feature in the vulnerability to climate change. The challenge this article identifies is to maintain a broad focus on the underlying determinants, and not allow the climate risks to be separated from their social exposures. Vulnerability cannot be explained in isolation. At an elementary level this requires the inclusion of race and ethnicity in data collection on adaptation progress, and its integration into governmental analysis and reporting of such data. Going forwards, it is only in so doing that adaptation approaches can begin to address the racial determinants of vulnerability to climate change.

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Notes

- 1 As a legally binding international treaty, the Paris Agreement 2016 recognised this multifinality and included a commitment by Global North countries to create a loss and damage fund for Global South countries to draw down, as means of addressing the overwhelming role of high-income Global North countries in climate change and environmental degradation (Dehm, 2020). The remedial funds for this loss and damage have been called 'a major failure' (Kühn, 2021) when set against the expectation of Global South countries to refrain from economic development activities that would use fossil fuels and release further carbon into the atmosphere.
- 2 A 'carbon sink' in climate science refers to how net greenhouse gas emission reductions represent the *sum* of reduced emissions. So, for example, plants, oceans, and soils absorb more carbon than they release (in contrast to a carbon source like fossil fuels which release more than they absorb).
- 3 See also Brook and King's (2017) analysis of air pollution exposure in London, and in which they conclude that 'for all ethnic groups except for White, there is a relatively higher concentration of highlighted LSOAs located within areas where the NO₂ concentrations exceeded the limit'.

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