

# “Until I see that I have water, I am never free”: Gendered experiences of water scarcity

**A case study from Gburimani, Northern Ghana**



Photo by Madeleine Nordström, April 2022

**By: Madeleine Nordström & Isabel Widman**

Supervisor: Rickard Lalander

Södertörn University | School of Natural Sciences, Environmental Studies and Technology

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## Abstract

Access to water is essential for every aspect of human life. Lack of water is a huge burden for people in low- and middle-income countries, directly linked to poverty, and considered a severe violation of human rights. Women are traditionally responsible for water collection and providing water for the household and consequently suffer from more burdens than men. This study aims to examine the gendered experiences of water scarcity in Gburimani, northern Ghana. By investigating the diversity of impacts of lived experiences, both within and beyond households, the purpose is to raise awareness of the community's situation and illuminate the importance of having an intersectional and gender-based perspective on the issue of water scarcity. This case study is conducted through the methods of *work in the field*, participatory method, and semi-structured interviews, and positions within the heart of decolonial feminism. The results are analyzed through insights and arguments from Feminist Political Ecology (FPE) and intersectionality. The results demonstrate that the social construction of gender and socio-cultural identities influences the diversity of experiences reflected in the community. The study concludes that gender division of labor, power structures, gendered responsibilities, and rights all determine that women are more vulnerable and face more burdens than men. However, the participants cannot be understood as a homogenous category with common submissions and oppressions. Gender, marital-and social status, age, and household positions are crucial variables influencing the extent of impacts and consequences. Therefore, the research stresses the importance of development actors to acknowledge the complexity of water and gender.

Keywords: Water scarcity, Gender, Feminist Political Ecology, Intersectionality, Decolonial feminism, Ghana

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*Isabel Widman and Madeleine Nordström*

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## **List of Abbreviations**

<b>FPE</b>	Feminist Political Ecology
<b>PRA</b>	Participatory Rural Appraisal
<b>MG</b>	Male Group
<b>MI</b>	Male Individual
<b>FG</b>	Female Group
<b>FI</b>	Female Individual
<b>IDI</b>	In-depth Interview
<b>Sida</b>	Swedish International Development Cooperation Agency
<b>CHPS</b>	Community-Based Health Planning and Services
<b>UTI</b>	Urine Tract Infection
<b>WHO</b>	World Health Organization

# 1. Introduction

My heart, it is like an insect is walking around my heart. Until I see that I have water, I am never free (Elderly woman, FI2).

These are the words of an elderly woman who has lived with water scarcity for as long as she can remember and whose life has been permeated by major struggles and burdens due to her responsibility of providing water for her family. Her description manifests constant anxiety and stress, which is of common occurrence among women in Gburimani, Northern Ghana.

Access to water is essential for every aspect of human life. Lack of water is a huge burden for people in low- and middle-income countries, directly linked to poverty, and considered a severe violation of human rights. Today, less than 3 percent of the world's water resources are fresh water, and the scarcity of water is increasing. Misuse, contamination of freshwater supplies, poor management, climate change, and population growth consequently reduce the amount of water available. In 2021, 1.42 billion people lived in areas of severe water scarcity, whereas nearly two-thirds of the global population experience water scarcity for at least one month a year, and half a billion people in the world live under conditions of severe water scarcity all year round (UN-Water n.d.; UNICEF 2021, p. 4; Mekonnen & Hoekstra 2016). Today, more than 4.4 million people in Ghana lack access to clean water, and people living in the poorest communities of the country are over 20 times more likely than people in wealthier communities to spend more than 30 minutes to access decent drinking water, with the greatest prevalence in the Northern Region (WaterAid n.d.; UNICEF n.d.).

Water scarcity exists due to either physical, economic, or infrastructural reasons and is defined as unreliable, unsafe, and limited access to water where the demand exceeds supply and where water resources have exceeded sustainable limits. The consequences of such conditions are tremendous, leading to poor health, diseases, and conflicts as communities and entire populations compete for shrinking water resources. Gender roles makes women traditionally responsible for water collection and providing water for the household, and consequently they suffer from more burdens than men (Global Water Forum 2012; UNICEF 2021, pp. 4–5; Mekonnen & Hoekstra 2016; Jeil, Abass & Ganale 2020, p. 321).

Gender-related water studies have engaged with how gender influences the impacts of water scarcity in various research and geographical areas. The growing body of literature investigates this issue in relation to, e.g., livelihood activities, health issues, school attendance, and gender roles and relations (Nauges & Strand 2015; Van Houweling 2016; Bisung & Elliott 2017; Jeil, Abass & Ganale 2020; Simiyu, Bagayoko & Gyasi 2021). Several scholars conclude that the effects of water scarcity disproportionately fall on women due to their combined reproductive and productive work, gender norms, and environmental responsibilities and rights (UNICEF 2016; Arku & Arku 2010, p. 120; Elmhirst 2011, p. 129).

This research aims to investigate gendered experiences of water scarcity in Gburimani, Northern Ghana - an area that, to the best of our knowledge, has not attached research spotlight. The case study builds upon the consolidated understanding that women suffer from greater burdens of water scarcity than men, but to illuminate the complexities and complicate this generalized notion, theoretical insights from Feminist Political Ecology (FPE) and

intersectionality will be incorporated to highlight that experiences of water scarcity are influenced by different social determinants, leading to multidimensional impacts, varying in all contexts, not least in different regions, communities, and households (Rocheleau, Thomas-Slayter & Wangari 1996, p. 10; Truelove 2019, p. 4).

Through semi-structured interviews, the objective is to facilitate a collaborative research process and understanding through multiple situating knowledge and interests. Therefore the research takes a position within decolonial feminism. These three theories highlight that women and men, due to socio-cultural identities and power structures, experience differences in terms of responsibilities, access, and control over environmental resources such as land and water (Rocheleau 2008, p. 722; Peet & Hartwick 2015, p. 276; Robbins 2020, pp. 62–63; Lugones 2007). *Patriarchy, gender division of labor, and gendered environmental rights and responsibilities* are central concepts incorporated in the thesis.

The research was carried out in Gburimani during the dry season, heading towards the beginning of the rainy season, between March-May 2022. Gburimani is located in Tolon District, approximately 35 km from Tamale, the capital of Northern Ghana. The livelihood activities in the rural area are highly dependent on water, and the primary water source is a dam located approximately 3 km from the center of the community. The dam is shallow, especially during the dry season, which ultimately constrains livelihood activities and everyday practices. These activities and practices are generally divided between men and women, whereas men are responsible for farming while women are responsible for everything else that regards water use and collection; they are the ones fetching, caring for the children, cooking, etc., reflecting on the patriarchal structures which have created masculine and feminine roles and a distinct gender division of labor (Sultana 2012, p. 15). The community suffers from severe seasonal water scarcity, and the responsibilities of women subsequently affect their social relationships, physical and emotional wellbeing, and economic opportunities. The water situation has created a vicious cycle where there is not enough water to make a profit from income-generating businesses and where lack of income subsequently hinders the population from buying water for livelihood purposes.

On a global level, much attention has been paid to the problems of water, sanitation, and household responsibility, specifically in the Sustainable Development Goals (SDGs) and explicitly in targets 5.4, 6.1, and 6.2. Target 5.4 seeks to recognize and value unpaid care and domestic work and promote shared responsibility within the household. Target 6.1 aims to achieve universal and equitable access to safe and affordable drinking water for all. Target 6.2 aims to pay specific attention to the needs of women and girls (United Nations n.d.a.; United Nations n.d.b.). Nonetheless, the problems remain, and increased attention is still needed. Therefore, this study intends to raise awareness of the situation of Gburimani by highlighting the perspective of the population. Moreover, it argues that insights from decolonial feminism, FPE, and intersectionality are essential to fully comprehend the complexity of water and gender in development contexts. All stories are different and must be embraced to cover the broad spectrum of experiences.

### 1.1. Aim and Research questions

More specifically, this study aims to examine and analyze the gendered experiences of water scarcity in Gburimani, Northern Ghana. Through the application of Feminist Political Ecology and intersectionality, the study intends to investigate the diversity of impacts and lived experiences, both within and beyond households.

The research questions that guide this study are:

- How are the gendered experiences and impacts of water scarcity reflected in Gburimani?
- How and to what extent do socio-cultural identities and power structures influence the impacts of water scarcity?

The first question relates to the attempt to generate a full understanding of the lived experiences in the community by acknowledging the perspectives of collective local histories. The reflection of the gendered experiences and impacts is grounded in the perception and narratives of the people of Gburimani, hence helping us put their voices, knowledge, and interests to the foreground. Drawing on both male and female experiences enables a comparison of how social norms, gender division of labor, and gendered environmental rights and responsibilities ultimately influence the perceived impacts of water scarcity.

The second question deals with how different social determinants, socio-cultural identities, and power structures lead to diverse impacts in varying contexts. It enables the study to avoid generalizing the participants as a homogenous category. These two questions function as guidance to achieve the objective of investigating the full diversity of impacts and lived experiences. The first question aims to provide a description. Meanwhile, the second has an analytical character embedded in the theoretical framework.

### 1.2. Disposition

The disposition of the text is as follows. First, the theoretical framework consisting of FPE, decolonial feminism, and intersectionality is presented. Thereafter, previous research is outlined before the methods are presented in the methodological chapter. Further, a description of the setting and the historical background of Gburimani is presented. The following chapter consists of the findings from the semi-structured interviews.

The male and female experiences of water scarcity are outlined according to different psychosocial stressors, which concern the outcomes of the responsibilities and social norms regarding the use, control of, and access to water. Previous research on water scarcity in low-and-middle-income countries has divided the psychosocial stressors into financial, physical, social, and inequities. This study will follow the same categories but will also include the stressor of emotions. The motivation for doing so is based on how the theory of FPE stresses the benefits of analyzing emotional challenges as a way to generate a comprehensive understanding of the experiences of water scarcity. This study also incorporates the stressor of inequality, as intersectionality is a central analytical and methodological tool.



In the following chapter, the analysis is outlined based on insights from FPE and intersectionality. After the discussion, some pertinent conclusions and final reflections will be drawn.

## 2. Theoretical framework

To understand and analyze the experiences and impacts of water scarcity in Gburimani and further explain how socio-cultural identities and power structures influence the impacts, this study builds on insights and arguments from feminist political ecology (FPE) and intersectionality. Furthermore, insights from decolonial feminism, particularly the concept of the colonial difference, will be emphasized as the research positioning and increase the understanding of our relation to the research and the participants through the process of critical self-evaluation (Pitard 2017). In order to do so, the task begins by seeing the colonial difference and then moving away from the conceptualization of women as a homogenous category (Lugones 2010, p. 753). When analyzing the gendered experiences of water scarcity, the study incorporates concepts like patriarchy, gender division of labor, and gendered environmental rights and responsibilities.

In broad terms, patriarchy is defined as male control and domination in both public and private spheres. It is usually described as a system of social structures, practices, and gendered power relations in which men dominate over women. Patriarchy can be understood as a set of social relations and solidarity among men that create male superiority (Peet & Hartwick 2015, p. 293). The patriarchal system has created masculine and feminine roles, leading to the subordination of women's social identity, taking various forms - exploitation (e.g., unequal workload), oppression (e.g., violence), and discrimination (e.g., resource distribution, the burden of household work, lack of education, etc.) (Sultana 2012, pp. 1–3, p. 7; p. 15).

The gender division of labor goes beyond the historical notion of biological determinism and towards the social dimension. Women's reproductive work is not accounted for and does not belong to the realm of productive forces, it is rather seen as a "nature-based activity," whereas men's productive work is usually considered conscious, rational, and planned labor. Due to this biological explanation that reproductive work is "natural" for women, their domestic chores do not appear as labor. The division of labor is not merely a simple division of tasks between sexes, it creates asymmetric and exploitative relationships (Robbins 2020, p. 63; Mies 2014, pp. 45–46).

Gendered environmental rights and responsibilities derive from gendered power relations and are reflected spatially in public and private contexts in different kinds of homes, communities, and regions. Environmental resource rights may be either legal or customary, men are often associated with the first and women the latter. Environmental responsibilities refer to the provision of productive resources for domestic use (such as firewood, water, etc.) and the responsibility to manage these resources in general (Rocheleau, Thomas-Slayter & Wangari 1996, pp. 10–13).

Resource claims are always about power and control, and locally-mediated customs and conventions influence who has access to what resources. Access to natural resources and control/ownership can be very different for different groups of people and are linked to their overall bundles of power (Sultana 2011, p. 166).

## 2.1. Feminist Political Ecology

Feminist political ecology (FPE) has extended the political ecology (PE) analysis of environment and power into gendered relations and addresses environmental processes and relationships from a gender perspective. When focusing on gendered relations, FPE complicates the notion of homogenous conditions and shared interest on a local level, both within and beyond households, and seeks forms of collaborative research process and understanding through multiple, situated knowledge (Rocheleau 2008, p. 722). The theory explains gender as a crucial variable that plays a critical role in determining water management, use, control, and access (Elmhirst 2011, p. 129; Van Houweling 2016, p. 1067). When investigating the gender dimension in research, FPE turns to key themes such as gendered environmental knowledge and gendered environmental rights and responsibilities (Elmhirst 2011, p. 129). The theory highlights that women and men, due to social roles, experience differences in terms of access and control over the environment. In other words, the rights of access to environmental resources, such as water and food, depend much on gender. The same applies to the responsibility of the management of environmental resources. Furthermore, FPE emphasizes that the gender differences in access, control, and knowledge have nothing to do with the biological differences between men and women, but rather it is the social and structural norms that categorize what counts as women's work and men's work. This means that the expectations of the socially assigned gender contribute to determining the level of access, responsibility, control, and burdens (Robbins 2020, pp. 62–63).

Gendered environmental rights and responsibilities are reflected in various contexts and different regions, communities, and households. Such environmental rights tend to significantly impact women's security of tenure, ownership, and social relations (Rocheleau, Thomas-Slayter & Wangari 1996, pp. 10–12). Despite lack of rights and control, women have a great responsibility for environmental practices and the obligation to produce and manage resources for the family, household, and community (Rocheleau, Thomas-Slayter & Wangari 1996, p. 10).

In Gburimani, men control the resource on which all households mainly rely on, i.e., farmland, to produce food<sup>1</sup>. This refers to what FPE illustrates as gendered mandates of control. The socially assigned role of men as breadwinners make them responsible for producing food for their families. Gendered mandates of control also refer to men's rightful access to the farmland and their authority to allocate this resource, where women's rights to utilize are inhabited within the rights of men (Rocheleau, Thomas-Slayter & Wangari 1996, pp. 10–12).

In addition, the theory acknowledges the connection between the environment and gendered knowledge, power relations, labor divisions, and livelihood practices. FPE emphasizes how the power of patriarchy, economic inequality, and poverty are central to how social relations shape women's relation to environmental resources (Jarosz 2011, pp. 308–309).

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<sup>1</sup> Further discussed and exemplified in the analysis

Sultana (2011) highlights the benefit of analyzing emotions and meanings attached to resource access, use, and conflict to better understand how resource struggles are not only political or social but also emotional and, in turn, how it affects everyday struggles (Sultana 2011, pp. 163–165). Paying attention to emotional issues can increase the knowledge of women's agency and reflect on the complexity and the depth of female experiences. Few scholars have explored emotional distress and suffering caused by water scarcity, thus paying attention to emotional suffering can provide insight into underrepresented perspectives (Sultana 2011, p. 167). Therefore, water struggles are not just material challenges but also emotional ones. Apart from physical and financial struggles, knowledge of women's emotional challenges such as stress, worry, suffering, and embarrassment are also essential to gain a holistic understanding of experiences of water scarcity (Cole 2017, p. 16).

For the purpose of the study, FPE is significant to interrogate how power relations interact with socio-cultural norms to reproduce difference, subjectivities, and gendered effects of water scarcity and water-related activities (Adams, Juran & Ajibade 2018, p. 134). Concepts and assumptions advanced in FPE complicate the understanding of gender water relations in the rural area, Gburimani. By including the aspects of how social variables such as age, social status, and wealth shapes the access and control of natural resources, the FPE analysis builds upon intersectionality. It examines gender in various forms of social difference that intersect and result in complex outcomes of subordination (Robbins 2020, pp. 64–65).

## 2.2. Decolonial feminism

Like FPE, decolonial feminist theory acknowledges the importance of not analyzing women as a homogenous category of common dependencies and shared interests (Peet & Hartwick 2015, p. 276). Pluriversality of knowledge, interests, experiences, and ideas are central parts of decolonial feminism and serve as the basis for this research approach and positioning (Manning 2021, p. 1205).

Mainstream feminist theories tend to concentrate on the analysis of patriarchy, as the only hierarchal and binary male supremacy, without understanding the history of the gender system as being a social structure that the Eurocentered capitalism imposed through heterosexuality and racial classification (Lugones 2007, pp. 189–190). Accordingly, the theory analyzes gender differentials from the lens of coloniality and the colonial difference. The colonial difference refers to a condition of being open-minded and acknowledging the coloniality of power. This condition brings the perspective of the subaltern to the foreground and hence creates a possibility for dialogic situations and a space where local histories are distinguished from the Eurocentric global designs. In other words, decolonial feminist theory calls for a pluriversality - a world distinguished from the Western profile, where all people, knowledge, cultures, and communities are valued. Here, the colonial difference creates a space for returning to subaltern knowledge, where border thinking emerges. For decolonial feminists, this space is the response and resistance to the coloniality of gender from within, from the perspectives of collective local histories of the marginalized (Lugones 2010, pp. 752–753). This theoretical platform asserts the understanding of the inseparability of different social identities, hence intersectionality is a central analytical tool in decolonial feminism (Lugones 2010, pp. 752–753; Manning 2021, p. 1205).

### 2.3. Intersectionality

Intersectionality is an analytical and methodological tool for intersecting social categories that have been constructed by modern categorical logic as homogeneous and separable and an approach to avoid generalizing women. Intersectionality typically analyzes and investigates gender, race, class, colonization, etc., and can therefore be a means to illuminate and include the oppression against women with intersecting identities (Lugones 2007, pp. 188–193). However, the social categories impacting individuals' lived experiences and social relations on the African continent may be different from the social identities typically emphasized in most American-and European focused literature. Intersectionality in the African context addresses how intersectionality is subjectively experienced and how context, place, history, and social and marital status might be important categories (Meer & Müller 2017, pp. 3–4). Meer & Müller (2017) remark on the importance of expanding intersectionality beyond social relations to include intersections of social power with material resources such as water (Meer & Müller 2017, pp. 3–4). Furthermore, the experiences of water scarcity are shaped by social determinants such as age, class, poverty, and marital status, and to acknowledge the full diversity of water-related experiences, it is vital to understand how water access and inequalities are congruently affected by different social determinants, leading to different forms and levels of water difficulties for people sharing community and even households (Truelove 2019, p. 4). Hierarchical positions and privilege are also critical tools when analyzing intersectional marginalization since it helps identify power dynamics to fully comprehend structural inequalities in different contexts (Nyantakyi-Frimpong 2017, p. 73; Evans & Lépinard 2020, p. 13). Privilege is relational and contextual, usually referred to as “unearned” advantages society grants to individuals or groups. For example, male privilege enables understanding how an “invisible package of unearned assets” takes institutional and embedded forms. Considering male privileges in a broader intersectional framework facilitates identifying how “unearned” benefits produce and naturalize inequalities, oppression, and violence (Evans & Lépinard 2020, pp. 12–15; David 2020, p. 102; Strid & Verloo 2020, p. 85). When analyzing structural intersectionality, meaning inequalities and intersections directly relevant to people's experiences in society, this study predominantly centers around social identities such as gender, marital status, age, household position, social status, and wealth (Strid & Verloo 2020, p. 85).

### 2.4. Application of the theoretical framework

Since this study investigates the gendered experiences of water scarcity and further intends to illuminate the diversity of impacts on different levels, both within and beyond households, a combined intersectional and FPE framework is highly adequate and enables a more comprehensive analysis.

FPE will provide insights into how the socially assigned gender determines experiences and the level of access, responsibility, control, and burdens. The intersectional analysis will serve as a tool for considering and recognizing the diversity of the participants to fully comprehend and reveal how identities converge to deepen the subordination and hence influence the impacts (Yuval-Davis 2006, p. 196–204). Due to the post-colonial setting and

structures of Ghana, this research seeks to position within the colonial difference; hence decolonial feminism serves as a guide to decolonize the research and achieve the aim - to bring the perspectives and narratives of the participants to the foreground.

### 3. Previous research

The existing research reflects on the different categories of psychosocial stressors and, regardless of the stressors or geographical context, concludes that women suffer from greater and more burdens of water scarcity than men. This section highlights the contributions within the thematic field and functions as the basis for our triangulation as a way to counter-balance different interpretations and conclusions.

#### *Financial stressors*

Research conducted in Ghana and other low-and-middle-income countries demonstrates that the financial stressors of inadequate water access generally regard the need to buy water from expensive informal sources and the lost opportunities to engage in income-generating activities depending on water. Water is used for various economic purposes, e.g., farming, building construction, and shea butter extraction. The financial stressor of water scarcity affects both men and women, although women suffer more due to their combined reproductive and productive work and their responsibility for water collection (Bisung & Elliott 2017, pp. 23–24; Jeil, Abass & Ganale 2020, p. 326; Arku & Arku 2010, pp. 120–121; pp. 115–116).

With the help of their children, women spend substantial time fetching water from a source that is often located far from their households. This generally prevents children from attending school, leading to long-term consequences, reducing the possibility of employment and hindering their economic and social status later in life (Nauges & Strand 2015, pp. 65–71; UNICEF 2016). Research from both Ghana and Tanzania demonstrate that daughters were more likely to take over household chores while mothers fetch water and also support them with water collection, something that is not an equally prominent demand of sons, ultimately compromising girl's schooling and leading to higher school drop-out rate for girls (Mbilinyi & Scechambo 2015, p. 92; Jeil, Abbas & Ganale 2020). Mbilinyi & Scechambo (2015) adds that some boys do help with water collection using bicycles, but that it is not as common due to the patriarchal nature of gender division of labor, where boys and/or men engage in "women's work" only when they get paid for it. This support usually decreases when they get older, and other family members take over the responsibility (Mbilinyi & Scechambo 2015, p. 92; Van Houweling 2016, p. 1070). However, a different research from Ghana indicated no or little gender discrimination regarding school attendance since boys also assisted their mothers with water collection just as much as girls (Nauges & Strand 2015, pp. 78–83).

#### *Physical stressors*

When households are incapable of buying water because of economic limitations, they are forced to seek water that is often contaminated. This results in high health risks because unsafe water used for drinking, cooking, and washing is a major risk factor for infectious diseases. Evidence from Ghana indicates that women's reproductive work makes them more susceptible to both infectious diseases and depression, with a greater prevalence in rural areas (Jeil, Abass & Ganale 2020, p. 322; Simiyu, Bagayoko & Gyasi 2021, pp. 1–5). Additionally, research from Tanzania demonstrates how women face increased health risks, including

waterborne and urinary tract diseases, due to water scarcity (Mbilinyi & Scechambo 2015, p. 91).

The physical stressors are also highly associated with physical pain due to long-distance walking to water sources, inadequate supplies for daily needs, and insufficient water supply for hygiene (Bisung & Elliott 2017, p. 24). Evidence from Ghana demonstrates that inadequate water supply for daily chores is related to physical violence, whereas the female respondents of the study testified of gender-based violence. Of all the female respondents, 76% reported how their responsibility for fetching water during water shortages put them in an exposed position, making them susceptible to violence, rape, and forced marriages (Jeil, Abass & Ganale 2020, p. 330).

### *Social stressors*

Research from Ghana and Mozambique illustrated women's fear of sexual assault directly associated with water collection. Apart from physical pain and fatigue due to long-distance walking, water collection also caused emotional stress because of the risk of walking far distances in the dark. Women often wake up early to avoid crowding at the water source, but these nightly walks are linked to fear of encountering men who may harm them (Bisung & Elliott 2017, p. 24; Van Houweling 2016, pp. 1069–1070).

Furthermore, the social stressors of water scarcity relate much to the social relationship between the household and the community. For example, disputes with neighbors were associated with stealing water because of the inability to provide water for the household (Bisung & Elliott 2017, p. 24). This social stressor is evident in research from Ethiopia, where the women described how the responsibility of fetching water caused disputes with both their husbands and neighbors (Stevenson et al. 2012, p. 396).

### *Inequities*

In Ghana, the experiences of water scarcity vary across the country, for example, in terms of water collection and the previously mentioned correlation to school attendance. Girls in the northern part of the country (Northern, Upper East, and Upper West region) were spending more time on water collection (average 25–30 minutes) and had more negative impacts on their school attendance than girls in the southern part (Nauges & Strand 2015, pp. 78–83).

On the contrary, evidence from Uganda illustrates how the geographical and socio-economic differences between urban and rural areas do not significantly affect water security since 'improved' water sources in urban, wealthier communities were almost as unsafe. However, this research emphasizes other diversities in intra-household inequalities and pronounced differences between male and female experiences where men and women from the same household experienced the same water conditions but had different perceptions of the severity (Tsai et al. 2016, pp. 286–290).

In regard to the main findings of previous research, the essence indeed suggests the importance of a gendered-based perspective when investigating water scarcity in low and middle-income countries.



## 4. Methodology

Insights and arguments from FPE and decolonial feminism have been incorporated into the methodology and permeated the entire research process. By not limiting the research to be about the community and rather with and for people-in-place, this study has combined the methods of *work in the field* and participatory research, critical reading, and semi-structured interviews with insights from methods of Political Ecology, which embrace a shift from merely participant observations to including participatory research in order to provide a more transparent consideration of the complex insider-outsider connections (Lembke, Lalander & Galindo 2020 p. 14; Rocheleau 2008, pp. 722–724). The research position of *work in the field* has enabled deeper interaction with the participants and the strive for the collaboration and pluriversality emphasized in the theoretical framework (Lembke, Lalander & Galindo 2020, p. 17).

### 4.1. Methods

#### 4.1.1. Work in the field and Participatory methods

In line with the decolonial feminist positioning of the researchers and the feminist political ecology's emphasis on multiple situated knowledge, trust is a central feature in *work in the field*. Therefore, this method, together with the theoretical framework, serves as a guide to ensure that all views are heard and to increase the voice of the most vulnerable in the search for societal change by acknowledging subaltern worldviews (Lembke, Lalander & Galindo 2020, p. 18; p. 31; Manning 2021).

Lembke, Lalander & Galindo (2020) emphasizes that academic practice and societal action are intertwined and discuss the complexity of objectivity and inevitable subjectivity. Due to our consolidating understanding that women suffer from greater burdens of water scarcity than men, assumptions and approaches have inevitably influenced the research design. Nonetheless, sympathy with the principal actors (women) has been nuanced by interrogating male experiences to challenge the ontological and epistemological evidence from the secondary data (Lembke, Lalander & Galindo 2020, pp. 14–15). Moreover, this study is not merely for academic purposes but for raising awareness about the lived experiences of the people in Gburimani, achieved through the intertwined academic procedure and strive for societal action (ibid. pp. 17–18). In an attempt to do so, the study will be presented to the Tolon District Assembly and Sida with the hope of a positive outcome.

The study has also taken inspiration from and engaged in central parts of the participatory research approach Participatory Rural Appraisal (PRA), developed by Robert Chambers. The most crucial aspect obtained from PRA regards the study's research purpose, the access to people and to bring their problems and situation to public notice, but also the principles of researchers' attitudes and of being self-critically aware, establishing trust, learning and listening (Beazley & Ennew 2006, pp. 191–192). There are different methods for generating the knowledge and perspective of the local population, and this research has especially incorporated the following: social and resource mapping - to gain information about location and availability to institutions such as health services and water sources. Social network diagrams - to better comprehend the social networks the different participants engage in.

Seasonal and social calendars, as well as time transects - to gain knowledge about dry seasons, work patterns, and time spent looking for water or being involved in work activities (Beazley & Ennew 2006, pp. 194–195).

Chambers (1994) demonstrates the seeking out of key informants, including various groups, and analysis of differences being important categories for PRA. Due to the overlapping nature of methods, these, together with critical reading and semi-structured interviews, explained to be the core of good participatory research, are incorporated into the methodology (Chambers 1994, p. 960). With the help of intersectionality, the analysis of socio-cultural differences such as gender, marital and social status, household position, wealth, and age enabled an identification of differences between and within groups. Chambers further remarks how the analysis of difference includes comparison and asking one group (or individual) why another is different (Chambers 1994, p. 960). Thus, this research also takes a comparative approach based on gender, groups, previous research, and social identities. Mixing these methods enabled a consolidation, cross-checking, and triangulation of information central to the research questions and purpose (Beazley & Ennew 2006, p. 192; Mayoux 2006, p. 123).

#### 4.1.2. Critical Reading

Critical reading refers to assessing the quality of a text and the interpretation and evaluation of the facts. The method helps to scrutinize to which extent there is enough evidence to support claims or conclusions and whether other possible explanations have been considered (Wallace & Wray 2011, p. 9). Our critical reading of existing studies within the chosen thematic field has involved more than merely skimming the chosen articles. Continuous evaluation and reflection of the secondary data have actively been applied, selecting research where authors adequately back their claims. It is important to note that author's subjectivities, assumptions, and logical reasoning might have affected our assessment of the research field of water scarcity and hence shaped our own empirical investigations. Nonetheless, the method has provided a more comprehensive understanding of the thematic field since the previous findings have been scrutinized and related to the results of this study as a way to counterbalance different interpretations and conclusions. This has resulted in enhanced awareness of backing up claims with evidence and made us able to identify where our study fills a research gap (Wallace & Wray 2011, pp. 7–10). The critical reading served as a tool to attain more expansive knowledge and understanding of how gender affects the impacts of water scarcity on different levels and contexts. To ensure the truthfulness of our findings, the data has been compared to previous research conducted in Ghana and other African countries.

#### 4.1.3. Semi-structured interviews

Before the semi-structured interviews were conducted, approval from the community leaders and the Tolon District Assembly was granted, and the objectives of this study were well-explained to the leaders and participants. At the research site, we began with observations and simultaneously started the process with semi-structured pilot interviews. Those interviews provided a general understanding of the research and interview context and enabled changes along with the procedure (Simon 2006, p. 169).

The semi-structured method followed an interview guide on specific topics related to the research problem, focusing on the respondent's experiences to ensure that important issues relating to water scarcity were covered. The semi-structured method allowed the interviewees to share their ideas and thoughts freely, which offered broader access to their perceptions of the situation (Willis 2006, pp. 144–145). Therefore, general interview questions were outlined beforehand and served as a basis for every interview. These questions were designed to be open-ended, relating to water scarcity and different themes of FPE, and allowed more flexibility to add follow-up questions, depending on the different interview groups. The semi-structured method provided an instrumental value for exploring dynamics, behaviors, interactions, and norms, which might have been lost with a pre-set list of questions (Willis 2006, pp. 144–145). In an attempt to better comprehend the community dynamics and the collective perception of water scarcity, the interviews consisted of mainly group discussions, typically including two to eight participants, as well as several individual interviews. Some of the group discussions led to complementary in-depth interviews where intersectionality was a central tool to explore diversities in individual's experiences.

Because the spoken language of Gburimani is Dagbani, the interviews were conducted together with two interpreters, one male, and one female, in order to avoid misunderstanding, misinterpretation, or feelings of restrictions. Although to establish trust and acquaintance during the interviews, the researchers gave presentations and final gratitude in Dagbani. All other conversations were translated with the help of the interpreters, recorded, and thereafter transcribed<sup>2</sup>. Interviews with key informants were held in English. All recordings started after the respondents gave informed consent.

#### 4.1.4. Sampling methods and Unit of analysis

The interviewees were selected through both convenience and snowball sampling methods, where participants were first selected wherever they were conveniently available. To increase representation, a snowball sampling was applied in combination to identify new sampling units. Consequently, the participants suggested other possible interviewees with similar experiences, who in turn suggested others (Frankfort-Nachmias, Nachmias & DeWaard 2015, p. 148; Willis 2006, p. 148). The snowball technique has been highly beneficial due to the village setting and the lack of records of community members, thus increasing the probability of finding potential interviewees. Essential for successful snowball sampling has been to diversify the interviews by continuously reflecting on the nature of the interviewees. For example, by asking the participants if they knew anyone with a different social identity, such as different age, gender, or marital status, who might be interested in talking to us (Willis 2006, p. 148).

The respondents are male and female individuals living in Gburimani, Northern Ghana. The interviews were conducted in the area through eight male group (MG) and 14 female group (FG) interviews, seven male individual (MI), and four female individual (FI) interviews, making it a total of 46 male and 62 female participants. Two female group discussions led to additional in-depth interviews (IDI). Additionally, interviews were held

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<sup>2</sup> The complete transcripts have been archived by the thesis authors

with five key informants. All 113 individuals served as representatives for the experiences and impacts of water scarcity in the community.

#### 4.1.5. Observation process

This thesis also builds on empirical observations, which have been of great importance since it has enabled the researchers to obtain data on activities, behaviors, and patterns in a natural setting without any distortion (Frankfort-Nachmias, Nachmias & DeWaard 2015, p. 171). When entering the research site, we were presented to certain perceptions of the water situation. By comparing these perceptions with observations increased the probability of obtaining a more truthful picture. As the research proceeded and more repetitive observations were gathered, assumptions and insights could be drawn (van Donge 2006, pp. 181–183). The gathering of observations was an ongoing process during the entire fieldwork and was frequently discussed and analyzed based on thoughts and insights from FPE and intersectionality. Taking a complete observer role, i.e., revealing ourselves as researchers and engaging in the participants' activities, habits, and other aspects of their everyday lives was a conscious choice to align with the participatory method (Frankfort-Nachmias, Nachmias & DeWaard 2015, pp. 246–247).

## 4.2 Validity, reliability, and self-critical reflections

### 4.2.1. Validity and reliability

Validity refers to whether a result represents what it intends to measure and concerns the legitimacy of the research. Frankfort-Nachmias, Nachmias & DeWaard (2015) present three types of validity that this study has strived for. First, by evaluating and establishing the theories of FPE and intersectionality that should serve as the foundation for the research and thereafter conducting the study accordingly to make the results logically and empirically tied to the theoretical concepts and assumptions (construct validity) (Frankfort-Nachmias, Nachmias & DeWaard 2015, p. 134). Secondly, selecting participants serving as a representative sample regarding the experiences of water scarcity in the area (content validity) (ibid, p. 135). This study includes narratives from both men and women in order to understand gendered experiences in a more comprehensive sense. A more proper level of validity and reliability was also ensured by including key informants with broader knowledge about the water situation in Gburimani. By conducting group interviews, collective discussions and opportunities to be supported by other participants were facilitated. To create a comfortable setting and more reasoned responses, the group interviews were conducted with participants already known to each other, many of which were related, stayed in the same household, or were neighbors. The participatory method and group discussions capture the diversity and can promote a collective discussion that increases the voice of the most vulnerable. However, group interviews may be influenced by power structures which can make people vulnerable in expressing their thoughts and problems (Mayoux 2006, p. 120). To avoid unreliable information to the highest degree possible, we have first considered different types of agency and power relations and thereafter suggested in-depth individual interviews to enable further freedom to speak independently of the power dynamics of a group (ibid, p.

123). We noted that the in-depth interviews created more trust and acquaintance and thus gave the respondent greater freedom to share their experiences.

Finally, the result has been related to external empirical material of the research topic through critical reading (empirical validity) (Frankfort-Nachmias, Nachmias & DeWaard 2015, p. 135). The degree of reliability has also been ensured by including a considerably large proportion of participants to avoid variable errors as far as possible (ibid, p. 135). Moreover, including respondents with diverse social identities has enhanced the diversity of local views and perceptions. Due to our consolidated understanding, it has been crucial for us as researchers to acknowledge our biases, engage in in-depth reflection, and design the questions in order not to affect the responses (Mayoux, 2006, p. 121–123).

#### 4.2.2. Self-critical reflections

Respondent's (momentary) distraction during interviews may lead to variable errors (Frankfort-Nachmias, Nachmias & DeWaard 2015, p. 135). Large parts of fieldwork were conducted during Ramadan, which may have affected participant's energy levels and loss of concentration and thus opportunities for deeper and more encompassing discussions. For example, one group interview was interrupted and terminated by the call to prayer. However, this group interview resulted in an in-depth interview to not omit the discussion and topics that had been interrupted. The time limitation of eight weeks of research might have led to restrictions on the study. We would have needed more time in the community to gain more information and better knowledge about the participants and the situation. A longer stay could have led to additional findings and complementary interviews with, e.g., key informants such as NGOs that have implemented previous efforts, which could have been valuable for a more comprehensive understanding. Gender differences may potentially have affected conversations and interviews with male participants and their willingness to explain or share experiences. To minimize such constraints, we have used two interpreters, one man during the male interviews and one woman during the female interviews. The language barrier may also have limited our full understanding of participant's responses and discussions. The interpreters might have missed some information when translating longer dialogues or monologues. To avoid such limitations as much as possible, we have repeated many of the statements told by the interpreters for the respondents to confirm that we understood the explanations right.

#### 4.3. Ethical considerations

Apart from the ethical aspects presented in the theoretical framework and methodology, we have adopted several codes of practice to perform the research as ethically as possible, whereas a cultural understanding of historical, religious, socio-cultural, lingual, and the economic context was central (Brydon 2006, pp. 26–27). Informed verbal consent was obtained prior to the interviews, and the respondents were granted complete anonymity and assured of the confidentiality of the information supplied (Brydon 2006, pp. 26–27). All key informants chose not to be anonymous. Another essential part of the ethical considerations has been recognizing and acknowledging power gradients both between the respondents and us and between the participants within the community itself. By embracing perspectives from

decolonial feminism, we aspired to minimize behavior that could have caused feelings of imbalance between us and the participants (Apeniik & Parpart 2006, pp. 34–35). Adhering to cultural customs was of main concern to gain trust and acceptance. These included, e.g., kneeling, greeting practices, addressing correct titles of the interviewees, and participating in the current activity respondents were undertaking (such as cracking of groundnuts, etc.). To further reduce feelings of imbalance, entering the community by foot and conducting interviews sitting on the ground were two other considerate actions.

## 5. Context

### 5.1. The setting

The population size of Gburimani is slightly unclear since the counting for 2020-2022 is not yet ready, but both the Assemblyman for Gburimani Electoral Area and the District Planning Officer estimates the population to be around 5000+. The population adheres primarily to Islamic beliefs, with few adhering to Christianity. The rural community's livelihoods are centered around small-scale agriculture, where men are the predominant farming actor, and women are the supportive actor, primarily engaging in reproductive work. The harvest is mainly used for household consumption but also as a commodity to sell in local markets. Apart from farming, the majority of the livelihood activities in the community, such as shea butter extraction, rice production, and food sales, depend on water as the main source of production. The social structures of the community are embedded in hierarchal and patriarchal norms where women are the main responsible for water collection and household chores.

Like most postcolonial sub-Saharan African nations, Ghana's modern state structures coexist with traditional institutions. Gburimani is located in the Dagbon Kingdom, where the people are called Dagomba, and the spoken language is Dagbani (Ahorsu 2014, pp. 95–96; p. 100).

The Dagbon Kingdom is characterized by traditional Dagomba features of hierarchal governance structures where chieftaincy draws on a monarchical system, kingship, and succession of ruling families from one chief to another male family member. Traditional institutions and political structures often revolve around the support of royal elites to subnational groups where the chief as the political leader, together with a council consisting of elders, are in charge of decision-making processes regarding general welfare and community development (Ahorsu 2014, pp. 100–104). In Gburimani, just like in the rest of Northern Ghana, chieftaincy plays a creditable role in terms of sociocultural, security, development, and governance (Ahorsu 2014, p. 102). Although these hierarchal political structures stem from pre-colonial traditions, the colonial rule has influenced the value and stature of chiefs as an institution and socially assigned beneficial positions to the men of royal families (Ahorsu 2014, p. 101). This beneficial position of men is evident in the patriarchal structures of other households of Gburimani as well.

### 5.2. Historical background

Water scarcity has more or less constantly been a significant issue in Gburimani and the Tolon District. Mohammed Abdulai, Chief of Gburimani and Ibrahim Mohammed, Assemblyman for Gburimani Electoral Area explain the historical background of Gburimani.

In 1962, when the District Council constructed the community dam, the population size of Gburimani was small, consisting of no more than 40 households. As the population grew, the water availability became less, since the dam was constructed according to the population size. After 26 years, in 1988, Gburimani was assisted by the NGO *Catholic Relief Agency* to reconstruct the dam. The NGO installed a filtration system and boreholes with pumps as a way to achieve their overall purpose - to reduce the water scarcity and eradicate guinea worm



in the area. During that time, Gburimani was one of Ghana's most guinea worm-affected areas. According to the Chief of Gburimani, the community had the worst guinea worm epidemic in the whole country.

The Assemblyman for Gburimani Electoral Area explains that the intervention was successful but that the improved water situation did not last long. The intervention constructed two dams, one with attached filtration and pumps for human uses and one additional dam for animal uses. The main dam was (and still is) shared among two communities, Gburimani and Tibogu. During the reconstruction, fences and gates, one for each community, were built around the dam to hinder animals and people from outside from entering. But as time passed, the filtration became ineffective, and the water dried up, meaning that the severe water scarcity was once again a fact for the population. The Chief of Gburimani explains that it was not until 2016 that another NGO called *Water for life* came to assist the communities in reforming the dam on one condition - the villages had to stop open defecation. An agreement was made with the community leaders, and the NGO started their work, uninstalled the non-working pipes, and removed the fences and gates in order to expand the dam. Both the Assemblyman and the Chief of Gburimani points out how the water situation was improved after this implementation. However, the water source quickly became shallow, the population size increased, and the water was yet again contaminated by entering animals. According to the Chief, this was the last time an NGO came to assist with the dam.

In a previous interview with Modern Ghana, the Chief describes that several attempts to source assistance from the government to remedy the situation have been unsuccessful and that there is no other alternative than to share the dam with animals (Modern Ghana 2021). As explained by the District Planning Officer, Abdullah Yussif, such efforts also regard drilling boreholes without any success. According to him, the water table of Gburimani is extremely low, causing several failed attempts. However, both the Chief and the Assemblyman express their belief that the problem does not regard the water table but is rather a question of financial priorities of not drilling deep enough. Almost every year, the District Planning Officer plans to improve the water situation, the construction of boreholes being one central part. However, there are not enough financial resources to implement these interventions.



## 6. Results

Gburimani suffers from severe water scarcity, and the impacts are many. This chapter will present the male and female participant's experiences, perspectives, and narratives. The results demonstrate that gender is a crucial variable in determining the experiences of water scarcity and the gendered impacts are outlined according to the psychosocial stressors below. These stressors are not simply independent categories, rather, they are all interconnected and correlated.

### 6.1. Male experiences of water scarcity

The general male experiences demonstrate that water scarcity has significant impacts on almost every aspect of their lives where the main difficulties include, e.g., farming, income opportunities, and worrying about their wife's increased burdens of water collection. The majority of the male participants explain that due to the current water situation in the community, the cultural and social responsibility of water collection has changed and that the traditionally assigned responsibility of women is now supported by men using different means of transportation (bicycles, motorcycles, MotorKings). Previous evidence from Ghana demonstrates aspects of such circumstances and that men happen to get involved in water collection if distances increase in the dry season (Dinko, Yaro & Kusimi 2019, p. 289). As one middle-aged man explains, "at this time, it is no longer about whose work it is. Even the men go to fetch, but when the rain comes, and there is water, the men will not engage in water collection again" (Young man, MG4).

#### *Financial stressors*

The male participants clearly state how water scarcity has severe impacts on their financials, especially on their farming, highlighting their wish to engage in dry season farming of vegetables, as it would have been a major income opportunity. Therefore, the majority of the men demonstrate a great desire to use water for irrigation and to farm throughout the year, something that has been impossible for long. The majority of the men explains that the only option they have during the dry season is to "sit here and wait" because there is no other work they can engage in. One elderly man (MI4) further explains that water scarcity so severely affects farming that the population of Gburimani is not financially where they are supposed to be. Another male participant in MG5 relates water scarcity to education by explaining how the lack of water restricts the community from moving forward at the educational level. He states that he "strongly believes that if we had more water, we would move and progress."

The Chief of Gburimani also emphasizes development issues and holds the position that water scarcity has led to increased poverty and how they become completely powerless once the dry season sets in. He further remarks,

The water scarcity equally affects our cattle, as a part of our agricultural inputs, we sell them when we need money. The cattle are part of our income, and last year more than 100 cows died out of drought. It is hard to supply water for the animals when you cannot even do it for the family (Mohammed Abdulai, Chief of Gburimani).

The dam's water level is frequently so low that the population is forced to buy water from informal sources, mainly from people in possession of either MotorKings (tricycles with flatbeds) or donkeys and a cart, used as a means to fetch and sell water to other community households. However, the lack of income generated from farm production generally affects the ability to buy from these sources. The male respondents of MG3 elaborate on the correlation between farming opportunities and water purchases, explaining that the decreased water availability forces farmers to sell their crops during periods when prices are low.

Our wish is to sell in January, February, or March when the financial yield is higher, but because we need to buy water, we are forced to sell it earlier and do not make enough profit as expected (Middle-age man, MG3).

The vicious cycle of water scarcity is evident in the financial outcomes. Two younger men in MG2 emphasize that they and many others don't have enough money to buy water and that this highly affects their children, especially in terms of school attendance. These findings relate to previous studies conducted in other low- and middle-income countries, where buying water from expensive informal sources is a common outcome and financial stressor of water scarcity (Bisung & Elliott 2017, p. 23).

In many cases, children help their mothers to fetch water in the morning, which means that they will not get to school in time and instead stay at home that day. After school hours, the children usually follow their mothers to the dam twice in the afternoon, making them exhausted and unable to study. This is a major concern and a worry emphasized by the majority of the male participants. School attendance is understood to affect both girls and boys equally since they both help their parents with water collection. This result correlates with previous studies from Ghana, where no gender discrimination was found between boy's and girl's school attendance due to water scarcity (Nauges & Strand 2015, pp. 78–83).

Furthermore, the effects of farming consequently affect household's food security. Insufficient harvesting sometimes results in buying food being the only option left, which is devastating for the household economy. In an individual interview (MI7), one elderly man explains how water scarcity and the inability of dry season farming affect the food proportion of his family and how he, as the household head with the control of the food supply, has found strategies to make it last longer by reducing the amount of food distributed to his wife. Like many other male household heads, he often allocates this responsibility and control to his sons. When the women require food, they either go to their husbands or their sons to ask for it. Another elderly man (MI4) explains that, in terms of food insecurity, he has a weekly meeting with the women of the household to decide the amount of food to use for the week.

Eleven out of the male participants explicitly stated that they are paying for food and water, both for family and animal uses in times of need. Only three interviewees in MG7 explicitly explained that paying is a shared responsibility, but with men being the primary provider. Only one individual (MI4) explained that the payment is the responsibility of his wife but that he sometimes supports her financially. The others did not comment on the responsibility for payment.

The financial impacts of water scarcity sometimes lead to male migration is the search for better farming opportunities or engaging in minor jobs in the south. One young man in MG3

explains that the water situation in Gburimani was the main contributing factor to his decision to migrate to the south, where he stayed seasonally between 5 months to one year. The outmigration from Gburimani is a major concern of the Chief, who states:

The young people migrating from Gburimani are the backbones of this community. Some of the migrants come back to the farm during the rainy season, but if the young ones migrate and leave us back at home, who will help with the community development? Nobody. It is a big worry to me as the community leader and family head of our African tradition (Mohammed Abdulai, Chief of Gburimani).

### *Physical stressors*

Men's physical health impacts mainly concerns the unsafe water. Several male participants emphasize how the water contains dirt, sand, and insects, leading to skin diseases, cholera, and other waterborne diseases. The dam of Gburimani is nowadays shared with cattle and other animals such as sheep and dogs, who both drink and defecate there. Most of the participants use a chemical called Alum to treat the water to become "safer," which substantially affects their health, causing, e.g., diarrhea. When adding the chemical, it takes some time until the water binds, and the water remaining after the dirt, sand, and organisms have sunk is considerably less than what was fetched, which also increases the time spent on water management.

Two young men in MG2 explicitly remark how it is ill-advised to drink water mixed with Alum and comment on their fear of what the chemical may cause to their health but that the option is better than drinking water where you can see the tiny insects inside.

According to a male nurse of the health clinic Gburimani CHPS, the population's health is a significant concern, and they frequently visit the clinic because of water-related illnesses. The key informant further explains how he believes that the population's attitude is the main issue. He states that the clinic advises all their patients to better manage the drinking water by boiling it, but that the patients ignore their advice due to their perception that the unboiled water makes a human stronger.

### *Social stressors*

Migration is not only a financial but also a social factor of water scarcity. The lack of water makes in-migration to Gburimani less common since girls and women from other communities have the knowledge about the water situation and refuse to move there for marriage since they are aware of the increased burden of water collection they will face. This obstacle to marriage concerns the men, leading to feelings of anxiety.

Other social aspects of water scarcity regard conflicts within the household and the community. Some male participants point out that women usually start fighting with their husbands because of the water quantity. Moreover, the time women spend on water collection delays their domestic work, and when the food is not ready in time, or when they cannot send the children to school in time, conflicts arise. The men explain the anger they feel in these situations and how they don't know how to communicate regarding the issue. Several male participants elaborate that the women sometimes deny them intercourse due to previous conflicts and tiredness from fetching water, which frequently leads to additional arguments.

Participants of MG1 further explain that the water situation also brings conflicts among women in the household and that they often fight over the small amount needed for their different chores. Moreover, MG1 and MG8 explain that disputes also arise within Gburimani when the village authorities ask the men to contribute GHC 100 (USD 13,20) a year to give it to the District Assembly to assist in the reconstruction of the dam. This contribution is supposed to come from the annual crop sales, but since the water scarcity has impacted the farm yield, many men have not been able to make this contribution.

### *Emotional stressors*

Almost exclusively, the male participants expressed their deep worry about their wife's burdens of water collection and the physical struggles they face. The men demonstrate how being unable to support your wife with water, either by financing or collecting, leads to feelings of defeat and disgrace. Fear is also commonly mentioned, especially the fear of poverty arising from decreased farming opportunities and the fear of living with the water problems for the rest of their lives.

Many participants explicitly remark feelings of sadness, unhappiness, and helplessness. The life conditions faced by the community make them feel hopeless for solutions, and the continued growth of the population leads to the fear that the water quantity will decrease even more. In the Dagomba culture, drinking water is the first thing offered to a visitor, and one elderly man (MI7) describes feelings of shame when not being able to do so. According to him, having clean water to provide for your guests or washing clothes properly would be a great relief.

### *Inequities*

While previous studies emphasize geographical inequities between northern and southern regions, the male respondents of this study instead highlight the geographical inequities between Gburimani and other communities within the Northern region (Nauges & Strand 2015, pp. 78–83). For example, other communities located approximately two hours from Gburimani have, according to the respondents, a greater ability to use water for irrigation and dry season farming. Participants of MG5 explain that while the population of these communities has this opportunity, all they can do is sit and wait for the rain. One elderly man (MI4) elaborates that by the time he can nurse his pepper, the other communities have already harvested and sold their pepper and other crops. He comments that they have better opportunities than him and are both more comfortable and richer because "every point in time, they have something to sell, we don't have that."

### *Inequalities*

The Assemblyman for Gburimani Electoral Area confirms inequality within the community, where successful farmers, people with diversified income, or people in possession of cattle, sheep, and goats have a greater probability of handling the outcomes of water scarcity.

The financial impacts of water scarcity are similar for everyone in the community, however, several male participants state that those owning a MotorKing or donkeys can earn income from selling water and thus are in a better position. Although, participants in possession of such deny this statement by explaining how the water collection hinders them

from engaging in other jobs such as their repairing and weltering businesses, which generate more income. One middle-aged interviewee (MI5), owner of a MotorKing, explains that he is rather worse off due to the responsibility of going to the dam several times a day. Yet, he holds the position that the women of his household are “better off” since he is the one providing the water. He further elaborates that his household may have more access to water than his neighbors. However, an owner of donkeys (MI6) opposes the statement that his household would find themselves in a better situation.

Furthermore, the Chief of Gburimani explains how he would never drink water from the community dam and instead buy sachet water or bring water from the pipe in his house in Tamale. However, the possibility of buying sachet water is rare in Gburimani.

Few people can afford sachet water, so few people use it. The majority use unsafe water for drinking. It is a pity, but that is the situation (Middle-aged man, MG6).

## 6.2. Female experiences of water scarcity

The female respondents deny the changes in the traditionally assigned responsibility of women’s water collection, demonstrated by the male participants, explaining that the extent to which men help women collect water is close to non-existing. Upon the question of whether the responsibility of collecting water was shared or if they received support from their husbands, the female respondents burst into laughter and replied that their husbands would never support them<sup>3</sup>. The general female experiences demonstrate that they are more susceptible to the implications of water scarcity because of their sole responsibility for water collection, most commonly referred to as financial constraints, emotional stress, increased health risks, and increased workload.

### *Financial stressors*

All female participants described how water scarcity causes major economic consequences as one of their most critical challenges. The lack of water supply affects how the women can engage in different income-generating activities. Apart from their primary responsibility of household chores, almost all the interviewees, either currently or previously, were involved in minor businesses to diversify their income. However, the lack of access to water is currently making their businesses dormant. The majority of the income-generating activities revolve around cooking for selling, e.g., Kenkey (a local food made of maize) and Koko (local porridge), processing of rice or shea butter production, all of which almost exclusively depend on water. Due to the water scarcity, the women are forced to buy water from the same informal sources as described by the men, in order to continue their businesses. The average cost of 60 pesewas (0,08 USD) per gallon makes many women unable to pay for the water, even though it is the sole most crucial component in their businesses, causing a vicious cycle in their finances and income. Previous research demonstrates that the inability to engage in livelihood strategies is a common outcome of water scarcity in low-and-middle-income countries (Jeil, Abbas & Ganale 2020; Arku & Arku 2010). As one elderly woman notes,

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<sup>3</sup> This notion will be further discussed in the analysis

At the end of the day, I have not made any profit because I have used all the profit to buy water (Elderly female respondent, FI3).

Buying water is crucial for businesses and the provision of the household as well, and these expenses are told to generally be the responsibility of the women. In only two out of 14 female interview groups, it was indicated that their husbands sometimes support them in paying for water when he has enough money but that the final responsibility falls on the wife and that she can never fully put the burden on him.

Women in FG12 explain how they try to save earnings from businesses they engage in during rainy seasons as a way to manage purchases during the dry season. Upon the question of who manages the savings, the respondents explain that they would never give their money to the husband since he would never give it back. One female participant of the group laughs and points out:

Why on this earth would you ever make a mistake and give the money to your husband? You dare not show that you are holding your own money. You don't even tell (Middle-age woman, FG12).

Even the small proportion of female respondents who notes that they can afford water described financial challenges since the water is dirty and requires Alum before usage. The water remaining after the chemical process is insufficient, both in terms of quantity and to make a business profit. The lacking access to water constrains women's opportunities to fulfill their aspiration to engage in more businesses, and as one female respondent (FI2) testified, her life would have changed entirely if she only had water for her business. As evident in previous studies from Ghana, when water situations are improved, women can engage in more economic activities (Arku 2010, p. 242).

One elderly woman (FI3) further explains how she perceived her situation to be even worse than younger women since she is too old to walk to the dam and carry the heavy water container, making buying from informal sources her only option left. During the conversation, she adds that the demand for water makes buying from informal sources unreliable as well. Another elderly woman (FG13) describes her experiences relating to age. She expresses that the younger women of her household do not recognize the water-related work she has done in the past. She explains that her age and inability to collect water has labeled her weak and lazy. However, she argues that her previous effort to provide for the family is the foundation for the younger women's better living standards.

The majority of the female participants conclude that their limited income constrains the buying of, e.g., soap used for cleaning, washing, and bathing children, substantially affect the health of the family members. Furthermore, the majority of the female respondents witness how their lost income has great consequences on their children's education since it is the responsibility of the mothers to support educational expenses such as school fees, uniforms, and food money.

It is always pathetic, you are worried, either your child will go without food, or they cannot go to school. Another issue too is if worst become worst then your child becomes a dropout while others continue their education (Elderly female, FG6).

This issue was further confirmed by the Chief Mohammed Abdulai, who described how mothers support their children more than the fathers, especially concerning education.

The impact of water scarcity on children's education is, just like for the men, a commonly expressed worry among the female respondents, and the school dropouts are told to take various forms. Children who help their mothers collect water in the morning are late for school and exhausted, leading to conflicts with teachers and eventually dropouts. When a young child drops out of school, the mother has to care for the child during the days, meaning less time for her to spend on either the business or household chores. Two different interview groups (FG1 and FG12) mentioned that early marriage is another outcome of school dropout. Although they did not specify to what extent, similar findings are presented by Jeil, Abbas & Ganale (2020).

The long-term consequences of school dropouts, such as the reduced possibility of employment and hindrance to economic and social status later in life, are evident in both Gburimani and a previous study conducted in Ghana. Nauges & Strand (2015) demonstrate how girls in the northern part of Ghana spend an average of 25-30 minutes on water collection, hence having severe negative impacts on school attendance, and this finding correlates with the case of Gburimani (Nauges & Strand 2015, pp. 78–83).

The women further elaborate on how mothers' financial constraints of paying for children's school fees often lead to the migration of young girls as a practical strategy to deal with the financial effects of water scarcity. These girls often migrate to the south (either Kumasi or Accra) to do *Kayayei* - a local word for carrying other people's loads or goods on their heads. Such migration is predominantly seasonal, where the migrating women return to Gburimani once the rainy season sets in and the economic opportunities get better. This finding is consistent with Jeil, Abbas & Ganale's (2020) research in Ghana, where head portering is a common livelihood strategy due to water scarcity (Jeil, Abbas & Ganale 2020, p. 330–331). *Kayayei* entails poor conditions and minimal income. A female participant in FG6 notes that "there is no more difficult work in this world for anybody to do that is comparable to *Kayayei*." The *Kayayei* labor puts girls and young women in harmful situations, making them susceptible to abuses such as violence, insults, and non-payments. Moreover, apart from noting the hazardous work of these girls, the female participants, just like the Chief of Gburimani, emphasize how such migration has wider implications for community development.

### *Physical stressors*

Although the physical stressors of water scarcity, such as waterborne diseases and the health impacts of Alum affect both men and women, the female responsibility for water collection leads to additional physical burdens such as body pain due to the long-distance walking.

Hospital visits due to the unsafe water are common, and one middle-aged woman in FG3 points out how she could not even count the number of times she visits the hospital in a month and that she is sure that her sicknesses were caused by the long-distance walking and the unsafe drinking water. The majority of the women declare that the unsafe water causes diarrhea and stomach pain and how the contaminated water affects their breastfeeding babies as well. A young woman notes,

And it is even dirty water, right now some of us has developed stomach ulcer because of the dirty water we drink. It doesn't give us good health at all (Young female, FG5).

The female participants explain how they usually go to the dam before sunrise and how the darkness easily leads to risks such as hurting themselves on stones, slipping into the water, or falling on their way home, dropping the water. Another risk of concern is snakes hiding in the grass. Due to the heavy carrying of water containers on their heads, many female respondents also describe how they have developed neck and waist problems. Additionally, they express the fatigue felt when coming back from the dam and immediately have to start with other household chores such as cooking. Unlike previous research, the female participants do not express any fear of encountering men when walking to the dam in the night (Van Houweling 2016, pp. 1069–1070).

To minimize the risks involved in water collection, some women have developed strategies. During the dry season, when the water is particularly muddy due to the shallow water, the women create a *yam foli* (wise queue), including a group of seven or more women, enabling them to go deeper into the dam. The woman in the front pass on the water to the others in the line before she is finally pulled back. This cooperation reduces the risk of getting stuck in the clay, and those who have recently given birth are always taken into account and placed at the back. As a newly delivered mother of FG11 explains, "your colleagues would not allow you to enter the dam in order to minimize the risk of infection."

Pregnancy puts women in a further vulnerable position. The health risks and physical burdens of water collection are a primary source of fear. Women's responsibility is so deeply rooted that they are forced to fetch even during their late stages of pregnancy. Sometimes, they even go to the dam in the morning and give birth in the evening. One woman explains,

I thought I was dying because the stress of the pregnancy coming to add to the stress of fetching of the water (Young female, FG10).

The health implications of pregnancy and water collection are further acknowledged by the midwife of the health clinic, who explains that after delivery, women are allowed to rest for four to seven days until they have to go back to their regular duties. This goes against WHO's recommendation for women to rest during the postnatal period (World Health Organization 2014). Consistent with findings from Tanzania, the key informant further adds that many of the female patients suffer from UTI caused by bacteria from the unsafe water and the inability to withhold proper hygiene (Mbilinyi & Seechambo 2015, p. 91). Ultimately, these infections may cause preterm labor and low birth weight of the child.

### *Social stressors*

Previous studies from Ethiopia demonstrate how disputes with other community members and husbands are a common social stressor of water scarcity, also described by the women of Gburimani. They witness that their inability to provide water for the household frequently leads to conflicts (Stevenson et al. 2012, p. 396). Although no indication of conflicts with other community members, the women describe conflicts between Gburimani and



neighboring communities where they sometimes go to fetch water. All the interviewees had at some point experienced insults and adds that since they are in such a vulnerable position, they do not dare to argue or fight back, not even when insults come from a child. The responsibility of fetching water does not only involve physical labor but also emotional, resulting in women having to employ strategies where public emotions often are controlled. Trough appearances of deference and subservience and not arguing or fighting back after being insulted are common emotional sufferings women endure (Sultana 2011, p. 169).

Apart from this issue, arguments between spouses were the most common type of conflict, usually based on the husband's perception of the wife's mismanagement of water and food, leading to complaints and sometimes physical violence. Similar evidence is found in Tanzania, where conflicts with husbands resulted from long hours spent on water collection (Mbilinyi & Scechambo 2015, p. 91).

During an interview (FG9) at the health clinic's weekly antenatal care day, the pregnant participants expressed how they experienced more frequent conflicts with their husbands during pregnancy because of increased frustration. One pregnant woman expresses that these conflicts are particularly common when her husband commands her to fetch water or do other chores during the late stage of pregnancy. Out of the substantial number of participants that discussed the issue of pregnancy and water collection, only two noted how their husbands support them during their last weeks of pregnancy. The rest witness that even though they wish to be spared the duty of fetching water during the late stage, they have no other option than to go to the dam themselves.

Women usually help their husbands on the farm after they have fetched water in the morning. However, the far distance and queuing by the dam side often leads to delay and dissatisfaction on the part of the husband, expecting them at the farm at a certain time. This correlates with previous research illustrating that women have difficulties fulfilling the expectations and assigned duties due to water collection during the dry season (Van Houweling 2015, p. 1071). As noted by one participant of FG7,

He can even beat me for being late and make threats of how to never make that kind of mistake again (Young woman, FG7).

She further elaborates on the hopeless situation of knowing that her primary duty is also to supply water and cook for the husband when he comes back from the farm. Sometimes he waits to argue with her until they come back home to not miss out on her help at the farm. Consequently, when they come home, the conflict escalates, sometimes leading to forceful sex.

I am a woman, it is painful, I go and pretend to sleep in my children's room, and he will call me or pretend that he is coming to beat me in front of the children, what can I do rather than enter his room and he will now have sex with me forcefully (Young woman, FG7).

The participants of FG7 express their emotional stress and how they feel unfairly treated by their husbands. They further elaborate on how they perceived that women, in general, are

subordinated in every aspect and how they do not dare to fight back because of the husband's power of deporting them from the house. As said by another respondent in FG7,

You are under his control, he owns you and everything, even when you are right, it feels very painful, even when he does the wrong thing, he still feels he is right over you (Middle-aged woman, FG7).

The impact of water shortages on agricultural livelihoods results in stricter control over food. Respondents of FG7 explain that their husbands have the ultimate control over food, and even when the farm production is affected, and the food is not enough to feed the family, he reserves some for selling. Regardless of the severity of the food shortage, the husband would never take from the reserved food and give it to the wives to cook. In such cases, the female respondents explain that they have developed strategies to do everything possible to save money from their rainy season businesses to buy food for the family. One middle-aged woman in the group elaborates how her husband gave her and the co-wife far too little maize to cater for the household of 15 people for the week, and when they asked him for more, he beat them so severely that the co-wife had to run away for a week. Since then, they have not dared to ask for more food again. In a later in-depth interview (IDI1), she declares that the co-wife was beaten more since she is the first wife of the husband, assumed to be the leader, and more officially responsible for cooking.

The various domestic responsibilities of the women sometimes collide with their duty of collecting water, leading to additional conflicts with other household members. A 30-year-old mother-of-four in FG11 exemplifies the difficulties of water collection when having an infant. In this instance, the woman expressed how she one time left her baby with her mother-in-law, but during her absence, the baby cried to the extent that the mother-in-law did not know how to handle him and became so frustrated that she started a fight later. This conflict forced her to start bringing her child to the dam, even when the baby was as young as the umbilical cord had not yet fallen off, and he was not yet at the stage of being carried on the back, leaving her in a hopeless situation. An elderly woman from FG13 express similar stress of bringing her newborn baby to the water source back in the days. By that time, the dam of Gburimani was not yet constructed, forcing her to walk a far distance to another village four times a day. She further explains how her firstborn passed away during this time and that she believes that it was because of the stress of bringing the baby. Again, the female responsibility of water collection denies them the rest recommended by WHO (World Health Organization 2014).

### *Emotional stressors*

Being the primary water supplier causes severe emotional stress for the women. Although the men also emphasized emotional stress, this was never explained as related to the burdens of water collection. The women describe their emotional suffering on different levels. Worrying about how to be able to collect enough water is one of the most commonly mentioned features, where feelings of unhappiness, anger, sleeplessness, and shame arise. The fact that the whole household depends on their water collection is another expressed emotional stress, along with the inability to complete the daily chores or offer water to visitors, especially during special occasions such as after giving birth. As one woman explains,

The most frustrating thing is that when a relative has heard that you have given birth successfully, they come with happiness to congratulate you, only for this person to get here, and you don't have water to show appreciation by cooking for the visitor. It looks very disappointing and very disgraceful on you the woman who has just given birth (30-year-old woman, mother-of-four, FG11).

Constant anxiety and panic are other related emotional stressors regarding pregnancy and water collection. The pregnant women of FG9 describe the fear of going into labor when they have not yet fetched water to clean themselves or the baby after delivery.

Additionally, the emotional stress of being a newly delivered mother and responsible for water is according to several the female participants a worry beyond explanation and imagination. There is a continuous search for another woman to care for the baby while they go to the dam, and even if they get help from someone to take care of the child, it still brings a lot of stress. As previous research demonstrates, newly delivered mothers suffer uniquely because they are often torn between caring for the newborn and providing water for the household (Jeil, Abbas & Ganale 2020, p. 330). A participant of FG14 expresses her experience as,

This is the senior wife [first wife of the husband] who normally takes care of the child when I am away, and sometimes she cannot control the baby, and the most stressful thing about it is that you hear people telling you that 'sister you should hurry up, you baby is crying'. Imagine you carrying heavy water and hearing these messages continuously from different people and you can't run with the water on your head, so it raises your stress level. And when you come home, the amount of water that you fetched was not even enough, so you have to go again (Young mother and second wife of the household, FG14).

A newly delivered mother expressed a similar experience regarding the stress of leaving her child:

Whether you like it or not, you have to go. The water scarcity will make you. So what you do is to wait until the child is about to sleep, if you are someone who can ride a bicycle, then you sneak out from the house and will be praying, 'May God help me so that my baby doesn't wake up now (Mother of a one-week-old baby, FG11).

### *Inequities*

Most of the female participants referred to similar perceived geographical inequities as the men, explaining that neighboring communities with better water access had, in their opinion, better financial opportunities than Gburimani. The respondents of FG12 hold the perceived notion of how women in the other communities were better off by explaining,

Even your children will look different. Their children can bathe in the morning and go to school in time. Mothers can prepare food at the right time for them. It is defiantly different, look at us here (Middle-aged woman, FG12).

They are better than us economically, their income is higher. We have to buy [food] from them. It means that your money goes to them since they are the ones selling in the market. But if we had water, we could also sell and get money (Elderly woman, FG12).

### *Inequalities*

Even though the female participants witness of similar experiences, there are disparities among the interview groups and within the groups. One female participant from FG7 explains how she perceives her situation worse compared to others since she is the only woman in her household, thus the sole responsible for water collection and other household chores. She further elaborates that other households consisting of more women, e.g., several wives, sisters-in-law, adolescent girls, etc., can share the chores. However, households consisting of more female members do not always guarantee shared responsibility. One young woman from FG12 explains that she lives in a household with other women, but since she is the third wife of the husband and thus traditionally responsible for water collection, she feels deprived of many opportunities.

In an in-depth interview with the 30-year-old mother-of-four from FG11, she explains that she, as the first out of two wives of the husband, is the only one responsible for the reproductive work and supplying the household with water, either fetching or financing it. In cases when she is unable to collect water, she has to buy it from money earned from cutting and selling firewood. According to tradition, the latest wife is supposed to be the main responsible for water as well as for cooking and heating water for the husband's bath, but in this household, the mother-in-law and household head has favored the second wife and spared her from such duties. Hierarchies among household members are of great importance in the understanding of resources and can differentiate members into unequal positions due to, e.g., gender, seniority, marital status, and the marital position of co-wives, leading to either privileged or disadvantaged positions (Nyantakyi-Frimpong 2017, p. 73).

The respondent further describes how she walks to the dam four times a day while the second wife rarely, if ever, goes there once. Her situation has become unbearable and has led to increased vulnerability of her and her children. As previous research has concluded, children's responsibility for water collection will unquestionably interrupt their education and possibly lead to dropouts (Nauges & Strand 2015; Jeil, Abbas & Ganale 2020).

It is obvious that my children will be responsible for water. Even now, they are the ones fetching water (30-year-old, mother-of-four, IDI2).

Apart from two respondents, all female participants explicitly indicate that they experience unequal burdens between men and women due to labor division, especially regarding water collection. As two women exemplify,

For the men, I can't tell you exactly what they are doing during the dry season (Elderly female, FG3).

The whole house and household activities are resting on you, the wife, so you can imagine (Young female, FG6).

## 7. Analysis

Based on insights from FPE, decolonial feminism, and intersectionality, this study argues that the social construction of gender is highly reflected in the experiences of water scarcity. The social and structural roles of men and women have shaped unequal impacts and the power of patriarchy, and gendered environmental rights and responsibilities determine women's increased burdens (Robbins 2020, pp. 64–65; Elmhirst 2011, p. 129). Furthermore, socio-cultural identities and power structures lead to different forms and levels of water difficulties, both within and between households (Truelove 2019, p. 4). Therefore, this section functions as an analytical discussion to highlight additional dimensions and complexities regarding contextual experiences. The water scarcity of Gburimani has wide implications, some are more directly linked to water than others. Nevertheless, all presented impacts are important to analyze since they all result from water scarcity.

The psychosocial stressors provide an illustrative picture of how gender influences the extent to which the male and female participants experience many aspects of water scarcity differently. Even though the water situation in Gburimani has severe effects on the entire population, women suffer from more burdens due to gender roles and the outcomes that follow (asymmetry in power, division of labor, responsibility, rights, etc.).

The relative distribution of resource rights and responsibilities between males and females is far out of balance in many localities (Rocheleau, Thomas-Slayter & Wangari 1996, p. 13). In Gburimani, it is significantly evident that women carry a disproportionate share of responsibilities for resource provision and management yet have limited or close to no resource rights. The result of this thesis demonstrates an interlinkage between water scarcity and food insecurity. The typical gender roles created by patriarchal structures are connected to how men possess the environmental rights over resources such as farmland and how women possess the environmental responsibility of managing food from that resource (Sultana 2012, p. 15). An example of how men exercise control over use rights was concretized by two female respondents:

Because we don't have other businesses, they [the men] allow us to farm with them. Sometimes they can even give us some a small plot and that is for your own and whatever you farm, that is for you. So, they allow us because we don't have other businesses (Middle-aged female participant, FG8).

After all you are not the owner, the owner is the one person who is the husband (Elderly female participant, FG7).

This refers to what FPE describes as gendered mandates of control, where men's rightful access to the farmland and their authority to allocate this resource. The female participant's rights to utilize the farmland are nested within the environmental rights controlled by their husbands (Rocheleau, Thomas-Slayter & Wangari 1996, pp. 10–12). This results in enormous burdens for the women, and the consequences take various forms on different levels. Water scarcity has severe effects on farm yields and consequently affects the household's food security and the quantity of food men allocate to the women, responsible for cooking. In cases

when the food given to them is not enough, women remain responsible for providing what is needed from another source (Rocheleau, Thomas-Slayter & Wangari 1996, p. 13). The female respondents explain that they have to buy food in such instances. Simultaneously, water scarcity is making businesses dormant and results in the small profit women make must be spent on both water and food, leaving them in a hopeless situation. In other words, one main factor for women's increased burdens of water scarcity in Gburimani is their gendered environmental responsibility, which leads to the unequal financial, physical, social, and emotional burdens they are facing. Notwithstanding, the men evidently suffer from burdens of water scarcity as well, although more from the actual lack of water access rather than due to their gender.

The patriarchal structure and the gendered power relations in Gburimani have led to the subordination of women. This has created masculine and feminine roles and a distinct gender division of labor. Men are seen as breadwinners and responsible for farming, while women are responsible for the reproductive work and everything else regarding water use and collection (Sultana 2012, pp. 1–3; p. 15). The social relations between men enable domination over women in various situations. The understanding of patriarchy as a set of social relations between, and solidarity among, men, is evident in how men allocate the responsibility and control of food distribution to their sons, meaning that women do not have the authority to control resources required for fulfilling their assigned duties (Peet & Hartwick 2015, p. 293). This is another dimension of gendered mandates of control where mothers' rights are inhabited within the rights of their sons (Rocheleau, Thomas-Slayter & Wangari 1996, pp. 10–12).

Not only does water scarcity decrease the quantity of allocated food, but it also leads to stricter control and women's increased burdens. As presented in the results, the situation of the husband who used physical violence on his wives when they asked for more food is a concrete example of how male control over resources leads to increased subordination and oppression. This situation is critical to analyze through intersectionality since it explains how the marital statuses of the wives determined the different consequences (Meer & Müller 2017, pp. 3–4). The social identity of being the first wife determine her gendered responsibility for food, hence leads to more consequences. This example further indicates how social positions and gender inequalities are both the cause and consequence of gender-based violence. Acknowledging structural intersectionality allows us to conclude that the responsibility that follows the marital status (first wife) intersects with the gender regime, creating the incentive for the violence she endured (Strid & Verloo 2020, pp. 83–85). This conflict and the other examples of gender-based violence are apparent outcomes of how the patriarchal system has led to the subordination of women's social identity, enabling “an acceptance” of such oppression and discrimination (Sultana 2012, p. 15). It also relates to how the society has granted men privilege and how their “unearned” benefits produce and naturalize inequalities and oppression (Evans & Lépinard 2020, p. 13).

As a way to cope with their inferior position in terms of resource control and rights, women have developed strategies to buy food for the family by saving money from the rainy season businesses, the need for doing so is grounded in their responsibility and obligation of cooking for the family (Rocheleau, Thomas-Slayter & Wangari 1996, pp. 10–13).

Mbilinyi & Scechambo (2015) explains that women's income-earning activities has created power struggles and threatened men's perceptions of themselves as the primary breadwinner of the family and that they, therefore, command their wives to hand over their earnings (Mbilinyi & Scechambo 2015, p. 91). Although the female participants of this study did not indicate that threats to men's household position were the reason for not telling their husbands about their savings, this may be related to the rights of men to control and dominate over women and their resources and how the patriarchal structure and gender roles are adamant (Sultana 2012, pp. 1–3).

The asymmetrical power relations between sexes are also reflected in the division of labor, creating exploitive relationships (Mies 2014, pp. 45–46). In Gburimani, the deeply rooted division of labor has led to an increased workload for women during water scarcity and water collection. This increased workload is reflected in the emotional stress of not having enough time left to complete other daily chores, leading to different health impacts such as fatigue when they must engage in other household tasks directly after coming back from the dam. In addition, apart from balancing the reproductive work with the time-consuming task of water collection, the women of Gburimani also engage in productive work such as farming or minor businesses when possible. The burdens of engaging in both reproductive and productive work on top of being responsible for water collection align with how Arku & Arku argues that women are more prone to the consequences of lack of water (Arku & Arku 2010). Additionally, the results of this study suggest that pregnant and newly delivered mothers suffer uniquely.

Women's work is often seen as a "nature-based activity" where reproductive work and domestic chores are "female work" not accounted for as labor (Mies 2014, pp. 45–46). This notion of reproductive work could explain how several male participants state "there is no work" and how the only thing they can do during the dry season is to "sit here and wait." As observed in Gburimani, there is a lot of work that does not belong to the realm of the productive sphere. Due to deeply rooted gender roles and the understanding of women's work as "natural" not considered rational and planned labor, the men will not engage in such (Mies 2014, pp. 45–46).

The female participants of this study clearly state that help from husbands would have been appreciated, however, beyond belief, and that they wish to be spared the duty of fetching water, especially during pregnancy. However, patriarchy and the social norms categorizing what counts as men's work and women's work make this wish quite unlikely (Robbins 2020, p. 63). As stated by one female participant,

If they [husbands] could help us, we would be very happy. Who would see help and don't like it? But they would never do it, so why do you put your mind there (Middle-age woman, FG12).

She continues by explaining that her husband would never go to the dam and fetch water since "the other men will tease him and say that the wife is controlling him." Helping wives with water collection would label a man as weak and threat his pride. This is a significant example of how gender is a crucial variable determining water management and water responsibility and how social roles shape the relationship to environmental resources (Elmhirst 2011, p. 129; Van Houweling 2016, p. 1067; Robbins 2020, pp. 62–63). The

masculine and feminine roles may also be the basis of how husbands frequently avoid helping their wives, compromising the solidarity among men by “being in solidarity with women”, which could perchance threaten the men’s perception of his household position as the “powerful head of the family” (Peet & Hartwick 2015, p. 293).

In the same way gender plays a central role in shaping women’s strong relationship to water collection, it may also shape men’s less- (or non) existing relationships to such. However, the majority of the male participants state that they do help women with water collection, and some explicitly describe that they are the sole responsible. As one young man (MG4) expresses, during water scarcity and especially dry season, “it is no longer about who’s work it is.” The men help women with water collection but will stop doing so when the rain comes. The fact that the male respondents formulated their involvement as “helping” indicates no real responsibility for the duty, thus no disruption in gender roles. The two out of 14 female interview groups that remarked that their husbands do assist them all live in households that own a MotorKing. Although it is not possible to draw facile conclusions from this observation, it may indicate how ownership of a MotorKing (wealth) can disrupt the division of labor. The husband of the household (MI5) demonstrates that he is responsible for water collection, while the females of the same household hold the position that they are the ones responsible since they can never fully rely on the MotorKing, completely authorized by the husband - once again proving asymmetric entitlements and gendered control (Sultana 2011, p. 165; Rocheleau, Thomas-Slayter & Wangari 1996). Furthermore, Mbilinyi & Scechambo (2015) present that men only engage in “women’s work” when they are paid for it (Mbilinyi & Scechambo 2015, p. 92). However, without claiming certainty of this statement, it is interesting that the men who assist women are also generating money by selling water to the community households.

The fact that the male participants, in contrast to the female, are not commenting on any inequalities between men and women proves their superior position. Although gender is a prominent factor influencing the experiences of water scarcity, as decolonial feminism argues, one cannot only concentrate on the analysis of patriarchy and the binary male supremacy, hence other social identities such as marital status, social status, age, and wealth are also crucial to acknowledge to fully comprehend the impacts (Lugones 2010, pp. 752–753).

In the African context, marital status is an important intersectional category that influences subjective experiences (Meer & Müller 2017, pp. 3–4). In the case of Gburimani, water scarcity and inequalities are highly related to responsibility and marital status. In accordance with the theoretical framework, this analysis complicates the notion of homogenous conditions, thus, marital status will not be analyzed as separate from household dynamics, which also influence the impacts of water scarcity (Rocheleau 2008, p. 722).

Based on the interviews and observations, marital status (being first, second, or third wife, etc.) does, in most cases, determine a woman’s social status, her responsibility level, and hence her experiences of water scarcity. This can explain why the young mother and second wife of a household in FG14 experienced increased emotional impacts. Her gender, age, and marital position decide her high level of responsibility for water collection, which traditionally is transferred from the first wife to the latest married (usually a younger woman). Ultimately, this merging of social identities explains the differences between her and the first (senior) wife.



However, this tradition is not consistent in the case of the 30-year-old mother of four (IDI2) whose co-wife (second wife) was spared the duties and responsibilities traditionally assigned to her marital position. In this case, the marital status (first wife) of the 30-year-old mother does not improve her social status and hierarchal position within the household since the mother-in-law's household position (household head) has greater influence. This finding corresponds with what Yuval-Davis explains as individual identities converging to deepen subordination (Yuval-Davis 2006, p. 204). Since hierarchy within households may be influenced by seniority and age, we argue that this finding demonstrates that one person's social identity may subsequently deepen the subordination of another. Here, the intersecting identities of age and marital position within local power structures become crucial explanatory factors for the 30-year-old mother's experiences (Nyantakyi-Frimpong 2017, p. 73). Her social identity as a first wife should reasonably be beneficial in terms of water responsibilities, however, the hierarchal position of the mother-in-law prevents that. This complicates the argument of Yuval-Davis by demonstrating that the social identities of the mother-in-law are more powerful than that of the respondent and that socio-cultural structures allow one person's social identity to deepen the subordination of another subsequently.

Concerning the socio-cultural aspect, age and seniority may evidently result in a powerful and privileged position. Although in terms of physical, financial, and social stressors, age may also influence the impacts of water scarcity in negative ways. For example, the inability to walk to the dam and carry water leads to inevitable financial expenses to cope with life activities. One elderly female (FG13) expressed that since her age prevents her from fulfilling female duties and reproductive work, the other women labeled her weak and lazy. Here, age as a social identity influences her social and emotional experience of water scarcity.

At the same time, a young age also influences the extent to which water scarcity affects individuals. Apart from women, children, regardless of sex, are culturally responsible for helping their mothers with water collection, leading to school dropouts, migration, and early marriages. Previous studies remark how a young age affects the responsibility of water collection, but gender determines when this responsibility stops. As Van Houweling stress, the support of boys usually decreases when they get older (Van Houweling 2016, p. 1070). Until a certain age, gender does not seem to influence the environmental responsibilities in Gburimani, but as soon as a child reaches adulthood, gender becomes the key social identity influencing the experiences.

In addition, the household position of being the only woman in a family can increase the burdens of water scarcity. As for the case of the female participant from FG7 who perceived additional burdens of water scarcity since her household consisted of merely men and children. She, therefore, lacks the opportunity to share the responsibility due to gender division of labor and gendered obligations (Mies 2014).

Although several male participants, including the Assemblyman, explain wealth in terms of possession of a MotorKing, donkeys, or diversified income to enhance water access, wealth turned out to be a marginal factor since most of the participants had the same or similar socioeconomic affiliation. The only participant explicitly expressing better access to more and clean water was the Chief, which indicates that wealth, social status, and hierarchal positions mitigate struggles in times of water scarcity.

While socio-cultural identities and power structures evidently influence the extent of experiences within and across all psychosocial stressors, the emotional stressor deepens the knowledge of women's agencies (Sultana 2011, p. 167). The female participants emphasize emotional stress to an extent that the male participants do not - concerning the responsibility of water collection and the financial, physical, and social inequalities and oppression that follows. The emotional stressor and expressed feelings of, e.g., constant anxiety and panic over the fact that their social role makes the whole household dependent on their water responsibility, adds an additional layer of explanation of women's subordination (Sultana 2011, p. 164). The female participants express how they feel unfairly treated because men "control them and everything" and how they are afraid to argue back in water-related conflicts because their husbands have the power to deport them from the house, which is the ultimate example of how women's agency is deprived.

## 8. Discussion

This chapter will discuss the male and female experiences in relation to each other, complicate the notions presented in the results, and place them into a broader development context.

It should be noted that the entire population suffers from the impacts and burdens of water scarcity, nevertheless, women's environmental responsibility for water collection is a key factor in the inequalities reflected in the community. As in previous research, the results of this study demonstrate that even though men and women experience the same water conditions, they still face different consequences. Perceptions of responsibility, support, and the degree of severity of impacts between men and women are generally contrasting, which makes it complicated to determine whose subjective perception to rely on. But to put things in perspective and facilitate conclusions, we have chosen to outline some specific examples of how the experiences differ below.

Prominent differences are evident in all psychosocial categories and not least in the financial aspect, where lack of control and rights simultaneously collide with assigned responsibilities. Water scarcity leads to economic constraints in agricultural and business opportunities, depending on water as the primary production source. The interviews declare that women are associated with both sectors while men are rarely associated with the latter. The gender division of labor and traditionally performed work within reproductive and productive sectors leads to a significant difference in terms of workload. Male participants expressed that they rarely work during the dry season. Female participants witnessed double workloads and the responsibility for financing resources such as food and water when access is scarce. The fact that male and female perceptions of payment responsibility and water collection differ makes it complicated to "take sides." Worth adding is, however, that, during the interviews, the women asked us if we had ever seen a man walk to the dam to fetch water for the household, which our observations did not contradict. Nevertheless, the differences in physical burdens indicate that women do have the sole responsibility for water collection. The male participants merely center their health impacts on diseases from unsafe water treated with Alum meanwhile, the women added physical burdens of accidents, fatigue, and body aches due to the long-distance walking and water collection.

Women's inability to perform household chores in time due to water collection is a commonly expressed cause of conflicts between spouses. However, the perception of the conflict's severity differs between sexes. The male participants emphasize women's complaints and denial of intercourse while the women declare physical, emotional, and sexual violence. The severity of these consequences and the majority of female participants who witness gendered-based-violence make the unequal gendered impacts unquestionable.

Another interesting aspect of the interviews conducted is that the male participants almost exclusively express their deep concern about the burdens their wives face and that an inability to support them leads to feelings of defeat and disgrace. At the same time, the vast majority of the female respondents declare help from husbands to be implausible. Again, the narratives indicate "words against words," and although our decolonial position and FPE analysis might make us biased, the differences in responsibility, emotions, and inequalities allow us to argue

that the gendered power relations of Gburimani indeed indicate injustice and disproportionate burdens between men and women during water scarcity.

In many instances, the findings of our thesis coincide with other gender-related water studies, where the inclusion of different stressors has been reflected upon, although in varying degrees. Previous research investigates water scarcity from different focal points, such as a gender perspective on living with drought (Arku & Arku 2010), gendered livelihood implications of sporadic water supply (Jeil, Abbas & Ganale 2020), gender roles and water practice (Van Houweling 2016), and gendered water collection and school attendance (Nauges & Strand 2015).

While our study indeed relates to previous research and follows the same categorization of psychosocial stressors established by Bisung & Elliott (2017), we argue that our study adds additional dimensions to each stressor and the above-mentioned focal points. The basis of FPE and intersectionality highlights how socio-cultural identities and power structures influence the impacts of water scarcity on different levels. For example, this study finds that children's education is not merely compromised because of water collection, as the center of attention in Nauges and Strand's research (2015), but also because of their mother's social status and gendered responsibility for children and their education. Furthermore, this study includes an emotional aspect that few previous scholars have fully incorporated (Sultana 2011, p. 167). Therefore, our research contributes additional insights to the thematic field and generates a deep understanding of the gendered and intersectional experiences of water scarcity in Gburimani.

Lastly, we want to highlight the complexity of the water situation and possible solutions in the community. Several male participants propose a reconstruction of the dam as the only solution to alleviate their situation. This becomes problematic from the contemporary aid and development perspective. We doubt that a dam for drinking purposes would align with the long-term and sustainable solutions water and aid programs usually aims to implement. This issue was brought up during a discussion with the District Assemblyman, who also expressed the improbability of NGOs, government authorities, or aid agencies in building a new or reconstructing the dam because of the health risks. Due to the improbability of such initiatives, and because previous attempts to drill boreholes have been unsuccessful because of the low water table, we propose a deeper investigation and research of the water situation in Gburimani, together with the local actors, in order to find other possible solutions to their situation. Not only investigations of, e.g., the actual water table but also to emphasize non-practical, equally important social factors. Considering the nature of this study, we suggest that the cooperation with local actors should include women since they are managing water and possess environmental knowledge regarding the issue. In other words, the water situation in Gburimani needs to be addressed immediately and to avoid unintended implications for people living in varying contexts, initiatives have to be based on the local histories as well as consider how socio-cultural identities and power structures influence the impacts of water scarcity differently. As this study is positioned within the heart of decolonial feminism, intersectionality, and FPE, we call for any development aid actor to acknowledge the pluriversality of knowledge, interests, narratives, and ideas presented in this research in order to effectively achieve the goals and targets of the SDGs (5.4, 6.1 and 6.2).

## 9. Conclusion

This study aimed to examine and analyze gendered experiences of water scarcity in Gburimani and to investigate the diversity of impacts and lived experiences, both between men and women and within and between households. Based on the results, we conclude that the experiences of water scarcity differ within all psychosocial stressors, where women suffered from greater burdens on different levels, which confirmed the consolidated understanding of this thesis.

With the help of the methods *work in the field*, critical reading, semi-structured interviews, and the theoretical framework, we were able to discuss and respond to the research questions of how gendered experiences and impacts of water scarcity are reflected in Gburimani and how and to what extent socio-cultural identities and power structures influence these impacts. We argue that the existing social roles and identities, gender division of labor, and power structures all influence the gendered experiences regarding responsibilities, rights, and control over water. We also argue that investigating intersecting identities and power structures is essential to comprehend the complexity of water scarcity in Gburimani fully. Even though all chapters of this thesis clearly demonstrate that women are in a more vulnerable situation, they cannot be understood as a homogenous category with common submissions and oppressions. Gender, marital-and social status, age, and household positions are crucial variables influencing the extent of impacts and consequences.

To conclude, our position within decolonial feminism allowed the research to create an opportunity for local histories to be heard. The study intended to raise awareness of the situation of Gburimani by bringing the perspective of the population to the foreground. In order to improve the water access in the area, we call for development actors to acknowledge the complexity of water and gender.

## 10. References

- Adams, E.A., Juran, L. & Ajibade, I. (2018). 'Spaces of Exclusion' in community water governance: A Feminist Political Ecology of gender and participation in Malawi's Urban Water User Associations. *Geoforum*, vol. 95, pp. 133–142. <https://doi.org/10.1016/j.geoforum.2018.06.016>
- Ahorsu, K. (2014). A Poststructuralist Approach to the Dagbon Chieftaincy Crisis in Northern Ghana. *African conflict and peace building review*, vol. 4 (1), pp. 95–119. <https://doi.org/10.2979/africonfpeacrevi.4.1.95>
- Apentiik, C.R.A. & Parpart, J.L. (2006). Working in Different Cultures: Issues of Race, Ethnicity and Identity. In: Desai, V. & Potter, R.B. (red.) *Doing Development Research* Edited by London SAGE Publications Ltd. pp. 34–43.
- Arku, F.S. (2010). Time savings and easy access to clean water: Implication for rural men's and women's well being. *Progress in Development Studies*, vol. 10 (3), pp. 233–246. <https://doi.org/10.1177/136499340901000303>
- Arku, F.S. & Arku, C. (2010). I cannot drink water on an empty stomach: a gender perspective on living with drought. *Gender and development*, vol. 18 (1), pp. 115–124. <https://doi.org/10.1080/13552071003600091>
- Beazley, H. & Ennew, J. (2006). Participatory Methods and Approaches: Tackling the Two Tyrannies. In: Desai, V. & Potter, R.B. (red.) *Doing Development Research* Edited by London SAGE Publications Ltd. pp. 189–199.
- Bisung, E. & Elliott, S.J. (2017). Psychosocial impacts of the lack of access to water and sanitation in low- and middle-income countries: a scoping review. *Journal of water and health*, vol. 15 (1), pp. 17–30. <https://doi.org/10.2166/wh.2016.158>
- Brydon, L. (2006). Ethical Practices in Doing Development Research. In: Desai, V. & Potter, R.B. (red.) *Doing Development Research* Edited by London SAGE Publications Ltd. pp. 25–33.
- Chambers, R. (1994). The Origins and Practice of Participatory Rural Appraisal. *Institute of Development Studies, Brighton*, vol. 22 (7), pp. 953–969. [https://doi.org/10.1016/0305-750X\(94\)90141-4](https://doi.org/10.1016/0305-750X(94)90141-4)
- Cole, S. (2017). Water worries: An intersectional feminist political ecology of tourism and water in Labuan Bajo, Indonesia. *Annals of tourism research*, vol. 67, pp. 14–24. <https://doi.org/10.1016/j.annals.2017.07.018>

David, E. (2020). Organising as intersectional feminist in the Global South. Birth and mode of action of post 2011 feminist groups in Morocco. In: Evans, E. & Lépinard, E. (2020). *Intersectionality In Feminist and Queer Movements: Confronting Privileges*. First Edition Abingdon, Oxon: Routledge, pp. 101–120.

Dinko, D.H., Yaro, J. & Kusimi, J. (2019). Political Ecology and Contours of Vulnerability to Water Insecurity in Semiarid North-Eastern Ghana. *Journal of Asian and African Studies*, vol. 54 (2), pp. 282–299. <https://doi.org/10.1177/0021909618811838>

Elmhirst, R. (2011). Introducing new feminist political ecologies. *Geoforum*, vol. 42 (2), pp. 129–132. <https://doi.org/10.1016/j.geoforum.2011.01.006>

Evans, E. & Lépinard, E. (2020). *Intersectionality In Feminist and Queer Movements: Confronting Privileges*. First Edition Abingdon, Oxon: Routledge, pp. 1–26.

Frankfort-Nachmias, C., Nachmias, D., DeWaard, J. (2015). *Research Methods in the Social Sciences*. Eighth Edition, Macmillan Learning.

Global Water Forum (2012). *Understanding water scarcity: Definitions and measurements*. [https://www.iwmi.cgiar.org/News\\_Room/pdf/Understanding\\_water\\_scarcity.pdf](https://www.iwmi.cgiar.org/News_Room/pdf/Understanding_water_scarcity.pdf) [2021-11-18].

Jarosz, L. (2011). Nourishing women: toward a feminist political ecology of community supported agriculture in the United States. *Gender, Place & Culture*, vol. 18 (3), pp. 307–326. <https://doi.org/10.1080/0966369X.2011.565871>

Jeil, E.B., Abass, K. & Ganale, J. K. (2020). “We are free when water is available”: gendered livelihood implications of sporadic water supply in Northern Ghana. *Local environment*, vol. 25 (4), pp. 320–335. <https://doi.org/10.1080/13549839.2020.1744118>

Lembke, M., Lalander, R., & Galindo, J.F. (2020). Objectivities and Trust in Ethnographic Research On and With Latin American Indigenous Peoples. In: Gallardo Fernández, G.L., Saunders, F., & Sokolova, T. (eds.). *Co-creating Actionable Science: Reflections from the Global North and South*, Cambridge Scholars Publishing. pp. 13–33.

Lugones, M. (2007). Heterosexualism and the Colonial/Modern Gender System. *Hypatia*, vol. 22 (1), pp. 186–209. <https://doi.org/10.1111/j.1527-2001.2007.tb01156.x>

Lugones, M. (2010). Toward a Decolonial feminism. *Hypatia*, vol. 25 (4), pp. 742–759. <https://doi.org/10.1111/j.1527-2001.2010.01137.x>

Manning, J. (2021). Decolonial feminist theory: Embracing the gendered colonial difference in management and organisation studies. *Gender, work and, organization*, vol. 28 (4), pp. 1203–1219. <https://doi.org/10.1111/gwao.12673>

- Mayoux, L. (2006). Quantitative, Qualitative or Participatory? Which Method, for What and When? In: Desai, V. & Potter, R.B. (red.) *Doing Development Research* Edited by London SAGE Publications Ltd., pp. 115–129.
- Mbilinyi, M. & Scechambo, G. (2015). Experiences in Transformative Feminist Movement Building at the Grassroots Level in Tanzania. In: Rodriguez, C.R, Tsikata, D. & Adomako Ampofo, A.K. (red.) (2015). *Transatlantic feminisms: women and gender studies in Africa and the diaspora*. Lanham: Lexington Books. pp. 79–102.
- Meer, T. & Müller, A. (2017). Considering intersectionality in Africa. *Agenda*, vol. 31 (1), pp. 3–4. <https://doi.org/10.1080/10130950.2017.1363583>
- Mekonnen, M.M. & Hoekstra, Y.H. (2016). Four billion people facing severe water scarcity. *Science advances*, vol. 2 (2), pp. e1500323–e1500323. <https://doi.org/10.1126/sciadv.1500323>
- Mies, M. (2014). *Patriarchy and Accumulation on a World Scale: Women in the International Division of Labour*, Bloomsbury Academic & Professional, London.
- Modern Ghana (2021). *Tolon: Chief, Residents lament sharing water with animals at Gburimani*. <https://www.modernghana.com/news/1059170/tolon-chief-residents-lament-sharing-water-with.html> [2022-05-10].
- Nauges, C. & Strand, J. (2015). Water Hauling and Girls’ School Attendance: Some New Evidence from Ghana. *Environmental & resource economics*, vol. 66 (1), pp. 65–88. <https://doi.org/10.1007/s10640-015-9938-5>
- Nyantakyi-Frimpong, H. (2017). Agricultural diversification and dietary diversity: A feminist political ecology of the everyday experiences of landless and smallholder households in Northern Ghana. *Geoforum*, vol. 86, pp. 63–75. <http://dx.doi.org/10.1016/j.geoforum.2017.09.003>
- Peet, R. & Hartwick, E. (2015). *Theories of Development: Contentions, Arguments, Alternatives*, Guilford Publications: New York.
- Pitard, J. (2017). A Journey to the Centre of Self: Positioning the Researcher in Autoethnography. *Forum, qualitative social research*, vol. 18 (3). <https://doi.org/10.17169/fqs-18.3.2764>
- Robbins, P. (2020). *Political Ecology: A Critical Introduction* (3rd Edition), John Wiley and Sons LTD: Hoboken, US.
- Rocheleau, D.E., Thomas-Slayter, B., Wangairi, E. (Eds.), (1996). *Feminist Political Ecology*. Routledge, London and New York.



Rocheleau, D. E. (2008). Political Ecology in the Key of Policy: From Chains of Explanation to Webs of Relation. *Geoforum*, vol. 39 (2), pp. 716–727. <https://doi.org/10.1016/j.geoforum.2007.02.005>

Simiyu, S., Bagayoko, M. & Gyasi, R.M. (2021). Associations between water, sanitation, and depression among older people in Ghana: empirical evidence from WHO-SAGE Wave 2 survey. *Aging & mental health*, pp. 1–8. <https://doi.org/10.1080/13607863.2021.1910796>

Simon, D. (2006). Your Questions Answered? Conducting Questionnaire Surveys. In: Desai, V. & Potter, R.B. (red.) *Doing Development Research* Edited by London SAGE Publications Ltd. pp. 163–171.

Stevenson, E.G.J., Greene, L.E., Maes, K.C., Ambelu, A., Tesfaye, Y., Rheingans, R. & Hadley, C. (2012). Water insecurity in 3 dimensions: An anthropological perspective on water and women's psychosocial distress in Ethiopia. *Social science & medicine*. (1982), vol. 75 (2), pp. 392–400. <https://doi.org/10.1016/j.socscimed.2012.03.022>

Strid, S. & Verloo, M. (2020). Intersectional complexities in gender-based violence politics. In: Evans, E. & Lépinard, E. (2020). *Intersectionality In Feminist and Queer Movements: Confronting Privileges*. First Edition Abingdon, Oxon: Routledge, pp. 83–100.

Sultana, A. (2012). Patriarchy and Womens Subordination: A Theoretical Analysis. *Arts Faculty Journal*, vol. 4, pp. 1–18. <https://doi.org/10.3329/afj.v4i0.12929>

Sultana, F. (2011). Suffering for water, suffering from water: Emotional geographies of resource access, control and conflict. *Geoforum*, vol. 42 (2), pp. 163–172. <https://doi.org/10.1016/j.geoforum.2010.12.002>

Truelove, Y. (2019). Rethinking water insecurity, inequality and infrastructure through an embodied urban political ecology. *WIRES Water*, vol. 6 (3), pp. 1–7. <https://doi.org/10.1002/wat2.1342>

Tsai, A.C., Kakuhikire, B., Mushavi, R., Vořechovská, D., Perkins, J.M., McDonough A.Q., & Bangsberg D.R. (2016). Population-based study of intra-household gender differences in water insecurity: reliability and validity of a survey instrument for use in rural Uganda. *Journal of water and health*, vol. 14 (2), pp. 280–292. <https://doi.org/10.2166/wh.2015.165>

UNICEF (n.d.). *Water*. <https://www.unicef.org/ghana/water> [2021-09-06].

UNICEF (2016). *UNICEF: Collecting Water is Often a Colossal Waste of Time for Women and Girls*. Press release. [www.unicef.org/media/media\\_92690.html](http://www.unicef.org/media/media_92690.html) [2021-09-07].

UNICEF (2021). *Water Security For All*. New York. <https://www.unicef.org/media/95241/file/water-security-for-all.pdf> [2022-05-21].

United Nations (n.d.a.). *Department of Economic and Social Affairs. Goal 5:* <https://sdgs.un.org/goals/goal5> [2021-12-16].

United Nations (n.d.b.). *Department of Economic and Social Affairs. Goal 6:* <https://sdgs.un.org/goals/goal6> [2021-11-23].

UN-Water (n.d.). *Human Rights to water and sanitation:* <https://www.unwater.org/water-facts/human-rights/> [2021-09-06].

van Donge, J.K. (2006). Ethnography and Participant Observation. In: Desai, V. & Potter, R.B. (red.) *Doing Development Research* Edited by London SAGE Publications Ltd. pp. 180–188.

Van Houweling, E. (2016). ‘A Good Wife Brings Her Husband Bath Water’’: Gender Roles and Water Practice in Nampula, Mozambique. *Society & Natural Resources*, vol. 29 (9), pp. 1065–1078. <https://doi-org.till.biblextern.sh.se/10.1080/08941920.2015.1095377>

Wallace, M. & Wray, A. (2011). *Critical Reading and Writing for Postgraduates*. London: Sage Publications Ltd.

WaterAid (n.d.). *Ghana.* <https://www.wateraid.org/where-we-work/ghana> [2021-09-06]

Willis, K. (2006). Interviewing. In: Desai, V. & Potter, R.B. (red.) *Doing Development Research* Edited by London SAGE Publications Ltd. pp. 144–152.

World Health Organization (2014). *WHO Recommendation on Postnatal Care of the Mother and New-born*. Geneva: World Health Organization. [https://apps.who.int/iris/bitstream/handle/10665/97603/9789241506649\\_eng.pdf?sequence=1&isAllowed=y](https://apps.who.int/iris/bitstream/handle/10665/97603/9789241506649_eng.pdf?sequence=1&isAllowed=y) [2022-05-12].

Yuval-Davis, N. (2006). “Intersectionality and Feminist Politics”. *European Journal of Women's Studies*, vol. 13 (3), pp. 193–209. <https://doi.org/10.1177/1350506806065752>