

Addressing Water Poverty Under Climate Crisis: Implications for Social Policy

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Access to safe, clean and affordable water is a basic human right and a global goal towards which climate change poses new challenges that heavily impact the health and wellbeing of people across the globe and exacerbate or create new inequalities. These challenges are shaped by a number of geographical and social conditions that, apart from the risks of weather-driven impacts on water, include water governance and management arrangements in place, including pricing tariffs, and the interplay of social and economic inequalities. Building on examples from Australia, Scotland and England and Wales that illustrate access to water in different types of water provision systems, and regarding to aspects of access, quality and affordability, this paper explores the types of challenges related to water poverty in the context of climate crisis and reflects on the multiple dimensions of water poverty oriented social policy at the interplay of climate change associated risks.

Keywords: water poverty, water insecurity, water affordability, cost of living.

Introduction

The climate crisis exacerbates water supply issues by altering changing rainfall patterns and increasing temperatures. These lead to more intensive periods of water scarcity and droughts, and higher incidences of flooding events that create or aggravate existing issues of inadequate water access for many. Water quality is under increasing threat due to biophysical impacts of temperature increase in aquatic environments, greater flooding and water run-off, and the lower capacity of filtration of nutrients and pollutants in periods of lower water flow. Increasing costs and competition for water resources put greater pressures on water infrastructure and services provision, while current techno-managerial solutions to handling water crises can lead to increased carbon emissions (Barnett and O'Neill, 2010) and threaten low-carbon development (cf Water UK, 2020). These challenges eventually affect the health and wellbeing of people across the globe while exacerbating existing inequalities and disparities, with specific implications for the development of social policy.

Successive, record, hot dry years resulting from climate change has seen many parts of the world struggling with water supply. In 2022, the long drought in the Horn of Africa has had severe impacts on food security for millions of people (Juma, 2022), while water scarcity in France left more than 100 municipalities short of drinking water (BBC, 2022). Furthermore, water scarcity intersects with other social, economic, political, and environmental issues. The COVID-19 pandemic has created unprecedented, lasting increases in global water demands (Cahill et al., 2021). In 2022 alone, access to hot water across western and southern Europe has been compromised by publicly imposed energy-saving measures (Oltermann, 2022), gas and energy supply shortages due to the Russian invasion of Ukraine, rising inflation, and the ongoing cost-of-living crisis (GeoPoll, 2022).

Climate change impacts on water resources, and climate-change-driven policies that impact water use and water management asymmetrically, affect people's water access based on geographical and socio-economic conditions (Gao et al., 2018). There should be concern about the existing water supply, even in areas where it is presently not an immediate problem (Sultana, 2018). Research on drought governance in north-western Europe, for example, has demonstrated that areas framing their issues to be 'an abundance of supply' (i.e. flooding or sea level rise) are underprepared for climate change impacts on water supply (Bressers et al., 2016).

This article aims to explore the diversity of challenges climate change imposes on access to, and affordability of, safe and clean water and to consider how current understandings of water poverty might account for those challenges and the implications for social policy. We begin with an examination of the existing approaches and intersections between water poverty and climate change. Next, examples from Australia, Scotland and England and Wales help illustrate different types of issues affecting people's access to water. Following that, we discuss the examples and impacts of climate change on water poverty, and conclude reflecting on the role of social policy.

The water crisis and the human right to water

The World Health Organisation (WHO) (2022) estimates current global water crises are affecting nearly two billion people. Of these, nearly 771 million people still lack access to safe water, with around one million people each year dying from water-, sanitation-, and hygiene-related diseases (water.org, 2022). These problems are exacerbated in the Global South, where 80 percent of people in rural areas still lack basic services (WHO and United Nations International Children's Emergency Fund, UNICEF, 2021). In India, for example, around half of the population (particularly women and children; people on low incomes) still lacks access to safe drinking water (UNICEF India, 2022), impacting school attendance, with rural women losing approximately twenty-seven working days of wages in a calendar year to fetch water. Much of the literature on water poverty and access issues focuses on the challenges in Global South contexts. However, it is increasingly recognised that while high-income, Global North countries are far less likely to experience water access problems, affordability and quality of water can still be a challenge (UNECE and WHO, 2012).

The General Assembly of the United Nations recognised the human right to safe and clean drinking water in 2010, and in 2015 detailed that it 'entitles everyone, without discrimination, to have access to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic use' (United Nations General Assembly,

2015). The ambition set in goal six of the Sustainable Development Goals (SDGs), adopted by all United Nations Member States in 2015, seeks to 'ensure availability and sustainable management of water and sanitation for all' (WHO and UNICEF, 2021). SDG 6 is supported by eight targets, the first two of which aim to 'achieve universal and equitable access to safe and affordable drinking water' and 'access to adequate and equitable sanitation and hygiene' for all by 2030. Broadly understood, the concept of water poverty speaks directly to SDG 6.

Water poverty: definitions and approaches

The concept of water poverty is generally understood as the inability to meet the human right to water, either in full or in part (End Water Poverty, 2022). Water poverty takes different forms, unique to the resource challenges posed by different geographies. Current understandings of water poverty do not satisfactorily address the challenges of affordability or ability to pay in developed countries. Issues of water poverty in the Global North surprisingly remain largely overlooked in both research and policy (Jepson and Vandewalle, 2016; Yoon and Sauri, 2019) despite notable exceptions (Bakker, 2001; National Energy Agency, 2019; Cook and Makin, 2020; Meehan *et al.*, 2020). It has been recognised that it is important to break down the north-south divide and learn across cases to understand and address drivers of, and routes to resolve, water poverty and marginalisation, particularly in urban and peri-urban contexts (Ranganathan and Balazs, 2015). Throughout this section, we will explore various terms used across various academic and policy literatures that connect with the broader framing of this article that will be of interest to social policy scholars.

The relationship between social inequalities (including poverty) and access to water has been extensively studied from different disciplinary and scholarly approaches, including development studies (e.g. Sullivan, 2002; Molle and Mollinga, 2003), political ecology (e.g. Swyngedouw, 2013; Sultana, 2018) and social policy (e.g. Pawar, 2014). Development studies, with a focus on water, sanitation and hygiene (WASH), understand water poverty as a factor/driver of wider poverty, so the improvement of access to water is critical for getting people and communities out of extreme poverty by underpinning nutrition and health (e.g. World Bank 2017, Molle and Mollinga, 2003). Social policy takes a different perspective, with wider poverty as a factor for water poverty; that is, how poverty and social exclusion situations hinder access to water. Political ecology studies tend to examine any or both of those relationships as part of wider socio-political processes and reflection around power dynamics and broader socio-spatial inequalities in the context of water (in)security (cf. Truelove, 2019).

These diverse scholarly approaches to water poverty translate into a differentiated study of water poverty within Global North and Global South contexts. Global South literature has focused more on the multiple dimensions of resource vulnerability and socio-economic intersections, aligned with the concept of 'water insecurity' (e.g. Madhusoodhanan *et al.*, 2016; Zaveri *et al.*, 2016; Goel *et al.*, 2020; Nhemachena *et al.*, 2020; Jemmali *et al.*, 2021). Literature on the Global North has focused instead on affordability problems (e.g. Huby, 1995; Martins *et al.*, 2016, Vanhille *et al.*, 2018; Yoon and Sauri, 2019; Pierce *et al.*, 2020). Yet, water affordability, a contested social construct that relates expenditure and household income (Teodoro, 2019), is flagged as a topic requiring more in-depth research in high income countries (Yoon and Sauri, 2019; Meehan *et al.*, 2020).

Current Global North work mostly builds on literature penned throughout the late 1990s and early 2000s by scholars, such as Bakker, that comment on the neoliberalisation of water markets in England and rising ‘water debts’ and ‘water poverty’ (cf. Drakeford, 1997; Bakker, 2001). Recently, there has been a push back against the neoliberalisation, privatisation, and financialisation of the governance of water supply (cf. Loftus et al., 2016) with clear implications for water poverty. There has been wider political consideration of re-municipalisation of public water supplies versus dominant water market solutions (e.g. the Right2Water movement in Europe) as a response to austerity policies and increased tariffs that disproportionately affect poor households (van den Berge et al., 2022). Within social policy literature, attention paid to ‘water poverty’ using this conceptualisation as such has been very limited, with less than a handful of references within specialised journals and all focused on ‘water affordability’ in the UK (Drakeford, 1997; Huby 1995; Bradshaw and Huby, 2013). There are crucial connections between water and differing socio-economic conditions across the world that determine quality of life (Mahlanza et al., 2016). There are more recent efforts to tackle this gap in areas of water accessibility (Haddeland et al., 2014) and also examination of water poverty at local levels due to the COVID-19 pandemic (Cook and Makin, 2020; Warner et al., 2020).

In the climate crisis context, political ecology literature proposes alternative ‘water justice’ framings to approach the complexity and intertwined relations between water challenges, uses of water and access to water. These consider the interaction of multiple agents and material and immaterial elements of access to water, including connections to issues of democracy, citizenship, and development, with the appreciation that solving water problems relies on addressing ecological, political and social issues alongside the simultaneous implementation of technical solutions to protect water access for the present and the future (Boelens et al., 2018; Sultana, 2018).

While the literature linking water and poverty has been expanding (cf. Meehan et al., 2020), and there are substantial empirical examples across Global South, there is still not sufficient reflection on the impact of water poverty on social policy and social work (Pawar, 2014). Human geographers, social scientists, and environmental humanities scholars are building links of interest for social policy scholars examining connections between poverty and how socio-spatial inequalities are produced, water infrastructures and use, and climate change. The following cases from Global North countries examine water poverty issues and offers opportunities for reflecting on social policy’s role under the climate crisis.

Water poverty issues in Australia, Scotland, England and Wales

In this section we illustrate the types of issues affecting people’s access to safe and affordable water and the varied impacts of climate crisis on water poverty across the Global North, reflecting a variety of experiences in high-income countries. These profiles build on existing evidence, and previous and ongoing research of the authors, highlighting different dimensions of ‘water poverty’: access in Australia, vulnerability of supplies in Scotland, and affordability in England and Wales. Collectively, these profiles illustrate the multidimensionality of water poverty and varied intersections with climate change in countries within the Global North, underscoring the importance of definitions and policies reflecting this complexity.

Water access in remote communities in Australia

Despite its high income, developed country status with a history of 'Big Water' systems of water and sanitation (Sofoulis, 2006), Australia has consistent service gaps in delivering drinking water access and drinking water quality to regional and remote regions (Wyrwoll *et al.*, 2022). In 2015, 100 percent of Australia's residents were classified as having access to 'at least basic' sanitation, with 74 percent of population having access to 'safely managed' sanitation facilities (WHO and UNICEF, 2017). However, Australia fails to universally achieve its global disease targets related to WASH, and remote Aboriginal and Torres Strait Islander communities are particularly affected (see Hall *et al.*, 2017; Bailie *et al.*, 2010) mainly due to poor sanitation (Warren and Birrell, 2016). This compounds other health and social impacts that are associated with poor, unsatisfactory housing stocks, inadequate maintenance of existing infrastructure, and unreliable provision of sufficient quantity and quality of potable water, having perverse implications for children in remote communities (Australian Human Rights Commission, *n.d.*; McLean, 2007; Bailie *et al.*, 2010; McLean, 2011; Hall *et al.*, 2017). Since 2008, the 'Close the Gap' campaign has aimed to achieve health and life expectancy equality in Australia by 2030 (AHRC, *n.d.*), but has failed to meet many targets (Holland, 2018). There is an increasing recognition that wider structural factors need to be addressed to reach the agreed health and life expectancy targets within the Aboriginal and Torres Strait Islander communities (Hall *et al.*, 2017; Holland, 2018).

Water poverty in settler colonial Australia is more than just an individual or household issue in relation to access or supply, as sovereign Aboriginal and Torres Strait Islander nations are economically and culturally dispossessed from water systems within the heavily marketised system of water rights and use (Hartwig *et al.*, 2020; Water Services Association of Australia/Central Land Council, 2022). Native Title, until recently, also excluded freshwater and sea-water systems. At a community level, disease burdens from poorly constructed and maintained housing, water, and sanitation facilities (Warren and Birrell, 2016; WHO and UNICEF, 2017) sit alongside water supply and water quality breaches from agriculture, regional development, and toxic mining legacies (de Santolo, 2019). For countries with Indigenous and First Nations peoples, 'water poverty' is more than a situation that a singular individual or household can move through with support. Water poverty in settler colonial country contexts (and arguably European countries with Indigenous peoples) needs to include an understanding of intersections of water affordability, water poverty, and water accessibility, alongside deep recognition of the structural and legal changes needed to acknowledge and address Indigenous sovereignty over lands and waters.

Water-related inequalities are being further exacerbated by interconnecting crises of climate change, water scarcity, flooding impacts, water quality, and contamination, hindering progress to these health targets (Australian Human Rights Commission, 2008; Hall *et al.*, 2017). Australia's water security has already been impacted by climate change, with substantial regional variability between floods and droughts and water scarcity events (Steffen *et al.*, 2018). As well as impacting delivery of water and sanitation services, climate related events also contribute to increased incidences of water pollution either through pulling contaminants into drinking water in the case of flooding, or concentrating contaminants in drinking waters in the case of water scarcity. In addition to the human health impacts, this nexus between a changing climate and wider issues of

environmental change and pollution also substantially disrupt more than human-species health (plants, animals) and therefore customary relationships with lands and waters (WSAA/Central Land Council, 2022; Hartwig et al., 2020). Further, finding alternative drinking and sanitation water supply through privatised means (bottles, tanking) exacerbates existing income disparities between Indigenous and non-Indigenous people, which are larger still in remote communities (Australian Institute of Health and Welfare, 2021) where spending on food and beverages is more than double (60–68 percent more expensive—Ferguson et al., 2015).

Vulnerability of private water supplies in Scotland

In Scotland, most of the population derives their potable water via piped mains connection delivered by the public utility, Scottish Water. However, around 3.3 percent of the population (i.e. 185,850 people) are not connected to this system and instead rely on private water supplies (PWS) sourced by springs, boreholes or surface water (Drinking Water Quality Regulator for Scotland (DWQR), 2021). Connection to the public supply is not always possible, and when possible, charges levied by Scottish Water and contractors can be prohibitive (Scottish Water, n.d.; Citizens Advice Scotland (CAS), 2020a).

PWS are vulnerable to a range of quality and reliability risks, which are exacerbated as the climate crisis impacts the quantity, distribution and frequency of precipitation. As PWS are located mostly in rural areas (CAS, 2020a) and vital to the rural economy (Teedon et al., 2020), the vulnerability of PWS can mean a disadvantage to the wellbeing of rural people and communities (Ash, 2021).

PWS are subject to quality issues (e.g. the presence of chemicals, microorganisms and contaminants) that range from water contamination from agricultural run-off during high precipitation events, to silting following dry periods (CAS, 2020b; DWQR, 2021). National climate mitigation strategies, such as tree planting for carbon sequestration, can also impact on the quality of PWS, although the extent and duration of these impacts is still poorly understood (Forestry and Water Scotland, 2018). Whatever the drivers of poor quality, treatment at point of use is an important mitigation strategy. The costs associated with maintaining the system correctly to ensure quality compliance can be high for PWS users and owners (Teedon et al., 2020), reaching an average of £3,300 per year plus capital costs (CAS, 2020b). Grant mechanisms in place to help investing in PWS have been found to be inadequate (CAS, 2020b).

PWS in Scotland are also vulnerable to water scarcity, and estimates suggest that almost half of the PWS are in areas of high or very high risk (Rivington et al., 2020). These vulnerabilities are regional. The northeast of Scotland might be heavily impacted because of a drier climate and a higher density of PWS (Rivington et al., 2020), and areas that have not experienced water scarcity before and tend to have smaller water storage, may now be affected and be more vulnerable to short periods of dry weather (Scottish Environment Protection Agency (SEPA), 2020).

Much of the responsibility regarding awareness and response to water scarcity falls on individuals/households. However, many PWS users do not have contingency in place for when their supplies run out, making them dependent on public support (CAS, 2020a; Ash, 2021). For example, during the dry summer of 2018, over 500 PWS required assistance from Scottish Water and local authorities with the provision of bottled water paid by the Scottish Government (Holdsworth, 2019).

PWS are also vulnerable to extreme weather events that become more frequent under a changing climate, such as windstorms. For example, in November 2021, Storm Arwen left thousands of households in Scotland without running water as a consequence of power outages in a situation that lasted for a week in some cases (Rotik and Bhaskar, 2022; Scottish Government, 2022). This disruption affected particularly PWS users, who required electricity to power water pumps and water treatment. Coping strategies such as using back-up generators or even temporary relocation to hotels are costly, untenable options for some households (Valero *et al.*, 2022).

Water affordability in England and Wales

In England and Wales, access to safe and clean water is rarely compromised, with c.99 percent of households being connected to a mains-water supply, though changing climates and growing populations may increase access issues in the future. The affordability of water, however, varies between customer groups and circumstances, leading to some customers restricting their consumption in an attempt to manage cost, or accepting increased levels of debt and arrears with their water company. Therefore, when referring to water poverty in England and Wales, this article primarily concerns the customers' ability to pay their water and sewerage bill(s), not their ability to access safe and clean water (National Energy Action, 2019).

The Digital Economy Act (2017) defines an individual living in water poverty as 'a member of a household living on a lower income in a home which—(a) cannot be supplied with water at a reasonable cost, or (b) cannot be supplied with sewerage services at a reasonable cost'. The United Nations Development Programme suggests that water costs shouldn't exceed 3 percent of household income (United Nations, 2014). However, the water industry in England and Wales is yet to adopt a formal measure of water poverty, with many variations being utilised. The two most common measurements (bill-to-income ratios of 3 percent and 5 percent) indicate that approximately 4 million and 1.5 million households, respectively, are experiencing water poverty (CEPA, 2021; Bradshaw and Keung, 2021).

To protect households' access to this essential service, the *Water Industry Act* (1999) removed water undertakers' powers to disconnect domestic water supplies for non-payment (see Bakker, 2001; Drakeford, 1997 for early accounts), but resulted in water bills being considered as a non-priority debt. In the years that followed, domestic water debt rose to over £2.2 billion (Ofwat, 2015) from £705m in 1999 (Defra, 2012). This considerable year-on-year increase prompted the need for substantial interventions in affordability support, primarily through social tariffs.

Permitted under the *Flood and Water Management Act* (2010), social tariffs allow companies to design schemes 'to reduce charges for individuals who would have difficulty paying in full'. As these schemes are designed by individual companies based on the outcome of their 'willingness to pay' research, a 'postcode lottery' of support has developed, meaning support is based on location and not need (Cook, 2020). This was acknowledged in the Independent Review of Water Affordability Support (Consumer Council for Water (CCW), 2021) and work is underway to design a single nationwide scheme to address the issues of fairness.

The national fuel poverty charity, National Energy Action (NEA), is also working to address water poverty, recognising that households struggling, or at risk of struggling, to

pay for their water bills could ration their use of water to unsafe levels as often seen with households in fuel poverty (NEA, 2021b). They argue that while reducing bills during price controls will help those struggling to pay, ‘if a smaller reduction in bills in the short-term reduces the risk of higher bill spikes in the future due to water resource management, then [...] the long-term impact on both the affordability and accessibility of water could be improved’ (NEA, 2021a).

Discussion: Rethinking water poverty under climate crisis

The cases presented above illustrate that water poverty has multiple dimensions that are worthy of recognition, require urgent attention and are further amplified by climate change.

Addressing the lack of access to potable water should be a foremost social policy priority regarding water poverty. Lack of access has widespread and often long-lasting implications for impacted communities. Our selected country examples clearly highlight the access-related challenges and problems that the remote, off-the-grid, and low-income communities face; issues that are exacerbated by the climate crisis.

But in addressing water access challenges, it is important not to overlook water access issues that are also created by technology and infrastructure differences. For instance, the Scottish example illustrates that the smaller supply systems can be at greater risk of being impacted by water scarcity, which in turn, can severely affect those that rely on such systems, such as the indigenous Australian communities. The examples from Australia and Scotland illustrate unequal inter and intra-regional geographies of water poverty (e.g. Meehan et al., 2020) because, in addition to regional hydroclimatic variation, remote areas often face specific risks associated with small, independently managed systems.

Affordability of water tariffs is another important dimension of water poverty wherein the balance of market powers, the level of market intervention, and financial aid plays a critical role. Although the example from England-Wales highlights supportive strategies (e.g. social tariffs), punitive measures are still widespread. In the United States and India, for example, disconnection for non-payment still occurs in many states, meaning households cannot access mains water until the debt is cleared and a reconnection charge is paid (Jones and Moulton, 2016; Times of India, 2018).

At the same time, climate change adaptation policies pushing for water efficiency could have negative impacts on water affordability, particularly for the most vulnerable households. The European Commission has previously suggested that price could be a tool for improving water efficiency, arguing that ‘water-pricing policies must reflect financial, environmental and resource costs if they are to be effective in enhancing the sustainability of water resources’ (Hrovatin and Bailey, 2001, p. 14). While this approach would be reflective of supply and demand drivers, it raises concerns with those supporting households that are, or at risk of, struggling to pay for water bills, as it could lead to the rationing of water to unsafe levels. In the United States, examples of additional surcharges applied in drought areas show the disproportionate impact on low-income households, with some monthly bills increasing to over \$300 for low-income households. The build-up of water debt has extreme consequences, including evictions, arrest, and even children being housed with foster families (Jones and Moulton, 2016). In addition, current policy trends to increase the resilience of water systems and pursue climate change mitigation (e.g. decarbonisation targets) require a high level of investment in infrastructure that might

also trigger an increase in water tariffs (Organisation for Economic Co-operation and Development (OECD), 2016).

Affordability discussions are also intertwined with the characteristics of the water supply systems. Social movements against privatisation of water (e.g. Right2Water) highlight that public utilities provide water at lower prices (European Federation of Public Service Unions, 2021) and push for a shift to more public-oriented water provision (van den Berge *et al.*, 2022). Whether public or private, large provision systems take advantage of economies of scale and distribute costs among a large population. The running and maintenance of smaller systems might pose high or even unaffordable costs that could prevent adequate system maintenance (as seen in the Scottish example).

Vulnerabilities in accessing or affording clean water particularly impacts marginalised groups (e.g. aboriginal communities) or people at risk of social exclusion whose finances are constrained. This implies that understanding water poverty not only requires a knowledge of the context, but also other deprivations that have the potential of creating poverty traps for the communities. While water poverty can be seen as driven by poverty, accounting for its multiple dimensions and their intersections requires a shift that pays attention to the significance of access to affordable water supply for addressing other poverty manifestations and securing social inclusion (Pawar, 2014).

Climate change has immediate implications for the availability of water, including regions with historic water scarcity (e.g. India with about 18 percent of world's population, but only 4 percent of water resources). Climate change, however, also exposes new places and people to water scarcity (e.g. Scotland). Challenges of extreme weather events, from heat to wind and rainfall, compromise existing infrastructure to water access. While these are well-recognised and enduring challenges (e.g. OECD, 2016), climate change also introduces complex challenges and communities' vulnerability to water poverty might depend on the resilience of their water provision systems.

A climate change approach to water poverty must reflect people's diverse needs for water, which may face changes from overlapping crises (e.g. the important and highly apparent role of water in the beginning of the COVID-19 pandemic), and increasing needs for water with competing demands in certain situations (e.g. water for cooling in the context of extreme heat or active travel initiatives).

Conclusions

The workshops that prompted this article illustrated the range of water poverty-related challenges experienced by different communities across the world. Seeing this complexity, social policy approaches towards water poverty focusing exclusively on water affordability are insufficient. While water affordability appears as 'the most understudied dimension of household water insecurity' (Meehan *et al.*, 2020: 11), the overlapping and intersecting ways in which the climate crisis threatens access to water requires a more integrated approach to understanding water poverty that considers the following aspects: (i) pervasive feedback in essential areas of human wellbeing (e.g. physical and mental health, and housing and energy needs); (ii) intersectionality in terms of gender, age, race, citizenship, and other structural axes of disadvantage (e.g. disabilities, employment situation, education) that might have impacted historic and current access to water and participation in water governance; (iii) multi-scalar geographical dynamics (Global North-Global South; dry regions-water-rich regions; centre-peripheries; rural-urban) and local

impacts of climate change; and (iv) the impacts that different governance, management, and social practices of water provision (e.g. public vs private provision, 'big water' vs small systems) might have on securing the peoples' and communities' right to water.

Although some accessibility issues can be addressed through redistributive welfare strategies, the multidimensional nature of water poverty requires attention to the management of water both as a common natural resource, and as an essential service that underpins public health, economic activities, and population wellbeing. A potential avenue for doing so is to advance in the consolidation of the right to water within national and regional rights frameworks. This has been pioneered from places in the Global South (of the forty two Constitutions in the world that include the right to water, two-thirds are from Latin American or African countries (Elkins *et al.* 2023)), but it remains less enshrined in public policy frameworks in the Global North. In Europe, only Slovenia, Iceland and Hungary include the right to water in their Constitutions (Elkins *et al.* 2023). Even the European Union's first citizen's initiative, the European Commission Citizen's Initiative on the right to water, decided not to introduce the human right to water into EU legislation as such (Bieler 2017). Despite important advances over the last decade following the global recognition of the right to water, recognition which has highlighted struggles in the Global North (Sultana and Loftus 2019), formalising this right in policy frameworks could provide a platform that people vulnerable to water poverty can stand on to make claims to secure affordable access to safe water (Brinks *et al.* 2022). Approaching water as a human right implies thinking of water as a public good (Ballesterio 2019) and, on that basis, planning for its use and regulation under a changing landscape of use and needs that is being shaped by the climate crisis. Consolidation of the right to water requires both rethinking water provision policies through socioeconomic criteria of income and vulnerability, and through uses and needs of water (Pawar 2014).

For example, consideration needs to be given to indirect impacts from mitigation strategies and the preparedness to face emergencies. This requires working towards more resilient communities and organisations that are prepared to manage water supplies under uncertain threats. It also requires transforming systems adequately in the most efficient and economical way to provide affordable, stable, and fair access to clean water for all individuals and communities.

This article fills an important gap by focusing on the implications that climate change mitigation and adaptation strategies could have for people presently experiencing and are vulnerable to water poverty. Emphasis on continuity of service and resilience improperly acknowledges present disparities in access and connection, participation in decision-making, use/need, and ability to pay. Therefore, as important conversations advance regarding how to maintain water and sanitation services in the face of climate impacts, there is also a need to address underlying sources of inequality in access to water services and exposure to climate risks. Simultaneously, discussions about reducing water use, and increasing reuse, overlook the differentiated capacities and starting points of the homes and communities that are targeted for change. There are opportunities for climate change mitigation in the water sector—including transforming demand—however there is a need for greater nuance in conceptualising diverse lived experiences and potential (capacity) for change in different homes and communities.

A research agenda on water poverty should investigate the differentiated experiences of the climate crisis and the coping strategies implemented by people experiencing water poverty, across the world, including their ability to participate in climate change

mitigation and adaptation decision-making. Scholars of water poverty should remain attuned to the accounts emanating from the Global South. Further research should include evidence from the Global South cases, where critical scholarship is theorising the intersections between drivers and impacts of water poverty, as well as the lived experiences of the climate crisis, and are entangled with the cultural and political structures, axes of injustices, and oppression (Sultana, 2022). While the climate crisis alters supply conditions and creates new water demands vital for personal and community wellbeing, it also raises normative questions about the continued accessibility and affordability of water to sustain a variety of services. Consideration must also be given to the wider range of water practices and services, including the role of water in the landscape and the water-energy intersections and how these change over time.

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