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Why a feminist ethics of care and socio-ecological justice lens matter for global, interdisciplinary research on water security

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In this conceptual analysis, we set out some of the negotiations and tensions that emerge when we try to build a shared understanding of water (in)security through the dual lenses of a feminist ethics of care and socio-ecological justice. We further reflect on how these theoretical lenses shape our work in practice—how do we actualise them in an international, interdisciplinary partnership? We actively seek to engage all our colleagues in how we understand the function of power and inequality in relation to the distribution of water resources and the ways in which intersectional inequalities shape access to, and availability of, water. We conclude that our international partnership will only add value to our understanding of water (in)security if we are able to identify not just how intersectional inequalities circumscribe differential access to water itself in a range of diverse contexts, but the ways socio-ecological justice and a feminist ethics of care are understood and in turn shape how we work together to achieve greater water security across diverse contexts.

KEYWORDS

water security, care, ethics, intersectionality, power, SDG6, justice

Introduction

Water is the most basic of needs, without which almost no life at any scale is able to survive, let alone thrive. Tackling a challenge as complex and elemental, both spiritually and literally, as a lack of water, requires the consideration and coordination of a wide range of actors operating in and through diverse contexts and scales. Sustainable Development Goal (SDG) 6 sets out a global-level commitment to "Ensure availability and sustainable management of water and sanitation for all", capturing not just the scale of the challenge but also the cross-cutting nature of water stress. SDG6 is explicit that having access to clean

and safe water is affected by climate change. The knock-on effects of reduced access to (potable) water and associated infrastructure linked to sanitation and hygiene are in turn fuelling socio-economic inequalities.[1] The SDG 6 Synthesis Report 2018[2] on Water and Sanitation reinforced that achieving SDG 6 is essential for progress on all other SDGs.

Issues of water security overlap with structural inequalities based on power (Myrttinen et al., 2018, p. 3). Lived experiences of access, use, control, and management of water are determined by existing gendered structures and extend to other aspects of identity such as class, race, indigeneity, religion, political and civil agency (Leder et al., 2017; Truelove, 2019; Sultana, 2020). Thus, through an intersectionality lens, a gendered context-specific analysis combines with other multiple axes of shifting social power (Fletcher, 2018), with implications for how we understand, and tackle, water (in)security in a range of diverse contexts.

It is with this understanding that we came together on an international, interdisciplinary project designed to better address water (in)security. Funded in 2018, the Water Security and Sustainable Development Hub is a five-year project committed to "Adopting a systems approach to dealing with water security at a global scale", supported via the UK Research and Innovation's (UKRI) Global Challenges Research Fund (GCRF).[3] Explicit in this understanding is the need for inter/transdisciplinarity, bringing science and social science into dialogue to solve global challenges around water. That social sciences must be "placed on an equal footing with the natural sciences and engineering" (Martin-Ortega, 2023, p. 2) may increasingly be accepted as the theoretical norm, but what this looks like in practice in the context of international partnerships is less clear. The Hub brings engineers, risk modelers, and climate scientists into dialogue with social scientists specializing in the governance, politics, and ethics of water across Colombia, Ethiopia, India, Malaysia, and the UK. Our challenge, as a Hub, is to bring this dialogue to life and reflect honestly on the opportunities and challenges it presents for how we understand, and tackle, water (in)security.

In this conceptual analysis piece, we set out some of the negotiations and tensions that emerge when we try to build a shared understanding of water (in)security through the dual lenses of a feminist ethics of care and socio-ecological justice. We further reflect on how these theoretical lenses shape our work in practice—how do we actualise them in an international, interdisciplinary partnership? Our analysis begins with a brief overview of the Hub itself, situating our approach to the "gender" work demanded by our funders. We then move on to consider what we mean by bringing a feminist ethics of care lens (that has embedded within it an intersectional lens) into dialogue with a socio-ecological justice lens, allowing for more situated and contextual analyses of water security challenges. Next, we consider how these theoretical lenses become part of the design and delivery of our research with a focus on three key concerns: (1) the tendency to see both water (in)security and gender as technical rather than social and political

challenges; (2) contestations over how to actualise theoretical commitments to gender and ecological justice in practice; and, (3) the extent to which diverse leadership might support a greater focus on "care" in our partnership. We actively seek to engage all our colleagues in how we understand the function of power and inequality in relation to the distribution of water resources and the ways in which intersectional inequalities shape access to, and availability of, water. We conclude that our international partnership will only add value to our understanding of water (in)security if we are able to identify the value of using the situated, relational and intersectional lenses afforded by combining socio-ecological justice and a feminist ethics of care to collectively achieving greater water security in the diverse contexts in which we are working.

Collaboration and partnerships in the Hub

The Hub was initially structured around six workstreams (WS): WS1—"Collaboratories" (Collaborative Laboratories), vehicles for place-based research; WS2—"Enabling Tools" to support systems integration; WS3 to WS5—challenge-led research on "Risks" (WS3), "Values" (WS4), and "Governance" (WS5); and WS6—"Monitoring, Evaluation and Learning" (MEL). Our Inception Workshop (February 2019) was held to reaffirm our international partnerships, identify Inception Phase activities, and confirm our Theory of Change. Gender (as a theoretical concept and thematic research area) was frequently mentioned—primarily in relation to workstreams 4 and 5—and there was significant commitment and recognition of the need to move beyond (for example) simply generating gender-disaggregated data and "tick box" exercises. Funder feedback on our Inception Report (September 2019) required us to add gender-disaggregated data to our logframe.

Our first Hub Assembly (September 2019) sought to refresh partnerships and facilitate new connections [particularly among our Early Career Researchers (ECRs)], to finalize 12-month workstream plans, and outline plans to the mid-term of the project. During this Assembly, there was broad (albeit not total) understanding that central to achieving the aims of the Hub was the effective positioning of gender research across the workstreams. At a very minimum, this took the form of incorporating gender-related challenges in relation to workstream priorities, a systematization of our approach across the Hub, and the stated aim of delivering outputs related to gender and the wider theme of intersectionality and water (in)security.

Our second Hub Assembly (February 2020) aimed to continue driving forward our partnerships, finalize our workstream plans to the mid-term of the project, and introduce our cross-cutting themes. It was at this Assembly that gender was affirmed as central to the Hub's work, cross-cutting all workstreams and potential outcomes. This was reframed as work on Power, Rights and Intersectionality (PRInt) in issues of water (in)security, which would incorporate researchers from all countries and workstreams. PRInt was launched at a workshop held following the Assembly with the explicit recognition that gender is one of a number of characteristics that intersect to create inequalities in access to clean water and sanitation. Keen to encourage proactive and

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voluntary engagement, attendance at the workshop was self-selected. Inevitably, there was a strong social science contingent, two organizations lacked representation, and one institution was only represented by women researchers. The gender split of attendees at this "gender day" was roughly 50:50, suggesting that it is not only women with an interest in these issues. Nonetheless, a self-selecting separate day to discuss gender, power and inequality has a silo-ing effect that makes it harder to ensure that gender and intersectionality are taken up as Hub-wide priorities that influence the activities of colleagues across Collaboratories.

At this point, where this intersectional research could naturally have been driven forward (following the recruitment of several early-mid career researchers to help reframe our focus), COVID-19 hit, delaying its implementation (as well as that of other emerging cross-cutting themes). As a more enhanced research theme than initially conceived, the intersectionality work also required additional resourcing, which was jeopardized by the extensive Overseas Development Assistance (ODA) cuts by the UK's Foreign, Commonwealth & Development Office (FCDO) in March 2021. The cuts saw the Hub lose approximately 30% of our total budget and the loss of our flexible funds, as well as significant loss of staff time which would have been used to support the development of this research.

With shifting priorities and resources, the Hub had to pivot to focus on areas where intersectionality was already incorporated. Our partners in Colombia were fundamental in pushing the Hub to work through these new structural constraints, establishing collaborations with the University of Oxford (to incorporate feminist ethics in the Hub's approach to socio-ecological justice) and the Water and Land Resource Center, Addis Ababa University (to embed socio-ecological justice methodologies in assessing climate- and health-related water risks). Through these partnerships, we have identified gaps, audited our research, and developed the dual lenses of a feminist ethics of care coupled with socio-ecological justice.

A feminist ethics of care and socio-ecological justice: theorizing our approach to water security

In order to shed light on the nature of the theoretical and practical dialogues within our global partnership, here we establish how we understand feminist ethics of care and how this can be complimented by the nuanced concept of socio-ecological justice, reflecting on what they might offer to our attempts to understand and address the multidimensional nature of water (in)security. We then present how an intersectional lens toward these concepts is an appropriate approach to capture their complexities.

So, what is a feminist ethics of care and why might it affect how we approach questions of water (in)security? First, let us consider "care". Using Tronto's (2013, p. 19) expansive definition of care, "care" refers to all the ways we (that is, humanity as a collective) "maintain, continue, and repair our "world" so that we can live in it as well as possible. That world includes our bodies and our environments, all of which we seek to interweave in a complex life-sustaining web". Second, let us consider "feminist ethics".

Feminist ethics offers a starting point by identifying the ways in which existing gender inequalities and divisions of labor lead to the presumption that women's subordination is natural (Jaggar, 1991). Recognizing that individual actions occur within the context of broader social practices which are specific to time, space and context, feminist ethics also seeks to emphasize practical recourses for change. This then creates ethical responsibilities; feminist ethics place strong emphasis on the possibilities for political change in addition to theory with a focus beyond the political realm (Jaggar, 1991). Feminist ethics also aims to account for the experiences of all people; it does not suppose that the experiences of one group, or a few groups, will represent everyone. Nor does it presume that these experiences exist in a vacuum; instead, a feminist ethics approach reveals hidden unequal power dynamics in our social and political relations, challenging the tendency to naturalize the gender division of labor.

One potential implication of bringing together "care" with a feminist ethics lens is that collectively we as researchers working across diverse contexts have ethical responsibilities not just to ourselves but also to each other within and beyond our partnership. So how do we then conceptualize these ethical responsibilities? Ethics frame our theories within political economic thought and development. They play a role in society's institutions. They frame how development, and the research, projects and interventions that underpin "development" efforts, are evaluated. Mainstream approaches to ethics draw overwhelmingly from Western ethical and moral philosophy, thus establishing a normative framing for what is valued in our research. Western ethics, as well as social justice frameworks, predominantly sit within a liberal-contractualist language of rights in which individuals are seen as autonomous and separate from the other (Jaggar, 1983). It provides the dominant framing within international relations. For example, the United Nations' Universal Declaration of Human Rights (United Nations, 1948) focuses on the individual's rights to life and liberty, and the right to freedom of opinion and expression. Many countries have adopted these foundational values in their constitutions. In the countries in our Hub partnership, we can see these frames adopted in, for example, Article 21 in the Indian Constitution and in parts of chapters 2 and 3 of the Ethiopian Constitution. It is hard to determine the extent to which these are performative rather than substantive inclusions, insofar as implementation is patchy. In the case of water, despite the UN declaring that access to water and sanitation is a basic human right in 2010,[4] work undertaken by Mehta et al. (2012) amongst others highlights forcefully the limits to upholding these rights in practice.

Feminist ethics of care scholars, in contrast, seek to shift the focus from individual rights and interests to collective acknowledgment and responsibility (Hutchings, 2000). Many feminist ethics scholars advocate for an expansive understanding of care (Tronto, 1993; Sevenhuijsen, 1998; Robinson, 1999; Hankivsky, 2004; Held, 2004). A broad understanding of care is grounded in the belief that all people are relational and interdependent, and that care is essential in our daily lives; neither

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4 https://archive.globalpolicy.org/social-and-economic-policy/poverty-and-development/development-democracy-and-human-rights/49350.html

persons nor societies could exist without care (Held, 1999, 2004). As a form of labor, care encompasses the effort applied to satisfy basics needs and may incorporate the emotional concern for the wellbeing of another which motivates the effort (Himmelweit, 1999; Bowlby, 2012). We would note here with caution that this emphasis on emotional concern may also be linked to the ways in which care in market societies is feminized, and in turn low or unpaid (see Hester, 2018). "Water work is hard", Caruso et al. (2023, p. 1) remind us, and too often "[w]ater work is unpaid" and thus under-valued, where the

> costs of water provision are paid in inadequate water quantity and quality, time spent walking or waiting, calories expended, sleep lost, injuries sustained, and safety risks endured. For some, the work is all consuming, and limits education and paid work opportunities. For others, water work results in missing social and community commitments, anxiety and stress, conflict, and shame if household water needs remain unmet.

Whilst we must guard against an overly romanticized notion of care—given that care work is highly unevenly distributed due to its unequal gender and class dimensions (Ferrant et al., 2014)—we may nonetheless take inspiration from a feminist ethics of care that moves away from notions of liberal atomisation toward placing an importance on a connection between people, cooperation, and community wellbeing (Robinson, 1999; Held, 2004), whilst simultaneously acknowledging the highly unequal division of labor that supports the collection, distribution and use of water toward such ends.

This approach reveals the socio-cultural norms, sanctions, values, and principles that govern social relations beyond a focus on interrelations between people and it is here where the further addition of a socio-ecological justice lens can help to address the resultant challenges. While the scope of feminist ethics of care includes the environment around us, the concept of socio-ecological justice allows the interconnection with the ecological world to be explicit (Yaka, 2019). The concept of reciprocity in feminist ethics of care emphasizes care between people; this can be complemented with a socio-ecological justice lens, which explicitly recognizes that reciprocity must be expanded between the human and non-human world.

Socio-ecological justice understands that the self is not isolated from the environment but rather expands into a nature-culture continuum. In other words, nature is part of the social world (Gudynas, 2011), forming an intrinsic relationship between ecological social spheres (Yaka, 2019, p. 363). Furthermore, when thinking about ethics, questions about justice are unavoidable (Yaka, 2019). Thus, it is necessary to create a new ethical conscience, to transfer the concept of justice beyond society, to recognize the ontological value of nature (Peña, 2020).

Foundational to the concept of socio-ecological justice is the ontological contributions of the human-nature relationship by indigenous groups (Blanco-Moreno and Peña-Varón, 2023), challenging hegemonic western notions of how humans interact with, and relate to, nature (Yaka, 2020). Socio-ecological justice is based on a recognition of the relational ontology of human life and the non-human world, which is directly influenced from indigenous worldviews, expanding who and what is included in our collective care endeavors, which has been the focus of some

of our reflections to date.[5] We argue that western ontologies and indigenous ontologies are not mutually exclusive, but exist as multiplicities within their own relational context, with implications for how we understand care and who does "water work" (see Caruso et al., 2023). These multiplicities also need to be considered in how we approach international partnerships to tackle global challenges, and influence how we have worked as a Hub.[6] Therefore, this extension to care through socio-ecological justice takes a critical holistic and interdisciplinary perspective.

We can, moreover, bring a socio-ecological lens back into dialogue with notions of "care". Work by Duffy (2011) distinguishes between "nurturant" and "non-nurturant" care as a way to explore how care embodies the physical environment. Nurturant care is care of another person and directed at the relationship with the other, while non-nurturant care is care of the physical world in a way that provides a basis for nurturant caring (Duffy, 2011). For example, soil and water conservation on land used for food crops would be considered a form of non-nurturant care. People care for the land and water, which provides sustenance for people. For some societies, this way of thinking of the physical environment is embedded in their belief systems. As a canal employee in the Andes in Peru's Motupe region explains: "When a river flows from above into a pond, and when you listen to this falling water, it says: *cuídame*. If you take care of me, I will give you life. If you take care of me, I will be here all your life. But if you do not take care of me, I will stop flowing. I will soon come to an end" (quote in Domínguez-Guzmán et al., 2022). Similarly, social institutions—shaped and reshaped by society—provide the frame through which nurturant care occurs. Even where social and political contexts may be relatively unstable due to, for instance, persistent armed conflict (an on-going concern for many colleagues in our Hub partnership), what is clear is that efforts to address water (in)security as a form of care, including by local collective action, may become crucial to supporting greater social cohesion (see García Vargas, 2007).

Given that care is socially situated, many care ethics scholars are uncomfortable prescribing a set of universal rules, an approach which in turn brings real value to an interdisciplinary, international research partnership. Thus, if we are to achieve more nuanced and contextual approaches to water security, an intersectional approach that incorporates both a socio-ecological justice framing and a focus on feminist ethics of care in how we conceptualize water (in)security needs to be more integrated into the framing of the Hub's work. Ideally, it means embracing the different ways of knowing and understanding water issues and ways of addressing water (in)security, from local actors and institutions to engineers and social scientists from across the Hub countries, an experience we had in Popayán, prior to our Hub Assembly in Cali, Colombia.[7] It also means providing platforms to share ideas and work, and

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5 http://www.watersecurityhub.org/news-events/news/integrating-indigenous-and-local-knowledge-academic-science

6 http://www.watersecurityhub.org/news-events/news/working-indigenous-communities-capacity-building-events/news/working-indigenous-communities-capacity-building

7 http://www.watersecurityhub.org/news-events/news/knowledge-exchange-and-relationship-building-popayan

being open to learning from one another, with the hope it breaks down silos and creates new spaces for counter-hegemonic transformations of human-nature relationships that in turn support more dynamic and situated conceptualisations of water (in)security.

Essential to a feminist ethics of care and socio-ecological justice is an explicit recognition of the diversity of lived experience. Here we can highlight the importance of intersectionality, or the ways in which co-constituted identities shape people's subjective experiences (see Crenshaw, 1989). Collins et al. (2021, p. 694) identify six core functional concepts: "namely, relationality, power, social inequality, social context, complexity, and social justice". It is in the intersections, interactions, or interplay of such social categorizations that the differential power relations that link these social categories affect individuals and groups, either by reinforcing/supporting or weakening prevailing power imbalances (Olsvik, 2007). Intersectionality addresses a critique of depoliticised and formulaic gender mainstreaming in policy and practice (Sultana, 2020).

The challenge in this area is to understand (in)equality as conditioned by, and related to, other interlocking inequalities through an intersectional approach that expressly considers the dynamics of power in decision-making. It is possible (and too easy) to create sets of checklists, policies, principles, and indicators, but without realistic, contextual, and situated plans for implementation these sets of things remain only as nice words in documents, a tendency we are keen to avoid. With an intersectional approach, we can observe a synergy with a relational feminist ethics that seeks to generate understanding of water (in)security that is situated but also systemic.

How then do we understand what shapes intersectional lived experiences with water? Here we would further argue that it is necessary to deal with the complex, deeply embedded relation between society and nature, where prevailing power imbalances influence the experience of relative water (in)security. Widening our understanding of ethical care also allows us to embrace diverse, non-Western and indigenous intellectual traditions in which relationality is foregrounded as a central consideration for wellbeing (see, for example, Blackstock, 2011; Boulton et al., 2015; Chan, 2017; Bedigen, 2022), wherein water security, we argue, is integral. The mainstream water literature focuses on water technology and issues of water management and control. But recent studies in the critical water literature highlight how the concept of care rooted in local understandings of their relationship with the environment and spiritual experiences plays an important role in arrangements for managing water and maintaining irrigation systems and ground water (e.g., Chitata et al., 2022; Domínguez-Guzmán et al., 2022), and that there needs to be room for diverse, and at times, divergent practices and ways of knowing in relation to water (Zwarteveen et al., 2021). Moving beyond technocratic tick-boxes and embracing this context-sensitive relationality is how Crider and Ray (2022, p. 2) argue that we move "toward the recognition of gender justice as a foundation for water justice for all".

Contributions of feminist ethics of care and socio-ecological justice to international partnerships on water (in)security

Bringing these lenses together, we suggest three principles that encapsulate how we endeavor to approach our international partnership working on addressing water (in)security.

The first principle is recognizing that all people, in all their diversity, have the same fundamental human needs that require care. Moreover, both the rights and interests of humans and the broader environment within which we live must be considered simultaneously. Such framing brings both the social and the ecological within the realm of ethics, justice, and rights. It acknowledges that people are dependent on both others and their environment at any given time for their wellbeing, and it places value on both "nurturant" and "non-nurturant" care labor. This not only considers the impacts of water security programmes on the environment, but also their impacts on care labor. This is a principle that we also recognize must operate both within the partnership itself as well as those with whom it engages as partners or stakeholders.

For example, it is worth noting that face-to-face Hub Assemblies, whilst beneficial in many ways, can disproportionately prevent participation of those with caring duties. When COVID-19 caused international travel to stop, our Hub Assemblies became virtual events, which enabled more equal participation by carers (irrespective of genders and across career stages).

In addition to acknowledging identities which may place individuals in their own unique category, the second principle recognizes relationships between people and the environment and that people are part of a larger interdependent socio-ecological web. Here, the self is defined through a web of human and non-human relations, formed through encounters and engagement in every temporal and spatial context (Yaka, 2019, 2020). In this view, humans are not only consumers of nature, but must work and be in relation with nature as a significant living world (de la Bellacasa, 2015). For example, in the Andean region of the department of Cauca, Colombia, the Kishu indigenous people have built a reciprocal relationship with water. Through the ancestral process of sowing water, the community has successfully recuperated springs, streams, and lakes within their territory. Recognizing this reciprocity with water has been key to how colleagues in the Colombian Collaboratory engage in this region.[8]

By acknowledging that people's lives are constructed through their social, personal, and ecological relationships, there is an explicit recognition that the impacts of water security programmes on individuals, as well as the impacts of decisions in international partnerships, are not siloed; rather, these impacts also have direct and indirect effects on human and non-human others. Linked with the principle of interdependencies and shared future is an explicit commitment to making a sustained impact on the lives of the most vulnerable. This requires us to make a clear distinction

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8   http://www.watersecurityhub.org/news-events/news/sowing-water; https://youtu.be/Iw_XNH2K0_8

between "compassion" and "kindness": "Compassion is a state of knowledge about the suffering of others" (Kumar, 2022, p. 236). The global challenge of water insecurity as entailed in SDG6 will not be addressed by compassion alone; it requires sustained action supported by adequate funding at the global scale. Contrary to compassion or good intentions, the idea of kindness is about actions aimed at assuaging human suffering and vulnerabilities. According to Cole-King and Gilbert (2011, p. 29), kindness means "sensitivity to the distress of … others with a commitment to try and do something about it". If the global challenge of water security and sustainable development is to be transcended, we would argue that a relational kindness must be placed at the heart of a feminist ethics of care framework. Here we also need to be mindful that "care" and "compassion" do not simply reproduce and concretise the gendered nature of "water work", that, as we have seen, is intrinsically feminized. The key here is that if compassion and kindness are to be integral to the achievement of SDG 6, then such sentiments must be followed by action, and within this action must be attempts to redress the unequal division of labor—cutting across race, class and gendered axes of difference—in how we manage water (in)security.

Taking this even further, the third and final principle is collective responsibility in our partnership. Tronto (2013) argues that shared effort for care of the collective promotes a society in which time is created to attend to work and care. This means collectively sharing care for both others and our environment. This does not imply that we need a singular, monolithic framework based on these shared principles. Blanco-Moreno and Peña-Varón (2023) note in their work in Colombia, for example, that organizations operate with heterogenous concepts of justice that support varied water ontologies, highlighting the value of recognizing these different strands of work, which is again another area in which Collaboratories have been active.[9]

Additionally, we need to emphasize the co-creation initiatives that support researchers in their role as facilitators of collective communication between marginalized populations and decision makers, to assure that our research, and research impact, is not siloed from the needs and priorities of marginalized groups (Choong and Neo, 2022).

Embedding these theoretical frames in the design and delivery of our research programme

The challenge for our interdisciplinary, international partnership has always been to convert these principles into foundational drivers of our practice. In this section, we set out the challenges to realizing research designs and outcomes that reflect these shared values and principles. Honesty about these limitations means acknowledging that we too are constrained in our practices by the same systems that operate to individualize and/or invisibilise relational care labor; that we, in turn, potentially exacerbate the very water insecurity we seek to ameliorate. Here we note two key

concerns. The first is the tendency to see both water (in)security and gender/intersectionality as technical rather than social and political challenges. The second is that an expression of shared values does not automatically convert into a shared understanding of how to actualise theoretical commitments to intersectional equality and ecological justice that are centered on care. We will look briefly at each one in turn.

First, many initiatives that seek to address development challenges or "tackle" the SDGs start with the search for technological solutions or institutional/policy reform packages, rather than engaging with the fuzzy complexity of global challenges (see Ferguson, 1990). While at the start of our collective deliberations in the Hub we wanted to embrace this complexity in line with the systems approach we adopted to solve problems of water insecurity, a divide was immediately apparent between the engineers and the social scientists. The former were keen to address water security as a complex but ultimately technical challenge, while the social scientists were committed to centring questions of power and inequality in water governance and resource distribution. This divide has a well-established history, insofar as the longer-term challenges of so-called "development" are frequently interpreted as the "result of a historical stage and a fundamentally technical problem (lack of knowledge, education, infrastructure or technology) to be solved by nonpolitical interventions" (Ziai, 2016, p. 151).

Despite being able to take advantage of the more forward-thinking approach to GCRF bids that provided monies to bring potential partners together as part of bid preparation, as well as a six-month Inception Phase to establish governance, management, and operational processes, a lack of time and space limited our ability to generate shared meaning around how we collectively understand complex social phenomena. Our Hub has been under pressure to design and conduct research involving a core team of 11 organizations working in partnership with a wider network of 42 organizations across five countries. In the space of 5 years, we are required to design and deliver evidence-based interventions, publish research, demonstrate impact, and influence water policy, notably in relation to meeting SDG6 targets across all countries. The COVID-19 pandemic, followed by extensive ODA cuts by the UK's FCDO in March 2021 threatened the existence of the Hub itself. Yet even without these extraordinary circumstances, only 5 years to work toward water security in 5 countries in partnership with over 40 organizations poses very real constraints to shared, international problem solving delivered through the dual lenses of feminist care ethics and socio-ecological justice.

Many of these constraints were the result of differing understandings of terminology, an unsurprising outcome when working across multiple disciplines, languages, and belief systems:

- A conversation on vulnerabilities 2.5 years into the partnership looked to be reaching a frustrated stalemate until the participants (both based in the UK) realized that the engineer understood "vulnerability" in the context of climate-related risks, while the social scientist understood "vulnerability" in terms of inequalities.

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9 https://www.watersecurityhub.org/news-events/news/water-security-rural-communities; https://youtu.be/w7nnN0oaM4E

- "Stakeholder" has an array of meanings within our partnership, from a specific narrow focus on government bodies (i.e. those with power/in charge), to a broad grouping that encompasses government, industry, ands NGOs but excludes communities (i.e. those with least power), to an all-encompassing understanding that a stakeholder is anyone with an interest or influence in the Hub. These different understandings speak to a broader discussion within the academic community about the word "stakeholder" in the context of decolonising research.[10]
- Aligned to the colonial undertones of the term "stakeholder", several colleagues outside of the UK understandably objected to the problematic language of "change" and "beneficiaries" in the context of research activities and impact due to (1) the implication that the beneficiary was ignorant/doing something wrong, and (2) the failure to recognize that we as researchers can learn from the non-academics we engage with and co-create solutions that draw upon their expertise and lived experience.

This problem around terminology was explicitly addressed in the Learning element of our MEL framework via a series of workshops with our Early Career Researchers (ECRs) on the convergence of understanding of terms and key definitions across the Hub.[11] Perhaps the "stickiest" term has been "gender", given that it is an indicator on which we are required by the funder to report. As such, it is worth reflecting specifically on the challenges work on gender has surfaced. All ODA-funded work has to "tick a box" that gender equality considerations have been included in any proposed work. Gender pertains to a set of socio-culturally and politico-economically constructed social relations, roles, and practices that change across time and space (Fletcher, 2018). It is context- and history-specific and is inseparable from power relations and societal value systems (Myrttinen et al., 2018, p. 4). Yet mainstream research and funding infrastructures tend to presume "gender" has a well-established, shared, or universal meaning, which is stripped of situated and contextual insights that may necessitate descriptors beyond, or instead of, the language of "gender". Indeed, "gender" itself is a highly contested term that travels poorly outside the English language (see Samarasinghe, 2014; Narayanaswamy, 2017). Within the Hub, there exists a multiplicity of understandings of the term. For some international colleagues, gender is not perceived as a notable issue because everyone is equal in the eyes of the law, even though inequity is evident in social structures. For other colleagues, inequality is embedded in legal frameworks, which has pushed women with whom we are collaborating to take more active leadership roles at the local level. We see, for instance, multiple and fluid, gender-diverse identities that differ from the norms of gender binaries (see Lugones, 2007) may face more exclusion due to water insecurity (see Robinson et al., 2023). However, this nuance remains limited in the Hub's work. In our experience, including in writing this

piece, interdisciplinary working is a challenge because of the need to establish a common vocabulary and shared understanding of these concepts that allows us to move beyond a reductionist conceptualization of work on gender as merely a bureaucratic exercise—as a simple counting exercise of binaries of men and women within and beyond our project, or as work primarily for the social scientists and/or women in our partnership that is perceived as separate to the "main business" of pipes, water pressure, and potability.

This is further exacerbated by the way in which funders expect gender to be reported, with requests to "Please summarize how your project is considering gender equality and any relevant activities or results" or "Please provide information on gender and inclusiveness for each major Hub activity/event, including the diversity of participants in terms of gender and age". This language is non-specific enough to make reporting on gender a weaker, reductionist exercise and risks reinforcing the "tick box" mentality the Hub actively seeks to move away from. Indeed, it can have the effect of seeing gender equality as a technical challenge (one of design, policy inclusion, representation), rather than as a challenge of transforming power relations (Goetz, 1994). Lists of indicators offer the impression of taking power and representation seriously, but they run the inherent risk of excessive simplification and of framing fundamentally political questions as technical considerations (see Merry, 2016).

We recognize the danger of over-simplified narratives that may result, for instance, in an extension of our commitment to emphasize relational care, to then center women as "natural" carers for the earth (see Leach, 2007). We are committed to unsettling the focus solely on the uneven burden borne by women and girls in relation to water(in)security that entails a wider contextual or structural analysis (see Doss et al., 2018 in relation to women and myths around agriculture). Indeed, work in this space is heavily contested and it is an area that is particularly prone to simplification at the international level through tools such as "gender mainstreaming" and a reductive and generalized focus on "women and girls" (see Chant and Sweetman, 2012; Hickel, 2014).

The second concern regards what this commitment looks like in practice. In the production of this piece itself, good faith engagement revealed contestation as to the best way to approach these issues in research design and implementation. All the co-authors engage in a variety of data collection methods and analysis, and one of the tools that surfaced for discussion was sex-disaggregated data collection. How might we work together in pursuit of socio-ecological justice through a feminist ethics of care lens? For some colleagues, sex-disaggregated data can be a powerful means of highlighting and monitoring gendered inequalities. For example, sex disaggregating SDG6 indicators would allow development actors to track and highlight gender inequalities in the water and sanitation sector. But, only disaggregating by sex, rather than a range of intersectional factors, can hide the structural and institutional production of multiple and inter-related inequalities (see Joshi, 2005). Sex-disaggregated indicators can potentially obscure more complex social dynamics that in turn have the adverse effect of hiding within-group inequalities, which can be seen as depoliticizing, neutralizing, and invisibilizing the intersectional dynamics of power (Mukhopadhyay, 2014; Osborne, 2015). Thus, they need to be used carefully. A combined

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10   https://www.fasttrackimpact.com/post/alternatives-to-the-word-stakeholder

11   This learning was captured in an internal document circulated around Hub colleagues, and the findings can be made available upon request.

socio-ecological justice and feminist ethics of care approach goes beyond simple sex-disaggregated indicators and aims to gather information on peoples' intersectional identities and associated challenges; differing care roles and needs; relationships to others and their environment; and the interconnecting power dynamics, with the aim to explore impacts of water security programmes or water (in)security phenomena through the lens of the guiding principles laid out above.

Our preparation of this piece also revealed divergent views about the value of women's inclusion and leadership in and around how to manage water and identified where there is no clear empirical "answer" to the design conundrum. Some co-authors have raised questions about whether leadership structures have been integral to the more technocratic interpretations of water security, whereas others would argue that women's inclusion is no guarantor of more inclusive, equitable, or dynamic research design and implementation. Within the Hub, we have recognized since our inception that gender is one of a number of characteristics that intersect to create inequity within our research team. We have sought to ensure gender balance of (for example) our Ethics Committee and International Advisory Board—alongside a balance of religions, ethnicities, organizations, geographies and disciplines—and actively championed the advancement of our female ECRs. We made an explicit commitment to EDIT (equality, diversity, inclusion, transparency). Whilst laudable, we can also reflect on the possibility that these efforts also render us guilty of a reductionist approach within our own project governance and operations that views the inclusion of women as proof of inclusivity.

Similarly, in WASH and gender interventions, some co-authors would point to empirical research (see, for example, Mommen et al., 2017) that highlights the transformational potential of women's inclusion and leadership in decision-making structures. This tends to focus on the local level e.g., on inclusion in water committees or the creation of water user associations and is an important dimension of work on water security for some co-authors. Others are more convinced by evidence that demonstrates that the transformational potential of such inclusion is limited and often weak (Cleaver and Toner, 2006; Adams et al., 2018), and that local participation is not a transformational silver bullet for social marginalization (Cooke and Kothari, 2001), despite it being a persistent focus of development interventions. A feminist ethics of care undertaken through a socio-ecological lens supports a more nuanced reflection, for instance, on the presumption that "women" could ever be understood as a singular group in relation to water (in)security. From her research in Bangladesh, Sultana (2020) asks why poor women are more often expected to organize and deliver their own water services (and often pay more per unit for them), than the middle-class women with piped water supplies to their homes? The issue of who has access to, and control of, water security is complex and multifaceted. We must not overlook the factors such as the gap between the rich and destitute, and discrepancies in governance systems (Gupta and Lebel, 2020). In our work in Malaysia, where water is a state matter in which there exist contradictions in the governing structure, the willingness of higher income households to pay for water filtering systems (because of better domestic water quality) is higher than that of lower income groups (Awang et al., 2020), which results in inequalities in access to safer water.

Despite the challenges of time and space to establishing shared vocabularies and objectives, it is also important to highlight the potential for comparative, cross-country, interdisciplinary learning and reflection around the similar-but-different challenges of water (in)security that emerge from an international partnership like the Hub. We have so far been able to observe, for instance, how indigenous groups who are politically and geographically marginalized in Malaysia and Colombia differentially engage with governance and legal structures to claim rights to land and water in ways that have revealed surprising commonalities given the very different socio-economic, religious, and political contexts. How then do we build on this new understanding, supporting learning around the relationship between the human and non-human world that work by Colombian colleagues have revealed, and perhaps adapt that to support work with indigenous communities in Malaysia?

Similarly, emergent findings from our Hub's research of informal settlements in Addis Ababa and New Delhi draw attention to class and ethnicity dynamics that shape how different groups access water, despite vastly different socio-economic contexts. How do the lessons from research on water basins in informal urban and peri-urban areas travel between contexts? We hope to be able to test the value of these dual lenses by building more nuanced intersectional dialogues between colleagues in New Delhi and Addis Ababa.

The challenge here is not that we might collectively disagree on how best to tackle intersectional inequality in water security research and implementation. It is that within the time and space constraints of conventional research models, which tend to favor technical approaches to problem-solving delivered in set time frames, rather than contextual and situated approaches, our capacity to negotiate shared meaning that shapes research design across dispersed geographical and disciplinary contexts is severely constrained.

Concluding thoughts: moving beyond bureaucratisation and technical fixes … or what we've learned (and done) to make our partnerships better

In the Hub, we have always been keen to ask better and more nuanced questions about who has "access" to water and who has "control", and how we set out to transform the current water systems to ensure social inclusion and intersectional equality grounded in principles underpinned by a relational feminist ethics of care and socio-ecological justice rooted in kindness. As we have noted, and without wanting to minimize the gendered lived realities of "water work", we are keen in the Hub to move beyond a simplistic and potentially reductive focus on the unequal burden on women and girls in relation to water (in)security, although it is important in so many contexts. Instead, the value of the Hub is its more nuanced contribution—to academic discourse, our systems approach, and the awareness/approach of our researchers—in the consideration of how intersectional inequalities exacerbate vulnerabilities within a water security system, and how we might develop cross-country insights and learning from our partnership. Working across 11

organizations and five countries, it is inevitable that we (as a Hub) are not all at the same place and or on the same page on these issues. The lesson here is that situated, contextual and intersectional insights are key to developing shared meanings, and these processes require time, space and opportunities to listen and learn.

Putting in place such processes are, however, constrained, as we have demonstrated, by the imperatives of funding that render the creation and nurturing of such processes as almost insurmountable challenges. What are the lessons then from our experiences for global-level research on water (in)security? How do we learn and build on these conceptualisations moving forward? Within the Hub's processes and management, we have ensured that structures are in place to support considerations of gender and intersectionality, even though some of these interventions have felt like a "tick box" because time, space, geographies, and pandemics have limited our ability to generate shared meaning around how we collectively understand complex social phenomena. As we move to our legacy stage, internally evaluating our success in this area is as important as evaluating our research outcomes, and the Hub will conduct an internal audit of how we have approached intersectionality within our collaboration to improve our future partnerships.

For water in(security) research more broadly, we know that partnership needs to be move beyond well-established facts around "water work" to think through how we come together to actually address this unequal burden—what does an international partnership offer to our collective knowledge-building efforts? We have found that we can make substantive contributions to unsettling the tendency to perceive water insecurity as a universal experience in a flattened place called the "Global South". Instead, we are committed to building comparative insights across our partnership contexts that support the achievement of SDG6 but in ways that build intersectional, dynamic and situated critiques of "water work" through the application of feminist ethics and ecological justice lenses. Using a feminist ethics of care combined with a socio-ecological justice lens also allows us to identify the ways in which gender, despite ODA guidance to the contrary, is not the only form of inequality that deserves our attention. Our aim in the final year of the project is to bring these different perspectives into dialogue.

The key is that these comparative reflections are not one-sided nor linear; instead, we seek to ask how the values we express around water and questions of power and inequality are linked with each other. One of the emergent issues in the Hub's work is that understanding water (in)security is complex, spanning sectors and geographies, so the relative insecurity of a particular actor or stakeholder may not be understood in isolation. We must contextualize questions of relative (in)security wherein our understanding is buffeted by interactions of populations with, for instance, rapid urbanization and poor infrastructure, or where gendered socialization and feminisation of roles intersect with differences in age, class, geographic location, religion and marital status in ways that not only shape vulnerability but also provide insight into how people challenge unequal power relations. This article has been a deliberation around how this GCRF Hub addresses an internal dilemma for projects working across contexts and disciplines, but with the hope that our transparency about the opportunities and challenges of international partnership will yield important insights for future work on water security.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, and further inquiries can be directed to the corresponding author.

Author contributions

The original draft of this piece was created by LN, RF, and MH, then circulated amongst colleagues from across the Hub collaboratories, all of whom made conceptual and material contributions to framing and writing this piece. Structuring and anchoring all contributions was then undertaken by LN, SS, and RM. Feedback on subsequent revisions was led by LN with substantive support from VA and SS. LN, VA, and SS reconciled the final round of revisions from reviewers and co-authors. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

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