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## Intersections of Gender and Water: Comparative approaches to everyday gendered negotiations of water access in underserved areas of Accra, Ghana and Cape Town, South Africa

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## INTRODUCTION

In underserved settlements of Accra, Ghana and Cape Town, South Africa, men and women both work to negotiate access to water on a daily basis. In a community such as Teshie in Accra, residents might travel several minutes carrying heavy water buckets from a nearby vendor, perhaps making several trips in a day to meet household needs. In South Africa, in a community such as Khayletisha, some residents have in-home access through a tap in newly built Reconstruction and Development Program (RDP) homes<sup>1</sup>, while others might walk up to 50 meters to a communal standpipe to fill buckets as needed. The particular experiences of women are frequently highlighted as central for questions of water access and conditions, with the linked suggestion that women are likely to be among the most vulnerable to access challenges or fluctuations in water quality or quantity. The focus on women's specific experiences has also been highlighted in policy discourses, for instance, with the third Dublin principle stating that 'women play a central role in the provision, management, and safeguarding of water' (Dublin Principles 1992). As such, work of the past several decades has highlighted the need to explicitly interrogate the gendered aspects of water access, uses, and conditions. Feminist political ecologists, in particular, have contributed to our understanding of gender-water linkages in diverse contexts, with particular focus on gender-differentiated:

- 1) Access and uses of water
- 2) Knowledges of water and water related institutions
- 3) Participation in governance
- 4) Lived experiences and emotional dimensions of water use, access, and governance

Here we report on an analysis of a 487 household survey conducted in 2012 in four underserved and relatively impoverished settlements, two each in Cape Town, South Africa and Accra, Ghana. We speak to these four focal themes, while using this analysis as a starting point to consider broader gender and water, and linked epistemological and methodological debates. While our emphasis here is on the quantitative analysis of everyday water access and experience in relation to the four focal themes, the work is part of a broader research project that also includes qualitative analysis of water access, governance, and narratives in Accra and Cape Town.<sup>2</sup>

Directing our analysis of the survey data to the four focal themes noted above, this article has several linked goals. First, we statistically analyze the differences in water related access and experiences as reported by female and male survey respondents to consider the evidence for, and characterization of, these differences across our study sites. Second, doing so allows us to contribute to the broader gender and water literature, and debates in feminist political ecology, through a quantitative multi-sited analysis—adding to discussions that have, to date, drawn heavily from single sited, in-depth, qualitative case-study research (see Agarwal, 2010, as a key exception, among others). Among other insights, our results



foreground key differences across the study sites, underscoring the importance of context specificity for analysis of complex gender related negotiations and realities. Third, and finally, we aim to contribute to broader discussions about method, epistemology and ways of knowing by drawing attention to tensions between empirical evidence and theory, as well as tensions that arise when quantitative analyses do– or do not – validate insights derived from qualitative studies. To this last point, we find that even as many of the expected gender differences are not evidenced as statistically significant, we do not consider that this negates the broader themes highlighted in the literature (as discussed below). We take these points to argue for triangulation, not necessarily to validate particular ‘truths’, but to more carefully examine the tensions between different methodologies and to highlight, and explicitly theorize, the types of information that are made visible (or remain hidden) through different approaches (cf. Nightingale 2009, 2003). Before presenting our results, we first provide more background from the literature on gender and water in general, and feminist political ecology in particular, to better understand the claims common to this body of work, and to substantiate the key questions that guided the analysis. This is followed by a characterization of the water situation in the study sites, to contextualize results and provide necessary background for the analysis that follows.

## Understandings of gender and water from a feminist political ecological perspective

Our rationale for interrogating gender differences with respect to water access, uses, knowledges, governance, and experiences stems from a large and growing literature on gender and water, much of it informed by feminist political ecology (e.g. Bennett, Davila-Poblete & Rico 2005, special issue of *Gender, Place, and Culture* [2009] or recent special issue in the *Feminist Review* [2013], Buechler & Hanson 2015). While the case studies and theoretical approaches that comprise this literature are diverse, several frequently cited insights include: (1) That women are often primarily responsible for water provision, especially for domestic needs (e.g., cleaning, cooking), and that this results in differentiated uses of water, as well as gender differentiated effects when water quality or access is compromised; (2) Linked to gender differentiated uses, and labour practices, women and men often have differentiated knowledges of water and other environmental resources (e.g. men may have certain knowledges in terms of water for irrigation or other productive uses, while women may be more focused on quality and quantity considerations for domestic uses, although this should not be assumed from the outset (Barnes 2013). (3) Men and women participate differently, and often unequally, in water governance institutions (e.g. women often participate less than men in water-related institutions, and even when women do participate, the character of the participation is often qualitatively different), with potential implications for all of the above (e.g. uses, access, and/or knowledges). Finally, (4), the experiences and emotional lives of water are themes of growing interest, with several recent studies showing that women may face particular stress related to compromised water quality or changing environmental conditions (e.g. Wutich & Ragsdale 2008). We provide further detail on these four focal themes as they are commonly discussed in the literature,



particularly as we use these insights to guide our analysis of the survey data, as reported below.

On the issue of water fetching and gender differentiated labours and responsibilities, cross-national analyses and multiple case studies have argued that women are most often responsible for water procurement for domestic uses (bathing, cooking, cleaning, drinking), and that women in particular often spend significant time on this task (Singh, Jacks, Bhattacharya, & Gustafsson 2006, Galvin 2011). Cross-national analyses have also suggested that these patterns are more pronounced when there is less access to improved water sources (Sorenson, Morssink, & Campus 2011). This recognition has led water policy communities to focus on women as primary purveyors of water (Dublin Principles 1992), and to recognize that adverse water conditions, such as water scarcity or drought, may particularly affect women and girls (in terms of work burdens or responsibilities in caring for sick family members who may be suffering from waterborne illness (e.g. Alston 2006, Arku & Arku 2010). An important cross-national study of 160 countries also demonstrates that there are gender differences in terms of morbidity and mortality associated with natural disasters (including floods and droughts). In brief, women and girls are more likely to die following disaster events—a pattern that was more pronounced when disaster events are larger, and in contexts where gender inequalities are greater (Neumayer & Plumper 2007).

With respect to knowledges, a number of studies have considered the ways that water related knowledge and expertise often becomes codified as masculine, or is connected to particular practices. For instance, in a recent study from Nepal, Zwarteveen and Liebrand (2015) highlight the embodied gendered performances that situate scientifically trained male (and often foreign) engineers as ‘experts’ and local people, especially women, as unknowledgeable about agricultural and hydrologic realities. In other studies, women demonstrated more interest in, and knowledge of, water related budgeting and economization compared with male counterparts ([Wutich, 2009], based on work in Bolivia). Concern with knowledges is also intrinsically linked with participation. Work by Harris (2005) in southeastern Turkey shows that women are often marginalized from water user groups in newly irrigated areas, a situation that leaves women without access to the training, resources, and networking possibilities available through those institutions. As such, any differences in terms of expertise and knowledges may be further entrenched through differential participation in water management institutions. It is worth noting that other studies have also documented enhanced participation of women in civic life linked to their initial engagement in water related associations, boosting their confidence, and enhancing community support for their participation (e.g. Aguilar [2005] for an example from Costa Rica, and Ennis-McMillan [2005] for an example from Mexico).

Highlighting lived experiences of water uses and governance, recent work suggests that stress, worry and other emotions can be strongly linked to differentiated water access and uses. Sultana (2011), for instance, examines the arsenic crisis in Bangladesh, considering the physical and emotional toll the crisis takes on women’s lives, particularly when they have to rely on power-laden and tenuous social networks to secure access to safe water. Wutich



and Ragsdale (2008), provide a detailed examination of water insecurity in the urban context of Cochabamba, Bolivia—finding that being a woman is a primary predictor of water-related stress. In this context they interpret the stress as linked to inequities in water access and distribution, rather than water scarcity per se. Wutich (2009) also highlights self-esteem and acceptance issues when water is less available, and women are unable to conform to social expectations in terms of hygiene and beauty, while arguments put forward by Goldin (2013, 2010) suggest in parallel that shame and self-esteem are elements important for tracking processes of inclusion and exclusion from decision making processes. As such, water (and sanitation) access and conditions are understood as linked to worry, embarrassment, or a range of other affective responses that characterize differential lived and emotional experiences of water use and access, notably for men and women, but also likely tracking along class, caste, or other intersectional differences (Hawkins & Ojeda 2011).

The examples outlined above, as well as the broader literatures on feminist political ecology and gender and water (Resurreccion & Elmhirst 2008, Hawkins & Ojeda 2011, special issue of *Geoforum* [2011]) highlight that gendered relationships to water are not essential (linked to male and female attributes or bodies), but rather are mediated by work responsibilities, socio-cultural expectations, and a range of contextual factors. The themes specific to water map against key insights and themes from work in feminist political ecology more broadly, including work that has focused on forestry, land, or other key resources (Rocheleau, Thomas-Slayter, and Wangari 1996, Nightingale 2009, Agarwal 2010). Although the various studies cited draw on different contexts, they nonetheless provide a compelling rationale related to the need to interrogate gender as a key dimension of difference that is likely to matter for understanding water uses, knowledges, participation, and emotional lives. As such, our expectation in undertaking the statistical analysis was that we would observe a number of key differences between male and female respondents related to a number of the questions from our survey (see full list of survey questions evaluated in Table 1). A key goal was to determine if any of these relationships could be validated statistically, and whether any patterns were consistent across our diverse study sites.





## CONTEXT: DETAILS ON METHODS AND RESEARCH SITES IN ACCRA AND CAPE TOWN

Our paper draws on a household survey implemented in early 2012 in underserved settlements around the urban areas of Accra, Ghana (n=239) and Cape Town, South Africa (n=254) (sites that might be described as ‘slums’ given inadequate infrastructure as definitional to the term)<sup>3</sup>. The specific sites of investigation were Ashaiman and Teshie in Accra, and Khayelitsha and Philippi in Cape Town<sup>4</sup>. Our work in these sites is ongoing, and also involves qualitative research focused on themes of water access, politics, and governance, including how these concerns link to citizenship, evolving state-society relations, and narratives of inequality and difference (see Rodina 2013, Dapaah 2014, Morinville and Harris 2014, Peloso and Morinville 2014). Survey teams were trained in data collection by collaborators at the University of Ghana-Legon and the University of Western Cape, for Accra and Cape Town, respectively. Surveys were conducted in local languages (Twi and Ga in Accra and Xhosa and Afrikaans in Cape Town) and were implemented over the period of several weeks. Participant selection was randomized, from every third dwelling (Ghana), and fourth dwelling (Cape Town) in selected neighborhoods. A full description of the statistical methods is provided in the Appendix.

### Contextual differences: Water access in Cape Town and Accra

The contexts of Ghana and South Africa are very distinct with respect to water access and governance. Ghana reportedly reached the Millennium Development goal’s target of halving the proportion of the population without water access before the 2015 deadline (declared in 2012; Dapaah 2014). Despite this achievement, access to water in the capital city of Accra is highly variable, and estimates of access are highly disputed, with suggestions that between 1/3 and 1/2 of the population in urban Accra have access to the piped water system managed by the Ghana Water Company Limited (GWCL)<sup>5</sup>. For those with direct access to the GWCL network, water flows intermittently, due to system deficits, leaky and inadequate infrastructure, and also a rationing schedule that operated until very recently (leaving some communities with water only one day per week, see Morinville 2012, Dapaah 2014). Our survey provides clear evidence that residents in underserved areas face considerable challenges with respect to affordability, time spent accessing water, water related conflicts, and linked concerns. As suggested in Figure 1, nearly half (47%) of our survey respondents rely on water vendors, while 20% report receiving water directly from the municipal utility, through piped access and storage. Ease of access is also a clear challenge: only 29% of our respondents in Accra agree that ‘water is easy to access’ while 64% disagree or strongly disagree with this statement (these responses provide a stark point of contrast with our South African respondents, see Figure 1).

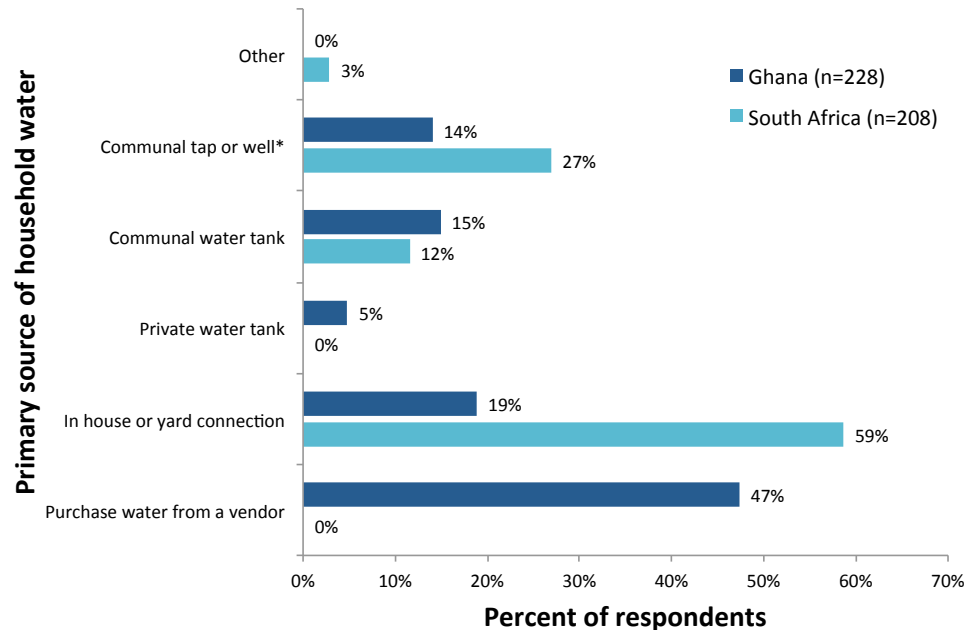
In South Africa, nearly twenty years after the democratically elected ANC (African National





Congress) government took office and the new Constitution was adopted, apartheid era planning and policy continues to shape access to water and sanitation – still markedly differentiated along racial and class lines. As an attempt to redress inequalities resulting from the past, South Africa boasts a Constitutional right to water and sanitation, even as there are ongoing implementation challenges (Mehta 2006, Rodina 2013). Specific efforts seek to make water more affordable and available include the Free Basic Water (FBW) policy that (in theory) guarantees a minimal amount of water will be provided to all households regardless of their ability to pay (currently set at 6 kiloliters per month, but with variable implementation across the country, and without specific consideration of household needs or size). Over the past several decades, there has been some progress in extending services to informal settlements and former townships—including in Khayletisha and Philippi where our survey was carried out. Despite these efforts, concern about unequal access to water, sanitation and other basic services is frequently in the news, with a spate of ‘service delivery protests’, and so-called ‘poo’ wars during which protestors dumped human waste in the urban core to protest the appalling status of sanitation in township settlements. These ongoing protests are part of the public response to continuing unevenness of services, as well as tensions that exist between consideration of water as a public ‘right’ versus as an ‘economic good’ as part of demand management policies—for instance, contestation related to the increasing use of meters in Cape Town and elsewhere (Environmental Monitoring Group [EMG], 2014). Although not detailed here, the situation with service access is changing with the ongoing housing formalization process. In short, as residents are increasingly moved into formal RDP homes, effectively this means moving from shacks with communal water and sanitation access—to structures with an in home tap and toilet (Rodina 2013)<sup>6</sup>.

**Figure 1. Primary sources of household water in Ghana and South Africa**



\*"Tap" includes standpipes and "well" includes boreholes. The Private water tank, or in-house or in-yard connection, generally refers to private/individual access (although it is possible that some might have given this response for shared communal access, particularly in Cape Town). Note the heavy reliance on vendors in Ghana, while no respondents in South Africa provided this response.

Relative to the country on the whole, the Western Cape region (where Cape Town is the major metropolitan area) is among the better-served provinces when it comes to water access. Currently reports state that 88% of the population has access to piped water inside their house (our survey—focusing on underserved communities of Khayletisha and Philippi places that number at 55% for in-yard connections, and 3% for in-house connections). In Cape Town, 83% of our survey respondents reported having 'easy access to water' and only 11% said that they do not. This is in stark contrast to the low percentages in the data from Accra—29% and 64% respectively. Also a noteworthy difference between sites — none of the respondents surveyed in Cape Town rely on private vendors.

While the case study sites are certainly distinct, the specific research sites in both urban areas were purposefully selected to highlight impoverished and underserved settlements. Given that gender differentiated patterns are often exaggerated under conditions of stress, we might also expect that observable gender differences might be more pronounced in our selected sites as relatively impoverished, relatively water-stressed, locales<sup>7</sup>.

**Table 1. Overview of questions of interest for the analysis.**

[Full Survey available online at project website, [www.edges.ubc.ca](http://www.edges.ubc.ca)]

Question	Answer
C.1.2 Primary source of [household] water?	Categorical
<b>IIIa) Uses of water and labour (as linked to labour practices)</b>	
C.3 Who primarily fetches the water for this household?	Categorical
C.7.1 For which of the following activities do you use most water?	Categorical
D.11 I always get enough water for: 1) drinking, 2) cooking, 3) washing, 4) bathing	Likert
D.13 I spend a significant amount of time fetching water.	Likert
<b>IIIb) Knowledges of water (and water related institutions)</b>	
C.8.1 (GHANA) Do you know of Aqua Vitens Rand Limited (AVRL)?	Binary
C.8.1 (SOUTH AFRICA) Do you know of Free Basic Water Policy?	Binary
C.9.1 (GHANA) Do you know of National Coalition Against the Privatization of Water?	Binary
F.10.1. I know that meetings are held about water-related issues in my community. <sup>a</sup>	Binary <sup>b</sup>
<b>IIIc) Participation in governance (or specific management institutions)</b>	
G.8.1 If you had a problem related to water supply, who would you go to?	Categorical
F.1. & F.1.4 I participate in water committees (7 other non-exclusive choices)	Binary
F.8 I wish I could participate more in community meetings.	Likert <sup>c</sup>



Question	Answer
F.11 I believe that meetings about things that concern our community are open and anyone can attend/participate.	Likert
<b>IIId) Lived experiences and emotional dimensions of water use, access, and governance</b>	
D.1 It is easy to get water.	Likert
D.2 The water we get is of good quality.	Likert
E.1 I am satisfied with the water services in my community. <sup>a</sup>	Likert
D.17 I have disagreements with family/community members over water.	Likert <sup>c</sup>
D.18 I worry about lack of water. <sup>a</sup>	Likert <sup>c</sup>
G.1 I feel safe when I fetch water from a community water sources (stand pipe, or a tanker).	Likert
G.2 I (would) feel comfortable talking to government officials regarding issues we face.	Likert

<sup>a</sup> Used in cross-tab analysis with employment and home ownership.

<sup>b</sup> Responses were given as likert scale but recoded as a binary response. "Agree" and "Strongly

<sup>c</sup> A modified likert scale was used.

"Agree" were recoded as "yes", and all other responses ("Disagree", "Strongly Disagree", "Neutral" and "Don't Know") were recoded as "no."

The subsets of survey questions listed there are those for which we expected to find clear differences between male and female respondents.

## GENDER DIFFERENCES WITH RESPECT TO WATER ACCESS, USES, KNOWLEDGE, GOVERNANCE, AND EXPERIENCES

As the focus of the paper is on gender-differentiated (1) access and uses of water (2) knowledges of water and water related institutions (3) participation in water governance (or community governance more generally) and (4) daily lived experiences and emotional lives around water, we are interested in seeing whether and in what ways there might be statistically significant differences between male and female respondents' answers to questions relevant to these themes (detailed in Table 1, above)? Were gendered patterns similar or different between the country contexts of Ghana and South Africa? Consistent with intersectional understandings of gender difference, we also analyze these issues in relation to home ownership and employment as proxies for wealth and enfranchisement. In terms of results, country level differences were far more pronounced than gender differences—indeed, there were few questions for which there were statistically significant differences between male and female respondents. The only question for which the differences between male and female respondents were significant across our multiple sites was for the question related to water fetching (C.3). Women were more often water fetchers, and there was also a clear gender skew in terms of how this was reported. Several other gender-differentiated patterns appeared in the country-specific analyses. For instance, in Ghana, men were twice as likely to report knowing of Aqua Vitens Rand Limited (AVRL) - the private consortium that managed water in Accra from 2006-2011. More men in Ghana also participated in community governance, broadly defined. For South Africa, the only significant gender differentiated result relates to men being more likely than women to think that community meetings are open to everyone. The direction of all results that met the threshold for statistical significance were consistent with our expectations.

When gender was analyzed intersectionally with other factors such as employment or home ownership (Table 2), other marked differences are observable. Home ownership and employment were used as proxies for wealth, income, or enfranchisement. Both home ownership and formal employment were more common in South Africa than in Ghana. The intersectional analyses reveal other important dimensions of gender processes, and would be lost to the researcher only considering male and female binaries (Hawkins & Ojeda 2011).

**Table 2. Variables used in intersectional analysis**

	GHANA		SOUTH AFRICA	
	Female (n)	Male (n)	Female (n)	Male (n)
Home owner	19% (114)	17% (106)	63% (148)	74% (97)

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Employed*	9% (121)	30% (115)	30% (112)	46% (72)
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\*Students and intermittently employed were grouped together for purposes of the analysis.

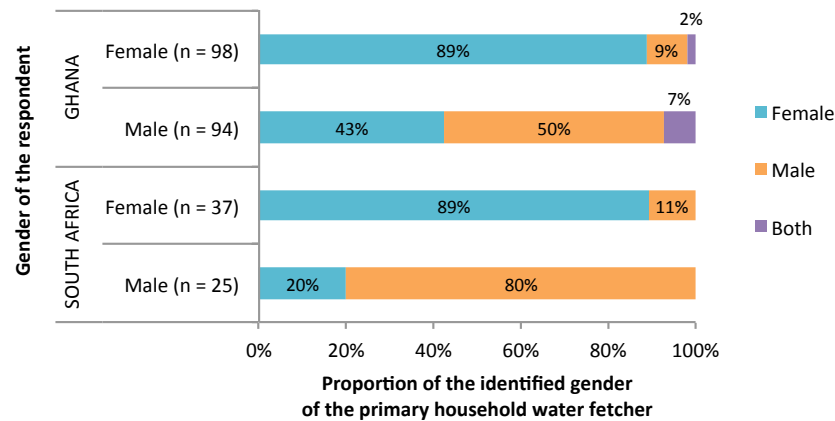
## Access to and uses of water

### *Who fetches water*

In households where an in-house or in-yard tap was not the primary source of water (96% of households in Ghana, 46% of households in South Africa), women and girls were more often identified as responsible for water fetching. In these households, women were identified as the primary water fetchers by 66% of respondents in Ghana (n = 193), and by 61% of respondents in South Africa (n = 62; Figure 2)<sup>8</sup>. In both Ghana and South Africa we see an interesting pattern –if a male is asked ‘who fetches water’ he is more likely to emphasize men’s roles in collecting water, while for female respondents report relatively higher involvement of women. For instance, in Ghana, 43% of male respondents identified a male household member as the person primarily responsible for water fetching. By contrast only 8% of Ghanaian female respondents identified a male household member as the person primarily responsible for water fetching (Figure 2). This likely means that men are underestimating women’s labor, a trend that has been characterized in the literature (e.g. Harris 2006), whilst at the same time, women may be overestimating their own contributions. Looking at South Africa we see a similar skew. Forty one percent of male respondents suggest that men do the water fetching in their household, while only 6% of female respondents gave the same answer. These are substantial disparities, highlighting the importance of considering who is being asked when we evaluate responses, particularly for analyses interested in gender and linked socio-political inequalities. Relative to what we expected before undertaking the analysis, this outcome is consistent (i.e. more women engaged in water fetching), although we did not anticipate the gender skew in reporting to the degree that it was evidenced here. Our observations in both sites confirm that water fetching is a task that both men and women participate in—there does not appear to be the same degree of distinction related to gendered labour practices as has been documented in many rural areas (where it is often only women and girls who fetch water).

**Figure 2. The gender of primary water fetchers reported by female and male respondents.**

### C.3 Who primarily fetches the water for this household?



We ran analyses for how water is used and whether or not respondents consider that there is enough water. The full results are provided in the appendix. In brief, there were no significant differences in the ways that men and women answered questions about uses of water overall (however there were 'nearly' significant gender differences in South Africa). For having 'enough' water, again there were no significant gender differences, but it of interest to note that in Ghana, women more often stated that they had 'enough' water for all four categories (drinking, cooking, bathing, ), and there were significant gender differences for one of the Ghanaian sites-Ashaiman, where women more frequently agreed that they had enough water for drinking ( $X^2 = 6.65$ ,  $df = NA$ ,  $p\text{-value} = 0.036$ ), cooking ( $X^2 = 8.51$ ,  $df = NA$ ,  $p\text{-value} = 0.018$ ), and bathing ( $X^2 = 6.58$ ,  $df = 2$ ,  $p\text{-value} = 0.037$ ), when compared with male counterparts. It is worth noting that what is 'enough' is a relative category, and people in underserved areas might have lower expectations in this regard.

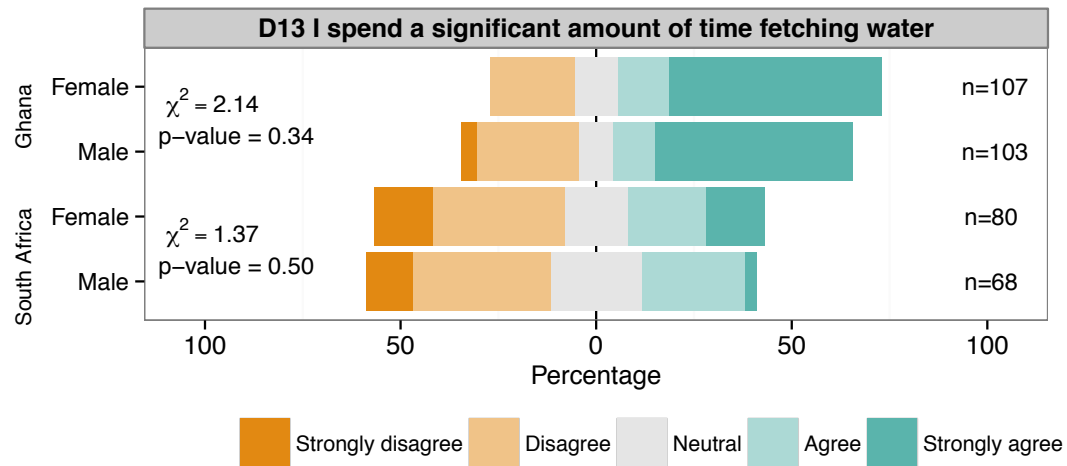
#### ***Time spent fetching water***

More Ghanaian respondents agreed that they spend a substantial amount of time fetching water as compared with South African respondents (Figure 3) although a considerable proportion of respondents in South Africa also suggested significant time investments for water fetching. Interestingly, even as we have the important gender skew in terms of who fetches water, we do not see any significant differences in responses of women and men related to time spent fetching water (ibid). This could be a function of expectations (women may expect to spend more time on this task), as well as other responsibilities that may also condition expectations (e.g. employment, particularly given that men are more often employed). To this point, we observe from the intersectional analyses that female respondents who were home owners or formally employed most often report that they spend a significant amount of time fetching water, and male respondents who were unemployed and did not own a home had the lowest frequency of reporting that they spend a significant



amount of time fetching water. These results reinforce the idea of relative notions of time, where those who are employed might put more weight on the time spent for domestic chores as they might consider their time to be at a premium.

**Figure 3. Time spent fetching water**



The  $\chi^2$  analysis was done on three categories of “Agree”, “Neutral”, and “Disagree”, with the “Strongly Agree”



and “Strongly Disagree” being grouped in their corresponding categories. The tests are between women and men within the same country. All tests had a degree of freedom = 2.

## Knowledges

Overall knowledge about water governance structures and policies was fairly low in both Ghana and South Africa—corresponding to the fact that participation in water governance is also generally low. In Ghana there were some gender differences in knowledge: men were more than twice as likely to report knowledge of the AVRIL consortium that had operated for five years in urban Accra, 26% of men compared to 10% of women, a significant difference ( $X^2 = 9.09$ ,  $df = 1$ ,  $p\text{-value} = 0.003$ ). In the study communities of Ghana, more men (14%) than women (6%) knew of meetings regarding water-related issues that were held in their community, with this difference being just shy of statistical significance ( $X^2 = 3.33$ ,  $df = 1$ ,  $p\text{-value} = 0.07$ ), however, when tested in individual communities there was a significant difference between women and men from Teshie: 9% of women and 27% of men reported knowing about meetings ( $X^2 = 4.12$ ,  $df = 1$ ,  $p\text{-value} = 0.042$ ). In Ashaiman, 3% of women and 7% of men report knowing of meetings ( $X^2 = 0.31$ ,  $df = 1$ ,  $p\text{-value} = 0.58$ ). The fact that this difference would show up in Teshie but not for Ashaiman makes sense in that there are existing water related institutions (local water boards) in Teshie, but none in Ashaiman at present (Peloso 2013, Morinville and Harris 2014). In terms of the direction of this result, again it is consistent with what one might expect from the broader literature, given the expectation of higher participation among men in water and community governance.

In South Africa, one measure of water related knowledge is familiarity with the Free Basic Water Policy (FBW): surprisingly, only 7% of women and 10% of men surveyed were aware of the FBW, revealing no statistical difference ( $X^2 = 0.29$ ,  $df = 1$ ,  $p\text{-value} = 0.59$ ). A greater number of respondents were aware of water-related meetings occurring in their communities (25% of men, 19% of women), again with no statistical gender difference ( $X^2 = 0.77$ ,  $df = 1$ ,  $p\text{-value} = 0.38$ ). It is also clear that in South Africa, there is less of a gender divide in terms of civic participation generally, with women often taking on roles in a range of community activities (broadly defined). From our survey, South African women participated in community governance in the highest numbers (52%), while Ghanaian women were the least likely to participate (12%). Numbers for male respondents were 42% for South Africa and 30% for Ghana.

When we compare the proportion of women and men within each category of employment and home ownership, we find knowledge of water-related meetings to be highest among South African homeowners (both women and men), and lowest among women in Ghana, particularly women who were home owners (Table A-2). The only significant difference found was that in South Africa, home owning women were more likely than non-home owner women to know about meetings (Table A-2)<sup>9</sup>. Other differences were consistent with the direction of the hypotheses, but were not significant (i.e. more unemployed men had knowledge of meetings than unemployed women). In other cases, the results were the

opposite of our hypothesis, but again, these were not significant. For example it is of interest to note that knowledge of meetings among unemployed men and women was slightly higher than their employed counterparts in both countries—an interesting result for tracking senses of ‘enfranchisement’ among different segments of the population. As well, it is noteworthy that homeownership correlated with knowledge of meetings in South Africa, but this did not carry over to Ghana, where home-owning women were the subgroup least likely to know about meetings. It may be the case, in this example, the gendered patterns of disenfranchisement are more difficult to overcome.

## Participation and governance

Participation in water governance was generally very low in all of our study sites and there were no significant differences between women and men. Broadening the question to other forms of civic engagement (not limited to water governance, but including community associations and government consultation meetings), there were much greater overall levels of participation in South Africa, where women also appear to be participating more than men. In Ghana, a statistically significant difference was observed, but in the opposite sense—more men participated in community governance than women (more consistent with the general trends common in the literature, Table 3).

**Table 3. Women and men's participation in community governance**

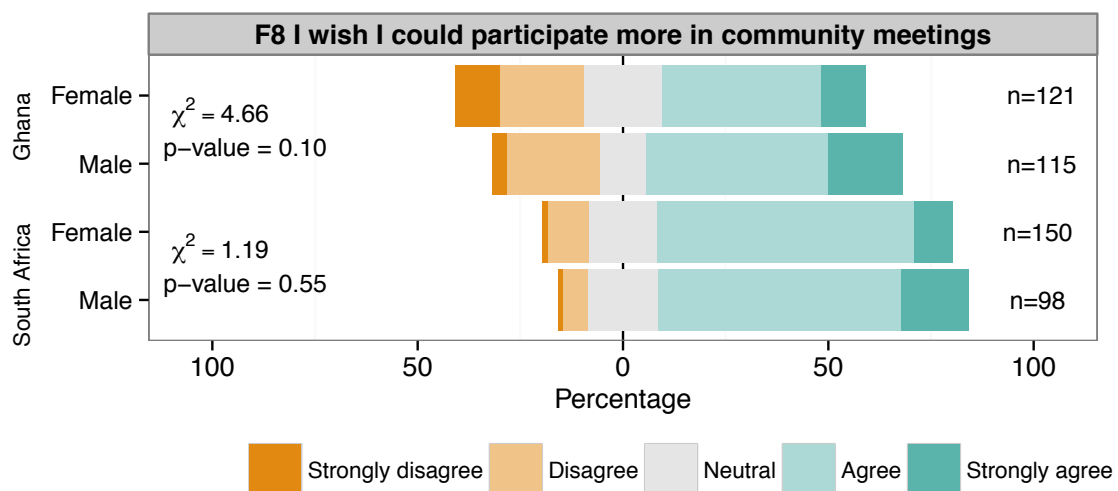
Question	Gender (GHANA)					Gender (SOUTH AFRICA)				
	Female	Male	X <sup>2</sup>	P-value	n	Female	Male	X <sup>2</sup>	P-value	n
F.1 I participate in civic groups	<b>12%</b>	<b>30%</b>	<b>10.20</b>	<b>0.001</b>	250	52%	43%	1.63	0.20	237
F.1.4 I participate in water committees	2%	4%	0.19	0.66	204	10%	6%	0.65	0.42	240

Statistically significant results in **bold**. df = 1

In both Ghana and South Africa there was a great desire to participate in community meetings, as compared with actual participation. While in both countries women were less likely than men to report that they desired to participate more, the differences were not

significant (Figure 4). In relation to the literature, this a somewhat counterintuitive result as we would have expected that women may ‘wish’ to participate in higher proportions, given informal and formal barriers that curtail their actual participation. However, the lower responses among female respondents might precisely reflect their understanding of those barriers, and thus the senses of disengagement reflected in lower numbers of women who ‘wish’ to participate in addition to the lower rates of ‘actual’ participation. This highlights the possibility again that gender works to condition variable expectations related to participation and as well as for our ‘desire to participate’ proxy.

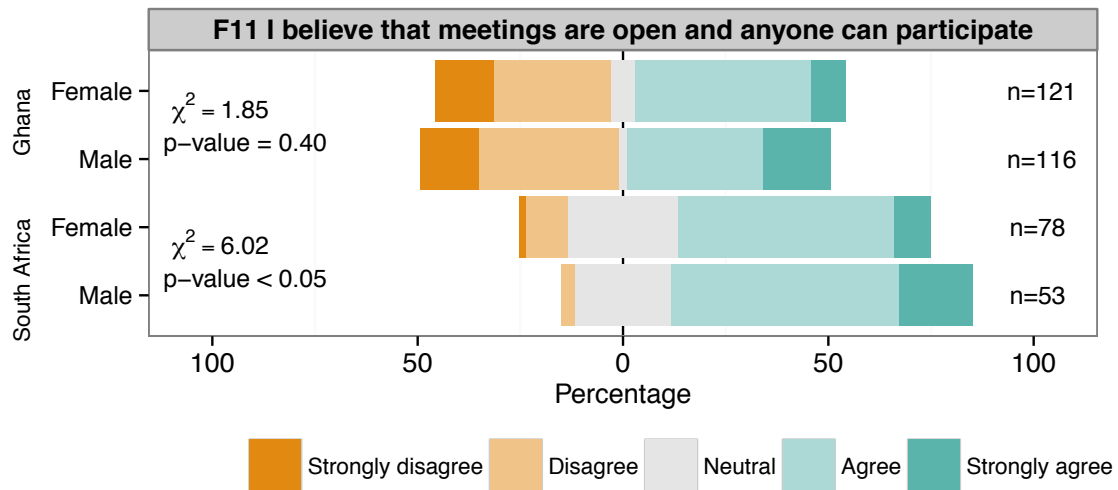
**Figure 4. Wish to participate**



The  $\chi^2$  analysis was done on three categories of “Agree”, “Neutral”, and “Disagree”, with the “Strongly Agree” and “Strongly Disagree” being grouped in their corresponding categories. The tests are between women and men within the same country. All tests had a degree of freedom = 2.

Consistent with our expectations, men in South Africa were significantly more likely than women to believe that community meetings were open to all (Figure 5), yet, there was no statistically significant difference between women and men in Ghana.

**Figure 5. Open community meetings**



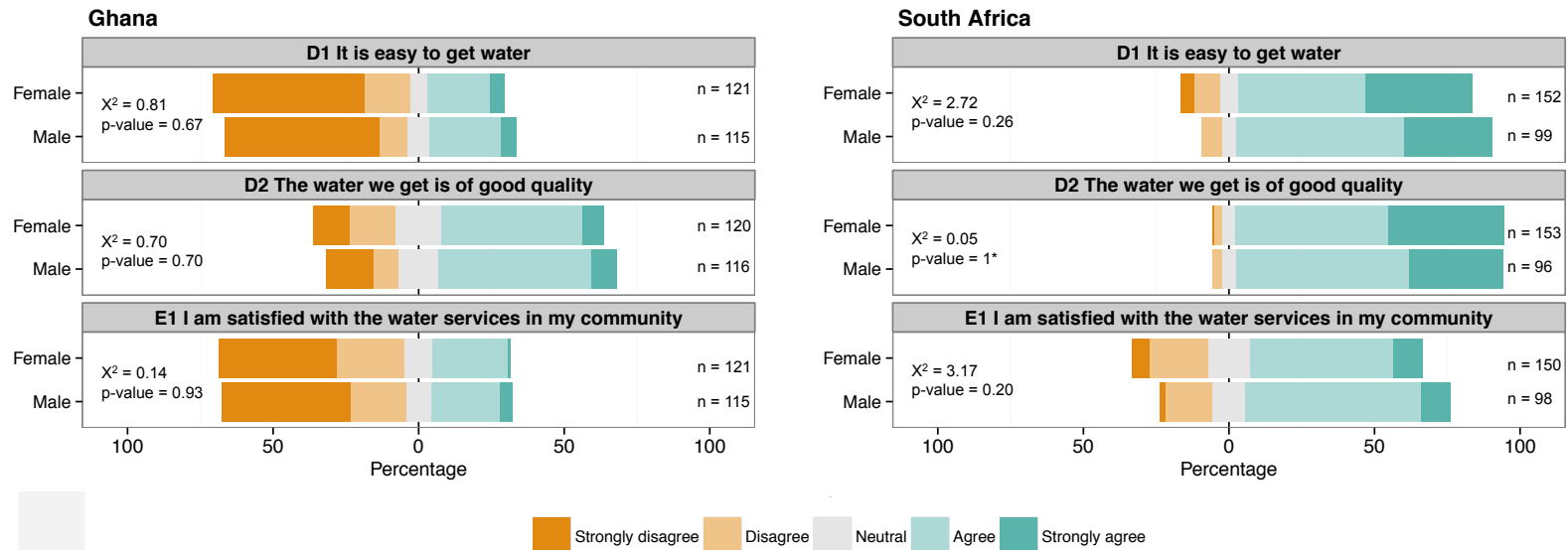
The  $\chi^2$  analysis was done on three categories of “Agree”, “Neutral”, and “Disagree”, with the “Strongly Agree” and “Strongly Disagree” being grouped in their corresponding categories. The tests are between women and men within the same country. All tests had a degree of freedom = 2.

## Everyday lived dimensions and emotional lives related to water

### *Perceptions of water access, quality, and affordability*

Differences in perceptions of water access, quality, affordability, and other economic and social dimensions of water were again much more pronounced by country than by gender. None of the comparisons between women and men were found to be statistically significant for questions related to the ease of getting water, the quality of water, or if the respondent was satisfied with the water services in their community (Figure 6). Again, based on the literature overall, these are factors for which we might have expected strong gender differences (particularly with women more often reporting less ease of access, or less satisfaction related to water services—especially given the relatively underserved status of all of our selected study sites).

**Figure 6. Perception of water**



The  $X^2$  analysis was done on three categories of “Agree”, “Neutral”, and “Disagree”, with the “Strongly Agree” and “Strongly Disagree” being grouped in their corresponding categories. The tests are between women and men within the same country. All tests had a degree of freedom = 2. \* Indicates  $X^2$  with a Monte Carlo simulation (2000 iterations) because of low frequencies (df = NA)

### Worry and conflict over water

Overall Ghanaians were more likely to report that they worried about water, but there were no significant differences between women and men (overall, nor within each country context). Similarly, Ghanaians had disagreements with their family and community members over water more frequently than South Africans, but again, women and men in Ghana and South Africa gave similar answers (See Appendix for full data).

### Intersectional analyses: Worry and satisfaction

In conducting intersectional analyses we found some significant differences between different groups of men and women, even if not between men and women. In South Africa, unemployed men were significantly more worried about water than employed men, and women who owned homes were more worried about water than women that did not own homes. The difference in worry by home ownership in South Africa is consistent with our understanding of the context in that currently home owners in our study contexts are worried about metering, and eventual requirements for payments, and linked concerned related to indebtedness (see Rodina 2013, EMG, 2014, even if they are not always paying for water at present). So, in this sense, somewhat counter-intuitively, home ownership in our study sites of South Africa may elevate worry related to water, rather than the inverse. For satisfaction, even as homeowners are more likely to enjoy in-home taps, there was more pronounced lack of satisfaction with water services among homeowners—women with homes stated significantly more dissatisfaction with water services compared with the women who did not own homes. Again, this likely tracks against variable expectations, rather than some absolute



condition of those services (or may be read through the worry over payment and metering, as noted above).





## DISCUSSION: RELATING BACK AND CONCLUSIONS

Drawing from the literature, we had hypothesized that men and women would report significant differences across a range of the issues examined. As detailed above, our results show very few gender differences that met the 95% confidence threshold for statistical significance. In those cases where significant gender differences were observed, the trends were generally consistent with our expectations. For instance, we observed that more women fetch water (and relatedly, that men might underreport, or that women might over-report women's involvement). In several instances men did report more familiarity with water governance (e.g. stronger familiarity with AVRIL in Ghana), stronger participation in community governance (in Ghana only), or stronger senses that meetings are open to all (among men in South Africa). There were examples where the patterns were not consistent with our expectation, or when we are uncertain as to how to interpret the result (e.g. the fact that unemployed men in South Africa are more likely to worry about water when compared with their employed counterparts). In sum, the gender differences were certainly much less consistent, and less pronounced, than expected. As such, we take the overall lack of statistical validation of the significance of gender as a key category of difference for water access and experience to be an important result. Yet, while this needs to be taken seriously, we also highlight qualifications that we also consider to be essential to characterize this result in light of broader debates and understandings related to gender and water. Chief among them, we consider that we need to take seriously the complexities of gender. There are linked processes and realities that are very difficult to capture with the types of survey instruments and quantitative analysis we undertook here. Further to this, our intersectional findings show us that these gendered experiences likely require considerable unpacking and nuance, inviting us to analyze and situate gender in ways that move beyond simple male and female binary understandings (indeed, in relation to the broader gender literature, we also understand the considerable concern related to practices, including research, that reinforce such binary understandings of gender, cf. Butler, 1990). We pick up these points in the discussion that follows, highlighting several additional points for consideration.

First, it bears restating that the results do confirm some elements of gender-difference as important for water-related analysis. This is particularly so if we include intersectional analyses (e.g. articulations with gender and country, employment, and home ownership). Among other compelling findings, there is a clear gender skew for water fetching (Figure 2), revealing a stark divide in terms of perceptions, or representation, within a survey context. Considering that we find that more women fetch water, we would also expect that there should be a clear gender pattern in terms of reported time spent fetching water. The fact that there was no reported difference in time spent fetching water suggests that gender is likely already at work in terms of conditioning different expectations for men and women with regards to what is 'significant' time for daily tasks (gendered dynamics likely also condition relative notions of what is 'enough', or 'satisfaction' with water). As such, we cannot conclude



that gender differences do not exist, but rather, we must consider the ways that gender works to condition different expectations and relative notions of what is to be expected among men and women, or among different men and women (according to income, employment, or other category). Where relative notions might be different, a key follow-up research task would be to characterize and assess those different relative expectations—whether qualitatively or quantitatively.

Second, several factors linked with the context specificities of our study sites are worth highlighting, primary among them, the fact that they are located in urban contexts. This context is crucial as much of the literature on gender and water focuses on rural contexts (notable examples that do focus on urban contexts include the work of Wutich and Ragsdale [2008] and Wutich [2009]). As such, urban sites may reveal specific experiences of water that likely differ from other trends in the literature. For instance, in all of our sites, although people spend significant time fetching water, access points are generally quite close to the residents' homes (although people do at times queue to get water and may have to collect water several times a day on a bucket-by-bucket basis). As such, it is possible that the gender differences may not be as pronounced in these contexts as they may be elsewhere, i.e. in locales where women have to travel long distances to water sources, or if they may be accessing water from a natural stream or other 'unimproved source'.<sup>10</sup> Our observations in these sites also confirm that both women and men are involved in fetching water for home use, even if the bulk of this labor still falls on women. For Ghana in particular, the economic benefits derived from water vending may also result in men being more closely linked with water access and provision than they may be in other locales—again highlighting context specificities that help to situate, and complicate, our results.

Third, our country specific analyses reveal interesting differences across our study sites of Ghana and South Africa. Although these differences were anticipated (given the key differences related to water access in the sites, as detailed in the introduction), we find that there are again lessons for gender and water discussions. While few would argue that gender-differentiated patterns are the same everywhere, our results nonetheless reinforce the importance of context to understand gender dimensions of water access and experience. In some instances, patterns observable in our Ghanaian sites were not observable for South Africa. At times as well, there are counter-trends in terms of what is observable from site to site<sup>11</sup>. To recall two specific examples, overall governance participation is much lower in Ghana (21%) than in South Africa (48%). Looking at gender, there is a gender skew, for instance, with 30% of men in Ghana reporting that they participate in community organizations or activities in contrast with 12% of women who report the same. In South Africa, the opposite appears to be true, with 52% of women reporting participation in community governance compared with 42% of men. These differences suggest the difficulties, yet also benefits, of cross-national comparative studies and of multi-sited research design. Given the observed differences, the survey results can serve as starting points to further open up, and unpack, these processes more fully, particularly through in-depth qualitative examination. As such, observed quantitative differences can be understood



as invitations to work towards nuance and clarity with respect to how and why gender related processes might work differently in various times and places. The context specificities in our results also underscore the need for caution in terms of abstracting generalizable insights with regards to gender-differentiated patterns. This is particularly important given that some themes from the gender and water literature are often taken as ‘truisms’, e.g. that women more often fetch water, or that women and men have different experiences of, and vulnerabilities to, water given labour requirements and household uses. Instead of assuming these patterns exist, it is important to work to clarify the specific pathways and contexts in terms of how gender or other key differences might work to condition water-related conditions and realities.

Fourth, our results also give us reason to pause and consider the limitations of different research methods more generally. For instance, it is possible that some gender-differentiated experiences are subtle, and perhaps experienced by subsets of the population, even if not by ‘most’ women in a way that would allow these patterns to be easily decipherable through quantitative analysis of survey data. As such, the idea of statistical significance may need to be challenged when we give weight to the lived experience and ways that water access matters for people’s daily lives. As one key example, we know from our qualitative work that women, particularly in South Africa, are very worried about water fetching for safety reasons (e.g., fearing sexual assault, particularly at night). The fact that this does not show up in our quantitative analysis does not negate the reality of these experiences for many women. We are left with the strong sense that while there is no reason that quantitative analysis cannot be part of a feminist and critical toolkit (Sheppard 2001, Schwanen & Kwan 2009), some gender related complexities are likely to be subtle and nuanced enough that they may require in-depth qualitative and ethnographic work. While we find value in testing trends, or in finding more general insights through statistical analysis, we are also cognizant of the reductive and glossing-over tendencies inherent in summing up complex processes and negotiations into a ‘yes’ or ‘no’ answer—as well as linked concerns related to the ‘authoritative’ veneer such work often enjoys (ibid, Hanson 1993). While we are encouraging critical engagement with quantitative methods (and results), we do not consider these sorts of limitations to only be valid for quantitative studies. With qualitative work, it is possible that if one goes looking for gender differences, selection bias or interpretive lenses may enable us to find those very differences we seek. Theorists have cautioned that one’s theoretical approach, or vision of the world, or what one expects to find, is important to structure the ‘truths’ revealed by the research (cf. Botkin 1990, Scott 1991). With this observation, we are not suggesting that qualitative work is not valid or robust—rather we are suggesting that each set of approaches likely has its associated limits, as well as benefits. We have shown that quantitative analysis can be revealing in terms of opening up key puzzles, or targeting specific relationships—inviting further work to better understand patterns that might be observable in some sites, but not others. As such, we are left with the strong suggestion that whenever possible, it is useful to pursue qualitative and quantitative work in tandem—allowing the quantitative work to reveal patterns that can then be explained and understood with more in-depth work. For instance, our work has revealed important questions such as



aiming to understanding why homeowners might express less satisfaction, and significant worry, related to water access—questions that can then be pursued qualitatively in follow-up work. Doing the qualitative work as well, and emphasizing the lived realities that come to the fore through these methods can also allow us to give needed weight to the important experiences in men's and women's daily lives—rather than only taking those ideas and 'differences' seriously if they can be validated statistically.

Finally, taken together, above all we find that these divergences and seeming contradictions offer forceful suggestion to pursue diverse methods not only in tandem, but also in conversation—taking the tensions and divergences between approaches seriously to interrogate and query these approaches, and what they might offer to challenge and unsettle our understanding. As Nightingale (2003, 2009) convincingly argues, 'triangulation' between different data sources is not necessarily to 'validate' particular knowledges, but rather to be able to query, and consider why certain truths appear in certain modes of inquiry, while other realities may be visible through other methods. The point, she argues, is thus not to find the truth, but to be better able to speak to the silences, tensions, and convergences and divergences between diverse realities revealed by different approaches (see also Hesse-Biber 2010, Harris 2011). In this way, we are not necessarily working for complete knowledge, but rather, seeking to learn from the necessarily partiality and situatedness of diverse knowledges (Haraway 1988). Our work may not offer decisive evidence of the ways that gender matters for water in all the ways that we had expected. It does, however, validate the urgent and ongoing need to better speak to divergences and convergences in our knowledges and research approaches, particularly as we engage with diverse realities and contexts. It is only in this way that conceptual engagements with ideas of gender can be interrogated, and that understandings of gender in general, and gender and water (access, use, knowledges and experiences) in particular, can be better understood—with attention to the nuance and complexity required for the complex and ever-changing terrain of water and society.



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**See separate Appendix**

## NOTES

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<sup>1</sup> RDP refers to the 'Reconstruction and Development Program', an effort of democratically elected ANC (African National Congress) that includes focus on providing housing and other basic services to impoverished populations, particularly as part of redressing apartheid era inequalities. At present in Site C, Khayletisha, the predominantly black township that is the focus of our study, as many as 1/3 of residents might be living in newly build RDP homes, while the majority live in corrugated metal or other 'shack' dwellings (CCT 2013a, 2013b). With ongoing formalization, the expectation is that all residents will eventually be living in formal RDP homes, or will be resettled elsewhere.

<sup>2</sup> More details on the broader research effort, and linked publications, is available on our website, [www.edges.ubc.ca](http://www.edges.ubc.ca).

<sup>3</sup> Several surveys were taken out for the analysis due to lack of completeness.

<sup>4</sup> The survey was funded by the Centre for International Governance Innovation (CIGI) and was implemented through a partnership between the EDGES Research Collaborative (Environment and Development: Gender, Equity and Sustainability Perspectives) at The University of British Columbia (UBC), the Anthropology of Water Research Group at the University of the Western Cape, and Professor Akosua Darkwah of the University of Ghana-Legon. Follow-up work was funded by the Social Sciences and Humanities Research Council of Canada (SSHRC), and has included qualitative fieldwork conducted in communities of Accra (2011-present) and in Cape Town (2012-present). More details on the survey instrument, implementation, and related research publications are available at [www.edges.ubc.ca](http://www.edges.ubc.ca).

<sup>5</sup> The WHO/UNICEF Joint Monitoring Program reports that 90% of Accra's population has access to improved drinking water, although the report also specifies that only 33% do so through their own direct connection to the GWCL (WHO/UNICEF Joint Monitoring Programme, 2010). Other accounts report that between 51% (Adank, Darteh, Moriarty, Osei-Tutu, Assan, & van Rooijen, 2011) and 59% of Accra's population is served by the GWCL (Ghana News Agency, cited in [Ainuson, 2010]).

<sup>6</sup> In either case, residents would be considered 'homeowners' for purposes of our survey, even as the home might be a corrugated metal shack or backyard dwelling.

<sup>7</sup> Recall several key citations highlighted above that highlight gender and water stress, disasters, or floods/drought, including Wutich and Ragsdale (2008); Neumayer and Plumper (2007); Alston (2006).

<sup>8</sup> Respondents with an in-house water source were removed from this analysis, which accounts for the low sample sizes, particularly in South Africa where in home/yard water sources were more common.

<sup>9</sup> It is likely, but not certain, that homeownership indicates time living in the community, as more recent arrivals to the community might be less likely to own homes, in addition to being a rough proxy for wealth and enfranchisement (though again, few –to none—of the respondents would be considered 'wealthy' as all study sites are relatively impoverished settlements).

<sup>10</sup> Recall that cross-national data on water fetching cited in the introduction confirms that women are more likely to fetch water when improved sources are unavailable.



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<sup>11</sup> This was very common in another analysis we conducted in the impact of material water conditions on governance participation, see Author et al in process). In several of the analyses run, gender was significant, but only at the country level, and at times the trends were in the opposite direction, so cancelled each-other out in the overall dataset.

# Appendix

## Intersections of Gender and Water, Harris et al, forthcoming in *Journal of Gender Studies*

### ***Statistical Methods***

Data with binary answers were analyzed using a proportions test (`prop.test`, stats package in R), and likert variables were analyzed using a X2 analysis (`chisq.test`, stats package in R). In some cases the frequency counts were too low to produce a reliable approximation of the X2 and p-value. In these cases we used a Monte Carlo simulation to approximate the p-value (the X2 value did not change). In all cases this did not change the significance of the results. The simulations used 2000 replicates.

Most likert questions were asked on a five-point scale (strongly agree, agree, neutral, disagree, strongly disagree), sometimes with options such as “don’t know” or “wish not to answer.” These later two answers were removed from analysis, and because of low frequencies in some responses the five-point scale was converted to a three point scale where the strongly agree and strongly disagree answers were grouped with agree and disagree respectively. While the tests were run on the three-point scale, the data is presented graphically in a five-point scale.

The data was obtained in four different communities in two different countries. We began by testing for differences by country (when the same question was asked in both countries), and again by community within countries. These results are not the focus of this paper but are provided in the appendix (Appendix Table 1-A). In cases where there was a significant difference by community, the differences by gender were also tested at the community level, in addition to the country level analysis.

**Table A-1. Country and within country community test results**

Question	Country					Study sites in Ghana					Study sites in South Africa				
	X <sup>2</sup>	df	p-value	Ghana (n)	South Africa (n)	X <sup>2</sup>	df	p-value	Ashaiman (n)	Teshie (n)	X <sup>2</sup>	df	p-value	Khayelitsha (n)	Phillippi (n)
IIIa.															
D.11 I always get enough water for: 1) drinking	95.61	2	<0.001	235	248	47.87	2	<0.001	131	104	0.46	NA	1.000	127	121
2) cooking	100.37	2	<0.001	235	250	51.88	2	<0.001	132	103	2.09	NA	0.511	128	122
3) washing	127.01	2	<0.001	235	249	51.05	2	<0.001	131	104	5.94	NA	0.057	128	121
4) bathing	133.98	2	<0.001	236	250	49.48	2	<0.001	132	104	0.32	NA	1.000	128	122
D.13 I spend a significant amount of time fetching water	35.27	2	<0.001	210	148	71.91	2	<0.001	108	102	8.53	2	0.014	96	52
IIIb.															
C.8.1 (GHANA) Do you know of Aqua Vitens Rand Limited (AVRL)?	na	na	na	na	na	2.95	1	0.086	132	104	na	na		na	na
C.8.1 (SOUTH AFRICA) Do you know of Free Basic Water Policy?	na	na	na	na	na		na	na	na	na	0.00	1	1.000	122	122
C.9.1 (GHANA) Do you know of National Coalition Against the Privatization of Water?	na	na	na	na	na	0.00	1	1.000	132	103	na	na		na	na
F.10.1. I know that meetings are held about water-related issues in my community.	10.54	1	0.001	229	243	6.81	1	0.009	126	98	2.21	1	0.137	85	49
IIIc.															
F.1.4 I participate in water committees	5.54	1	0.019	204	240	3.77	1	0.052	133	96	0.29	1	0.591	125	118

Question	Country					Study sites in Ghana					Study sites in South Africa				
	X <sup>2</sup>	df	p-value	Ghana (n)	South Africa (n)	X <sup>2</sup>	df	p-value	Ashaiman (n)	Teshie (n)	X <sup>2</sup>	df	p-value	Khayelitsha (n)	Phillippi (n)
F.1. (Total) I participate in a civic group	38.62	1	<b>&lt;0.001</b>	237	250	0.00	1	1.000	115	60	0.15	1	0.695	115	110
F.8 I wish I could participate more in community meetings.	29.19	2	<b>&lt;0.001</b>	236	248	20.40	2	<b>&lt;0.001</b>	133	103	1.66	2	0.437	126	122
F.11 I believe that meetings about things that concern our community are open and anyone can attend/participate	87.47	2	<b>&lt;0.001</b>	175	225	12.72	NA	0.002	133	104	7.79	2	<b>0.020</b>	46	85
III.d.															
D.1 It is easy to get water.	163.20	2	<b>&lt;0.001</b>	236	251	73.50	2	<b>&lt;0.001</b>	132	104	20.86	2	<b>&lt;0.001</b>	129	122
D.2 The water we get is of good quality.	76.13	2	<b>&lt;0.001</b>	236	249	74.27	2	<b>&lt;0.001</b>	133	103	5.84	NA	0.056	127	122
E.1 I am satisfied with the water services in my community	83.54	2	<b>&lt;0.001</b>	236	248	63.79	2	<b>&lt;0.001</b>	132	104	3.11	2	0.212	125	123
D.17 I have disagreements with family/community members over water.	67.32	3	<b>&lt;0.001</b>	237	248	35.67	3	<b>&lt;0.001</b>	133	104	9.85	NA	<b>0.018</b>	125	123
D.18 I worry about a lack of water	130.11	3	<b>&lt;0.001</b>	232	246	69.69	3	<b>&lt;0.001</b>	132	100	2.06	3	0.560	127	119
G.1 I feel safe when I fetch water from a community water sources (stand pipe, or a tanker).	26.85	2	<b>&lt;0.001</b>	226	149	1.50	2	0.473	125	101	1.38	2	0.502	97	52
G.2 I (would) feel comfortable talking to government officials regarding issues we face.	29.13	2	<b>&lt;0.001</b>	232	231	1.14	NA	0.855	132	100	3.24	2	0.198	114	117

**Table A-2. Cross tab results for question F.10. I know about water related meetings in my community.**

Country	Category 1	% know	n	hypothesis	Category 2	% know	n	X <sup>2</sup>	Test p- value	df	
GHANA	Employed (women)	0%	11	>	Unemployed (women)	7%	105	0.05	0.59	1	*
	Employed (men)	13%	32	>	Unemployed (men)	15%	80	0.00	0.52	1	*
	Employed (women)	0%	11	<	Employed (men)	13%	32	0.40	0.26	1	*
	Unemployed (women)	7%	105	<	Unemployed (men)	15%	80	2.58	0.05	1	
	Home owner (women)	5%	20	>	Non-home owner (women)	7%	91	0.00	0.50	1	*
	Home owner (men)	19%	16	>	Non-home owner (men)	14%	88	0.02	0.44	1	*
	Home owner (women)	5%	20	<	Home owner (men)	19%	16	0.59	0.22	1	*
	Non-home owner (women)	7%	91	<	Non-home owner (men)	14%	88	1.74	0.09	1	
SOUTH AFRICA	Employed (women)	16%	37	>	Unemployed (women)	19%	78	0.02	0.55	1	
	Employed (men)	16%	32	>	Unemployed (men)	26%	38	0.63	0.79	1	
	Employed (women)	16%	37	<	Employed (men)	16%	32	0.00	0.50	1	
	Unemployed (women)	19%	78	<	Unemployed (men)	26%	38	0.40	0.26	1	
	Home owner (women)	26%	89	>	Non-home owner (women)	10%	52	<b>4.46</b>	<b>0.02</b>	1	
	Home owner (men)	26%	70	>	Non-home owner (men)	24%	25	0.00	0.50	1	
	Home owner (women)	26%	89	<	Home owner (men)	26%	70	0.00	0.50	1	
	Non-home owner (women)	10%	52	<	Non-home owner (men)	24%	25	1.80	0.09	1	*



**Table A-3. Cross tab results for question D.18. I worry about lack of water.**

Country	Category 1	% worry	n	hypothesis	Category 2	% worry	n	X <sup>2</sup>	Test p-value	df
GHANA	Employed (women)	100%	11	<	Unemployed (women)	91%	107	0.24	0.688	1 *
	Employed (men)	94%	32	<	Unemployed (men)	93%	81	0.00	0.500	1 *
	Employed (women)	100%	11	>	Employed (men)	94%	32	0.00	0.492	1 *
	Unemployed (women)	91%	107	>	Unemployed (men)	93%	81	0.04	0.582	1
	Home owner (women)	90%	22	<	Non-home owner (women)	95%	89	0.16	0.656	1 *
	Home owner (men)	83%	18	<	Non-home owner (men)	94%	86	1.18	0.139	1 *
	Home owner (women)	90%	22	>	Home owner (men)	83%	18	0.55	0.229	1 *
	Non-home owner (women)	95%	89	>	Non-home owner (men)	94%	86	0.59	0.779	1
	Feel safe (women)	87%	39	<	Don't feel safe (women)	95%	74	1.04	0.154	1 *
	Feel safe (men)	80%	35	<	Don't feel safe (men)	99%	74	<b>9.56</b>	<b>0.001</b>	1 *
	Feel safe (women)	87%	39	>	Feel safe (men)	80%	35	0.27	0.301	1
	Don't feel safe (women)	95%	74	>	Don't feel safe (men)	99%	74	0.83	0.819	1 *
SOUTH AFRICA	Employed (women)	58%	36	<	Unemployed (women)	49%	83	0.49	0.757	1
	Employed (men)	44%	32	<	Unemployed (men)	71%	38	<b>4.27</b>	<b>0.019</b>	1
	Employed (women)	58%	36	>	Employed (men)	44%	32	0.92	0.169	1
	Unemployed (women)	49%	83	>	Unemployed (men)	71%	38	4.12	0.979	1
	Home owner (women)	59%	92	>	Non-home owner (women)	37%	52	<b>5.67</b>	<b>0.009</b>	1
	Home owner (men)	59%	70	>	Non-home owner (men)	40%	25	1.86	0.086	1
	Home owner (women)	59%	92	>	Home owner (men)	59%	70	0.00	0.500	1
	Non-home owner (women)	37%	52	>	Non-home owner (men)	40%	25	0.00	0.517	1
	Feel safe (women)	20%	10	<	Don't feel safe (women)	51%	136	2.54	0.056	1 *
	Feel safe (men)	30%	10	<	Don't feel safe (men)	56%	84	1.49	0.111	1 *
	Feel safe (women)	20%	10	>	Feel safe (men)	30%	10	0.00	0.500	1 *
	Don't feel safe (women)	51%	136	>	Don't feel safe (men)	56%	84	0.26	0.694	1 *

**Table A-4. Cross tab results for question E.1. I am satisfied with the water services in my community.**

Country	Category 1	% Agree	% Neutral	% Disagree	n	Category 2	% Agree	% Neutral	% Disagree	n	X <sup>2</sup>	Test p-value	df
GHANA	Employed (women)	18%	9%	73%	11	Unemployed (women)	27%	10%	63%	110	0.48	0.903	NA *
	Employed (men)	35%	3%	62%	34	Unemployed (men)	24%	11%	65%	80	3.09	0.231	NA *
	Employed (women)	18%	9%	73%	11	Employed (men)	35%	3%	62%	34	1.64	0.502	NA *
	Unemployed (women)	27%	10%	63%	110	Unemployed (men)	24%	11%	65%	80	0.33	0.848	2
	Home owner (women)	18%	5%	77%	22	Non-home owner (women)	29%	11%	60%	92	2.41	0.352	NA *
	Home owner (men)	11%	11%	78%	18	Non-home owner (men)	31%	9%	60%	87	2.97	0.260	NA *
	Home owner (women)	18%	5%	77%	22	Home owner (men)	11%	11%	78%	18	0.90	0.619	NA *
	Non-home owner (women)	29%	11%	60%	92	Non-home owner (men)	31%	9%	60%	87	0.17	0.920	2
SOUTH AFRICA	Employed (women)	54%	14%	32%	37	Unemployed (women)	58%	19%	23%	83	1.45	0.484	2
	Employed (men)	64%	18%	18%	33	Unemployed (men)	64%	10%	26%	39	1.26	0.548	NA *
	Employed (women)	54%	14%	32%	37	Employed (men)	64%	18%	18%	33	1.89	0.388	2
	Unemployed (women)	58%	19%	23%	83	Unemployed (men)	64%	10%	26%	39	1.58	0.455	2
	Home owner (women)	51%	16%	33%	92	Non-home owner (women)	75%	11%	13%	53	<b>8.87</b>	<b>0.012</b>	2
	Home owner (men)	67%	10%	24%	72	Non-home owner (men)	79%	17%	4%	24	4.79	0.082	NA *
	Home owner (women)	51%	16%	33%	92	Home owner (men)	67%	10%	24%	72	4.14	0.126	2
	Non-home owner (women)	75%	11%	13%	53	Non-home owner (men)	79%	17%	4%	24	1.69	0.495	NA *