AKENTEN APPIAH-MENKA UNIVERSITY OF SKILLS TRAINING AND ENTREPRENEURIAL DEVELOPMENT

ASSESSING THE ROLES WOMEN PLAY IN THE DELIVERY OF WATER, SANITATION AND HYGIENE SERVICES IN GHANA

PRISCILLA FORDJOUR ASENSO

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BY

PRISCILLA FORDJOUR ASENSO

(8201930013)

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DECLARATION

Candidate's Declaration

I hereby declare that this thesis, with the exception of quotation and references contained in published works which have been duly acknowledged; is the result of own original work and that no part of it has been presented for another degree in this university or elsewhere.

Priscilla Fordjour Asenso

Signature: ……. Date:..……

Supervisors' Declaration

We hereby declare that the preparation and presentation of this thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the Akenten Appiah-Menka University of Skills Training and Entrepreneurial Development.

Professor Isaac Monney (Principal Supervisor)

Signature: ……. Date:…..……

Professor Richard Amankwah Kuffour (Co-Supervisor)

Signature: ……. Date:…..……

ABSTRACT

This study explored the key role of women in providing water, sanitation, and hygiene (WASH) services in Ghana's two major cities, Kumasi and Accra. Primary data were collected through a semi-structured questionnaire using a descriptive, cross-sectional research design alongside a quantitative approach. The findings revealed significant gender imbalances within WASH institutions at various management levels. Women in the WASH sector primarily focused on environmental health duties (73.6 %), while a smaller percentage held technical positions (5.9 %). Sociocultural factors, including gender stereotypes, contribute to this underrepresentation. Women held only 11.9 % of top-level management positions, while they represent 36.5 % of middle management, 44.8 % of lower management, and 6.7 % of support staff roles. Maternity leave (75.6 %) emerges as a considerable incentive for women working in the sector. In contrast, inadequate transportation allowances (32.6 %), long working hours (9.1 %), stressful work conditions (16.5 %), and low salaries (22.3 %) present significant disincentives. Despite these challenges, a majority (68.4 %) of women expressed a strong commitment to remaining in the sector, driven by their passion for improving WASH services and saving lives. The study highlights the urgent need for greater gender equity and women's empowerment within the sector. Suggested strategies to attract more women included recognition and reward mechanisms, educational and awareness initiatives, sound policies, gender-sensitive approaches, advocacy for women in WASH, strategic recruitment, and the integration of gender considerations into all WASH projects. Proposed specific actions involve mentorship programs to facilitate women's advancement into top-level management, encouraging women to pursue technical

education, enhancing salary structures, and addressing workplace stigmatisation. The study advocates for fair career progression plans and support for women in leadership roles while addressing biases through training and fostering better working conditions.

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DEDICATION

This research is dedicated to my husband, Adomako Richard Asenso, and my brothers, with special recognition to Robert Kofi Asem, Patrick Asenso and Reynolph Asenso, for their immense support and love throughout my academic journey.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The fundamental human rights related to water, sanitation, and hygiene are essential for safeguarding health and human rights (Davis, 2017). These are vital for the support of other human rights, especially the right to adequate living standards and health (Triasari, 2021). Historically, the focus on water, sanitation, and hygiene has mostly centered on technological solutions; however, a thorough analysis of water, sanitation, and hygiene programs reveals that access is greatly influenced by social determinants, such as gender identity and social status (Setty et al., 2020). Gender-based inequalities exist in every nation, leading to significant disparities between men and women regarding their ability to utilize, manage, and benefit from water, sanitation, and hygiene resources (Fisher et al., 2017a). Empirical evidence from previous studies indicates that women and men often display differing practices and experiences concerning water, sanitation, and hygiene due to biological and socio-cultural factors (Jalali, 2021).

In contexts of inadequate access to WASH (Water, Sanitation, and Hygiene) services, women face disproportionate challenges, particularly regarding menstrual hygiene, personal safety, sexual harassment, and violence. These factors highlight the critical need for proper sanitation and hygiene facilities (Tearne et al., 2021). The lack of adequate facilities often confines women and girls to nighttime movements, thereby increasing their vulnerability to physical and sexual violence (Koner, 2018). This fear of neglecting

natural bodily functions not only causes discomfort but also raises the risk of health issues such as infections, constipation, and stress (Swedish International Development Cooperation Agency, 2019). Moreover, gender inequalities significantly influence educational outcomes. In several countries, the absence of clean water and gender-sensitive toilet facilities correlates with higher dropout rates and lower attendance for girls (Akanzum and Pienaah, 2023). Cultural and historical norms frequently place the responsibility of collecting and managing water on women, diverting their time away from personal hygiene and other activities. Women typically spend more time fetching water than men (Sarkar, 2020), reinforcing social norms that depict men as primary water consumers while women handle water collection for household needs (Balehey et al., 2018).

The gendered division of labor in water collection and sanitation exacerbates challenges in regions with scarce water sources, limiting women's ability to prioritise their hygiene needs (Abu et al., 2019). Inadequate WASH infrastructure affects not only women's access to resources but also hinders their participation in economic, social, and recreational activities due to increased caregiving and domestic work responsibilities (De Paz et al., 2020). Access to water also impacts women's involvement in agriculture, food security, and economic opportunities. Given their roles in health, childcare, and domestic water management, women possess valuable knowledge about water resources and community customs, which is essential for effective WASH programmes. Excluding women from WASH decisions can lead to poorly designed facilities and unsustainable practices (Forsythe et al., 2016)

Research confirms that programmes involving women throughout planning, implementation, and monitoring stages are more successful and sustainable (Bisung et al, 2021). Hence, the active involvement of women in choices regarding water and sanitation is not only essential for their overall health and safety being but more to that, enhances their social status and economic prospects, granting them access to influential roles (Aranda, 2016). However, women remain underrepresented in leadership positions, including management, regulation, and policymaking. To effectively integrate a gender perspective into global water and sanitation efforts, advocating for direct involvement of women across all levels, from local communities to international organisations is imperative.

1.2 Problem Statement

Women are heavily impacted by most WASH issues, however their active participation in WASH-related decision-making processes and their perspectives is frequently overlooked and are not usually considered (Abu et al., 2019). Existing literature indicates that the lack of women's participation in decision-making and planning constitutes a significant cause behind the failure to provide WASH facilities that adequately address the needs of women and girls (Kate et al., 2016). Consequently, the leadership and decision-making capacities of women within the WASH sector play a critical role in the establishment and management of water, sanitation, and hygiene services (Brown and Tenkorang, 2015). For a truly democratic and transparent water management system that reflects the needs of all people, regardless of gender, it is essential to ensure equal participation from both men and women (Rudolph and Kurian, 2022). This endeavor

should commence with a greater number of women in undertaking ministerial roles in sectors of water management and environmental sanitation. The involvement of women as water managers should also be promoted at all levels, extending from high-level management to grassroots initiatives (Brewster et al., 2016). At the policy level, there is limited available data on the impact of women's participation in WASH decision-making, primarily due to the global workforce composition, where women account for only around 18 % of water and sanitation utility employees and a mere 12 % of environmental sector ministers (Connolly, 2019).

Recognising that sustainable, long-term progress requires women's involvement in decision-making processes, it is imperative to capture the unique perspectives and expertise of women. However, in the Ghanaian context, considerable uncertainty prevails concerning the specific role women play in delivering WASH services. Existing literature (Oduro-Kwarteng et al., 2014) suggests that female workers constitute just 22 % of the entire WASH sector workforce. Furthermore, their specific roles and where exactly they work remain relatively unknown (Connolly, 2019). Considering these circumstances, it is essential to develop a comprehensive cognisant of the roles women hold within the WASH sector, as their contribution cannot be underestimated (Allen et al., 2018; Abu et al., 2019). Against this background, this study aims to evaluate the role of women in Ghana's WASH sector.

1.3 Significance of the Study

The study aims to contribute to the ongoing discussion surrounding the issue of limited female representation in WASH decision-making and planning. It intends to highlight government authorities, policymakers, and non-governmental organisations the extent to which women have been engaged in WASH decisions on a broader policy scale. Additionally, the study seeks to raise awareness about women's adeptness in effectively managing water and sanitation resources. Therefore, it is imperative to identify and tackle the challenges faced by women in the WASH sector, including those that hinder their participation.

1.4 Objectives of the Study

1.4.1 Main Objective

The study was conducted to determine the roles of women in WASH service delivery in Ghana.

1.4.2 Specific Objectives

Specifically, the study sought to:

1. Take inventory of where women work in Ghana’s WASH sector.
2. Determine the role women play in WASH service delivery
3. Determine the incentives and disincentives for women in the WASH sector.

1.5 Research Questions

1. What are the gender ratios across various administrative levels in the various WASH institutions and how are women involved in decision making?
2. What roles do women generally occupy within the WASH sector?
3. What factors dissuade women from working in the WASH sector?
4. What strategies can be implemented to attract and retain women in the WASH sector?

1.6 Organisation of Study

The report is structured into six chapters. The first chapter provides an overview that covers the context, issue statement, analysis concerns, objectives, significance of the study, and the task structure. The second section delves into a review of recent research findings on gender and WASH issues, spotlighting the roles women undertake in the delivery of WASH services. In chapter three, the study's methodologies are detailed, including the study's scope, data sources, study population, sampling approach, data collection tool (structured questionnaire), statistical analysis, and ethical consideration. Chapter four unveils the study's results, analysis, and findings. Chapter five delves into a thorough exploration and discussion of the significant study findings. Finally, chapter six encompasses a concise summary of the findings, conclusion, and recommendations drawn from the study.

1.7 Limitations of the Study

This study focuses on evaluating the roles of women within institutions responsible for providing WASH services in Accra and Kumasi. The study's limitations are attributed to time and financial constraints. Limited time was a challenge due to the need for travel to collect data from the selected cities and the necessity to complete the project within a defined time limit. Efforts to include the Ga West Municipal Assembly and two crucial entities, namely Zoomlion Ghana's Head Office and the Environmental Protection Agency in Kumasi, encountered challenges, impacting the extent of the study's coverage. These institutions play pivotal roles in Ghana's WASH sector and would have contributed valuable insights to the study. The absence of their input could introduce potential bias and diminish the holistic understanding of opportunities and challenges faced by women in the WASH sector in Ghana. One thing that the researcher could have sought to do but was unable to accomplish due to the limitations was conducting in-depth interviews with key personnel from the institutions that were difficult to reach. These interviews could have provided qualitative insights into the roles, experiences, and perspectives of women working within those institutions, to capture their unique viewpoints and enrich the research findings.

CHAPTER TWO

LITERATURE REVIEW

2.1 Access to Water, Sanitation, and Hygiene

1 access to water, sanitation, and hygiene. Access to WASH is critical in promoting good hygiene practices and behavior; however, millions of people and communities remain unserved or underserved, even regarding basic water services and primary sanitation. Globally, 2.1 billion people live in households lacking access to safely managed drinking water (UNICEF, 2017). Most people without safe drinking water reside in low- and middle-income countries (LMICs) (Foster et al., 2021). These communities face multiple challenges, including inadequate water for daily tasks, unfavorable living conditions, and substantial time and financial resources spent on water acquisition (Derry et al., 2020). Although the drinking water MDG target was met earlier than expected, Sub-Saharan Africa (SSA) still confronts significant obstacles in accessing even basic water services. For instance, 319 million people still lack access to properly managed water systems. Furthermore, 695 million individuals lack access to well-managed sanitary facilities (WHO and UNICEF, 2017). Additionally, significant differences in access to WASH services exist between urban and rural populations, with access to WASH services being only 47% in rural areas. Access to safe water and sanitation affects the mental and physical well-being of individuals and households, with the greatest impact on women (Sultana, 2011; Grebmer et al., 2015). According to Grebmer et al. (2015), more than 340,000 children under the age of five die annually from diseases caused by unsafe water, inadequate sanitation, and poor hygiene. Moreover, due to heightened sensitivity to

unfavorable environmental conditions, pregnant women are more vulnerable to many diseases caused by environmental hazards linked to poor WASH (Jadhav et al., 2016). Several major health issues that mothers experience throughout pregnancy, childbirth, and the postpartum period are exacerbated by these disorders (Thakur et al., 2017). Improving WASH practices can disrupt the transmission of soil-transmitted helminths (STH), based on evidence showing reduced infection rates with WASH interventions. Lack of access to water and sanitation can lead to anxiety, shame, and suffering because of these issues (Wutich, 2019). Consequently, inadequate WASH services have a substantial negative influence on people's mental health, particularly that of women and girls, affecting their quality of life and social status. Additionally, women, often the primary caregivers, face extra stress when contaminated water impacts public health, as they must care for sick family members on top of their regular responsibilities (Gimelli et al., 2018a). To improve health, combat poverty, advance equality, and support socio-economic growth, the international community adopted the Millennium Development Goals (MDGs) in 2000, focusing primarily on enhancing water, sanitation, and hygiene services. MDG 7 aimed to halve the proportion of people living without access to clean water and basic sanitation by 2015. WHO/UNICEF (2015) reported that most countries achieved their drinking water objectives by 2015. However, slow progress has been observed in improving access to better sanitation, especially in LMICs. Ghana failed to meet its sanitation MDG objective despite achieving its drinking water MDG target of 92.7% (Kanyagui and Viswanathan, 2022). While progress has been made in achieving the drinking water targets of the MDGs, further improvement is needed. Tegegne and Sisay (2014) found that 10% of girls avoid going to school during menstruation in certain

parts of the country due to insufficient sanitation facilities where they feel comfortable and at ease. During the MDG implementation phase, addressing gender-specific needs was a top priority to reduce the gender disparity gap (Sardelis et al., 2017). The establishment of the SDGs has increased commitment to gender equality in WASH. SDG 6 targets equitable and universal access to safe drinking water and sanitation for all by 2030, while SDG 5 focuses on gender equity (United Nations, 2017). Goal 6 encompasses the entire water cycle, including WASH access, resource usage, and integrated management. SDG 6.2 specifically aims to ensure the availability of adequate sanitation and hygiene for everyone while striving to eliminate open defecation, paying close attention to issues affecting women and girls (United Nations, 2017). Given the disparities in socially constructed roles, responsibilities, opportunities, and limits based on gender, these targets reflect the idea that different genders have varying WASH needs (Hirai et al., 2018). Gender gaps must be addressed to achieve the SDGs' goal of equitable access to WASH, ensuring that everyone, particularly women and girls, has access to WASH services. WASH initiatives should integrate and resolve the persistent inequities between men and women by adopting the principles of human rights, namely "equality and non-discrimination" and "participation and inclusion" (Otonoku and Awomuti, 2021). It should provide women with a voice in local decision-making to strengthen their agency (UNICEF, 2017). Consequently, WASH initiatives and programs should go beyond providing infrastructure and place more emphasis on how that infrastructure may interact with social and cultural elements (Derry et al., 2020). Objectives 6.1 and 6.2 of the Sustainable Development Goals (SDGs), which refer to universal WASH coverage, are still primarily measured in technical terms, mainly access

to WASH facilities. This approach may not adequately capture the significance of WASH services for enhancing human welfare and reducing social inequities related to gender (Sweetman and Medland, 2017; Gimelli et al., 2018b).

2.2 Gender-Based Violence

Access to clean water, better sanitation, and hygiene is generally not an urgent issue in the developed world, as corroborated by current research findings (WHO, 2015; Braimah et al., 2018; Olagunju et al., 2019). Inhabitants of developing nations face significant barriers to WASH, with diverse challenges needing to be addressed by men, women, boys, and girls while striving to meet their WASH needs (Sorenson et al., 2011; Bisung et al., 2015; Gross et al., 2018). Gender-based violence is more likely to affect females who have limited access to sufficient and safe WASH services WASH violence can be divided into four categories: structural, sexual, psychological, and physical (Nunbogu and Elliott, 2021). Acts that cause bodily harm while obtaining WASH services are manifestations of physical violence (Pommells et al., 2018), whereas threats, verbal abuse, and other behaviors that create negative feelings exemplify psychological acts of violence (Bisung and Elliott, 2016; Collins et al., 2019). Rape, unsolicited sexual advances, and inappropriate touching at a WASH facility are all considered forms of sexual violence (Pommells et al., 2018). Additionally, structural violence is characterized by the direct or indirect roles that political, economic, and social actors, along with institutions, play in exacerbating disparities related to access to water, its costs, and availability (Braimah et al., 2018). Research supported by Water and Sanitation highlights instances of sexual assault perpetrated against teenage females using poorly designed toilet facilities in their

schools (Nallari, 2015; Girod et al., 2017; Amatya et al., 2018). The study also revealed structural shortcomings in providing adequate sanitation facilities for managing menstrual hygiene by school administrations. Therefore, it is crucial to recognize that structural choices can significantly affect how well communities manage their water demands, often disproportionately impacting women and girls (Sahoo et al., 2015; Bisung and Elliott, 2017). While poor access to WASH does not directly cause violence against women and girls, it does increase their vulnerability to such experiences (Rahman, 2013; Peterman et al., 2020). When access to WASH is limited and violence occurs, some women and girls develop coping mechanisms to mitigate the abuse (Arango et al., 2014; Dogoli, 2021). Women may resort to using less water for personal hygiene or domestic needs when water sources are distant (Yerian et al., 2014). Literature supports the notion that "traveling long distances, coupled with the predictability of community women's water-fetching routines, provides assailants with opportunities to target women who are isolated, alone, and consequently more vulnerable" (Pommells et al., 2018). Beyond the physical harm posed by these sexual assaults, Dogoli, (2021) highlighted that this violence inflicts significant psychological distress and anxiety, aggravating feelings of vulnerability among women collecting water. While men are often blamed for violence against women, it is also true that women may commit acts of violence against children and other women. When access to clean water is limited, women frequently encounter challenges in obtaining it. Yerian et al. (2014) report that women often engage in disputes or confrontations during long queues at water sources. Such tensions arise, particularly when some women attempt to bypass the queue to collect water. Issues of violence sometimes extend into the home, as well as at the water source. Women may physically

and verbally assault children for wasting water. According to Pommells et al. (2018), women face an increased risk of experiencing spousal abuse when they are unable to provide water or complete water-related tasks at home. If husbands perceive a lack of sufficient water for their wives and children, especially for girls, they may complain and, in some cases, resort to physical violence (Quaife, 2019). Girls also face verbal abuse or physical violence from women who feel they have spent excessive time at the water source (Bui and Morash, 2017; Morton, 2021). Children are often subjected to verbal and physical abuse from women for wasting water. When husbands intervene, they may, in some instances, feel compelled to hit their wives if they perceive them to be unfair; this type of violence poses significant risks (Gil, 2012; Jewkes and Morrell, 2012). Furthermore, these findings demonstrate that violence in WASH communities is pervasive and not always inflicted by men (Yerian et al., 2014; Shakya et al., 2017). Poorly maintained roads in many communities in Sub-Saharan Africa heighten the risk of accidents for women and girls walking to water sources or using fields for open defecation (UNICEF, 2019). Moreover, when women must travel long distances to obtain water, the risk of rape or robbery remains high (Meth, 2017). Whether traveling alone or in groups, women and girls are vulnerable to animal attacks and assaults while walking to fetch water (Dogoli, 2021; Sani and Scholz, 2022). The shame and stigma surrounding sexual assault deter many women and girls from reporting such traumatic experiences. Women who frequently carry large volumes of water report experiencing significant physiological health issues as a result of these journeys (Dubey et al., 2020; Nounkeu & Dharod, 2020). According to Sorenson, Morssink, and Campos (2011), as cited in Pommells et al. (2018), some negative health effects of fetching water from a distance

include exhaustion, long-term back injuries, micronutrient deficiencies due to high caloric expenditure, and a lack of choice, all of which continue to hinder the health and development of women and girls in communities where water fetching is common. When health concerns are combined with security issues, a broader spectrum of health risks emerges (Akinlusi et al., 2014). Existing literature extensively covers the prevalence of waterborne diseases and other health issues related to WASH in the developing world. While children typically suffer the most from these diseases, Wallace et al. (2019) highlight that women's daily interactions with water exacerbate their risk of schistosomiasis, fever, malaria, anemia, dengue, yellow fever, and hookworm infestations. Similarly, studies conducted in rural Ghana by Bangert et al. (2017b) illustrated a favorable correlation between women's health and access to clean water. Although waterborne illnesses represent a significant portion of health problems in developing countries, communities with limited access to clean water are inherently more susceptible to various health issues.

2.3 Inequalities in WASH

It is sometimes asserted that investments in water supply and sanitation (WSS) produce broad economic benefits which are essential instruments for reducing poverty (WaterAid, 2021) Water and sanitation were previously included in the Millennium Progress Goals (MDGs) as essential building blocks of development (Nhamo et al., 2019). The SDGs, which succeeded them, went one step further and changed the emphasis from service delivery to service delivery "for all" (Milton, 2021). As a result, SDG 6 supports the perennial objective of providing equitable and sustainable WASH services targeted at

women, girls, and those in impoverished conditions. The basic equity contention is brought up by this particular issue. According to Ahmed et al. (2020), access to safe drinking water, sanitation, and hygiene is essential for every woman, man, girl, and boy to live a life of health and dignity, protect human rights, and promote gender equality (USAID, 2020). To fulfil the rights to water and sanitation, they must be made available, reachable, safe, acceptable, and inexpensive to everyone without exception (Neto and Camkin, 2020). In most communities around the world, women are responsible for safeguarding the welfare, health, and hygiene of the family (Mimica, 2017). Additionally, women frequently manage household water resources and encourage home and community-based cleanliness sanitation. In Sub-Saharan Africa, women and girls are mostly responsible for securing water for domestic consumption. (Sarkar, 2020; Venkataramanan et al., 2020). According to a study by Gross et al. (2018), women and girls in Sub-Saharan Africa usually spend 25 % of their working days in search of and fetching water. Currently, 200 million hours are spent by women and girls worldwide harvesting water. (Katrapati, 2021). When women have access to clean water close to home, their responsibilities can be drastically reduced, freeing up more time for other interests. (Hall, 2020; Tomberge et al., 2019). This time might be utilised by these girls to go to school (Nauges and Strand, 2015). In the provision, administration, and protection of water, women play a vital role. Women's involvement in agricultural output, food security, and commercial prospects is reduced when they lack access to water (Herrero et al., 2013; Tantoh. et al., 2021). Given that agriculture depends on water and that women constitute nearly half of the agricultural labour force globally, these numbers highlight the significance of inclusive water resource management in achieving gender equality.

When women lack access to water, their participation in agricultural production, food security, and commercial opportunities is reduced (Onyalo, 2019; FAO, 2022). It is the responsibility of women as careers to safeguard their children from the dangers of open defecation when there is a lack of sanitation throughout the home. Human communities are rife with strong taboos and stigmas related to urinating or defecating, which foster secrecy, shame, and disgust around excretion (Sweetman and Medland, 2017). While males may be able to go to the bathroom quite easily and won't face harsh consequences if they do so, the situation is drastically different for women (Kwiringira et al., 2014). While males may be able to go to the bathroom quite easily and won't face harsh consequences if they do so, the situation is drastically different for women. Due to universal social standards that demand that people not be observed when using sanitary facilities, women need greater privacy than males do. Women need to urinate more frequently when they are pregnant. When they use the outdoors or public sanitary facilities, they need to feel physically safe. All women are required to use these facilities when at work or school, but for some women, using public facilities is their main access method (Kaur et al., 2018; Sweatman, 2019). In educational contexts, the failure of school administration to provide girls with areas of dignity to attend to their hygiene needs has detrimental effects on the accomplishment of equal boys-to-girls educational ratio as well as their academic advancement (Bisung and Elliott, 2017a;). Some girls struggle to manage their menstrual cycles at school owing to inadequate privacy and sanitary facilities (Tegegne and Sisay, 2014). Women are expected to cover their bodies following modesty rules, thus they cannot expose themselves during urination or faeces in the exact way that biology requires (Green, 2018; Paster, 2018). As a result, when

women do not have access to a latrine and instead practice open defecation, they wait until nightfall which can be use for the concealing often accomplished by clothing.. To postpone their sanitary demands more easily until the evening or early morning, women may choose to refrain from eating and drinking during the day (Khanna and Das, 2016). Despite limited evidence, there have been reports of poor hydration and withholding urination leading to an increased risk of urinary tract infections (Kaufman et al., 2019; Sahoo et al., 2015). Integrating special requirements for women and girls into sanitary systems will require more than engaging women's groups in health promotion activities during the implementation stage (Dickson et al., 2014). Women's perspectives are equally significant for establishing and monitoring access indicators, designing infrastructure, and planning initiatives (Burt et al., 2016). Access to safe water and sanitation services is frequently restricted or nonexistent during conflicts and other emergencies, and the availability of these services is further hampered by frequently destroyed infrastructure (Harpring et al., 2021). Conflicts and natural disasters that make water scarcer could cause women to suffer twice as much as males. (SIDA, 2019; Nagabhatla et al., 2021). Gender dynamics within households must be considered in situations of displacement when water and food are distributed. This includes the capacity of both men and women to obtain and fairly distribute relief supplies within households. Men are often enrolled, so when they no more (due to conflict or displacement), women may not have the registration information necessary to seek aid (Mulumba and Namuggala, 2014; Meyer et al., 2019). A greater risk of infection exists for hundreds of millions of men and women who seek treatment in hospitals that lack basic amenities like WASH and health waste services (Bangert et al., 2017; Cronk and Bartram, 2018). The WHO study examined data

on the 287,000 estimated maternal fatalities that occurred between 2003 and 2009, the majority of which might have been prevented (Say et al., 2014). Sepsis was a contributing factor in 10.7 % of all maternal fatalities worldwide (infections that can be cut drastically by handwashing on the part of midwives and health staff). The study emphasised the significance of focusing on social issues (such as attitudinal transformation and health education) in addition to the technical aspects of WASH, which are the provision of water and sanitation services and infrastructure. The time spent by women who care for families when unmet WASH needs exist could be put to many different uses (Cronin et al., 2015; Fisher et al., 2017; MacArthur et al., 2020a). The analysis above demonstrates that although women and girls bear the majority of the burden of WASH issues, they are frequently left out of the planning, implementation, and monitoring of community WASH activities because of have less power than the males in terms of status, power, resources, and time (Routray et al., 2017; Abu et al., 2019). Men and boys are not encouraged to participate in family chores community-based sanitation activities, and the perspectives of women and girls are not consistently reflected in decision-making bodies (Coulter et al., 2018; Abu et al., 2019). Involving both women and men in integrated water resource initiatives through a gender-transformative approach can increase effectiveness and efficiency (Aregu et al., 2017; Gupta et al., 2020).

2.4 Gender and Water Management

Since the 1980s, there has been an increase in interest in encouraging women's involvement and participation in the administration of water and sanitation programs, in

many countries, since they serve as the traditional water managers for their households. In the last four decades, women have been fully, equally, and profitably integrated into discussions about the provision of and management of water for international development (MacArthur et al., 2020).The United Nations Water Conference in 1977 in Mar del Plata, Argentina, marked the beginning of the first sustained interest in women and water (Pandey et al., 2021). The Declaration of Mar del Plata, which resulted in the UN General Assembly establishing the years 1981 to 1990, was adopted at this meeting and recognised women's role as water providers and administrators for the first time. This provided a framework for a massive supply of potable water for half of the world's population as well as support women in their domestic work. The UN General Assembly Resolution 25, which promotes the full participation of women in water supply, planning, implementation, and technological applications, placed additional focus on the role of women (Bundschuh et al., 2020; Crawford et al., 2020). It also provided a chance for decision-makers to include women in determining their own goals for the water projects. The present international water for life decade (2005-2015) also emphasises the significance of boosting women's participation in all water-related development initiatives by utilizing women's expertise and competence as water managers and decision-makers (Nhamo et al., 2019). This recognition was highlighted at the United Nations Conference on Environment and Development (UNCED), also known as the Earth Summit, which took place in Rio de Janeiro in 1992, the World Conference on Women that the UN hosted in Beijing in 1999, and the International Conference on Water and Environment (ICWE), which took place in Dublin, Ireland, in January 1992 (Hjorth and Madani, 2023). Concerns were raised at these conferences about the necessity

of giving those who depend on natural resources for their livelihood due consideration by facilitating their active involvement and participation in all relevant decision-making processes, particularly indigenous people in rural areas and women (Bui, 2021). For instance, the Dublin Conference gave rise to four principles that have served as the cornerstone for many later water sector reforms on water management. These principles established a new strategy known as Integrated Water Resources Management (IWRM), which among other things recognised fresh water as a limited resource that is vulnerable to overuse and the crucial role women play in its provision and management (Hjorth and Madani, 2023). Accepting and putting into practice this concept calls for constructive policies that address the unique requirements of women, and equip and empower them to participate in water resource programs at all levels, including decision-making and implementation, in ways that they define. (Bouman-Dentener, 2020). Since then, policymakers have made attempts to incorporate gender issues in water development projects. In any development initiative, it is crucial to include gender relations. Gender relations in this context take into account the various roles that men and women assume within a household and community. These roles determine the unique perspective, skills, and demands of men and women, which are connected to the responsibilities that they are assigned in the home and the community. To maintain the sustainability of water management initiatives, both men and women have valuable information that should be included. In contrast, men's perspectives, knowledge, and demands are frequently taken into account in water management projects while women are neglected (Khandker et al., 2020). Women play a significant role in gathering, managing, and maintaining the communal water supply, regulating and controlling its social use, and ensuring its safe

maintenance. Men have traditionally been in charge of making decisions and have dominated the processes that affect the management of water supply. In addition, women manage water resources with males for productive use. These beneficial usage changes depend on the community. For example, women may be responsible for subsistence agricultural production while men may be primarily engaged in commercial agricultural production creating a difference in their respective needs for water resource management programs (Abonge, 2022). As a result, women are more knowledgeable than men about the availability, reliability, and purity of water supplies in a variety of contexts, including family, community, and subsistence livelihood conditions (Abu et al., 2019; Derry et al., 2020). These illustrate the need for women to participate in decision-making for the management of the water supply to improve it. Women's empowerment and grassroots water advocacy are essential for the ongoing operation of water supply, and their empowerment significantly increases their participation, assuring the success of sustainable development plans. Offutt (2022), posit that when women are given the platform to voice their concerns on matters that affect their daily livelihood, or are involved at all levels of water management and policy formulation, they help mobilise the potential of water for development and ensure that water does not become a constraint to sustainable development. Lessons learned from Africa and the rest of the globe show that increasing women's involvement in decision-making and water management not only improves the operation and upkeep of water facilities but also enables them to make greater economic contributions to their households (Venkataramanan et al., 2020; Stoler et al., 2022). Adams et al. (2022) also report that involving women in the selection and localization of a new water point will increase water accessibility and better meet their

individual needs by ensuring that the time and energy spent daily by women on collecting water will be reduced and instead used for more productive activities, such as their household sanitation and food production, which will lessen their physical workload, which frequently results in deformity and disability.

Although numerous conferences, workshops, seminars, and projects involving the organisation of community-based groups have discussed the importance of enhancing the role of women in the management of water supply and do mention their intention to guarantee some level of participation for women, these policies have not been adequately translated into practice as there is very little evidence of explicit attempts to increase or improve the involvement of women in water initiative (Abu et al., 2019; Indarti et al., 2019a; Derry et al., 2020; Dickin et al., 2021). This is because the channels used to manage water supplies and the socioeconomic norms that are prioritised tend to weaken and reinforce unequal participation in technical training programs, decision-making processes, and the status of women in water management and users' committees (Derry et al., 2020).

2.5 Benefits of Women's Participation in Water Governance

Enhancing women's participation in the development of the WASH sector, from WASH users and beneficiaries to effective actors and water managers with expanded choice and voice in the WASH resources management processes, has received a lot of attention over the past few decades. Studies on water and sanitation programs show that women's involvement is crucial for the success and sustainability of WASH programs (Derry et al.,

2020; MacArthur et al., 2020; Anderson et al., 2021). Studies have found that women's involvement in decisions about water supplies, transparency, and management of sanitation interventions, whether through better resource knowledge, the design of systems to better account for varied resource uses, better regulatory enforcement, or greater community buy-in to governance rules was strongly associated with the effectiveness of the projects (Routray et al., 2017). Literature from regions throughout the world from Bangladesh (Sultana 2015), China (Tong et al., 2017), Brazil (Figueiredo and Perkins, 2018), Kenya (Yerian et al. 2014), Mexico (Harris and Gantt, 2017) and Canada (Figueiredo and Perkins 2013), to name a few, has shown that increased participation of women in water governance can benefit health and environmental sustainability, as well as reduce conflict through better resource management. Additionally, increased female participation can enhance water infrastructure and access, which can reduce the opportunity costs women face when collecting water and free up their time to engage in community- and social-capital-building activities that increase socioeconomic resilience. Related to this claim, some assert that women have in-depth knowledge of water quality, reliability, and availability because they are in charge of the family's health as well as the time-consuming process of collecting water (Abu et al., 2019; Indarti et al., 2019b; Derry et al., 2020). This information can help with project design. Women may also have greater incentives to address water problems and maintain infrastructure (Miller et al., 2021). Given these connections, the failure to include women is likely to undermine the success and sustainability of water management efforts (Shrestha et al., 2023). In India, projects with women excluded from the planning process had major faults, such as hand pumps that were too heavy for women to operate (Prokopy, 2018). In rural Egypt,

researchers discovered that women knew more about problems with water availability and pollution. Male leaders ignored the issue of pollution even though these ladies brought it up to their spouses (Assaad et al., 2014). Studies indicate that involving women in decision-making in irrigation increases sustainability by ensuring that the needs and capacities of all users are acknowledged (Zulu et al., 2021). In the Andes, women are increasingly responsible for irrigating fields as male migration increases. Women and men have different preferences for water access and use, with women generally preferring to use irrigation water for multiple purposes such as bathing and laundry, preferring to avoid night irrigation turns, or preferring to locate canals closer to their homes (SIDA, 2019). According to Boelens and Zwarteveen (2014), when these preferences are disregarded, water efficiency goals may be compromised. Another dimension that relates to sustainability is the degree to which the involvement of all community members contributes to more effective buy-in, monitoring, and adherence to regulations improves women's status and boosts gender equity. As water management and planning often determine resource access, and women have key roles in familial and productive water needs, women's participation in management mechanisms is considered essential. Some studies suggest that women are empowered through their participation, leading to improved confidence and enhanced self-reliance (Derry et al., 2020; Dickin et al., 2021). Others claim that participation gives women the chance to use water to generate money, which strengthens their negotiating power in the family and community (Harris and Gantt, 2017). In India, women's increased access to water supply allowed them to expand their involvement in dairy cooperatives, increasing their income and improving household bargaining positions. In South Africa, expanding women's access to

water for agriculture supported disadvantaged women who were excluded from the formal sector in terms of food security (Schreiner, 2015). Another controversial argument is that expanding the participation of women in resource management may provide them with greater opportunities to actively engage in other facets of communal life and the democratic process (Harris and Gantt, 2017). Although there is little evidence to support these associations, research conducted in Mexico implies that women's involvement in water management provided them with possibilities to engage in other political spheres (Ennis-McMillan, 2017). Additionally, it has been demonstrated that women's involvement in water decision-making fosters community trust, particularly through increased financial transparency (Yerian et al. 2014), and yields information that can improve climate change adaption (Figueiredo and Perkins 2018). These conclusions have been supported by numerous scholars (Adams et al., 2020; Larson et al., 2022).

2.6 The WASH Sector of Ghana

The WASH sector in Ghana is well-organised institutionally, with a framework that shows how institutions in the sector connect from service delivery to the creation and execution of policies. The framework divides the sector institutions into three levels: policy and planning at the level of government ministries; facilitation and regulation at the level of decentralised agencies and departments; and local service delivery at the level of local government and community. The sector is supported financially and technically by a variety of development partners. Policy making, resource allocation, monitoring, and evaluation are the responsibilities of the institutions under policy and planning, while those under facilitation and regulation are tasked with ensuring that the provision of

WASH services by the institutions under local service delivery complies with national policies and standards. The institutions under all these categories, except local service delivery, are solely public sector institutions. Private-owned companies and non-governmental organisations (NGOs) are more active in the provision of local services, particularly in the areas of rural and urban sanitation and rural water supply. Research and capacity building in the sector is also being conducted by numerous training and research institutions. The Ministry of Water Resources, Works, and Housing's Water Directorate is in charge of developing the policies that will govern how institutions operating in the water subsector guide its operations (MWRWH). The Water Resources Commission is in charge of regulating and managing the sustainable use of water resources (WRC). In terms of determining water tariffs for customers, the Ghana Water Company Limited (GWCL), a public utility company governed by the Public Utilities Regulatory Commission, is solely responsible for providing urban water delivery services in Ghana. GWCL has the legal mandate to provide potable water in urban centres and does so through the operation of about 86 water supply systems in all 16 regions of Ghana. The primary organisation officially tasked with facilitating the supply of safe drinking water and related sanitation services to rural communities and small towns in Ghana is the Community Water and Sanitation Agency (CWSA). Small towns obtain their water through piped systems that use mechanised boreholes or surface water abstraction, whereas rural areas often get their water from hand-dug wells and boreholes with hand pumps. Many of these systems are run either by local governments or by private companies. The MWRWH coordinates the activities of the WRC, CWSA, and GWCL. The Ministry of Local Government and Rural Development (MLGRD) and the

Ministry of Environment, Science and Technology (MEST) oversee developing and revising the National Environmental Sanitation Policy, respectively. The Environmental Protection Agency (EPA), the Local Government Service (LGS), and the Metropolitan, Municipal, and District Assemblies are responsible for service delivery and the implementation of policies (MMDAs). The MMDAs have Environmental Health and Sanitation Departments/Units that oversee, among other things, public education about sanitation and the enforcement of environmental laws. MMDAs are in charge of operating wastewater treatment plants in locations where dumping sites are accessible, however, private companies handle the majority of the collection of solid waste and faecal sludge (Oduro-Kwarteng et al., 2014).

2.7 The Role Women Play in the Sector

While it is widely acknowledged that women are essential to community water-related tasks, as evidenced by their participation in community organisations (village water and sanitation committees, water user associations, etc.), this has not translated to the same level of representation in formal WASH institutions and organisations (Steimanis et al., 2020; Kharisma, 2022). Women make up a small percentage of workers in WASH companies as well as in the mining, building, and energy industries (International Finance Cooperation, 2013). According to a recent World Bank research, women made up only 18 % of workers across 64 water utilities in 28 economies (World Bank, 2019). Other studies support this finding, demonstrating that the sector continues to employ more males than women, particularly in technical fields and professions, which reflects developments in the broader labor market (International Water Association, 2016; Das

2017). However there is increasing evidence that organisations with women in senior positions (and greater diversity overall) perform better than those with no women or very few women, and that these women have a positive impact on governance, identities, and public images of an organisations (IWA, 2016; Patel et al., 2020). According to research, women make up just 18 % of the sector's paid employment and are underrepresented in water utilities (Simone Soeters et al., 2021). Furthermore, it has been discovered that they are overrepresented in fields like administration, customer service, accounting, and human resources, which are traditionally thought of as suitable for women, as opposed to positions in technical fields, operations, maintenance, and leadership positions. Such disparities frequently reflect broader labor market trends (Grant et al., 2019a). A study by Winkler and Roaf (2015) revealed that women are typically underrepresented in technical water management roles as well as in ministries that make decisions concerning water resources. Similar circumstances exist in the WASH sector of Ghana. Agyare-Kwabi (2013) discovered that the Environmental Health and Sanitation Departments had a higher percentage of female health inspectors (49 %) compared to the Municipal and District Environmental Health Inspectorate (7 %) where most decisions are made. Oduro-Kwarteng et al (2014) reveals that females constitute 22 % of the entire workforce in the sector. The study also found that the majority of jobs held by women in the sector were in administration and finance and social development. The low percentage of women in the technical roles in the WASH industry is ascribed to women's low enrollment in technical water and sanitation courses, which results from detrimental sociocultural factors that deter women from pursuing such courses (Oduro-Kwarteng et al., 2014). Female representation in technical and engineering sectors is generally low since fewer women

enroll in science and engineering-related courses at the pre-tertiary and tertiary levels nationwide.

2.8 Human Resource Capacity building in Ghana's WASH Sector

Adequate human resource development for the water and sanitation sector has long been recognised as a priority issue, as illustrated by Mar del Plata United Nations Water Conference in 1977, International Water Supply and Sanitation Decade (1981-1990), and the UNDP Symposium on Capacity Building for the Water Sector (Appiah-Effah et al., 2019). More recently, several significant reports have again highlighted the urgent need for adequate human resources in the sector (Pruss et al., 2018; Workman et al., 2021; Yates et al., 2021). The need for adequate human resources in the sector is an increasingly important priority given the water and sanitation target for MDG 7 (Suyono, 2020). To achieve MDG 7 targets, it is necessary to make sure that the appropriate number of people, equipped with the appropriate skills, are present at the appropriate time to provide services to the underprivileged at a reasonable cost (Abubakar and Aina, 2019). Building capacity means bringing together more resources, more people (both women and men), and more skills (Dapilah et al., 2020). The MDG Report (2013) claims that empowering women is essential to attaining other MDGs and furthering human progress. More women must participate in decision-making, especially in the subsectors of water and sanitation. To ensure sustainability, capacity building has to continue beyond project implementation, with a gradual scaling down to those responsible for the operation and maintenance of water supply and sanitation, who are primarily women (Derry et al., 2020). The sustainability of water and sanitation efforts must therefore

prioritise training and capacity building for women, especially in technical and administrative roles, to ensure their participation in the decision-making process. Existing research shows that women are frequently uninterested in pursuing technical and engineering courses. Moreover, they are often not interested in working in technical fields (Powell et al., 2012). Ensuring an enabling environment for girls and women to study science, technology, mathematics, and engineering courses is important for building a reserve of qualified water, sanitation, and hygiene professionals, addressing critical human resources gaps in the sector, and promoting women's economic empowerment (Oduro-Kwarteng et al., 2014). To achieve a more equal workplace, it is essential to motivate women and girls to apply for training and to set up a mentoring system to keep them in training and assist them throughout their careers (Kumar et al., 2021) Women should play a significant part in water management, and this role might be strengthened through the gender mainstreaming method, which has gained more and more recognition in recent years (Oktari et al., 2021). It is a strategy for ensuring that women and men benefit equally by making women's and men's concerns and experiences an intrinsic part of the design, implementation, monitoring, and evaluation of policies and programs in all domains (Packett et al., 2019). It is a strategy aimed at making both men and women a part of the planning, implementation, monitoring, and evaluation of policies, projects, and programs (Tabassum and Jayakumar, 2022). Men and women have different responsibilities and relationships, which can lead to gender disparities when one group is consistently favored and has benefits over the other (Fine et al., 2020). Therefore, gender mainstreaming is an integral dimension of bringing to light the concerns and experiences of both men and women (Darmstadt et al., 2019). For the sake

of efficacy and efficiency, gender mainstreaming in water policy is justified, according to Buckingham (2021); a gender-sensitive strategy ensures that supplies are delivered and managed more sustainably. Gender mainstreaming is argued to empower women and advance broader societal equality goals, contributing to poverty alleviation and social inclusion (Fisher et al., 2017b; Abu et al., 2019; Derry et al., 2020). However, the effectiveness of instrumental gender mainstreaming in water management hinges on how well the primary agenda addresses gender relations in water supply, usage, and management (House et al., 2022). Despite women's involvement in WASH programs, their ability to influence project priorities remains limited (Derry et al., 2020). However, since they are the intended recipients of such projects, women's participation in their planning may actively contribute to sustainability (Fisher et al., 2017a). To address the gender disparities, it is important to create a gender mainstreaming policy and action plan expressly for the water and sanitation sector. This should encourage greater involvement of women in sector decision-making at all levels of management, particularly in the areas of water and sanitation where women and children are most impacted (Oduro-Kwarteng et al., 2014).

2.9 Barriers to Women's Participation in the Sector

The rights of women must be upheld to ensure the sustainable management of water resources and universal access to safely managed WASH (Unicef, 2016; Bangert et al., 2017; WHO/UNICEF, 2017). Inequality, prejudice, and social exclusion are present in the water governance, WASH sector, WASH policies, strategies, and service access (Grant et al., 2019b; International Labour Organisation, 2020). Gender inequality is

pronounced in the WASH sector workforce, replicating wider global workforce trends (International Labour Organisation, 2020) and constraints to women's full participation in the labour market (IFC, 2013; International Labour Organisation, 2018). Stereotypes have frequently been discovered to have a significant role in the WASH sector's inability to recruit varied talent and individuals from diverse disciplines. Fewer women choose STEM (science, technology, engineering, and mathematics) subjects in secondary school and higher/tertiary education due to prevailing social standards. (Powell et al., 2012; IWA, 2016). In addition, employers' perceptions that engineering and technical positions are "men's jobs" serve to further dissuade women (in all their diversity) from enrolling in programs and pursuing careers in historically male-dominated fields (IWA, 2016; Epstein, 2022). These stereotypes are reinforced at the organisational level, in the form of expectations about who does what kinds of jobs, and in recruitment for these roles. Another prevalent hurdle that has led to women's lower levels of interest in careers in technical and professional WASH positions is the dearth of role models who are women and diverse WASH professionals, especially in technical and leadership roles (González-Pérez et al., 2020).

According to Grant et al. (2021), a lack of role models is one of the top five obstacles to women in leadership. Exposing young women and girls to role models helps them learn more about possible job paths in all of their diversity (Powell et al., 2012). Such role models encourage optimistic views about pursuing careers in fields typically dominated by men. They help dismantle stereotypes and build the self-confidence of women to pursue a less conventional career path (World Bank, 2019). Also, Continued efforts to

attract diverse talent to the WASH sector will be inadequate unless there are enough roles available, and recruitment policies and processes at workplaces are conducive to hiring women (Kumal et al., 2021). This is seen from the fact that despite an increase in female STEM graduates over time, there has been no equivalent rise in their employment in WASH-related fields. In a World Bank survey conducted in 2019 across 28 countries, water companies often hire more males than women. According to existing research, political and personal interests are allowed to influence recruiting processes, which threatens diversity and can undermine the formal values of transparency, non-discrimination, justice, and equality in hiring. (United Nations, 2018; Soeters et al., 2021). In Indonesia, selection committees are used to organise the hiring of new civil workers (including those in the WASH workforce), although the final say in the matter rests with a "Trustee Personnel Officer," who at the district level is the district chief. The research found that this system had the potential to undermine the formal principles of transparency, non-discrimination, fairness, and equality in recruitment processes, and allowed political and personal interests to interfere, as there was no requirement for the 'Trustee Personnel Officer' to base their final decision on the official ranking that candidates received (Soeters et al., 2021). Additionally, hiring practices, applicant targeting, the language used to frame job descriptions, and different parts of the interview process in the majority of WASH organisations reveal unconscious bias favouring men and candidates who are physically fit (Grant et al., 2020). Female graduates are less likely to be targeted as potential candidates in the WASH sector, as is evident in the gender-biased and ablest language used in job descriptions for a lot of the technical roles that are traditionally seen as male-dominated. For instance, some job postings may

contain unrealistic requirements for senior-level roles, such as a minimum number of years of experience, which affects women (in all their diversity) who had to take time off from paid work to start a family (Wallis, 2019).

Women may be discouraged from applying for certain positions if the job descriptions contain gendered language, even though they may be qualified for the position. Such practices further reinforce societal stereotypes that certain jobs are better suited to a particular gender (Hu et al., 2022). Women also have to apply for a significantly higher number of jobs to receive the same number of interview invitations compared to equally qualified men, and this pattern is further compounded for women with children, older women, women with disabilities, and women from racial and ethnic minorities (Foley et al., 2019). Nevertheless, some employers may be reluctant to hire women of childbearing age because they perceive a lack of attachment to the labour market or because they may not be willing to cover maternity responsibilities (International Labour Organisation, 2018). Additionally, government departments in some countries might not have the funding for maternity replacements, which can cause resentment among other coworkers who must take on additional responsibilities on behalf of female staff members on maternity leave (Wald, 2022). Moreover, recruitment panels have been found to exhibit implicit bias at the interview stage by posing prejudiced and personal questions about whether the candidate is married or planning to start a family (Navarro, 2020). These attitudes continue despite research showing the value that part-time working parents bring to society and the economic benefits of retaining staff (World Bank, 2020a, 2020b). Furthermore, women and men are often evaluated using different standards. For instance,

women frequently face greater scrutiny of their credentials and achievements (Ferreira and Santos, 2022; White and Smith, 2022).

Gender bias is also reflected in interviews, affecting perceptions of how likeable or competent a candidate is. Women (in all their diversity) are more likely to be at a disadvantage while negotiating higher pay at the recruitment stage (Foley et al., 2019). The barriers mentioned above are made worse by discriminatory laws that forbid women from working in particular fields in many countries. A World Bank (2018) dataset from 189 countries revealed that 26 countries have legal restrictions on women working in the water sector as plumbers, working in sewers, working at night in water-related construction and maintenance jobs, etc. Protecting the rights of female workers is absent in a majority of countries (International Labour Organisation, 2015). In many of the STEM-related fields, women (in all their diversity) are more likely to leave the workforce at a higher rate than men and this pattern has also been found in WASH organisations. Women's tenures are significantly shorter than men's on average, which is especially noticeable in technical roles like managers and engineers (World Bank, 2019; Hamori et al., 2022). Common causes include but are not limited to inflexible work schedules that interfere with childcare obligations; workplace violence or harassment; feelings of isolation in a male-dominated workplace; the unspoken expectation placed on women to carry the "emotional load" for the team; discriminatory maternity leave laws; low and unequal wages; and a lack of basic amenities like hygienic and menstrual-friendly toilets (Kumar et al., 2021).

Gender norms and expectations at work and outside of it can restrict women from participating in the workforce (Dore et al., 2022; Setyonaluri et al., 2022). For example, research among the government WASH workforce in Indonesia by Soeters et al. (2021), revealed bias against married female employees as they were not encouraged to conduct field activities and instead were restricted to tasks at the office. He highlighted that the unequal burden of domestic responsibilities at home contributed to the manifestation of such biases. WASH-related roles at the sub-district level created their own set of gender-specific challenges and real and perceived security issues for women. Sanitarian workers were required to travel a lot for field inspections and latrine construction. The requirement of high mobility, the fact that few female sanitarians can ride a motorbike, as well as the distances involved and poor road conditions, were found to be challenging for female sanitarians. Due to social norms, it was not considered acceptable for women to travel to some remote locations by themselves, and this required female sanitarians to adjust their schedules to suit those of their male colleagues to ensure they had a chaperone. Additionally, it has been discovered that unpaid domestic and care work responsibilities seriously affect women's involvement in the labour force, but the economy and society continue to undervalue these roles because they involve duties that women have traditionally performed without compensation (International Labour Organisation, 2018). Because employees are expected to work longer hours and flexible or part-time employment is discouraged, the nature of work in infrastructure-related companies, particularly WASH organisations, is frequently regarded as being gendered. Because they must balance their work and domestic commitments, this type of work culture disadvantages women who have families and caregiving responsibilities (Das,

2017; McKinsey Global Institute, 2018). In turn, this encourages employer bias against hiring women, encouraging occupational and sectoral segregation and maintaining gender pay discrepancies (International Labour Organisation, 2018). This prejudice affects every aspect of women's work lives, reinforces exclusion, alters power dynamics, and prevents women from working to their full capacity (Assefa et al., 2021).

The triple load of responsibilities that many women bear in society- caregiving, employment, and volunteer work- along with the significant amount of time and energy they expend, impacts labour market participation (Dutta, 2022). Additionally, 60 % of women globally who lack access to maternity leave are affected by the absence of statutory rights to maternity protection (Rao, 2016; Rossin- Slater, 2017; Bishnoi and Bishnoi, 2022). Violence and harassment, including sexual and verbal assault in the workplace, significantly contribute to why women leave employment. This issue is exacerbated in traditionally male- dominated fields (Partnership on Employment and Accessible Technology, 2017; Beghini et al., 2019). Due to a reluctance to draw attention to themselves in an already isolating workplace, many women endure the burden of accepting sexual harassment in various male- dominated industries (Adams, 2018; National Academies of Sciences, Engineering, 2018; Varman et al., 2018). The WASH sector also remains weak regarding anti- harassment policies, guidelines, and reporting mechanisms, as revealed in a World Bank (2019) study of water companies, which found that only 28 % provide sexual harassment training for their employees, and only 52 % have policies aimed at preventing sexual harassment. Inadequate or difficult- to- access facilities that do not meet the needs of women further contribute to high turnover among

a diverse workforce in the WASH sector (Koblinsky et al., 2016). Many historically male-dominated workplaces, including many WASH organisations, lack inclusive amenities such as accessible toilets, sanitary facilities for different genders, changing rooms, and spaces for children and nursing mothers (Critchley et al., 2021). Furthermore, even after many women have shattered the "glass ceiling" and attained leadership positions, societal standards regarding gender stereotypes persist, burdening them with multiple roles they must fulfil at work and at home (Carter and Peters, 2016).

The intersection of gender norms and other identity-based prejudices, which create barriers for women, must also be acknowledged. Additionally, social and economic structures are built around paradigms that normalise the caregiving responsibilities typically assigned to women (Baker et al., 2023). The challenge lies in addressing the systems and structures established around these norms that perpetuate them over time, even as they evolve. Norms and systems reinforce each other, both serving as significant impediments to change (Pincus, 2023). A survey conducted by an international labour organisation in 2013 revealed that the gendered social and reproductive roles of women and men posed major barriers to women’s leadership. These roles, assigned by society, further manifest in workplace structures and culture in various ways. For example, men are not encouraged to take parental leave, hindering the sharing of childcare responsibilities; women do not gain sufficient management experience to position themselves for promotions; and time constraints resulting from women's caregiving duties make it challenging for them to engage in networking activities that could enhance support for their leadership (Lim, 2017).

Research in the Indonesia WASH government sector revealed the complex “labyrinth” that women navigated to reach leadership positions which involved individual, family, community, and institutional domains and the intertwined gender norms and expectations within each of these domains (Kark and Eagly, 2010; Soeters et al., 2021). The lack of sufficient time, money, and mobility resources is shown to prevent women from exploring opportunities for advancement or professional growth (Agyekum et al., 2022). Even with government rules and policies that may help women's career advancement, social norms and ingrained structures that hold men to be superior to women are proven to restrict women's professional advancement (Koburtay et al., 2022). Most often, males are considered superior and are served by women. They feel embarrassed if their spouses hold more important professional positions than they do (Grant et al., 2021). All these norms collectively contribute to the limiting of women’s career ambitions as most females are unable to pursue further education and training. Similarly, Stereotypes regarding the traits of effective leaders systemically penalise women in all their diversity since these traits frequently favour the physically able male (ambitious, assertive, aggressive) (Debray et al., 2023). On the other hand, women who do succeed in achieving leadership positions and exhibit these attributes are viewed negatively since they defy the accepted standards of community and feminine features, which puts them in a catch situation (World Bank, 2019). Due to deeply ingrained biases, even when more women are occupying leadership roles, there still seems to be a lack of trust in women leaders (Ro, 2021).

2.10 Making the Sector More Equitable, Inclusive, and Attractive

Organisational amendments are necessary to achieve gender equality and inclusion outcomes in programs and structures (Palmén and Schmidt, 2019; Roos et al., 2020). WASH actors can significantly contribute by fostering an environment that encourages diverse individuals to pursue careers in the WASH sector. One effective approach to achieving this is through education and awareness initiatives. Outreach programs can be organised in schools, education fairs, and career forums to share information and career opportunities in various technical WASH-related fields (Varady et al., 2022). To enhance awareness of the value of water and inspire women to pursue jobs in this sector, special efforts should be made to ensure these initiatives target segregated educational and employment contexts (Das and Kotikula, 2019).

WASH professionals can collaborate with the appropriate government ministries to update the curriculum to include lessons on positive gender role models, promoting diversity and inclusive participation in STEM and other WASH-related fields). A prime example in this regard is the "Resource Pack for Gender-Responsive STEM Education," created in 2017 by the UNESCO International Bureau for Education and the Ministry of Education Malaysia (Kumar et al., 2021). WASH actors can also leverage partner networks to develop internship and apprenticeship programs with various water and sanitation organisations, including those in the private sector. This will increase awareness of the sector and combat misconceptions about inclusive and gender-neutral career options. Scholarship programs and tuition subsidies have also been reported to enhance enrollment in engineering programs connected to WASH. WASH actors can

create and promote networks of young women WASH professionals who engage with educational institutions to impart knowledge, provide mentoring, and dispel gender stereotypes in the field (Arif et al., 2021). Once again, players in the WASH sector have a critical role in assisting their partners, particularly government organisations, in dismantling traditional recruitment mechanisms and replacing them with more inclusive alternatives. To change the perceptions of those hiring new employees, there is also a need for training, role modelling from leaders, and the development of an inclusive organisational culture. To attract diverse candidates for a position, rephrasing job advertisements to be more inclusive and gender-neutral is a practical and effective strategy (Buchter, 2023). Highlighting benefits such as flexible working hours, reasonable accommodations for women, a commitment to inclusivity and diversity, and promoting job vacancies through existing women employees has also proven effective (Von et al., 2014; International Labour Organisation, 2016) .

WASH actors can create and promote networks of young women professionals in WASH who engage with educational institutions to share knowledge, provide mentorship, and challenge gender stereotypes in the field (Arif et al., 2021). Furthermore, those in the WASH sector play a critical role in assisting their partners, particularly government organisations, in dismantling traditional recruitment methods and replacing them with more inclusive alternatives. To shift the perspectives of those hiring new employees, training, role modelling from leaders, and developing an inclusive organisational culture are also necessary (Cary et al., 2020). Rephrasing job advertisements to be more inclusive and gender-neutral is a practical and effective strategy for attracting diverse candidates to

positions (Buchter, 2023). Additionally, highlighting benefits such as flexible working hours, reasonable accommodations for women, a commitment to inclusivity and diversity, and promoting job vacancies through existing women employees has also proven effective (Von et al., 2014; International Labour Organisation, 2016) .

Another method for reducing covert biases that may arise during the recruitment process is training organisations in the use of anonymous recruitment practices. At the short-listing stage, removing names, genders, or other identifiers from applicants can help mitigate stereotyping to some extent (Adamovic, 2020). However, if a diverse panel is absent when selected candidates progress to interviews, existing unconscious bias is likely to persist. Therefore, these programs will be ineffective unless firms ensure that diverse interview panels are integrated into their hiring processes. WASH actors can assist their partners in developing inclusive hiring practices that promote a diverse recruitment panel and a structured interview process discouraging spontaneous discussions about personal matters (Kaul, 2022). Additionally, WASH actors can organise training for employees on the recruitment panel to address their implicit and unconscious biases (Nentwich et al., 2021).

WASH actors can play an important role in transforming their own work cultures, and they can influence their partners and society at large, by recognising biases where they exist and supporting their partners to create a safe space to address power dynamics in the workplace (Ocloo et al., 2021). This can include training employees on addressing unconscious bias and facilitating conversations around diverse experiences and

perspectives; ensuring a diverse and inclusive information, communication, and decision-making process in the organisation; and designing ways to overcome gender segregation in certain technical roles (Das, 2017). It has been found that workplace modifications and reasonable accommodations increase productivity, staff well-being, and employee retention (Crawford et al., 2020; Elouise, 2020). In addition to addressing societal norms, policies and initiatives that attempt to redistribute caregiving duties promote a gender-awareness workplace culture. This can include advocating for laws that prevent employers from firing pregnant women and which guarantee their return to the same or an equivalent position after maternity leave; ensuring that parental leave policies recognise sexual and gender minorities and all types of parenting situations; on-site clean, private and comfortable lactation rooms and flexible work arrangements for all caregivers (Rao, 2016).

A program run by USAID aims to increase Kenyan water utilities' capacity to integrate gender equality into institutional operations and service delivery (Das, 2017). Such initiatives recognise, value, and support the multiple roles that people play, as well as attempt to change societal norms related to traditional gender roles and the burdens that they bring to a range of people. By establishing formal and informal networks in the sector that can serve as a forum for sharing experiences, lessons learned, and peer-to-peer mentorship, WASH actors can help keep women working in WASH-related fields. A mentoring program run by the Association of Women in Water, Energy and Environment brings together professional women working in the field to share information and experiences (Kumar et al., 2021).

In traditionally male-dominated workplaces, such as WASH organisations, both formal and informal networks of WASH professionals can create supportive environments for sharing experiences and challenges, as well as provide access to leadership and mentorship opportunities. These platforms empower women to overcome their inhibitions and pursue job opportunities, enabling them to envision themselves in leadership and decision-making roles. Moreover, these networks can serve as a foundation for collective action and advocacy for policy and other changes within the WASH sector. The African Women Sanitation Professionals Network is one such platform for women working in sanitation, dedicated to identifying and addressing the barriers faced by women sanitation professionals.

The Women in Water Leadership Circle is a leadership program for female decision-makers within Kenyan water service providers. Funded by the World Bank, this initiative aims to eliminate obstacles related to balancing work and personal obligations, as well as influence and power dynamics, negotiation styles, and strategic networking, among others. The work culture and gender diversity outcomes within an organisation can be enhanced by increasing the visibility of women in senior and leadership roles. These women serve as role models, inspiring others in the company to pursue opportunities for career advancement. Furthermore, when organisations partner with Rights Holder Organisations (RHOs), they gain a deeper understanding of the challenges faced by women, girls, and other marginalised groups. This knowledge positions them more effectively to promote their leadership experiences. Alongside peer networks, training and professional development opportunities can help women sharpen their skills in areas

pertinent to leadership roles. It has been frequently observed that, even when such opportunities are available, they are not always equally accessible due to various factors, including the timing, duration, accessibility, and location of workshops and training, in addition to the costs and accommodations necessary for a support person to attend.

When creating the content of leadership programs, it is crucial to keep in mind that women frequently fail to recognise when they are already acting in a leadership capacity and that they frequently place a greater emphasis on their shortcomings than on the qualities and behaviours of male-define leadership. In these situations, these programs need to be combined with initiatives to broaden perspectives on leadership and acknowledge that the leadership traits and behaviours that are more frequently exhibited by women are also ones that are particularly crucial for success in 21st-century organisations (Eagly and Carli, 2018). All these factors should be considered when developing leadership programs.

A leadership program run by WaterAid Cambodia aims to increase the skills, knowledge, and self-assurance of women WASH workers at the district and provincial levels. This is a comprehensive program that begins by recognising the obstacles that women face in participating in decision-making. After that, instruction is given in practical leadership styles, communication, listening, and advocacy techniques. It also presents a chance for knowledge experience, peer mentoring, and enhancing the network of women in WASH. Training employees, including managers, on gender sensitivity, diversity, and gender

mainstreaming is another way WASH actors may assist their partners in combating social stereotypes and fostering a work culture that supports the career development of women.

Such programs aid in raising awareness and broadening public acceptance of flexible work environments. They challenge assumptions about stereotypical gender roles and reduce bias to increase opportunities for career advancement (Kumar et al., 2021). Support from family is also critical to women's career advancement (Mustapa et al., 2018). Women's professional progression is greatly facilitated by support (and even acceptance) from the husband and family, as this has repercussions for the allocation of household duties, including childcare. Women can complete their education, attend training, and manage their workloads because of this informal support from families and husbands, which takes the shape of emotional support, domestic assistance, and childcare (Soeters et al., 2021). It was discovered to be nearly as crucial as institutional backing. Through workplace capacity-building initiatives (diversity and inclusion training, manager leadership support, budgeting for inclusion in WASH programs), discriminatory attitudes affecting women can be addressed.

2.11 Conceptual Framework of the Study

This study is grounded in gender role theory and institutional theory. Gender role theory clarifies the concentration of women in social development roles and their underrepresentation in technical positions due to societal expectations and workplace structures. Institutional theory emphasises how organisational frameworks, policies, and incentive structures impact female participation in the WASH sector. The three

hierarchical levels of the WASH sector include policy and planning (government ministries responsible for policy formulation), facilitation and regulation (decentralised agencies ensuring compliance and oversight), and service delivery (public institutions, private companies, and NGOs executing WASH programs). This study focuses on key institutions operating within the WASH sector, categorised into the public sector (MMDAs, GWCL, CWSA, EPA, WRC), private sector (Zoomlion Ghana Ltd, Safisana Ghana Ltd), and NGOs (Wateraid Ghana). These organizations collectively illustrate how institutional frameworks, job roles, incentive systems, workplace barriers, and gender-responsive measures influence women's participation in the sector. The framework conceptualises several independent variables, including institutional involvement across the public, private, and NGO sectors; job role distribution within social, technical, and administrative positions; incentive structures such as maternity leave policies, salary caps, and career growth opportunities; and workplace challenges like stigmatisation and retention barriers. These factors are analysed concerning the dependent variable, which is women's effective participation in the WASH sector, assessed through incentives and disincentives, retention and turnover intensions of female employees in the WASH sector. Addressing gender disparities through equitable policies, improved incentives, and workplace reforms is essential to maximizing the sector's potential and promoting sustainable development.

2.12 Gaps in Literature

The contribution of women in the WASH sector has been extensively studied and analysed from multiple perspectives; however, research on their roles in management

positions across various WASH institutions remains limited (Bisung and Dickin, 2021). The positions they hold reflect the management levels in which they primarily engage, as well as the challenges faced when examining women in management roles across different WASH institutions (Dogoli et al., 2023; Smith et al., 2020).

This information can be used to draw effective conclusions and make key recommendations for policy formulation and implementation. While the literature thoroughly discusses the barriers that women face in their efforts to participate in sector decisions and projects, it fails to explore the factors that deter women from pursuing careers in the industry and often underrepresents the specific challenges encountered in management roles (Dickin et al., 2021; Johnson and Lee, 2019). This limits the ability to formulate effective support systems for women in leadership within the sector. Investigating the factors that incentivise women to pursue careers in the WASH sector is vital for creating environments that attract and retain female talent in management positions (Adams & Patel, 2021). This underscores the importance of including this metric in the current study and further highlights how factors discouraging women's career pursuits in the WASH sector are seldom explored in depth. The current study employs a cross-sectional research design with a quantitative approach, providing sufficient quantitative inference to substantiate claims of gender disparities. The majority of existing literature is geared towards qualitative insights, lacking adequate quantitative data (Kumar and Choudhury, 2022; Svahn, 2012). Addressing these gaps is crucial for developing effective policies and interventions aimed at enhancing women's participation and representation in the WASH sector, particularly in management roles.

CHAPTER THREE

METHODOLOGY

3.1 Study Area

The research was conducted in two major metropolitan areas in Ghana; Accra and Kumasi.

3.1.1 Location, Size, and Population

The Accra Metropolitan Assembly (AMA) stands as one of the twenty-nine Municipalities in the Greater Accra Region, serving as both the regional capital and the national capital of Ghana. It is bordered to the North by Ga West Municipal, the West by Ga South Municipal, the South by the Gulf of Guinea, and the East by La Dadekotopon Municipal. Encompassing a total land area of 139.674 square kilometres, the Metropolitan Area's population was recorded at 284,124 people during the 2021 population and housing census, with 134,045 men and 150,079 women (Ghana Statistical Service, 2021). Literacy rates are notable, with 89 % of individuals aged 11 and above being literate, and the remaining 11 % classified as illiterate. Females are more prevalent among the illiterate population (Accra Metropolitan Assembly, 2022). In terms of water sources, the primary sources of drinking water include pipe-borne water within dwellings (31.8 %) and sachet water (28.3 %). Toilet facilities are predominantly public toilets (14.9 %), followed by water closets (WC) and pit latrines (KVIP). A small percentage (2.3 %) of households lack toilet facilities, while a notable portion (36.8 %) share separate bathrooms within the same house.

The Kumasi Metropolitan Assembly, situated in the Ashanti Region, encompasses an area of approximately 214.3 square kilometres, representing about 0.9 % of the region's land area. Positioned around 270 kilometres north of the national capital, Accra, the Kumasi Metropolis is the country's second-largest and second-most populous city, with a population of 443,981 recorded in the 2021 Population and Housing Census. This figure includes 213,662 males and 230,319 females (Ghana Statistical Service, 2021). The literacy rate stands at 91 % for individuals aged 11 and older, with a slightly higher literacy rate for females (50.8 %) compared to males (49.2 %) (Kumasi Metropolitan Assembly, 2022). Regarding water sources, 83 % of the population relies on pipe-borne water, 11 % on wells, 2 % on boreholes, 2 % on rivers, and 1 % on spring or rainwater.

3.1.2 Economic Activities

Within the Accra Metropolitan Assembly, a significant portion of individuals aged 15 years and above are engaged in economic activities. The prevailing occupation within the metropolis predominantly involves skilled work in agriculture, forestry, and fishing, while a smaller proportion encompasses roles in services, sales, crafts, technical fields, and professions.

In the context of the Kumasi Metropolitan Assembly, a notable proportion of individuals aged 15 years and above are actively participating in the workforce. The most common occupation within the Metropolis is associated with crafts and trades, as well as elementary positions. A smaller segment of the population engages in skilled agricultural, forestry, and fishery work (Ghana Statistical Service, 2021)

3.1.3 Waste Disposal

In the Accra Metropolis, the predominant approach for solid waste disposal involves the collection of waste from homes through public dump containers. Liquid waste is commonly discharged into gutters via both drainage and sewerage systems. The city's daily waste production reaches approximately 3,000 tons, and although the former disposal sites are no longer operational, Accra currently lacks its designated solid waste disposal site.

Turning to the Kumasi Metropolis, the city's robust commercial and industrial activities contribute to a daily generation of about 1,500 tons of solid waste, which is primarily managed through landfilling. As for liquid waste, common practices among households in the Metropolis include drainage system disposal into gutters, direct disposal into gutters, and the release of liquid waste onto compounds (Ghana Statistical Service, 2021).

3.1.4 Vegetation

In the Accra Metropolitan area, three primary vegetation zones can be identified, encompassing shrubland, grassland, and coastal lands. Shrubland is prevalent particularly in the western outskirts and northern regions toward the Aburi Hills. Characterised by dense clusters of small trees and shrubs, its average height is around five meters. The grasses within this zone comprise a mixture of species commonly found in forest undergrowth, typically growing to a height of not more than one meter. Adjacent to the shrubland, ground herbs thrive, including species that tend to flourish post-fire. Within the coastal zone, two distinct vegetation types are present: wetlands and dunes.

Mangroves, consisting of two dominant species, occupy the tidal zones of estuaries and sand lagoons, while salt-tolerant grasses envelop extensive low-lying areas surrounding the lagoons (Accra Metropolitan Assembly, 2022).

Moving to the Kumasi Metropolis, its location within the transitional forest zone, specifically the moist semi-deciduous South-East Ecological Zone, is notable. Prominent tree species in this area include Cuiaba, Triplochlon, and Celtis, as well as various exotic species. The soil within this ecological zone is nutrient-rich and conducive to crop cultivation. This lush vegetative cover is part of the reason why Kumasi has been referred to as the "Garden City of West Africa." However, urbanisation and construction have led to a significant loss of this vegetative cover in various parts of the city. Despite this, certain areas within the Metropolis, such as KNUST, Kumasi Zoological Gardens, Manhyia Gardens, and Nhyiaso, still exhibit verdant environments that require careful conservation efforts (Kumasi Metropolitan Assembly, 2022)

3.1.5 Climate

The Accra Metropolitan Area is situated within the dry equatorial climatic zone, characterised by two distinct rainy seasons. The first commences in May, concluding by mid-July, while the second begins in mid-August and concludes in October. With an annual average rainfall of approximately 730mm, it holds the country's lowest precipitation levels. Temperature fluctuations are minimal throughout the year, with a mean monthly range of 24.7 °C in August (the coolest) to 33 °C in March (the warmest), culminating in an annual average of 26.8 °C (Dickson and Benneh, 2001). Due to its

proximity to the equator, daylight hours remain relatively consistent year-round. Relative humidity spans from 65 % during mid-afternoons to 95 % at night (Accra Metropolitan Assembly, 2022).

Similarly, the Kumasi Metropolis falls within the wet sub-equatorial climatic type. Notably, average minimum and maximum temperatures hover around 21.5 and 30.7 °C, respectively. Sunrise sees an average humidity of approximately 84.16 %, reducing to 60 % during sunset. The city's moderate temperature, humidity levels, and the bimodal rainfall pattern (with peaks of 214.3 mm in June and 165.2 mm in September) have directly contributed to population growth and environmental dynamics. This has led to a significant influx of people from various regions, including beyond national boundaries, to the metropolis. The appealing aspect of Kumasi's relatively mild climatic conditions has positioned it as one of Ghana's most densely populated cities (Kumasi Metropolitan Assembly, 2022).

3.1.6 Relief and Drainage

Within the Accra Metropolitan Area, numerous wetlands and water bodies contribute to the creation of microclimates in certain areas. However, the original vegetation of the Metropolitan Area has changed over the past century due to a combination of climatic shifts and human influence.

Similarly, the Kumasi Metropolis finds its location within the plateau of the Southwest physical region, ranging between 250 to 300 meters above sea level. The topography

presents an undulating landscape, crossed by prominent water features such as the Owabi River and streams like Subin, Wiwi, Sisai, Aboabo, and Nsuben. These water bodies, notably Owabi, play a crucial role as the primary source of drinking water for not only Metropolis residents but also for the wider region. Despite their significant contribution to the socioeconomic well-being of the area's inhabitants, these water bodies face threats due to human activities. Urban development encroaching on water courses by real estate developers and practices like urban agriculture have resulted in pollution and degradation of these water bodies. These factors potentially contribute to the frequent instances of flooding experienced in the Metropolis.

3.2 Study Design

This study employed a descriptive, cross-sectional research design, complemented by a quantitative research approach. The descriptive aspect aimed to gather insights into the involvement of women in delivering WASH services. Meaningful conclusions were derived by objectively measuring conditions thus providing a numerical framework for findings. This approach facilitated data collection and conversion into numerical data, allowing for the application of statistical techniques in analysis. Quantitative method was based on the use of a semi-structured questionnaire, to capture information encompassing socio-demographics, work experience, motivating and demotivating factors in the sector, educational background, and job responsibilities.

3.3 Sources of Data

The study primarily relied on firsthand data sources. Data collection was facilitated through the utilization of a semi-structured questionnaire, encompassing a combination of open-ended and close-ended questions. The close-ended questions covered categories such as socio-demographics, work experience, incentives, and disincentives. Meanwhile, the open-ended questions delved into the varied viewpoints and insights of respondents concerning their work responsibilities, intentions regarding retention, and factors influencing turnover.

3.4 Study Population and Sampling

3.4.1 Study Population

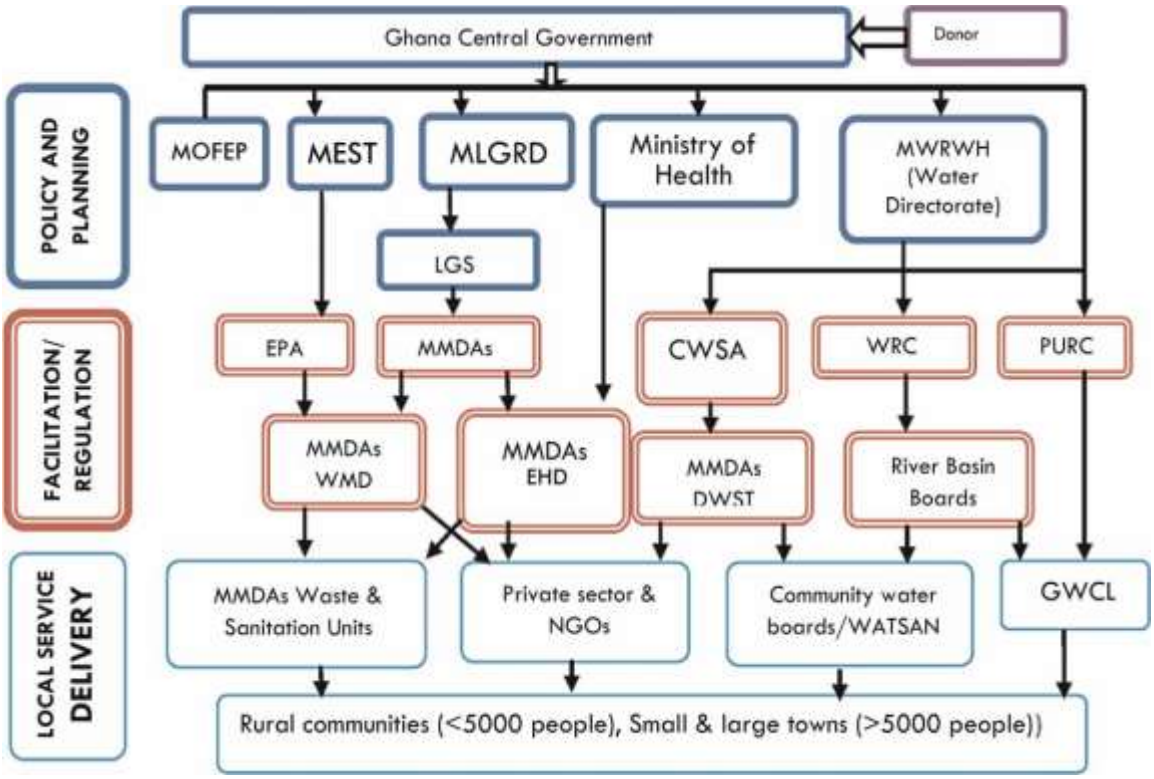
The study's focus was directed towards women employed in organisations offering Water, Sanitation, and Hygiene services. These women within the WASH sector were identified as the primary target group, to gather insights regarding factors like job incentives, disincentives, their impact on work engagement, as well as intentions related to retention and turnover. Additionally, the study encompassed Human Resource Managers employed across selected WASH institutions. This group was included to ensure the acquisition of information about the organisational structure of these institutions, thus enabling the determination of gender distribution across different management levels.

3.4.2 Inclusion Criteria

The study sought organograms from various WASH institutions, leading to the inclusion of all Human Resource Managers within these organisations. Equal opportunities were extended to women employed in diverse WASH institutions for their participation.

3.4.3 Sample Size and Sampling

Figure 3.1 illustrates the institutional framework of Ghana's WASH sector (Oduro-Kwarteng et al, 2014). Ghana's WASH sector is characterised by a coherent institutional framework that outlines the interrelationships among sector entities, spanning policy formulation, implementation, and service delivery. This framework classifies sector institutions into three tiers: policy and planning at the government ministries level, facilitation and regulation within decentralised agencies and departments, and local service delivery encompassing local government and community levels.



Source: Oduro-Kwarteng *et al.* (2014)

Figure 3.1: Institutional Context for Ghana's WASH Sector

Institutions across these categories, except for local service delivery, are primarily comprised of public sector entities. Private companies and non-governmental organisations (NGOs) are prominently engaged in local service delivery, particularly concerning rural and urban sanitation, as well as rural water supply. Guided by this framework, essential institutions were purposively chosen across all sub-sectors. This comprised five public sector organisations, along with one NGO and two private sector institutions (Table 3.1).

Table 3.1: Sampled of WASH institutions for the study

Category	Organisational Agencies
PUBLIC SECTOR	EPA
	MMDA, s
	Water Resource Commission
	CWSA
	GWCL
NGOS	International NGO
PRIVATE SECTOR	Sanitation Service Providers

(Source: Field Data, 2022)

Specifically, key institutions within the aforementioned categories were purposively identified in Accra and Kumasi for the research (Table 3.1). As indicated by Oduro-Kwarteng et al. (2014), a significant concentration of WASH institutions is known to operate within these regions. Additionally, it is noteworthy that Accra and Kumasi stand as the most densely populated cities in Ghana (Ghana Statistical Service, 2021).

3.4.4 Sampling of Study Organisations in Accra and Kumasi

A total of nine (9) public sector institutions, one (1) Private sector institution, and one (1) international NGO situated within the Greater Accra Metropolitan Area were purposively selected for this study (Table 3.2). Among them are eight MMDAs, WRC, Safisana Ghana Ltd (Tema), and WaterAid Ghana. These pivotal institutions, specifically offering services related to water, sanitation, or hygiene, were deliberately selected due to their integral role within Ghana's WASH sector.

The Greater Accra Metropolitan Assembly (GAMA), and its Waste Management Department, were also included in the study. GAMA acknowledged as a significant area of concern for Water, Sanitation, and hygiene in Ghana, was selected for its pronounced

representation of factors like economic growth, urbanisation, and population trends (Ghana Statistical Service, 2021; Otiwaa-Borketey, 2017). Given that environmental Health and sanitation responsibilities fall under local government authorities, all three (3) sub-metros in GAMA, as well as eight MMDAs, were purposely selected. GA Central Municipal Assembly (Ga Central Municipal Assembly, 2022), along with Ga South Municipal Assembly (Ga South Municipal Assembly, 2022), La Nkwantananag Madina Municipal Assembly (La Nkwantananag Madina Municipal Assembly, 2022), Ga East Municipal Assembly (Ga East Municipal Assembly, 2022), Ga North Municipal Assembly (Ga North Municipal Assembly, 2022), Adentan Municipal Assembly (Adentan Municipal Assembly, 2022), and Ga West Municipal Assembly (Ga West Municipal Assembly, 2022) were intentionally selected due to the pressing Water, Sanitation, and Hygiene issues within their respective areas. Hence, all eight (8) MMDAs in Accra were purposively sampled due to their unique WASH challenges, rendering them particularly relevant for the study. The regional office of WaterAid Ghana was also purposively selected, being a major NGO dedicated to safe water provision and hygiene education for vulnerable communities.

The Water Resource Commission, a prominent regulatory body in Ghana's Water Resources domain, was also intentionally included, specifically targeting its regional office. Lastly, Safisana Ghana Ltd, a key private company specialising in waste management and recycling in Accra, was chosen purposively, further enhancing the research scope.

Table 3.2: Sampled organisations in Accra selected for the study

Category	Selected Institutions
Public sector	Water Resource Commission
	AMA, Waste Management Department
	Accra Metropolitan Assembly
	Ablekuma South Sub- Metro
	Ashiedu Keteke Sub- Metro
	Okaikoe South Sub-metro
	Ga East Municipal Assembly
	Ga North Municipal Assembly
	Ga West Municipal Assembly
	Ga Central Municipal Assembly
	Ga South Municipal Assembly
	La Nkwantananag Madina Municipal
Private sector	Safisana Ghana
NGO	Water Aid Ghana

Similarly, in Kumasi, eight (8) Public sector and one (1) Private sector institution were purposively selected for the study. These institutions were purposively chosen due to their significance within Ghana's WASH sector. The Kumasi Metropolitan Assembly, alongside its Waste Management Department, was purposely included in the study, given the Metropolis' substantial population and its central role in environmental waste management (Asibey et al., 2019; Ghana Statistical Service, 2021). Among the Metropolis' five sub-metros, the first three (3) were purposively sampled based on their population sizes (Ghana Statistical Service, 2021). This includes the Bantama Sub Metro, Nhyiaeso Sub Metro, and Manhyia North Sub Metro. Oforikurom Municipal Assembly was purposefully selected as a sample for the study. Oforikurom Municipal Assembly is one of the MMDAs in Kumasi that has encountered challenges in Water, Sanitation, and Hygiene (Oforikurom Municipal Assembly). Similarly, the Suame Municipal Assembly (Suame municipal assembly) and the Kwaadaso Municipal Assembly (Kwaadaso municipal assembly) have also faced similar issues. The regional offices of the GWCL,

encompassing Ashanti North and Ashanti South regions, were purposively selected for their centrality in company water supply. Similarly, the Community Water and Sanitation Agency, Water Resource Commission, and Zoomlion GH Ltd were purposively sampled, further enhancing the comprehensiveness of the study. Below is the list of institutions that were purposively selected for the study in Kumasi.

Table 3.3: Sampled organisations in Kumasi selected for the study

Category	Selected institutions
Public sector	Kumasi Metropolitan Assembly
	Bantama sub metro
	Nhyiaeso sub metro
	Manhyia North sub-metro
	Kwadaso Municipal Assembly
	Oforikurom Municipal Assembly
	Suame Municipal Assembly
	Ghana Water Company Ltd
	Water Resource Commission.
	Community Water Sanitation Agency
	Environmental Protection Agency
Private sector	Zoomlion Ghana
NGO	Water Aid Ghana

(Source: Field Data, 2022)

3.4.5 Sampling Methods

The study utilised purposive sampling to choose participants for the research. Purposive sampling entails the researcher's discernment in selecting individuals who possess valuable insights into the subject being studied. This approach intentionally involves individuals who are most relevant to the research goals. The purpose of purposive sampling is to strategically select cases or participants that align with the research questions being addressed (Abrams, 2010).

3.4.6 Sample Size Determination

Cochran's formula, developed in 1963, is a method used to calculate the sample size required for categorical data in surveys or experiments. It aids in determining the minimum sample size necessary to achieve a specific level of confidence in the study results (Cochran, 1963).

To calculate the sample size with a 95 % confidence level and a 5 % margin of error, even when the population size is unknown, the following formula is used:

$$\mathbf{n} = \frac{(\mathbf{Z}^2 \times \mathbf{P} \times (\mathbf{1} - \mathbf{P}))}{\mathrm{E}^2}$$

Where:

n = Sample size

Z = Z-score corresponding to the desired confidence level (e.g., for a 95% confidence level, **Z** ≈ 1.96

P = Expected proportion or prevalence (expressed as a decimal).

In this case, assuming P = 27 %, P ≈ 0.27.

E = Margin of error (expressed as a decimal). Here, E is 5%, which is equivalent to 0.05.

$$\mathbf{n} = \frac{(\mathbf{1.962} \times \mathbf{0.27} \times (\mathbf{1} - \mathbf{0.27}))}{\mathbf{0.05^2}}$$

$$\mathbf{n} = \mathbf{302.87}$$

$$\mathbf{n} \approx \mathbf{303}$$

Therefore, the sample size required for respondents in Accra and Kumasi is approximately 303 when aiming for a 95 % confidence level and a 5 % margin of error.

3.4.7 Sampling of Respondents in Accra and Kumasi

All women employed in the Environmental Health and Sanitation Department (Environmental Health and Sanitation Officers) within the specified MMDAs, as well as women from various institutions, were eligible to participate in the study. These women were chosen for their extensive knowledge and qualities that aligned with the research questions. Personnel from different institutions were also included, as they generally provide relevant insights into the institutions' structures and gender ratios, which are significant to the research topic.

Given the larger size of GAMA, a greater number of Environmental Health Officers from MMDAs were purposively selected for participation, compared to Kumasi. In the Municipal Assemblies, twenty (20) women from each were selected, and in the sub-metros, ten (10) women from each were chosen, totalling thirty (30). Similarly, ten (10) respondents from WRC, WaterAid Ghana, and Safisana Ghana Ltd were purposively selected. Additionally, eight (8) women from the Waste Management Department of AMA were considered. Selection of all participants was based on their roles within the institutions. Table 3.4 indicates the distribution of respondents sampled in Accra for the study.

Table 3.4: Respondents sampled in WASH Institutions in Accra

Number of Sampled Organisations	Participants per Institution	Total
7 MMDAs	15	105
3 Sub Metros	10	30
WRC	10	10
WMD, AMA	8	8
Water Aid Ghana	10	10
Safisana Ghana	10	10
Total		**173**

(Source: Field Data, 2022)

Similarly, in Kumasi, ten (10) women each from the three MMDAs and ten (10) women from each of the above-mentioned sub-metros in KMA were purposively selected. Five (5) women from the Waste Management Department of KMA were also sampled purposively. Twenty (20) women from the regional offices of Ghana Water Company Ltd in the Kumasi Metropolis were purposively chosen. Furthermore, ten (10) women from CWSA and Zoomlion Ghana Ltd, and five (5) women from EPA and WRC were also included. Human resource Managers from each institution, totalling twenty-two (22), were purposively selected to participate in the study. The selection of all participants was based on their roles within the institutions. The selection of all participants was based on their roles within the institutions. In total, the study involved 303 women and 23 Human Resource Managers as participants. The distribution of respondents from the sampled organisations in Kumasi is outlined in Table 3.5

Table 3.5: Respondents targeted in WASH institutions in Kumasi

Number of Sampled Organisations	Participants per Institution	Total
MMDAs (3)	10	30
Sub Metros (3)	10	30
WRC	5	5
WMD, KMA	5	5
GWCL (2)	20	40
CWSA	5	5
Zoomlion Ghana	10	10
EPA	5	5
Total	**-**	**130**

(Source: Field Data, 2022)

The organogram of various institutions was utilised to identify and analyse the gender distribution across various roles and hierarchical levels. Positions within the organisation were categorised into top, middle, and low-level management, as well as supporting staff roles. Gender classification was conducted in consultation with the human resources department. The number of males and females in each category was recorded for analysis. This data was then used to determine the overall distribution of gender across different levels and roles within the institution, revealing patterns of gender representation and identifying areas where women were underrepresented.

3.5 Data Collection Instrument

Questionnaires were employed to collect data from female employees, covering areas such as socio-demographics, education, work experience, responsibilities, incentives, disincentives, retention, and turnover intentions. The questionnaires were administered through face-to-face interviews in English. Respondents' demographic information was

gathered initially, and subsequent sections corresponded to different research objectives. The questionnaires included both closed-ended and open-ended questions to ensure a comprehensive understanding. Additionally, HR questionnaires captured organogram and gender ratio details of the institutions' management levels.

3.6 Data Analysis

After data collection, a thorough data cleaning process was conducted to ensure accuracy and cohesiveness. Rigorous editing was performed to verify the authenticity and coherence of the information in both questionnaires and research notebooks, aligning them with the study's objectives. Data obtained from the field were coded to maintain uniformity. Quantitative analysis was carried out using the Statistical Package for Social Sciences (SPSS). Descriptive analysis was employed, and data interpretation was facilitated through statistical tools like graphs, pie charts, and tables.

3.7 Ethical Consideration

Ethical approval was obtained from the Kwame Nkrumah University of Science and Technology's (KNUST) School of Medical Sciences. Informed written consent was acquired from female employees in chosen WASH organisations before questionnaire administration as well as human resource managers of various institutions. Data privacy was maintained, interviews ensured respondent anonymity and comfort, and safety measures were communicated in the consent form. Sensitive data would be encrypted and securely stored, as outlined in the consent form.

CHAPTER FOUR

RESULTS

This section presents the findings of the study. It offers an in-depth overview of women's involvement at different management levels, highlighting both the incentives and disincentives and providing insights into effective strategies for attracting and retaining women in the sector.

Table 4.1: Demographic characteristics of respondents

Variable	Frequency	Percentage (%)
Age		
20-30	46	18.4
31-40	137	54.8
41-50	45	18.0
51-60	22	8.8
Number of Children		
1-4	158	87.3
5-7	23	12.7
Religion		
Christian	226	87.9
Islamic	31	12.1
Academic Qualification		
Certificate	146	57.3
NVTI	2	0.8
HND	10	3.9
BSc	72	28.2
MSc	25	9.8

(Source: Field Data, 2022)

4.1 Demographic Characteristics of Respondents

Table 4.1 indicates the socio-demographic characteristics of the study's respondents. The majority (54.8 %) of the respondents were aged between 31-40 years. 18.4 % were

between 20-30 years, 18.0 % were between 41-50 years and 8.8 % were between the ages of 51 - 60 %. Most (87.3 %) respondents had 1-4 children and 12.3 % had 5-7 children. Most (87.9 %) respondents were Christians, whereas 12.1 % were Muslims. The majority (57.3 %) of the respondents earned post-secondary certificates, 28.2 % had a BSc degree, 9.8 % possessed an MSc degree, 3.9 % had an HND, and 0.8 % had an NVTI qualification.

4.2 To Take an Inventory of Where Women Work in the Wash Sector of Ghana

Table 4.2a: Gender distribution at different management levels in study institutions, Kumasi

Institution	Top-level management n/%		Middle-level management n/%		lower-level management n/%		Supporting- staff n/%	
	Male	Female	Male	Female	Male	Female	Male	Female
CWSA	2(66.7)	1(43.3)	2(100)	0(0)	3(50)	3(50)	6(75)	2(25)
GWCL, Ashanti North	1(100)	0(0)	5(83.3)	1(16.7)	39(76.5)	12(23.5)	-	-
GWCL, Ashanti South	2(100)	0(0)	1(25)	3(75)	20(100)	0(0)	-	-
KMA- EHSD	3(60)	2(40)	3 (100)	0(0)	3(37.5)	5(62.5)	-	-
Oforikurom Municipal Assembly	0(0)	1(100)	1(33.3)	2(66.7)	5(41.7)	7(58.3)	-	-
Nhyiaeso Sub Metro	1(25)	3(75)	0(0)	2(100)	1(16.7)	5(83.3)	-	-
Bantama Sub-Metro	0(0)	2(100)	1(33.3)	2(66.7)	3(33.3)	6(66.7)	-	-
Manhyia North Sub-Metro	2(100)	0(0)	1(100)	0(0)	1(11.1)	8(88.9)	-	-
Suame Municipal Assembly	2(66.7)	1(43.3)	3(60)	2(40)	1(12.5)	7(87.5)	-	-
Kwaadaso Municipal Assembly	1(50)	1(50)	1(50)	1(50)	2(22.2)	7(77.8)	-	-

(Source: Field Data, 2022)

Table 4.2b: Gender distribution at different management levels in study institutions, Accra

Institution	Top-level management n/%		Middle-level management n/%		lower-level management n/%		Supporting staff n/%	
	Male	Female	Male	Female	Male	Female	Male	Female
Accra Metropolitan Assembly (WMD)	2(100)	0(0)	6(75)	2(25)	8(100)	0(0)	0(0)	3(100)
Okaikoe South Sub- Metro	1(100)	0(0)	1(100)	0(0)	1(8.3)	11(91.7)	5(100)	0(0)
Water Resource Commission	4(44)	5 (55.6)	4(20)	16(80)	4(30.8)	9(69.2)	0(0)	11(100)
Safisana Waste Management Ltd	6(60)	4 (40)	6(100)	0(0)	1(25)	3(75)	24(82.8)	5(17.2)
Ashiedu Keteke Sub-Metro	4(44)	5 (55.6)	2(66.7)	1(33.3)	2(66.7)	1(33.3)	-	-
Ga South Municipal Assembly	1(50)	1(50)	2(100)	0(0)	7(31.8)	15(68.2)	-	-
Ga East Municipal Assembly	3(75)	1(25)	1(20)	4(80)	2(13.3)	13(86.7)	-	-
Ga Central Municipal Assembly	1(50)	1(50)	2(29)	5(71)	9(60)	6(40)	0(0)	2(100)
Adentan Municipal Assembly	4(36.4)	7(63.6)	2(40)	3(60)	1(10)	9(90)	-	-
Ga North Municipal Assembly	1(14.3)	6(85.7)	5(50)	5(50)	4(33.3)	8(66.7)	2(33.3)	4(66.7)
Water Aid Ghana, Accra	21(91.3)	2(8.7)	6(54.5)	5(45.5)	4(80)	1(20)	-	-
La Nkwantanang Madina Municipal Assembly	5(71)	2(29)	0(0)	2(100)	8(23.5)	26(76.5)	1(20)	4(80)

(Source: Field Data, 2022)

Table 4.2c: Gender distribution of employees at various management levels across all the institutions in Accra and Kumasi

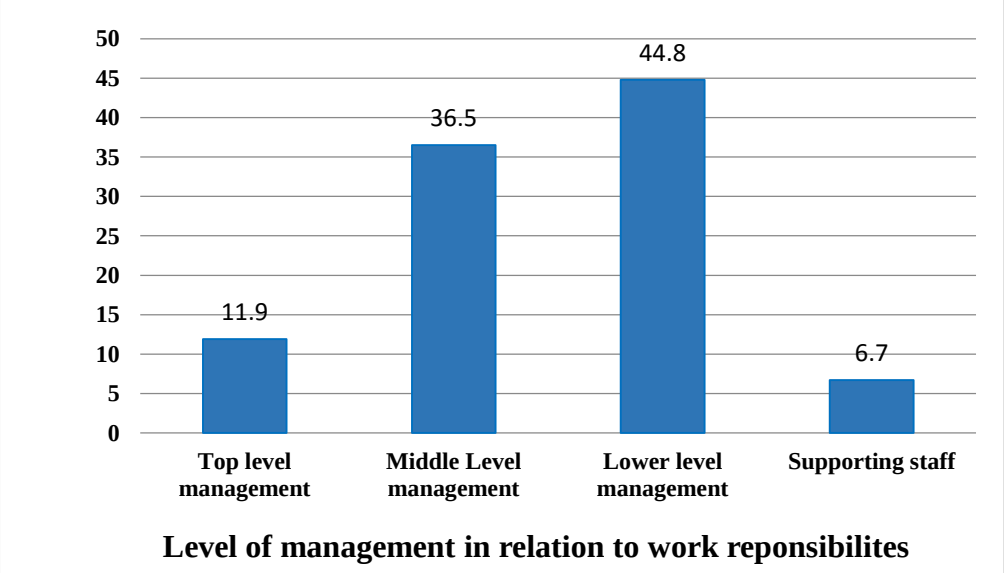
Location	Top-level management n/%		Middle-level management n/%		Lower-level management n/%		Supporting staff n/%	
	Male	Female	Male	Female	Male	Female	Male	Female
Accra	53(60.9)	34(39.1)	37(46.3)	43(53.8)	51(33.3)	102(66.7)	32(52.5)	29(47.5)
Kumasi	14(56)	11(44)	18(58.1)	13(41.9)	78(56.5)	60(43.5)	6(75)	2(25)

(Source: Field Data, 2022)

4.2.1 Gender Distribution of Employees at Various Management Levels across All the Institutions in Accra and Kumasi

Table 4.2c presents the results of the joint gender distribution of employees in Accra and Kumasi across all management levels. A majority of top management positions at study institutions in Accra are held by males (60.9 %) whereas females occupy 39.0 % of these roles. In middle management, the gender distribution shifts slightly, with males comprising 46.3 % and females 53.8 %. Most of the female employees (66.6 %) hold lower-level staff positions, while 33.7 % of males occupy these roles. Among supporting staff, males and females constitute (52.5 %) and (47.5 %) respectively.

In Kumasi institutions, 56.0 % of top-level positions are occupied by males, while females hold 44.0 % of these roles (Table 4.2c). In middle-level management, males account for 58.1 % of positions, with females representing 41.9 %. At the lower-level management, males constitute 54.5 % of the staff, whereas females comprise 45.1 %.



(Source: Field Data, 2022)

Figure 4.1: Management levels of respondents based on work responsibilities

Figure 4.1 illustrates the work responsibilities of participants. The majority (73.6 %) of the respondents were engaged in environmental health duties. 14.2 % were engaged in administrative and secretariat duties, technical duties included 5.9 %, while 6.3 % involved the provision of financial information.

4.2.2 Women's Role in the Delivery of WASH Services

Table 4.3: Work experience among respondents

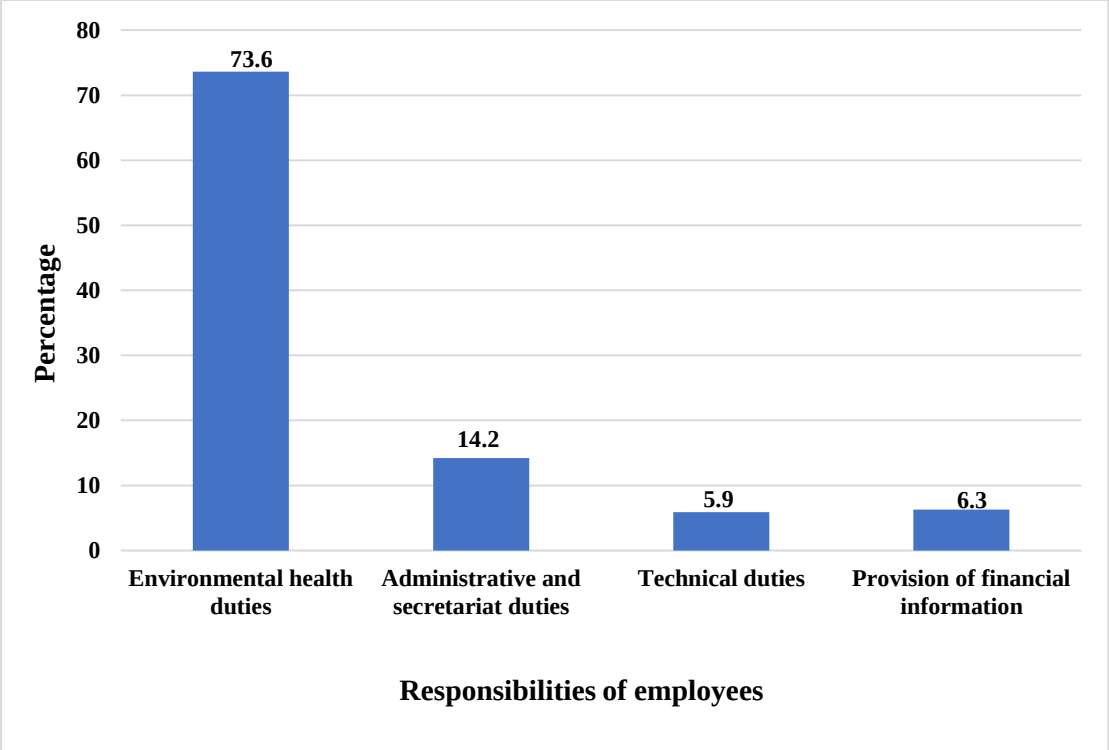
Variable	Frequency	Percentage (%)
Work experience		
1-5	93	36.5
6-10	109	42.7
11-15	36	14.1
16-20	10	3.9
21 and above	7	2.7
Total work experience		
1-5	62	25.6
6-10	63	26.0
11-15	57	23.6
16-20	26	10.7
21 and above	34	14.0

(Source: Field Data, 2022)

Table 4.3 shows the work experience among respondents. The majority (42.7 %) of respondents had 6-10 years of experience, followed by 1-5 years (36.5 %), 11-15 years (14.1 %), 16-20 years (3.9 %), and 21 years and above (2.7 %). The largest overall job experience was found in those with 6–10 years (26.0 %), followed by those with 1–5 years (25.6 %), 11–15 years (23.6 %), 16–20 years (10.7 %), and 21 years and above (14.0 %).

Figure 4.2 illustrates the work responsibilities of participants. The majority of responders (73.6 %) worked in the environmental health and sanitation department.

Administrative and secretarial work accounted for 14.2 %, technical duties and financial information providers accounted for 5.9 % and 6.3 % respectively.



(Source: Field Data, 2022)

Figure 4.2: Work responsibilities of employees

4.3 Incentives and Disincentives for Women in the WASH Sector

4.3.1 Incentives for Respondents at the Various Institutions

Table 4.3.1a: Incentives for respondents at the various institutions

Variable	Frequency	Percentage (%)
Incentives		
Maternity leave	155	75.6
Free accommodation	2	1.0
Free health care	20	9.8
Clear career progression plan	4	2.0
Transportation allowance	8	3.9
Off- days	3	1.5
Paid over time	1	0.5
Study leave	3	1.5
Good salary	9	4.4
Level of satisfaction with Incentives		
Very dissatisfied	61	23.6
Dissatisfied	85	32.8
Neutral	63	24.3
Satisfied	46	17.8
Very satisfied	4	1.5
Men who hold the same position as females		
Yes	186	75.9
No	59	24.1
Being paid fairly as compared to the men in the same position		
Yes	85	40.5
No	125	59.5
If yes explain further.		
Both are on the same salary grade	81	100
Reward and recognition for good work done		
Yes	105	40.4
No	154	59.5

(Source: Field Data, 2022)

4.3.1a: Incentives for Respondents at the various Institutions

Table 4.3.1a presents the incentives for respondents in various institutions. Maternity leave (75.6 %) was considered as their primary incentive, followed by free health care (9.8 %). Other incentives included a good salary (4.4 %), transportation allowance (3.9 %), clear career progression plan (2.0 %), study leave (1.5 %), off-days (1.0 %), free accommodation (1.0 %), and paid-overtime (0.5 %). The majority (32.8 %) of

respondents were dissatisfied with the incentives while 24.3 % maintained a neutral stance. Some respondents (23.6 %) were very dissatisfied. Nonetheless, 1.5 % were very satisfied and 17.8 % were content with the incentives. More than half (59.5 %) of the respondents reported that their institutions do not reward employees for good work done while the remaining 40.4 % specified that their institutions do reward and recognise employees for good work done.

4.3.1b: Incentives for Respondents at the Various Institutions

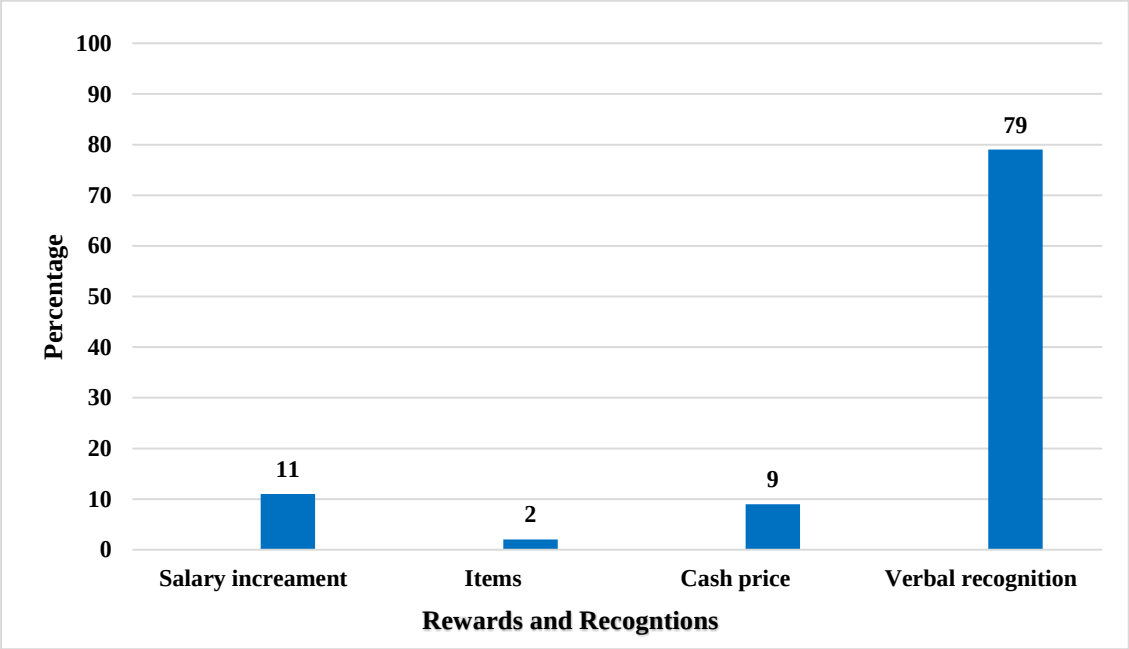
Table 4.3.1b further indicates incentives for respondents at various Institutions. More than half (55.2 %) of the respondents identified verbal recognition as a form of reward, and 24 % mentioned cash prizes, followed by salary increments (9.4 %), Items (6.3 %), and paid holidays (5.2 %). 46.6 % of the respondents found the company's promotion system to be fair while 28.7 % considered it unfair. Others (15 %) also stated that it is neutral, followed by those who said it is extremely unfair (5.6 %), and very fair with 4.0 %. Respondents provided various reasons for their opinions on the promotion system. A majority (42.2 %) highlighted untimely promotions, while 18.4 % found them timely. Additionally, the respondents stated that promotion is based on an appraisal system (17.3 %) and interview outcomes (16.8 %). Other opinions expressed by respondents that influence promotion systems include the lack of an automatic staff information update system (7.6 %), the salary attached to promotion is very small (2.7 %), promotion is based on work experience and qualifications (2.7 %). On the need for a better reward system, 98 % of respondents said yes while 24 % said no. Regarding a higher salary for good performance, 93.5 % of respondents said no while 6.5 % said yes.

Table 4.3.1b: Incentives for respondents across different institutions

Variable	Frequency	Percentage (%)
Means of rewarding		
Cash Prizes	23	24.0
Salary increment	9	9.4
Paid holidays	5	5.2
Items	6	6.3
Verbal recognition	53	55.2
Opinion on the company's promotion system		
Extremely unfair	14	5.6
Unfair	72	28.7
Neutral	38	15.1
Fair	117	46.6
Very fair	10	4.0
Reasons for various opinions given on the promotion system		
Untimeliness	78	42.2
No automatic system to update staff information	14	7.6
The use of an appraisal system	32	17.3
Promotion is based on work experience and qualification	5	2.7
Promotion depends on the outcome of an interview	31	16.8
Timeliness	34	18.4
The process involved is not transparent	6	3.3
It involves the payment of promotion fees	11	6.0
The salary attached to promotion is very small	5	2.7
Every eligible person qualifies for the promotion	7	3.8
Received recognition for good work done		
Yes	48	18
No	217	82
The need for a better reward system		
Yes	239	98
No	26	24
Receive higher salary on good performance		
Yes	17	6.5
No	248	93.5

(Source: Field Data, 2022)

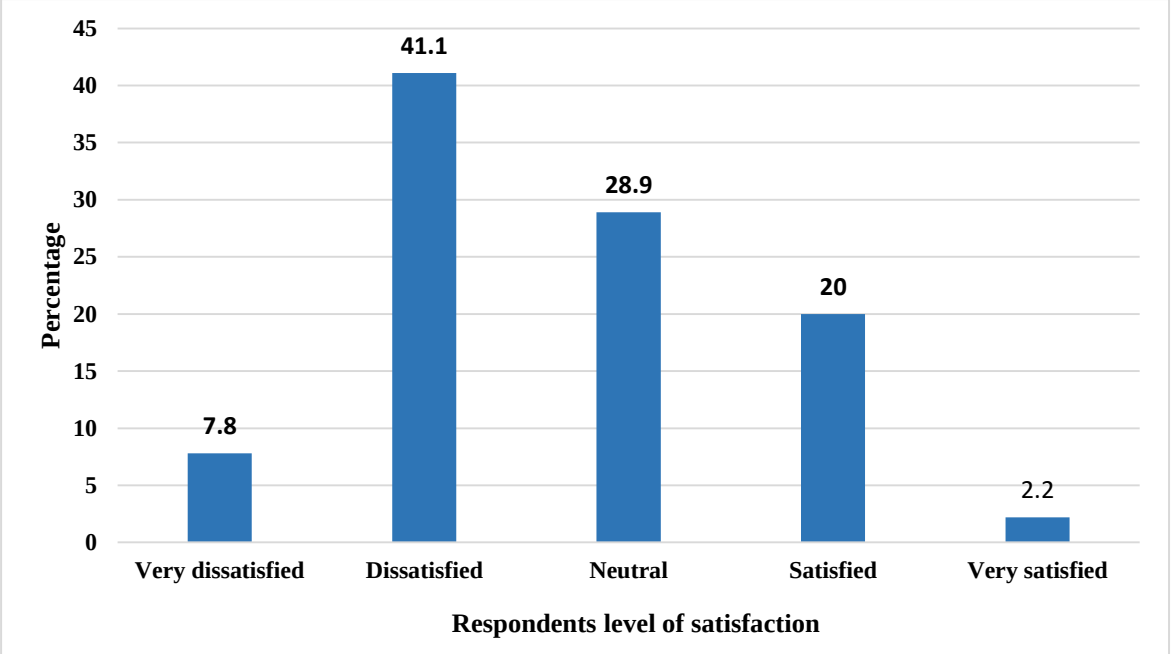
Figure 4.3 illustrates the different types of rewards and recognition that respondents have received. The majority (78.8 %) of respondents highlighted that reward and recognition primarily take the form of verbal recognition while 10.6 % mentioned salary increments (10.6 %), followed by cash prizes (9.1 %) and the giving of items (1.5 %).



(Source: Field Data, 2022)

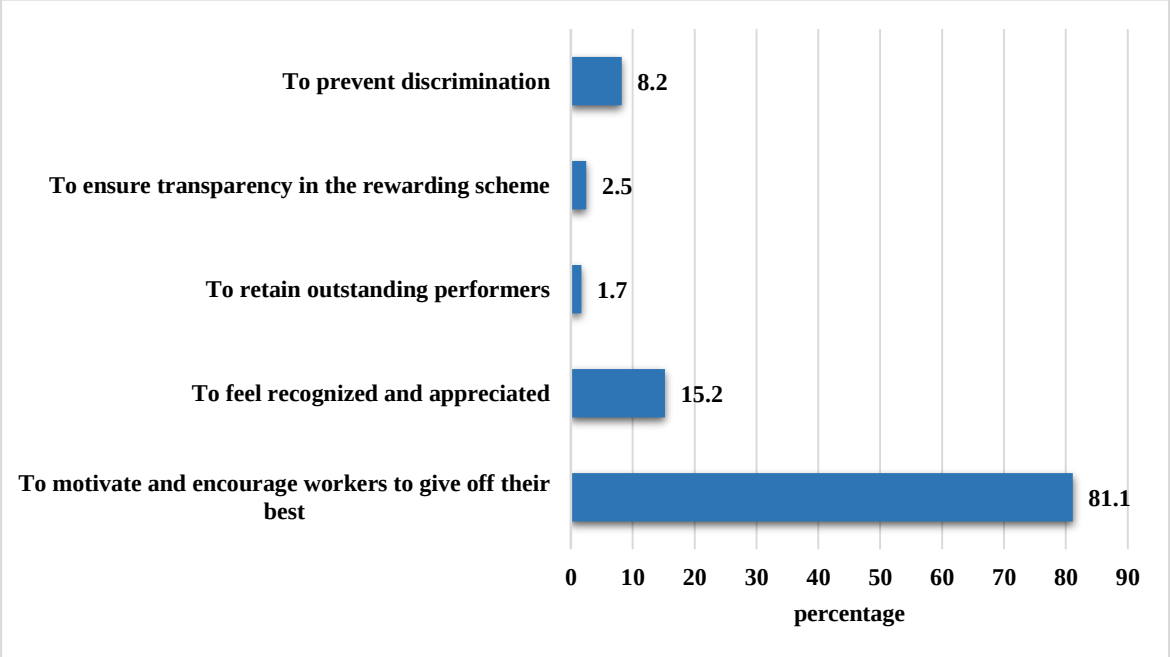
Figure 4.3: Respondent-based rewards and recognition

Figure 4.4 depicts the levels of respondent's satisfaction with the rewards and recognition received. The majority of participants (41.1 %) expressed dissatisfaction, with 7.8 % indicating strong dissatisfaction. Additionally, 28.9 % remained neutral, while 20.0 % reported satisfaction, and 2.2 % were very satisfied.



(Source: Field Data, 2022)

Figure 4.4: Level of satisfaction with the reward and recognition received



(Source: Field Data, 2022)

Figure 4.5: Reasons for a better reward system.

Figure 4.5 specifies the reasons for a better reward and recognition system. These reasons include motivating and encouraging workers to give their best (81.1 %), to feel recognised and appreciated (15.2 %), to prevent discrimination (8.2 %), to ensure transparency in the rewarding scheme (2.5 %) and retain outstanding performers (1.7 %).

4.3.2 Disincentives for Respondents at Various Institutions

Table 4.3.2a shows disincentives for respondents at various institutions. The main disincentives were inadequate transportation allowance (32.6 %). Others included inadequate salary (22.3 %), Stressful work (16.5 %), stigmatization (10.7 %), long working hours (9.1 %), and delayed salary (5.0 %). 4.9 % of respondents experienced stigmatisation, while 95.1 % did not. In a similar vein, 1.5% of respondents claimed that stigmatisation had an impact on their work, whilst 98.5% disagreed. Feeling threatened by male co-workers was expressed by 2.3 % of respondents, while 97.7 % did not feel threatened. In terms of satisfaction with treatment from superiors, respondents (52.7 %) remained neutral, 36.9 % were satisfied, 6.2 % were dissatisfied, and 1.5 % were very dissatisfied. On the subject of gender discrimination, most respondents (96.5 %) said no while 3.5 % said yes.

Table 4.3.2: Disincentives for respondents at various institutions

Variable	Frequency	Percentage (%)
Disincentives		
Stigmatisation	26	10.7
Long Working Hours	22	9.1
Transportation Allowance	79	32.6
Unpaid -Overtime	2	0.8
No Maternity Leave	1	0.4
Delayed Salary	12	5.0
Insufficient Salary	54	22.3
Stressful Work	40	16.5
No study leave	6	2.5
Suffer stigmatisation		
Yes	12	4.9
No	233	95.1
Affect Work		
Yes	2	1.5
No	131	98.5
Feel threatened by male co-workers.		
Yes	6	2.3
No	250	97.7
Level of satisfaction with how workers are treated by superiors		
Very Dissatisfied	4	1.5
Dissatisfied	7	2.7
Neutral	137	52.7
Satisfied	96	36.9
Very satisfied	16	6.2
Respect from colleagues		
Yes	232	96.7
No	8	3.3
Discrimination due to gender		
Yes	9	3.5
No	246	96.5
Effect on self-esteem		
Yes	8	6.0
No	125	94.0

(Source: Field Data, 2022)

4.4 Retention and Turnover Intentions of Respondents

Table 4.4a: Retention and turnover intentions

Variable	Frequency	Percentage (%)
Plan of leaving the sector		
Yes	81	31.6
No	175	68.4
Factors that will account for leaving the sector		
Poor conditions of service	23	29.9
Insufficient salary	18	23.4
Lack of Incentives	16	20.8
To Pursue Opportunities	13	16.9
Retirement	13	16.9
Stressful Work	7	5.2
For further studies	29	37.7
Factors that will account for long service		
The essence of achieving improved WASH services	33	22.0
The passion to save lives and serve humanity	75	50.0
To gain knowledge and experience	16	10.7
Good Salary	20	13.3
Difficulty in job acquisition	3	2.0
Good Policies	6	4.0
Motivation Packages	12	8.0
Good Conditions of Service	8	5.3
To be a role model for other females	1	0.66
The need for more females in the sector		
Yes	243	96.8
No	121	45.5
Reasons for the need for more females		
Women are more involved in WASH issues	46	20.0
Women have extensive knowledge of WASH	24	10.4
To make inclusive policies to meet the WASH needs of women	28	12.1
Females do well in WASH education programs	31	13.4
For gender balance and equity	27	11.7
To achieve WASH goals	8	3.5
The need for women's empowerment	33	14.3
Women are the primary managers of WASH service	20	8.7
Women are needed in spheres of life	12	5.2
A limited number of females in the sector	6	2.6
Women in the sector are very hardworking compared to the men	20	8.7

(Source: Field Data, 2022)

4.4a Retention and Turnover Intentions of Respondents

Table 4.4a outlines respondents' retention and turnover intentions. A majority of the respondents (68.4 %) had no plans of leaving the sector while 31.6 % indicated their plans to leave. The main reason for respondents willing to leave was to further their studies (37.7 %). Other factors included poor conditions of service (29.9 %), insufficient salary (23.4 %), lack of incentives (20.8 %), and stressful work (37.7 %). Respondents willing to stay in the sector were due to the passion they have to save lives and to serve humanity (50.0 %) and the essence of achieving improved WASH services (22.0 %). Factors such as a good salary (13.3 %), acquiring knowledge (10.7 %), adequate motivational packages (8.0 %), Good conditions of service (5.3 %), and good policies (4.0 %) were mentioned as well. Most (96.8 %) respondents said yes to the need for more females in the sector while a few (3.2 %) respondents said no. The reasons given by respondents to support the need for more females include women's active involvement in WASH issues (20.0 %), the need for women empowerment (14.3 %), strong female performance in WASH education programs (13.4 %), to make inclusive policies to meet the WASH needs of women (12.1 %), gender balance and equity (11.7 %) and women's extensive knowledge in WASH (10.4 %).

4.4b Retention and Turnover Intentions

Table 4.4b further outlines respondents' retention and turnover intentions. The findings highlighted that attracting women to the sector could be achieved primarily through recognition and rewards (33.6 %). Other strategies included education and awareness campaigns (28.8 %), incentive packages (20.0 %), good policies (16.0 %), good conditions of service (14.4 %), salary increments (12.8 %), women's advocacy in WASH (11.12 %), strategic recruitment (10.4 %), enhancing opportunities for

women (6.8 %), promoting gender equity (3.2 %), gender mainstreaming (2.8 %), more women in leadership positions (2.4 %), empowering women's career growth (1.6%), and training of women in technical fields (1.6 %). Some respondents 54.5% stated that they would choose the sector again as a field of work, while 45.5 % said otherwise. The reasons for not choosing the sector again included insufficient salary (26.0 %), lack of motivational packages (21.3 %), inadequate supportive policies (9.0 %), government inattention to grievances (5.1 %), and a lack of respect for women (1.3 %). whereas a majority of the respondents (35.3 %) said they would choose the sector again and the main reason was the passion they have to save lives and to serve humanity.

Table 4.4b: Retention and turnover intentions

Variable	Frequency	Percentage (%)
Means of attracting more females into the sector		
Good Policies	40	16.0
Education and Awareness Creation	72	28.8
Women's advocacy in WASH	28	11.2
Good conditions of service	36	14.4
Incentive Packages	50	20.0
More women in leadership roles	6	2.4
Enhancing opportunities for women	17	6.8
Promoting gender equity	8	3.2
Empowering women to pursue and enhance their career	4	1.6
Strategic Recruitment to attract more women	26	10.4
Gender Mainstreaming	7	2.8
Training women in technical fields	4	1.6
Recognition and Reward	84	33.6
Salary increment	32	12.8
Reasons for not choosing the sector again		
Poor conditions of service	31	13.2
Stressful Work	13	5.5
Lack of motivation packages	50	21.3
Inadequate supportive policies	61	26.0
Policies do not support and protect women's welfare	21	9.0
Inattentiveness to our grievances by the government	12	5.1
Lack of respect for women	3	1.3
Reasons for choosing the sector again as a field of work		
The passion for saving lives and to serve humanity	83	35
The essence of achieving improved WASH services	38	16
To acquire knowledge in WASH	7	3

(Source: Field Data, 2022)

CHAPTER FIVE

DISCUSSION OF FINDINGS

5.1 Gender Distribution of Males to Females across the Various WASH Institutions

The findings highlight significant gender disparities, especially in top management positions, where men dominate with 60.9 % compared to women (39.0 %). Some institutions lack female participation in top management entirely, exhibiting a critical gender equity issue. In contrast, middle management shows a more balanced gender distribution, with women holding 53.2 % of positions, slightly outnumbering men (46.8 %). However, this trend does not extend to lower management and supporting staff, where women make up 66.6 % of lower management roles, indicating potential barriers to their advancement to higher positions. In Kumasi, top-level management is also male-dominated but slightly more balanced than in Accra, with men holding 56 % of positions and women 44 %. The gender gap widens in middle-level management, where men occupy 58.1 % of roles compared to 41.9 % for women. At the lower management level, males constitute 54.5 % of the staff, while females make up 45.1 %, showing a more balanced representation but still indicating male preference in these roles. These findings carry multifaceted implications. While the surged participation of women in middle and lower-level management positions signals progress in gender equity and expanded opportunities, the underrepresentation of females in top-level management points to persistent gender biases and impediments thwarting their advancement to leadership. The prevalence of women in supporting staff roles may reflect deeply ingrained gender stereotypes influencing career trajectories and choices.

5.2 Women's Role in the WASH Sector

The study findings highlight that women in the WASH sector predominantly hold roles within social development job categories. Notably, the Environmental Health and Sanitation Units within the Metropolitan, Municipal, and District assemblies (MMDAs) primarily engage in health education, health promotion, and nuisance abatement. Consequently, a substantial portion (73.6 %) of their responsibilities falls within the social development category. Similarly, the research reveals a marked gender disparity in technical positions (55.9 %) within the sector, particularly when compared to social development roles and administrative duties (14.2 %). This pattern corroborates the findings of Agyare-Kwabi (2013), who reported a higher proportion of females (49 %) serving as health inspectors in the Environmental Health and Sanitation Departments compared to those in decision-making roles within the Municipal and District Environmental Health Inspectorates (7 %). Likewise, Oduro-Kwarteng et al. (2014) found a significant concentration of females (91 %) in social development, administration, and finance positions, contrasting with technical roles (20 %). The study attributes the lower representation of women in the technical sphere of the WASH sector to reduced participation in water and sanitation-related technical courses. Sociocultural factors and prevailing norms often discourage women from pursuing such fields. Perceptions of engineering and technical roles as male-dominated further perpetuate the dissuasion faced by women from families and society at large when considering careers in traditionally male-dominated sectors (IWA, 2016; Botella et al., 2019; Mehrzad et al., 2021; Epstein, 2022). Moreover, many tertiary institutions across the country predominantly offer programs in social development, administration, and finance, driven by high demand in the labour market (Oduro-Kwarteng et al., 2014). Enhancing women's empowerment is

instrumental not only for achieving other MDGs but also for fostering human development. This significance is particularly pronounced in the water and sanitation sub- sectors, where increased involvement of women in technical roles is highly important. The study emphasises the need for gender analyses during project programming to assess potential impacts on both genders and their relations.

5.3 Incentives for Women in the WASH Sector

The study's findings emphasise the significant role of maternity leave (75.6 %) as a key incentive for women in the sector. Maternity leave serves as a vital motivator, enhancing women's commitment to the workforce. For women striving to balance their careers with family responsibilities and for those seeking to engage actively in both child-rearing and professional activities, flexibility and family support are essential for retention. Research in developed economies highlights the impact of maternity leave and childcare provisions on female labour force participation. Similarly, other studies underscore the importance of maternity leave and childcare provisions for women's involvement in the labour force. (Cerise et al., 2013; Kaufman and Petts, 2020).

While attractive salaries and allowances significantly contribute to attracting and retaining employees, the findings reveal that good salaries (4.4 %) were ranked among the least effective incentives. This suggests employee dissatisfaction with their salaries, particularly evident among females in the Environmental Health and Sanitation Department (EHSD). Government salaries for the public sector are determined by factors such as education, work experience, technical knowledge, and job nature. However, the results indicate that the majority of females in EHSD

possess diploma certificate qualifications, which likely affects their salary levels. A competitive salary is a primary motivational mechanism in the workplace and is integral to human resource management, providing tangible rewards for employees' contributions. Seniwoliba and Nchorbono's (2013) findings support this, indicating that a good salary serves as a monetary incentive, motivating employees and influencing their enthusiasm and performance. Similar sentiments are echoed by Kalot (2013), Nimo et al. (2013), and Njunwa (2017), who emphasise good salaries as a significant motivating factor.

The study's results disclose that study leave (1.5 %) and career progression plans (2.0 %) were ranked among the lesser incentives available to women in these institutions. This is unfortunate, given the mutually beneficial outcomes of career development for both employees and organisations. Although career advancement is intrinsically motivating, it also positively influences salary and allowances (Emmanuel and Nwuzor, 2021). Participants highlighted that career progress faces impediments beyond the challenges associated with acquiring study leave indicating broader organisational reluctance to support female career development. Soeters et al. (2021) observed that limited time, financial resources, and mobility constrain women's opportunities for advancement. Mabokela and Obakeng (2015) discuss how women navigate family and professional demands, often reshaping traditional norms to accommodate both their academic careers and familial responsibilities. These findings are in agreement with Indra et al. (2013), revealing that family and personal responsibilities pose significant barriers to women's career mobility. The study findings also indicate the absence of additional incentives like transportation allowance (3.9 %) and free accommodation (1.0 %) in the surveyed organsations.

This observation aligns with the conclusions drawn by Okafor (2014) and Opoku (2021) in their respective research, which similarly identified a lack of entitlement to benefits such as transportation allowance and free accommodation for employees.

5.4 Disincentives

The findings revealed that female employees face workplace stigma (10.7 %). Similar conclusions were drawn by Stone (2013), whose research highlights the prevalence of statements linking stigma to work or motherhood statuses. The frequency of these stigma statements varies across contexts, with higher instances noted among women in male-dominated professions within elite firms where pronounced time norms are prevalent. Likewise, the study emphasises the existence of various disincentives, including long working hours (9.1 %), stressful work conditions (16.5 %), transportation allowance issues (32.6 %), and inadequate salaries (22.3 %). These disincentives negatively affect employee performance. In situations where equitable pay and working conditions are lacking, evaluations may be insufficient, leaving outstanding performance unrecognised. The demand for increased work hours, combined with the job's challenging nature, can elevate stress levels, progressively undermining performance. These findings align with the observations of Smithers and Walker (2014), who noted that long working hours tend to demotivate professionals working full-time on-site compared to those with less on-site engagement. Anisah (2021) also underscored the significance of inadequate salaries as a major demotivator affecting employee performance. The research suggested that employees who receive adequate salaries for their work are typically motivated to perform at their best.

5.5 Retention and Turnover Intentions

Although the study identified discouraging incentives for women within the sector, a notable proportion of female participants expressed no intentions of leaving the WASH sector. Their commitment to remain within the sector stems primarily from their passionate dedication to saving lives through the provision of WASH services and their strong desire to enhance the quality of these services. Participants highlighted that access to adequate WASH services is a fundamental human right and a crucial component of human survival. This sense of responsibility and motivation drives them to contribute to the sector, even at the expense of personal sacrifices, with the ultimate goal of benefiting society Brenya et al. (2016), found similar motivations among civil service employees in Ghana. These individuals were committed to pursuing the public interest and were genuinely concerned about the welfare of their communities, actively engaging in public duties to support policy implementations that benefit society at large.

Interestingly, some participant who expressed intentions to leave the sector attributed their decision to poor conditions of service (29.9 %) in their current workplace. This finding resonates with Nimo et al. (2013), emphasizing the significance of a conducive working environment for motivation. Regrettably, the conditions of service within the surveyed organisations, particularly in the EHSD, were reported as subpar. Participants cited issues such as poor conditions of work and insufficient furniture. These conditions prompted some to consider leaving the service and the sector altogether once they had the opportunity (16.4 %). Participants also expressed a desire to leave the sector to further their studies (37.7 %). Many respondents emphasised the importance of enhancing their knowledge, skills, expertise, and professional

experience. This aspiration for personal growth and development is often accompanied by the anticipation of greater future benefits. Historically, many female employees in Ghana did not aspire to higher academic pursuits due to a lack of ambition and self-confidence, as well as limited opportunities for advancement. However, some participants are now pursuing or planning to pursue first and postgraduate degrees, recognising the increasing importance of education and skills in today's knowledge-based and technologically advanced economy.

Additionally, the study revealed a widespread consensus on the need for more females in the sector due to the pivotal role they play as primary managers of water resources. This finding aligns with the research of Leahy et al. (2017), Mahon and Fernandes (2010), and Wasonga et al. (2016), which stresses the significant contributions of women in gathering, managing, maintaining communal water supplies, and ensuring the safe and equitable use of these resources. The study findings emphasise the imperative of increasing female representation in the sector to ensure gender equity (11.7 %) and women empowerment (14.3 %). These conclusions align with the research conducted by Indarti et al. (2019) and Leahy et al. (2017), indicating that WASH interventions play a significant role in promoting gender equality and women's empowerment.

The study also highlights the potential for attracting more women to the sector through education and awareness creation (28.8 %). This involves organisational changes that foster a culture of gender equality and inclusion, encouraging a diverse range of individuals to pursue careers in the WASH sector. Outreach programs, such as those in schools and career forums, can effectively convey information about

career prospects in technical WASH-related fields, particularly if they consider the accessibility of such programs to women in rural areas.

Furthermore, the study emphasises the role of good policies (16.0 %) and gender mainstreaming (2.8 %) in attracting women to the sector. Policies that address care responsibilities, support parental leave, and create inclusive and flexible working environments contribute to fostering a gender-sensitive work culture and dismantling societal norms that hinder women's participation.

Recognition and Reward (33.6 %) mechanisms were identified as effective strategies to attract women to the sector. Acknowledgement and appreciation for employees' contributions not only enhance their motivation but also cultivate a sense of belonging and commitment. This finding aligns with prior research by Yue et al. (2021), Nimo et al. (2013), Akafo and Boateng (2015), and Wiley (2014), which emphasises the strong connection between recognition, reward, and work motivation. Strategic recruitment (10.4 %) is another approach to encourage more female participation in the sector. By dismantling traditional recruitment mechanisms and implementing more inclusive processes, organisations can promote diversity and inclusivity in their workforce. This can be achieved through training, role modelling, and establishing an inclusive organisational culture.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The study's findings emphasise several key aspects of women's roles in the WASH sector in Accra and Kumasi, Ghana. These findings address the gender distribution across various management levels, the significant contributions women make to the sector, the incentives and disincentives they encounter, their retention and turnover intentions, and the strategies designed to attract and retain more women in the field.

- The study reveals a clear pattern of gender distribution in the WASH sector, where women primarily occupy middle and lower management roles, while men predominantly hold top management positions.
- Women in the WASH sector primarily focus on environmental health duties (73.6 %), while a smaller percentage holds technical positions (5.9 %). Sociocultural factors, including gender stereotypes, contribute to this underrepresentation.
- Maternity leave (75.6 %) stands out as a significant incentive for women in the WASH sector. In contrast, salaries and other financial incentives rank lower, indicating dissatisfaction with compensation.
- Disincentives such as workplace stigmatisation, long working hours, and stressful work conditions affect female employees' job satisfaction and performance.
- Despite facing disincentives, a substantial number of women (68.4 %) express their commitment to remain in the WASH sector. However, some women

consider leaving the sector due to factors such as pursuing further studies, poor conditions of service, inadequate salary, and stressful work.

6.2 Recommendations

- To address the gender disparities in management roles, the government should implement gender-sensitive policies and practices that promote women's advancement to top-level management positions.
- The government and private sector institutions should endeavour to improve salary structures, provide better working conditions, offer financial incentives, and streamline the process for study leave to motivate and retain female employees.
- The government should implement policies that will actively combat workplace stigmatization, ensure reasonable working hours, and recognise and reward exceptional performance.
- Training institutions should implement measures that will promote female participation in water and sanitation-related courses through the establishment of admission quotas for female students; and through financial aid for females in science-related courses both at the pre-tertiary and tertiary levels.
- Private sectors and Non-Governmental Organizations should promote awareness campaigns in schools and communities to promote careers in the WASH sector for women.
- The government of Ghana and private sector should implement policies that will encourage and support women's leadership roles within organisations.

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