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Water poverty in a 'Hydro Nation': Exploring distributional and recognitional water injustice in Scotland

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ABSTRACT

Scotland is celebrated as a 'Hydro Nation' with abundant water resources and some of the cheapest water in the UK. However, despite claims that the UK is meeting SDG 6.1 (universal access to safe, affordable drinking water), our analysis of twenty interviews with water and fuel poverty professionals found that many households across Scotland struggle to afford and access safe water. This situation was particularly evident for rural water users and BAME (Black and Minority Ethnic) communities. We argue that the current definition of water poverty in the UK is inadequate and obscures the perpetuation of water injustice.

1. Introduction

The impression that access to safe, affordable drinking water is assured in the Global North was recently exposed as a mythical fallacy by Meehan et al. (2020). They argue that water insecurity is a social condition contributing to poverty and is reproduced even in the world's most affluent and water-secure places. Doubts about the achievability of the UN Sustainable Development Goal target 6.1 ("By 2030, achieve universal and equitable access to safe and affordable drinking water for all" (UN, 2015)) have been expressed in the Global South (Nhamo et al., 2019), yet misleading portrayals of success in the Global North persist (OECD, 2018; UN, 2020; UNICEF & WHO, 2019).

In light of this dominant narrative, it is unsurprising that the water poverty literature has focused mainly on countries in the Global South, where water poverty is described as a condition in which households are unable to access safe drinking water or are precluded from accessing available water (Ahmed and Kranthi, 2018; Kallio et al., 2018; Shalamzari and Zhang, 2018). The concept was developed into an index of water poverty (Sullivan, 2002; Sullivan et al., 2003), which has been used in the evaluation of water poverty in the studies referenced above (Ahmed and Kranthi, 2018; Kallio et al., 2018; Shalamzari and Zhang, 2018). They consider water poverty in relation to cost, availability (including quality), access, capacity, use and environment. The concepts of water poverty put forth by Feitelson and Chenoweth (2002) and included in the Water Poverty Index (Sullivan et al., 2003) were developed for international comparisons and as a holistic policy tool

with worldwide application (Sullivan, 2002). Research in the global North reflects more limited conceptualisations of water poverty, primarily affordability (Sylvester et al., 2023; Yoon et al., 2021). However, much research in the global North explores water security (which speaks to availability and quality), access, capacity, use and environment (Barraqué, 2003; Hubbart and Gootman, 2021; Jackson and Langton, 2011; Kozicki and Baiyasi-Kozicki, 2019; Satur and Lindsay, 2020), but does not explicitly link this to water poverty.

Furthermore, the recognition of the right to safe drinking water by the UN General Assembly in 2010 was followed by a surge in research focused on the Global North (Sultana, 2018; Sultana and Loftus, 2020). For example, McDonald and Swyngedouw (2019) introduced several case studies from the Global North on campaigns for the remunicipalisation of drinking water, including Marseille (France), Barcelona (Spain) and Missoula (USA), which speaks to the inherently political nature of the failure to safeguard the right to water (Jepson, et al., 2020). Cooper (2014) explored the impact of the contamination of a municipal water source serving 300,000 West Virginia (USA) residents in 2014. Also, in 2014, tens of thousands of residents in Detroit, Michigan (USA) began to have their water disconnected under new austerity measures to cope with the city's economic collapse (Clark, 2020). Just miles away, in Flint, Michigan, in the same year, residents were exposed to high levels of lead and legionella in their drinking water following a cost-saving decision by public officials to change the water source to the polluted Flint River (Clark, 2020; Pauli, 2019).

These examples show that neither water safety nor affordability

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(requirements for achieving SDG 6.1) are a given in the Global North. While the term water poverty is not typically used in reference to these cases, they exhibit similar hallmarks to the cases described in the global South (Ahmed and Kranthi, 2018; Kallio et al., 2018; Shalamzari and Zhang, 2018) in that the affected populations are unable to access safe water or are precluded from accessing available water. Our understanding of what constitutes water poverty globally (North and South) is premised on this concept.

Focussing specifically on the UK, it is reported that SDG target 6.1 has already been met (UN, 2020). Within the UK, Scotland is celebrated as a 'Hydro Nation' (Scottish Government, 2012) with a reputation for abundant water resources and some of the cheapest water in the UK (Scottish Government, 2018a). The definition of water poverty used in Scotland and the UK at large uses an income threshold where a household is considered to be "in water poverty if it spends more than 3% of the household's disposable income on their combined water and sewerage bill(s)" (NEA, 2019; UKWIR, 2020). This use of an income threshold is much narrower than the concept of water poverty proposed for the Water Poverty Index (Feitelson and Chenoweth, 2002; Sullivan et al., 2003).

In Scotland, households pay a flat rate for water based on their council tax band (Scottish Water, 2023), and fewer than 500 households are metered (CXC, 2017). A water charge reduction scheme is available for eligible households, giving a maximum discount of 35% to those receiving a council tax reduction (Scottish Water, 2023). Research undertaken by the Fraser of Allander Institute (2019) suggests that using the 3% income threshold proposed by NEA (2019) and UKWIR (2020), 12% of households experience water poverty. This finding indicates that SDG target 6.1 is not being met in Scotland. We view this as an injustice.

The exclusive focus on affordability when using an income threshold overlooks the hardships many Scottish households face to access safe water (Teedon, et al., 2020). Research in a Scottish context (CAS, 2018; Fraser of Allander Institute, 2019; Walker, 2015) tends to use the terms 'affordability' and 'insecurity' rather than 'water poverty'. Therefore, it is no surprise that the latter is absent in literature from the Scottish Government (e.g., Scottish Government, 2019; Scottish Government, 2021). Amid the current 'cost of living crisis' (Francis-Devine, et al., 2022), it is even more important to consider a broader view of water poverty, as although the increase in water costs is relatively low in comparison to other utilities and household expenses (at approximately 31p per week (Scottish Water, 2022)), struggling households continue to face hardship.

In contrast to the water poverty literature, the fuel poverty literature does a better job of engaging with fuel poverty in the Global North (Bouzarovski and Petrova, 2015). In Scotland, a household is considered to suffer from fuel poverty if more than 10% of household income (after housing costs) is required to achieve a "healthy indoor environment" and where the household is income-poor (Bramley, et al., 2017, p. 15). This definition is focused mainly on the affordability of fuel, as is the case with water, but the reference to a healthy indoor environment also speaks to the experiential nature of fuel poverty. The term 'fuel poverty' is widely used in the Scottish Government literature, and there are ambitious legislative targets to eradicate fuel poverty by 2040 (Scottish Government, 2018b). In contrast, there is little recognition from the Scottish Government that safe water is not universally affordable or accessible in Scotland (Scottish Government, 2018a), and consequently, there are limited opportunities for struggling households to access support. As access to water and energy are vital for health and well-being (Bramley, et al., 2017; UN, 2010), the discrepancy between the government's approach to water poverty and fuel poverty provides a valuable reference for exploring opportunities to tackle water poverty in Scotland.

This paper contributes to the growing literature on the human right to water in the Global North. We have developed a framework for understanding water poverty and use it to examine how it manifests in Scotland. The research addresses the lack of knowledge about water

poverty in Scotland by drawing on the perceptions and experiences of water and fuel poverty practitioners. The objectives of the research were to (i) explore how water poverty is understood by water and fuel poverty professionals, (ii) document knowledge of how water poverty manifests in Scotland and (iii) investigate whether particular groups might be more likely to experience water poverty. These findings are brought into conversation with the justice literature to understand how to genuinely achieve SDG target 6.1 and water justice for all.

2. Perspectives on water justice: a framework for understanding water poverty

In order to understand and explore water poverty, we draw on social justice theory (Morris, 2002; Powers, 2019; Swenson, 1998) and associated concepts of justice (Bates, 2006; Fraser, 1995; Loftus, 2009; Patrick et al., 2014; Sen, 1995; Walker and Day, 2012), as well as vulnerability theory (Fineman, 2008; Kohn, 2014). These theories help interrogate and respond to the inequity and hardships of water poverty experienced by those across Scotland and provide a framework for documenting those to increase their visibility to policymakers.

2.1. Social justice theory

Social justice can be defined as 'the arrangement of society's major institutions and social practices to secure sufficient levels of well-being ... for each member of that society' (Powers, 2019, p557). This definition encompasses two 'paradigms of justice' (Fraser (1995, p.70)); distributional and recognitional, described below. Conventionally, procedural justice is considered a third form constitutive of social justice (Walker and Day, 2012). Procedural justice is concerned with decision-making processes, which ensure that no group or individual is systematically marginalised (Fraser, 1998). Although many of the experiences shared in Sections 5 and 6 suggest that procedural justice is also occurring in Scotland, this was not sufficiently explored or identified in this research to comment further.

John Rawls's theory of justice challenged what he viewed as economists' neglect of the fair distribution of goods in society (Swenson, 1998). They were concerned with redressing inequalities (Bates, 2006) and proposed that social goods should be distributed first to the least advantaged in society (Morris, 2002). Rawls' focus on distributional justice was foundational for Sen's (1985) capabilities approach to distributional justice, which argues that fair distribution is insufficient and that 'capabilities' to transform social goods into value must also be considered. Nussbaum (1999) later theorized ten central capabilities and argued that defining a minimum set of capabilities is needed to realise a just and valuable life. Thus, a distributional justice approach to poverty is concerned with ensuring all members of society have access to social goods and can derive value from those goods. This distributional justice approach to poverty is reflected in the sentiment of SDG 6.1 ('universal and equitable access to safe and affordable drinking water for all').

Fraser (1995) notes that distributional justice alone cannot achieve social justice and that social justice scholarship should be increasingly concerned with the "recognition of difference" (p. 68). They define recognitional injustice as the subjection "to patterns of interpretation and communication that are associated with another culture and are alien to one's own" (Fraser, 1995, p. 71). With respect to poverty, Fraser (1995) questions the prevalence of poverty among marginalised groups in society and proposes that the cultural norms embodied in the economy disadvantage those who do not conform to such norms. Thus, to achieve social justice, the needs of all in society must be recognised. While social justice theory helps us understand the inequalities in society, it is also necessary to recognise how they underpin structural and institutional practices. These, however, may be understood by turning to vulnerability theory, as done next.

2.2. Vulnerability theory

There is little agreement on what vulnerability means (Wrigley, 2015) or how it should be applied (Bracken-Roche, et al., 2017), with some authors describing it as vague and observing that the concept often relies on implicit assumptions (Schroeder and Gefenas, 2009). Some definitions include that it describes the future threat of poverty (Calvo and Dercon, 2005), a condition in which the object is prone to exploitation (Schroeder and Gefenas, 2009) or susceptibility to harm (Dilley and Boudreau, 2001); others have described it in terms of the lifetime dynamic between stress and resources (Spini, et al., 2017). Fineman's (2008) vulnerability theory argues that vulnerability is a human condition, and thus, the role of government is to provide support to all since no individual is immune to vulnerability and the experience of hardship. Kohn (2014) notes that vulnerability theory emerged as an alternative to social justice. Social justice theory, they assert, focuses on achieving formal equality and the "sameness of treatment" (p. 6). Fineman claims that social justice does not adequately address historical discrimination, although arguably Rawls' theory of justice, which is concerned with making reparations, goes beyond the so-called "sameness of treatment" (Bates, 2006; Morris, 2002).

Nevertheless, vulnerability theory provides an explicit view that injustice is not experienced by those with 'vulnerabilities' but perpetuated through a system of privilege and disadvantage. These privileges and disadvantages are not inherent within individuals but are socially mediated, and thus too, is the experience of injustice. This perspective is invaluable for exploring who experiences water poverty and why.

2.3. Water justice

Social justice and vulnerability theories provide a 'double lens' to explore water poverty in Scotland. First, social justice theory allows us to analyse the disparities in water access in the context of current water policy in Scotland, where not only is water not equally accessible by all, but where access can mean different things to different groups of people. Patrick (2014) explains that injustice arises when water resources are scarce or when access to water is restricted on some basis. This definition correlates well with the description of water poverty in the Global South (Ahmed and Kranthi, 2018; Kallio et al., 2018; Shalamzari and Zhang, 2018) and accounts for both distributional and recognitional aspects of social justice. Although there are multiple manifestations of distributional water justice, allocation based on equality, equity or needs (Patrick et al., 2014), Wutich et al. (2015) advocate for water distribution with a needs-based approach. This approach aligns well with recognitional water justice, which also acknowledges that different water users need different volumes of water to derive the same benefits of access (e. g., women for hygiene purposes (Sweetman and Medland, 2017) as captured in SDG 6.2 (UN, 2023)).

Secondly, vulnerability theory enables us to reframe the interpretation of vulnerability from something inherent within individuals to be a universal human condition (Fineman, 2008). Thus, discussions on justice described herein are premised on the understanding that where an individual is perceived to be vulnerable, perhaps because they have different needs, they are, in fact, disadvantaged by the current system, and when these needs are not met, there is injustice. Reflecting on Powers' (2019, p. 557) definition of social justice, which advocates for the well-being of "each member of that society", water justice similarly necessitates both recognitional and distributional justice. Water justice is, therefore, a normative goal, for which we adopt the following definition: the fair distribution of water underpinned by a recognition of diverse water needs (Jepson et al., 2020; Patrick, 2014; Wutich et al., 2015). On the other hand, water poverty is the experience of the events that occur when water justice fails to be realised, i.e., water poverty is the manifestation of water injustice.

This paper uses these theories to help explore how water poverty is conceptualised and experienced in practice. Water and fuel poverty

professionals were asked to share insights into how (water) poverty and vulnerability are understood and how, in their experience, these terms are used in policy and practical contexts. Zwarteven and Boelens (2014) draw attention to the need to challenge the dominance of water policies and stakeholders, arguing that they disadvantage the economically less powerful. This paper helps to address this challenge by providing a more holistic understanding of water poverty and doing so with an abiding concern for those in such poverty.

3. Methodology

This paper is based on twenty in-depth interviews with water and fuel poverty professionals in Scotland. The national water company, the economic regulator, the drinking water quality regulator, a consumer advice organization working on water and national and community organizations working on fuel poverty were contacted for interviews. Of approximately 30 emails sent, 20 interviews were undertaken by the lead author. Those who agreed to participate represented the national water company ($n = 4$), a consultant working for the water company ($n = 1$), a consumer support organization working on water ($n = 2$) (these participants were assigned the label 'Water Industry Professional'), professionals working in the fuel poverty sector operating at both a national scale ($n = 7$) (assigned label 'Fuel Poverty Professional'), and community organizations delivering fuel poverty alleviation programmes ($n = 5$) (assigned label 'Fuel Poverty Professional [in rural community organization/and representing BAME community organization]'), and an energy consultant ($n = 1$) (assigned label 'Energy Consultant'), in Scotland. Engagement with professionals with expert knowledge is vital for implementing research and for considering practical experience (Dana, 2016; Feuerstein et al., 2018; Ion et al., 2019; Jacobson et al., 2009; Tseng, 2012). Fuel poverty professionals were included in cognizance of the lack of acknowledgement of water poverty and the contrasting ambitious efforts to eradicate fuel poverty by the Scottish Government when both resources are vital for health and well-being (Bramley et al., 2017; UN, 2010). It was hoped that the expertise of fuel poverty professionals in tackling poverty would complement the perspectives of water professionals.

All interviews were conducted between May and June 2020 via telephone, Microsoft Teams or Skype. Interviews lasted approximately 1 h. The interviews focused on participants' conceptualizations of the terms 'poverty' and 'water poverty' (as distinct concepts), perceptions of household vulnerability, eligibility for financial (or other) support and perceptions of responsibility for tackling poverty. A complete list of the questions asked can be found in the supplementary material. The research was subject to ethical review at the University of Edinburgh.

The study adopted a snowball sampling approach, in which the primary recruitment strategy was to contact directors or high-level managers within Scottish organizations to ask for nominations of appropriate professionals within their organizations, who were then contacted and asked to participate ($n = 7$). These contacts often resulted in further recommendations for appropriate participants, and these were followed up, and more participants were recruited ($n = 5$). A smaller number of participants ($n = 3$) were recruited to supplement the sample using personal connections developed through the lead author's time working in the Scottish water industry. Finally, the Keep Scotland Beautiful map of climate-challenge-funded groups (KSB, 2020) was consulted, and all project coordinators who mentioned fuel poverty in their project description were contacted to recruit participants with experience in implementing fuel poverty programmes at a community scale ($n = 5$). Quotations in the subsequent sections are assigned an identifier which explains the professional experience of the participant (i.e., 'water professional' or 'fuel poverty professional'), but some participants requested full anonymity. Participants were recruited based on their professional expertise in the water industry or fuel poverty; however, several participants, particularly those who represented community organizations that delivered fuel poverty alleviation programmes

and represented certain stakeholders of interests, including rural water users and BAME (Black and Minority Ethnic) people.

Participants were found to be highly engaged in the process of consenting to participate and in the interpretation of the data produced, which may be a result of the timing of the data collection during the COVID-19 pandemic. Almost all participants requested a copy of the transcript, and more than half made contact afterwards to clarify and discuss their comments. It is unclear whether these participants would have been able to engage so conscientiously at another time. It may be that during lockdown, professionals in some sectors had fewer demands on their time and could more fully influence how their words were understood and conveyed through this research.

All interviews were audio recorded and transcribed before being analysed using reflexive thematic analysis (Braun and Clarke, 2006), which embraces the subjectivity of researchers in the analysis process (Braun and Clarke, 2023). An iterative coding process was begun, an exploratory process involving the identification of ideas or thoughts which may later be used to construct themes. Each transcript was read through in full, followed by an unlimited open coding process where between 23 and 70 codes were assigned to each transcript. The transcripts were reviewed again, and an axial coding process began (as described by Neuman, 2014), which focused on original codes and the development of ideas and themes. Thematic ‘trees’ were then sketched, similar to the approach used by Miles and Huberman (1994) for the most prominent themes, demonstrating the interlinkages between the codes and the themes across the ‘trees’. Consistent with our reflexive thematic analysis approach, we do not consider that codes and themes were present within the transcripts or that they ‘emerged’, but rather that we identified them based on the research objectives and our own subjective experiences (Braun and Clarke, 2023). Similarly, we did not aim for saturation, which we consider subjective (Braun and Clarke, 2019). The final phase of formal analysis involved the selection of data which illustrated the narrative from the themes and contextualization of the data in the social and water justice literature.

Before conducting this research, the lead author worked in the Scottish water industry for seven years. This experience included managing the water efficiency projects and the associated partnership with Home Energy Scotland, the organization responsible for delivering the Scottish Government’s fuel poverty programmes. Therefore, it is acknowledged that the approach to this research and decisions taken in the research design undoubtedly reflect, in part, many years of subjective observation and consideration of water poverty in Scotland.

4. A distributional justice perspective of (water) poverty

This section reflects first on distributional justice by exploring how water poverty is understood and how it manifests from the perspective of water and fuel poverty practitioners in Scotland. It demonstrates that water poverty is conceptualised in terms of the inability to access or afford water and subsequently argues that the technical definition (NEA, 2019; UKWIR, 2020), which focuses exclusively on affordability, is insufficient to capture the whole water poverty experience.

4.1. How is water poverty understood in Scotland?

Professionals tended to describe ‘poverty’ in terms of distributional justice, which, as previously described, is concerned with the fair distribution of social goods (Swenson, 1998) and capabilities (Nussbaum, 1999; Sen, 1983) in society. Conceptualizations of poverty included:

“... globally I think [it’s] more a resource challenge ... resource availability, but also infrastructure, a lack of infrastructure” [Water industry professional #1]. (1)

“If you think about poverty in a wider sense, it is not just an affordability issue, it’s an availability issue and a capacity issue, and you know it’s

more nuanced or more factors contribute to poverty, not just the lack of being able to pay for something” [Fuel poverty professional #1]. (2)

When discussing ‘water poverty’ specifically, some responses were consistent with the perception that water poverty is a challenge experienced solely in the Global South (Ahmed and Kranthi, 2018; Clark, 2020):

“I’d have thought about the Oxfam advert with everybody crowded around the same pump for water” [Fuel poverty professional in rural community organization #1]. (3)

“Obviously, you see videos of people in Africa that have to walk miles to get dirty water” [Energy consultant]. (4)

The above comments discuss the accessibility of water, whereas other participants considered water poverty in terms of affordability:

“For me, it would be around affordability and related to if customers can afford to pay their water charges” [Water industry professional #2]. (5)

“I always thought Scotland didn’t have a problem with water as a resource. And it’s the same with energy. I mean, we do have enough for everyone, it’s just that due to the income bias, not everyone is able to access it” [Fuel poverty professional #3]. (6)

The capabilities perspective posits that distributional justice requires all individuals to convert social goods to meaningful value (Sen, 1983). In this research, the response describing a lack of infrastructure as a form of poverty highlights that infrastructure may allow society to derive more value from water and, thus, more capability. Relatedly, although Sen (1981) intimates that capabilities are independent of income and wealth, arguably, the affordability-based understandings of poverty noted above affect a household’s ability to enjoy the benefits of water access. While it is illegal to disconnect domestic households based on non-payment of water charges (Water (Scotland) Act, 1980), the burden of the associated water bill can affect the value the household can obtain from this access. As in the case of energy, when a household cannot afford its energy bill:

“... there comes a point when they will turn the heating down and live in a cold place” [Water Industry Professional #3]. (7)

Based on the council tax band of property, the flat water rate in Scotland ensures that households have stable bills (Scottish Water, 2023). However, apart from eligible households being able to apply for a water charge reduction, households have no control or ability to reduce their bill and, therefore, must sacrifice other expenditures to pay their water bill. Several interviewees noted that households can reduce the costs associated with their water use by reducing their hot water use and, therefore, their energy bill. Walker (2015) reported the case of a householder in arrears for their water bill who self-disconnected from their gas supply to save money and consequently had no access to hot water.

Furthermore, two interviewees referenced the water charge reduction scheme. They argued that the discrepancy between the water charge reduction (up to 35%) and the council tax reduction (up to 100%) (Scottish Water, 2023) leads to many households not paying for their water bill because they are unaware that there is a difference in the level of discount. This problem is exacerbated by the payment process where water and council tax charges are taken in the same payment. A lack of clear communication about the reduction schemes and payment liability leads to households falling into water debt, which is also discussed by Walker (2015).

4.2. Experiencing water poverty

The conceptualizations of (water) poverty in the previous section demonstrate that poverty is understood to describe both the inability to access and the inability to afford a resource, which reflects the criteria of

access to safe and affordable water captured in SDG 6.1. In light of these perspectives, we argue that the technical definition adopted in the UK, which describes water poverty as experienced when more than 3% of household income is spent on water charges (NEA, 2019; UKWIR, 2020), fails to capture the broader poverty experience, particularly the issue of access and masks the unjust distribution of water.

In explaining water poverty, professionals tended to describe its experiential nature rather than the technical definition. This conception appears to diverge from knowledge in the energy sector, for which Stern (2014) reports that experts and laypersons understand energy in different ways, with language understandable by professionals often being inaccessible to laypersons. In this research we found that there was low awareness of water poverty, even among the professionals:

"No, it's not something I'd ever thought of really, which is ridiculous really because ... it is in a lot of ways related to you know, 90% of my work" [Fuel poverty professional #1]. (8)

"It's not really something that I do know much about ... I'm not really aware" [Water industry professional #1]. (9)

In one interview, a participant recognised that they had experienced difficulties accessing safe water when they had to boil all their water for consumption because of a poorly managed private water supply. They commented:

"In retrospect, that must tick a box for water poverty" [Fuel poverty professional in rural community organization #1]. (10)

This comment illustrates that water poverty is not intuitively recognised even for professionals who work on poverty alleviation. Discounting experiences besides unaffordability from the water poverty definition somewhat trivializes unequal access to safe water. Interestingly, this participant's choice of words indicates that poverty experiences are perceived to "tick a box", which implies that formal poverty definitions do not account for the nuances of lived experience, a notion discussed by others in the poverty literature (see for example Stewart and Roberts, 2016).

Professionals in this research consistently described an experiential perception of water poverty. In addition to the comments in section 4.1 implying that water poverty is a condition of the Global South when discussing water poverty in Scotland, participants explained:

"it's a way to describe people that are vulnerable and struggle to pay their water bills and to be supplied with water" [Anonymous]. (11)

"I think water poverty is the [in]ability of the household to pay for a public good that is necessary for every human being. However, because it's a public good, for this household that cannot afford that, this should be a call from the state to enjoy the good without having to pay because it's something that every single household should have" [Water industry professional #4]. (12)

"I think we forget that we're in this global water system, and I think that's where water poverty is important, but it's really to feel it and see it when we have an abundance of water here" [Fuel poverty professional and representative of BAME Community #1]. (13)

The first two quotes centre on the experience of water poverty relating to financial difficulties, but they also convey a sense of injustice. The first uses the terms 'vulnerable' and 'struggle', which implies that water poverty is not only about affordability but is also associated with hardship. The second quote emphasizes the universality of water needs and expresses the opinion that water consumption should not cause hardship and that the government is responsible for supporting struggling households. The final quote explains that water poverty is a global issue, again emphasizing the universality of water needs. This participant also introduces the sensorial experience of water poverty.

Wallenborn and Wilhite (2014) argue that in the case of energy, experiences and interactions with energy through our environments are

embodied and affect subsequent interactions and decisions about consumption. We found evidence that water poverty can be similarly embodied for households on private supplies and affect perceptions of normality. After explaining that they only had access to a poorly maintained private water supply, a participant commented:

"We just drank tea all the time ... but we now have a mains water supply that's drinkable, so we drink a lot more water than we used to" [Fuel poverty professional in rural community organization #1]. (14)

This comment demonstrates that having to boil water before drinking changed the participant's behaviour and highlights that not having access to a safe water source was normalized and overcome by 'just' drinking tea.

Therefore, water poverty is not primarily perceived in monetary terms. Even participants who used the technical definition in their professional work explained water poverty in terms of experience and framed it as an injustice. Reflecting on the participants who identified that they had "tick[ed] a box" for water poverty, it can be argued that by not accounting for these experiential perceptions, many of the impacts and injustices of water poverty will continue to be misunderstood and unrecognized. Thus, the current water poverty definition embodies and perpetuates the distributional and recognitional injustice experienced by households across Scotland (Teedon et al., 2020).

5. A recognitional justice perspective of water poverty

Until now, we have illustrated that water poverty in Scotland is conceptualised mainly as a matter of distribution. Individuals were perceived to experience water poverty if they lacked water access or the means to pay for water. However, the omission of experiential elements from the technical understanding of water poverty highlights the issue of non-recognition.

As discussed above, distributional justice concerns the fair distribution of social goods and capabilities (Nussbaum, 1995; Sen, 1983; Swenson, 1998) and accounts for past discrimination and inequalities (Bates, 2006). However, achieving fair distribution supposes that the needs of all in society are known and recognised. Recognitional justice is concerned with the failure to account for needs that arise from different circumstances and cultures (Fraser, 1995) and as Schweiger (2019, p.12) notes: "Recognition is not a resource that can simply be distributed but arises from the interaction of people who recognise each other". Given this, two groups (rural water users and households supported by BAME community organizations) were identified who were perceived to experience water injustices. We argue that injustices experienced and identified by rural water users and BAME communities manifest as unequal distribution of resources and support, which is a consequence of the failure of industry and government to recognise the experiences and needs of these groups.

5.1. Water (in)justice for rural water users

Teedon et al. (2020) report that 3% of Scottish households do not have access to mains water and rely on a private water source, primarily affecting rural households. However, Scottish Water still has a duty to support those who are not connected to mains water, as outlined in the Water Industry (Scotland) Act, 2002, which stipulates that Scottish Water must have particular regard for persons who "... are ordinarily resident in a rural or remote part of Scotland". Water poverty, as experienced by rural water users, was frequently discussed by professionals. A rural participant described some of the challenges they faced:

"The responsibility for making the water drinkable falls on the individual" [Fuel poverty professional and representative of rural community organization #1]. (15)

Referring to a nearby village that had recently connected to mains water, the participant continued:

“One house decided to stay on a private supply for some reason. I don’t know why you’d want to do that!” (16)

They explained that connecting to mains water was costly and that cost falls on the individual. Therefore, the responsibility for ensuring their water was safe to drink presented an additional burden, which is inherently unjust. Therefore, this participant’s experience demonstrates that achieving SDG target 6.1, which aspires to achieve universal access to safe, affordable drinking water, is far from guaranteed in Scotland. In contrast, an industry participant described rural households on private supplies as very fortunate because they do not have to pay a water bill. This view demonstrates that the industry participants did not adequately recognise the experiences of rural water users and again exposed the gap between formal and experiential perceptions.

Furthermore, the portrayal of Scotland as a wet country and a so-called ‘Hydro Nation’ (Scottish Government, 2012) implies that there is enough water for everyone. However, a participant noted that although there was sufficient water, they were not able to access it:

“[It’s] not generally a dry place ... where we lived it would probably have been three miles to run a pipe to the mains ... almost certainly not worth it [for the landlord to pay for connection]” [Fuel poverty professional and representative of rural community organization #1]. (17)

In the case of this participant, while there was enough safe water three miles away, they were precluded from accessing it. Therefore, access to treated drinking water was not equally distributed. This situation is also described by Mehta (2014), who discusses ‘volumetric per capita’ considerations of water access and argues that such conceptualizations are insufficient to ensure equitable allocation. Furthermore, this participant was not only disadvantaged by living rurally but also by being a tenant and having limited power to improve their access, which reinforces the importance of recognising the different needs and circumstances of groups as a prerequisite for achieving distributional justice.

In the Global South, some rural communities rely on surface water when they cannot afford water from other higher-quality sources (e.g., Mehta, 2014). The experience of water poverty is not confined to the Global South; it is evidenced by one participant in this research who recalled that they had witnessed householders in Scotland taking water from a stream near their homes and filtering it through surgical stockings. These insights highlight that rural water users face specific water challenges that need to be directly considered to enable just access to clean water and that it is inaccurate to claim that all of Scotland’s population has access to safe water (SDG Network Scotland, 2020)

5.2. Water (in)justice for households supported by BAME community organizations

As the focus in the UK has been on the affordability component of water poverty (NEA, 2019; UKWIR, 2020), access to support and advice for financial hardship must also be considered. When industry professionals discussed the support available to so-called ‘vulnerable’ customers, the language line (a language interpretation and translation service) was highlighted as an example. However, professionals from BAME organizations specifically identified the language interpretation services as an example of insufficient and tokenistic support:

“They were saying we have a language line, so we’re engaging with ethnic minorities” [Fuel poverty professional and representative of BAME community organization #2]. (18)

The participant explained that national organizations simply providing an interpreter phone line does not equate to equitable access to support (or distributive justice). They explained that BAME community organizations signpost and support BAME individuals for whom English is not a first language to use the language line. Simply providing the interpreter phone line fails to recognize the systemic

barriers that exclude BAME communities from accessing support in the first place. Thus, industry perceptions that interpreter services can substitute culturally sensitive and specific engagement is a matter of misrecognition (Schweiger, 2019; Fraser, 1995).

Another participant expressed a need for intermediary BAME community organizations:

“There is a recognition that although there [are] established services, they perhaps miss out a tranche of the population, there [are] linguistic and cultural barriers and also confidence barriers” [Fuel poverty professional and representative of BAME community organization #2]. (19)

If these organizations were not available, it was believed that:

“So many communities would be so excluded from everything” [Fuel poverty professional and representative of BAME community organization #1]. (20)

This participant acknowledged that BAME communities are often characterized as ‘hard-to-reach’ but framing the communities as ‘excluded’ rather than ‘hard-to-reach’ shifts the perception that the injustice arises because of the individual’s identity to injustice as a product of the system. McCauley et al. (2013) report a similar oversight in the energy sector where the needs of older people are not accounted for, which increases their risk of experiencing fuel poverty. These examples support Fineman’s (2008) vulnerability theory, which describes vulnerability as a universal human condition, and we argue that the exclusion of BAME communities from established support services is the consequence of a failure to appreciate the needs of a minority group.

An example of the importance of recognising different needs across water users in Scotland is the special relationship that some in the BAME community have with water. A participant commented:

“A lot of people see water as being very sacred and spiritual from a faith point of view” [Fuel poverty professional and representative of BAME community organization participant #1]. (21)

Water justice accounts for these considerations, as water plays different roles and has different spiritual significance for people (Mehta, 2014).

This perspective is relevant to understanding water poverty as the participant explained that, as an example, Muslims in Scotland require more water than other faith groups to partake in the social and ritualistic norms of religious life:

“They have a washing ritual, so water usage is high” [Fuel poverty professional and representative of BAME community organization #1]. (22)

The participant quoted above explained that water used in mosques and other non-domestic premises, including workplaces, is metered in Scotland and unless they have a charitable exemption, the higher water use comes at a higher cost. This effect works against justice, as Sen (1983) explains that different people require different resource levels to meet core needs. That Muslims in Scotland (1.45% of the population (Elshayyal, 2011)) may face higher charges and are the only faith group with a poverty prevalence greater than 20%, at 41% (Scottish Government, 2018c), indicates a failure to recognise the different needs of Muslims to practice their faith in Scotland and undermines the principles of distributional justice (Swenson, 1998; Sen, 1983).

Therefore, recognising diverse water needs is an imperative precursor to distributional justice and, ultimately, water justice. The additional burden on rural water users to make drinking water safe, the necessity for BAME community organizations to support their service users in obtaining assistance, and the different water needs of different groups, which are not exhaustively explored here, demonstrate that this recognition is not currently enshrined in the Scottish water industry.

6. Vulnerability to water poverty

As discussed in Section 2.2, vulnerability has various definitions in the literature (Bracken-Roche et al., 2017; Calvo and Dercon, 2005; Dilley and Boudreau, 2001; Schroeder and Gerenas, 2009; Spini et al., 2017; Wrigley, 2015). Similarly, the term ‘vulnerable’ was used and interpreted in various ways by the professionals participating in this research and by the researcher. It was broadly used as a label for individuals who were seen to require more support to access services, including water and associated administrative assistance, because of their identities or circumstances.

Participants themselves acknowledged that the term ‘vulnerable’ is subjective and sensitive:

“A lot of people might fall into a vulnerable category, but they don’t want to be defined as being vulnerable” [Water industry professional #5]. (23)

When discussing vulnerability, two groups frequently conceptualised as vulnerable by industry professionals were individuals living in rural areas (as discussed in section 5.1):

“Rural properties that are off-grid are at greater risk of fuel poverty” [Fuel poverty professional #1]. (24)

And those for whom English is not a first language (as discussed in section 5.2):

“We offer foreign language interpreters” [Water industry professional #5]. (25)

Coincidentally, three participants in this research lived rurally and identified as being at greater risk, and two worked for BAME community organizations (and self-identified as BAME themselves) and referred to language barriers in their communities. Interestingly, these professionals used the terms ‘vulnerable’ or ‘vulnerability’ noticeably less often than the industry professionals. When asked about eligibility for support and vulnerability, industry professionals mirrored this language and discussed the challenges of reaching and providing services to rural water users and those for whom English is not a first language. However, the rural water users and BAME professionals responded to the vulnerability terminology with discussions of self-sufficiency and exclusion (for example, describing entrepreneurial ventures to better cope with financial uncertainty and exclusion from funding criteria) and infrequently used the term vulnerable in response. While these professionals did not explicitly disidentify as vulnerable, the responses implied that they did not perceive themselves to be so, despite the hardship they described, and is a promising avenue for further study.

The difference in language used between the industry professionals and the professionals from community organizations again highlights the gap between formal and experiential definitions and perceptions. The conceptualization of vulnerability by industry professionals failed to recognise that the hardships faced by rural water users and those for whom English is not a first language (in this example) are not inherent to these identified traits and are instead borne out of systemic disadvantage. This perspective resonates with Fineman’s (2008) vulnerability theory, which advocates for a shift away from identity-based conceptualizations of vulnerability and towards understanding that injustice is propagated through a system of privilege and disadvantage.

Our focus on vulnerability here has focussed on the groups identified in this research who are more likely to face uneven barriers and burdens associated with accessing water. However, conceptually, the Water Poverty Index offers valuable points for further consideration of who and what might be vulnerable to water poverty by focussing on availability, access, capacity, use and environment (Sullivan, 2002). The vulnerability explored in this section has focussed mainly on capacity, availability and access. However, other research exploring environmental water needs demonstrates that responding to and safeguarding water access to humans may cause harm to the environment (Sanya, 2020; Falkenmark, 2013). This link between the vulnerability of humans

and nature highlights the importance of taking a holistic approach to understanding water poverty, as we advocate for here.

7. Recommendations

Based on the findings from this research, and supported by the broader literature, we offer several recommendations for 1) the Scottish Government and the Scottish water industry at large, and 2) recommendations for future research addressing both the limitations of this study (as outlined next) and interesting future research avenues that developed through this study.

7.1. Limitations of study

The main limitation of this study was that few of those interviewed had lived experience of water poverty. The depth of understanding gained from those who shared their lived experiences suggests there is much more to uncover.

Relatedly, our findings are limited by the groups with which we spoke. We incidentally found that rural water users and those supported by BAME community organizations may be more likely to face hardship associated with their water use, but there are likely many other groups who face additional barriers and burdens that were not raised in these interviews (e.g., women, as has been discussed elsewhere (Sweetman and Medland, 2017)).

Furthermore, we did not capture insights from broader water industry professionals, including regulators and government workers. These individuals would undoubtedly have knowledge relevant to understanding why water poverty is not acknowledged in Scotland and how it might be targeted and alleviated, which would add value to this discussion.

7.2. Recommendations for government and water industry

Previous research (Fraser of Allander Institute, 2019) and the findings presented here prove that water is not affordable or accessible for all in Scotland. Thus, we urge the Scottish Government and the water industry to recognise that water poverty exists in Scotland. Looking ahead, we suggest that access to essential services is considered holistically, rather than focussing on individual services alone. In the meantime, we propose that they adopt a similar approach to that taken for fuel poverty and consider both the affordability and experiential implications of living in water poverty. This approach supports the development of strategies that alleviate hardship and achieve more just water provision worthy of a ‘Hydro Nation’. If the recommendations suggested below are implemented, the distributional and recognitional injustices relating to water access in Scotland will begin to reduce.

First, relating to the affordability component of water poverty, we recognise that the way water payment is administrated in Scotland makes it challenging to implement change. The recent increase in water charge reduction to 35% (CAS, 2020) was a step in the right direction. Nevertheless, participants in this research reported the discrepancy between the council tax and water charge reductions as confusing, and it was believed to lead households to fall into water debt. In the long-term, we propose that the discount offered is revisited, but in the short-term, we recommend that householders’ liability to pay their water charges (even if they receive a 100% council tax reduction) is better communicated to those affected.

Specifically for rural water users, we have shown that households on private water supplies face additional burdens to ensure their water is safe to drink. We recognise that the water company is not obligated to connect a household to mains water if it is cost-prohibitive. However, if the application is rejected, we recommend that additional support is provided to support households to improve the standard of their existing supply to an adequate level and is not limited to the nominal £800 available through local authorities (MyGov, 2022).

In the research presented here, a participant noted that they were powerless to improve their water quality because they were tenants. We suggest that landlords should be obligated to provide a safe drinking water supply, even if they are on a Type B supply (which is not subject to statutory water quality monitoring) and that tenants should be made aware of their rights and supported to pursue recompense when their rights are breached.

We have discussed the inadequacy of an interpreter phone service (language line) to support non-native English speakers who may face uneven barriers to accessing support. We recommend that the government and water industry, more broadly, proactively engage with community organizations (including those involved in this research who support BAME communities) to ensure that engagement is not tokenistic and that different groups of consumers with different needs are recognised and able to access support when needed.

7.3. Recommendations for future research

An essential first step for future research is to explore the lived realities of water poverty with residents of Scotland. By specifically engaging with residents with water poverty experience, a deeper appreciation of the nature of hardship may be realised and may inform possible solutions.

We also recommend that future research engages with a broader group of professionals, including policymakers and economic and drinking water quality regulators. We also recommend that future research engages with professionals involved in the localised delivery of water services to understand the logistical challenges of overcoming uneven water access. As well as the water professionals, engaging with poverty NGOs to contextualise potential strategies for alleviating water poverty in more comprehensive poverty alleviation programmes would be valuable.

Finally, in Section 2, we mentioned the third tenet of social justice theory – procedural justice – but did not elaborate further in this paper. Experiences shared by participants indicated that procedural injustices are likely also occurring in Scotland, and it would be valuable for further research to investigate this and evaluate the impact this might have on the incidence of water poverty.

8. Conclusion

Sultana and Loftus (2020) note that since the UN adopted a resolution recognising water as a human right in 2010, literature on water justice has increasingly related to the Global North, and this paper contributes to that trend. As discussed earlier, we argue that if the concept of water poverty as described by Feitelson and Chenoweth (2002) and Sullivan (2002), Sullivan et al. (2003), is applied to the global North as well as the global South, many of the recent cases described in West Virginia (Cooper, 2014), Marseille, Barcelona and Missoula (McDonald and Swynedegouw, 2019) and Detroit and Flint (Clark, 2020) may be understood as manifestations of water poverty. We have applied these principles to this study and find that water poverty also manifests in Scotland. We found that water poverty manifests as the inability to afford safe drinking water and unequal barriers and burdens to access it. Thus, water poverty is not merely a financial state but something that is experienced.

As far as we know, our study is the first qualitative study to examine water poverty in Scotland explicitly. It is also among the few studies exploring water poverty in the global North (Sylvester et al., 2023; Yoon et al., 2021). Although other research discusses the inability or preclusion of citizens from accessing safe water, framing this as water poverty (as we have done) enables a holistic view of the factors which interact to undermine endeavours to achieve SDG 6.1 and the right to water. We have developed a framework for exploring water poverty in the global North or South, which connects water poverty to water justice and may guide others undertaking research in this area.

Although it is reported that the UK has already achieved SDG target 6.1, we have shown that this is not the case in Scotland. We propose that the current technical definition of water poverty is inadequate and obscures the perpetuation of water injustice. Finally, we argue that the lack of acknowledgement that water poverty exists in Scotland undermines the achievement of universal access to safe and affordable drinking water.

Author contributions

Heather Anderson: Conceptualization, data curation, formal analysis, roles/writing – original draft, writing – review and editing, Sam Staddon: Conceptualization, supervision, writing – review and editing, Heather Price: Funding acquisition, writing – review and editing.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The authors do not have permission to share data.

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Appendix A. Supplementary data

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Glossary

BAME: Black and Minority Ethnic