

**Research article**

# **Political Ecology of Water Resource Governance in Ghana: Towards Sustainable Pathway for Decentralization and Participatory Water Supply in Rural Communities of the Savannah Region.**

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This rural-driven study utilized the liberal political framework to examine the political ecology of water resource governance as a sustainable pathway for decentralization and participatory water supply in rural communities of the Savannah Region. Methods utilized were quantitative, while the ontology and epistemology adopted the post-positivist approaches. Cross-sectional and probability approaches were used to draw a sample of 450 respondents. Self-designed questionnaires were administered while correlation and descriptive statistics were used for analysing the data. With 95% confidence interval and error margin ( $e$ ) = 0.05, the decision rule for hypotheses test was stated as 'accept null hypothesis ( $H_0$ ) if p-value is greater than ( $>$ ) the alpha level ( $\alpha$ )= 0.05 and do not accept the null hypothesis if the significant level (p-values) are less than or equal to ( $\leq$ ) the critical value (i.e. alpha level,  $\alpha = 0.05$ )'. Results showed rural water systems continue to experience incessant cycle of failure, necessitating rehabilitation with resources which should have been used to provide water systems to first time beneficiaries. Training and logistical support, appropriate technologies, human resources, policy enforcement and financial capacities for engendering participatory governance have either been erratic or completely unavailable. Meanwhile, time limitation, family/occupational commitments, finance, social inequalities, knowledge levels and walking distance to decision centres, significantly influenced household's participation in decision making on water in the communities. Since the "p-values" of the listed variables were generally less than ( $<$ ) the alpha level ( $\alpha = 0.05$ ), the null hypothesis ( $H_0$ ) was ruled out. Decentralized and participatory initiatives are required to transform the Community Water and Sanitation Agency into a professional, non-profit seeking and community-based public utility service-oriented organization. An effective approach for sustaining water delivery is by promoting participatory self-governance and co-management of water systems. This require a shift from the current ineffective Community Management Model (CMM) into a liberal political ecological governance model, with emphasis on synergizing international, national, local government, civil societies and community management efforts and exploration of their comparative advantages. This model should enable the decentralization of financial, human resources, administrative capacities and empowerment of the local communities to participate effectively in public water services delivery.

**Keywords:** Political Ecology, Water Resource Governance, Sustainability, Decentralization, Participation, Rural Communities, Savannah Region, Ghana

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## INTRODUCTION AND BACKGROUND

The pursuit for decentralized and participatory water and political ecological governance in Ghana is founded on the 1992 constitution which established the Metropolitan, Municipal and District Assemblies (MMDAs) and the Community Water and Sanitation Agency (CWSA), by Act 936 and Act 564 respectively, to implement policy measures for speeding up access and sustainability of rural communities to water services (Zanu 1996). The growing body of literature and development practitioners have increasingly paid attention and concern to rural development issues as evidence in human history reveals that population growth, development prospects and access to social amenities for the urban's world outnumbers rural communities. This sharp development divide makes urban world's to be generally perceived as sites for economic growth, prosperity and wellbeing while rural areas regarded as slums characterised by poverty and marginalisation. There has been considerable attention on rural communities towards addressing issues including inequitable provision of public services, social and environmental amenities, such as rural housing, cleaner water and sanitation (Oluwu and Wunsch 2004).

This is because rural communities face "double-edged constraints" since they appear simultaneously affected by ecological problems related to "development", industrial growth and increased consumption (e.g. pollution, greenhouse gas emission (Wanjiru 2014), resource over-exploitation, waste production) as well as activities associated with underdevelopment (e.g. water quality, social infrastructure, solid waste management and poor living conditions) (Neil 2018). Corresponding to these categories of rural ecological problems, "*green political ecological agendas*" (lay emphasize on long-term global environmental solutions) and "*blue water agendas*" (lay emphasizes on current and more localized water and sanitation solutions) have been emphasized (Barry 2009). In practice, these ecological agendas overlap and are interlinked. For instance, pollution affects water quality, sustainability of urban cities, global climate as well as current health conditions and wellbeing of households in rural communities (Munasinghe 1992). However, due to rural-urban population dynamics, there is persistent tendency to overlook the prevailing development and ecological concerns of rural communities, although water infrastructure and human wellbeing tend to be worse in such smaller bioregions.

Although rural communities are uniformly perceived as "productive hubs" which serve urban centres with standardized farm products and labour workforce, limited access to non-farm employment opportunities and social amenities (health, education and water) continue to marginalise their development prospects (Hope 2010). Moreover, it has been recognised that rural communities

face more tougher constraints in addressing both "green" and "blue" ecological constraints (i.e. double-edged constraints) than urban centres as they have fewer access to financial, human resources and lack political clout. Hence, in this study, rather than overemphasizing the contradictory narratives between these ecological agendas, a liberal political ecological (PE) governance is utilized to seek their reconciliation. A liberal PE agenda, with emphasize on participatory democracy (Barry 2009) and decentralization (Oates 1972) are adapted in order to contribute to nascent research on developing rural communities in third world countries, with explicit focus on their specific water and ecological governance arrangements (Ahwoi 2010). Arguably, liberal development agendas, reforms and policies could improve rural conditions through government budgetary allocations, trickle-down socio-economic growth (Bhatnagar and Williams 1992) or stimulate development prospects of bioregions through "*local growth engines*"; such as decentralized and democratically established metropolitan, municipal and district Assemblies (Ayee 2008). Moreover, political and economic decentralization, which is linked to liberal reforms, can in principle empower municipalities and local communities to effectively respond to the double-edge constraints of ecological governance more effectively and sustainably, taking into consideration the locality-specific water problems, socio-economic and political-historic contexts. In related cases, liberalist policies pursued through political decentralization opens new opportunities for democratic, participatory water and ecological governance as specified in the framework of the Local Agenda 21 (UN 1992). Drawing from Neil (2018), in this study, rural communities are perceived as places with their own socio-demographic issues (i.e. history, culture, norms traditions etc) with their own development potentials, specific ecological problems and politico-economic contexts.

Similarly, liberal political ecological governance is not seen as a homogenous, immutable development agenda, but as one with geographically-specific socio-demographic, economic and historical forms and trajectories (Nelson and Huntington 2014). Consequently, this interconnectivity enables effective interrogation and generalisations between governance and sustainable water allocation in rural community contexts. In the specific case of water management, purely technical approaches seem insufficient to adequately respond to the demands of a constantly growing rural population and mounting water consumption pressure (Bertrand-Krajewski, Barraud and Chocat 2000). In contemporary times, the concepts of water and ecological governance draws attention to the values, norms, and principles that underpin decision making and the central role of institutions, individuals and their personal attitudes and behaviours towards water resources (Dobson 2007).

Moreover, building on democratic model and embracing political pluralism (Lele 2010), contemporary systems of water governance emphasize the multiscale socio-political and economic perspectives as the basis of the interaction between different types of actors interested in solving ecological problems (Hoppe 2010). According to the UNDP (2007), the concept of governance relates to the exercise of economic, political and administrative authority to manage a country's affairs at all levels. It comprises the mechanisms, processes and institutions through which citizens and groups articulate their interests, exercise their legal rights, meet their obligations and mediate their differences. In this context, water and ecological governance is perceived as the range of political, social, economic, administrative and policy systems that are in place to develop and manage water resources and the delivery of water services, at different levels of society (GWP 2002). The distribution and quality challenges with rural water are phenomenally a reflection of underdevelopment and governance failures (Global Water Partnership-GWP 2004). This is because impoverished countries often suffer from the problem of rain dependency for agriculture, rapid growth in population and hence water demand, small endowments of water infrastructure, fragile institutions and face more uncertainties arising from climate variabilities. Scholars observe that several water crises around the world appear more related to governance and institutional failures and non-engagement of beneficiary communities than to physical resource scarcity (Iribarnegaray and Seghezze 2012). For Watts (2000), PE of water relates to the understanding of "the complex relations between nature, power, economics and society through a careful analysis of what one might call the forms of access and control over resources and their implications for environmental health and sustainable livelihoods" (Watts 2000: 257).

As a unitary and democratic state, Ghana was previously under the British Colonial rule until it became the first sub-Saharan African country to obtain its political and economic independence on 6<sup>th</sup> March 1957. With the adoption of the 1992 republican constitution, the country was ushered into a democratic regime where decentralization and popular participation were adopted as the ultimate pathways to sustainable socio-economic development (GoG 1992). The territorial waters are legally vested in the President of Ghana. However, to improve the management and governance of the water sector, institutions such as the Ghana Water Company (GWC) was established and charged with water provision for urban communities, while the CWSA, focusses on public water delivery in rural settlements. However, for the past decades, the country has struggled to redress the historical underdevelopment and imbalance of access to potable water resources particularly within the Savannah ecological area of Savannah region, which

was historically reserved as British protectorate for cheap sources of manpower to the industrial and mining sectors of the Southern Ghana (Roger 1975; Brukum 1998).

The remainder of this study is organized as follows: Section two presents the problem statement and justification, section three covers the objective and hypotheses, while section four presents the theoretical framing and discusses the empirical literature from the context of political ecology. Section five describes the study area and methodology adopted while section six and its sub-sections presents and discusses the findings. In section eight and nine, the study presents the conclusions drawn and carves out knowledge contributions while section ten offers recommendations and policy implications. Finally, section eleven covers suggested areas for further studies.

## PROBLEM STATEMENT AND JUSTIFICATION

The rural dwellers in peripheral communities of Ghana have access to diversified water sources including pipe-borne water, public taps, boreholes, water vendors, dugout-wells, water from streams and rainwater (GSS 2012). Yet, the paradox is that due to limited spaces for public participation, rural water scarcity and socio-economic services delivery constraints continue to prevail. Water in the rural areas are classified as 'improved' or 'unimproved' (GICG 2018). The sources considered as improved are pipe-borne public water into homes, public standpipes, boreholes, protected (lined) dugout-wells, protected springs, and rainwater collection, while unimproved sources are unprotected wells, rivers and springs, private vendors and water from tanker-trucks (Stoler, Weeks and Appiah 2013; CWSA 2013). In the water and sanitation sub-sector, the pursuit for addressing inequitable rural-urban resource allocation was shown by the establishment of the CWSA and MMDAs to ensure potable water supply and sanitation service delivery are accessible, affordable and equitably distributed to marginalized and impoverished rural communities (CWSA 2014).

This was to further decentralize water provision and bridge development gaps between rural and urban water supply with the ultimate aim of socio-economic empowerment of peripheral communities. Nonetheless, since post-independence, rural communities continue to experience deterioration in socio-economic and resource allocation. In this regard, the rural water, environment and sanitation sub-sector of the Savannah ecological area has not been spared. The key management model utilized by the CWSA is the Community Management Model (CMM) concept, involving the training and engagement of unprofessional community members, to operate and manage their water supply systems (CWSA 2015). Since the inception of CMM in 1994, modest gains

have been made in the provision of water, sanitation and hygiene services to rural communities (Ghana Statistical Service-GSS 2012). The reasons for this include unemployment, inability to pay for water tariffs, participatory constraints, inability to afford the upfront connection fees and lack of land title ownership among rural residents (MWRW 2012).

At the regional levels, evidence suggests that large proportion of rural water systems are in a state of disrepair or malfunctioning because limited funds and technical support were devoted to addressing operation and maintenance post-construction (CWSA, 2003). Moreover, Adank et al. (2014) discovered that around two-thirds of installed water facilities in rural areas are either completely or partially broken down. Due to the high costs of operation and maintenance, the management and expansion of water supply projects become a challenge to many rural communities. The World Bank (2008) observes that the support for water facilities is generally provided within a project scheduled framework, but post-construction support is often either non-existent or truncated with the completion of the implementation phase. Hence, Manu (2015) reiterates that these questions the long-term operational efficiency of such water facilities. The sustainability of investments made in water supply infrastructure in rural communities by government and its development partners are threatened by weak decentralization and participatory challenges (Ayee 2008), necessitating research and policy reforms for improved and sustainable political ecological governance of water resources. Although a balanced rural ecology is undoubtedly, an essential pillar for stability of rural economies, if these constraints remain unaddressed, hunger and poverty could become eminent as agriculture, fishing, trading and artisanship which constitute the mainstay and livelihoods of the rural economies in Savannah Region, tend to suffer with reduction in water supply arising from ineffective governance and management.

## OBJECTIVES AND HYPOTHESES

This study explored the political ecology of water resource governance through the lenses of decentralization and participatory water governance as sustainable pathways for water supply and economic wellbeing of historically deprived households. The study draws empirical evidence from Ghana, as a democratic and lower-middle income country, to unmasked the politics, power and economic struggles surrounding water, environment, local governance and sustainability, with particular reference to rural settlements in the Bole, Gonja West and Gonja Central Districts of the Savannah Region. To achieve these objectives, the study hypothesized that “there is no statistically significant association between time limitation, financial burden,

family and occupational commitments, social inequalities, HHs knowledge capacity, geographical proximity from decision-making cores and the engagement of rural households in decentralized and participatory decision making processes surrounding the allocation of drinking water in their communities”. The alternative hypothesis ( $H_1$ ) assumed that “there is a statistically significant association between time limitation, financial burden, family and occupational commitments, social inequalities, HHs knowledge capacity, geographical proximity from decision-making cores and the engagement of rural households in decentralized and participatory decision making processes surrounding the allocation of drinking water in their communities”.

## CONCEPTUAL AND THEORETICAL FRAMING

The ability of societies and rural communities in developing countries to develop responses to water crisis and adapt appropriate ecological measures to avoid the exacerbation and emergence of new crises is complicated by contradictory agendas and actions (local and international) which value water as a public good and human right (Liberalism) (Gleick 2010; Guerrinin 2011), and neoliberalists who value water as an essential and profitable commodity and, therefore, lay emphasize on free market oriented solutions to water constraints and ecological governance (Johnston 2003). These narratives of political ecology (PE) are dissimilar depending on how scholars have utilized the traditional notions of PE in describing and interpreting human-ecological relations, and how they privilege and proffer particular narratives over others. A striking feature of water and ecological governance is the assumption that liberal political agendas such as decentralization and democratisation (Oates 1972; Neil 2018), should enable public engagement in the delivery of essential social amenities, particularly water, as suggested by agenda 2030 (UN 2015). However, the unanswered question is: Is this what is happening in the rural and community water sectors of developing countries, particularly Ghana? The PE agendas which originated from liberalists i.e. participatory democrats, seem to be in agreement with the notion and vision of a “good ecological society” based on the specific attributes of a liberal political ecology, that it is either typically democratic, participatory (Arnstein 1969), centralized (power-laden) (Ophuls 1977; Saward 1996) or decentralized rather than being purely “economic and market-oriented” (Biersack 2006: 5).

Taking opportunity of the theoretic consensus on attributes of a liberal PE society, this study was theoretically framed on two liberal PE governance agendas, namely participatory democracy and decentralization/ centralization approaches to water governance in order to deal with discovering the politico-ecological manifestations of communities and whether

the driving idea behind rural water governance (social, economic and political imperatives for water), requires that human societies and communities be built on the core politico-ecological principles i.e. democracy, participation, decentralization and centralization arrangements (Oates 1972) which characterise the water and sanitation sector. In this way of thinking, this study seeks to expand the liberal political ideology on the environment by offering rural level empirical narratives, predicting and testing the manifest synergy between politics (decision making), humanity, water, society and environment linkages.

The analysis unfolds within the micro or rural context with envisioned outcome for integrated political ecological governance and rural water sustainability. This is desirable because contemporary liberal eco-governance agendas advocate for inclusion and participation of a multiplicity of state and non-state (exogenous and indigenous) actors including, donor agencies; households, communities; business investors; NGOs; research institutes; think-tanks etc. in water governance, thus, making human-water-ecological relations more multifaceted and dynamic. I argue that the participation of rural people in public water delivery is preconditioned on democratic processes which engender good governance, accountability, transparency and efficiency in public service delivery. In this way of thinking, this current study conceptualises or envisions participation as a democratic stereotype of water governance which extends beyond mere political organisations, popular representation and institutional establishment (Ahwoi 2010) into the social, economic and political arenas (Alberti et al. 2003), where the basic form of decision making is based on collective public opinion, inclusive organisation, consensus building and the common good of the citizens (Arstein 1969).

### **Empirical Literature: Political Ecology Context**

The participation of rural people in public water delivery is preconditioned on democratic processes which ensure good governance, accountability, transparency and efficiency in public service delivery (Oluwu and Wunsch 2004; GoG 1992). In elaborating the PE on water, participatory democrats integrate the relationship between water and human-society relations (Meadowcroft et al. 2005). Hence, application of democrats notion of PE in this study was imperative for understanding how the involvement of rural peoples in the participation process of water governance affect the distribution of drinking water and maintenance of rural ecological systems. Drawing from the democrat's perspective, the idea of PE and democratising the water sector is to create an ecologically conscious community inhabited by ecologically friendly, free, fair and more water and ecologically responsible citizenry. Arguably, PE is typically premised on participatory democracy,

which envisions an ecologically friendly community modelled on grassroots participatory democracy. Moreover, democrats perceive that politically and ecologically responsible communities are founded on social justice principle, which require intergenerational justice towards unborn future generations (UN 2015: UN 1992).

Therefore, the need to protect biodiversity and water sustainability leads participatory democrats to "favour diversity in human relations, specifically opposing all forms of exploitation and discrimination based on neoliberal agendas such as socio-economic orientations including deregulation, privatisation and exclusion in terms of race, gender, income, sexual orientation or age" (Neil 2018:51). This means that, participatory democrats find authoritarian and market-oriented solutions to water allocations unacceptable as they disregard democratic, social justice and welfarism principles (Barry 2009). The argument for participatory democracy begins with a critique of neoliberalism. Arguably, participatory democrats contend that neoliberalist strategies are unable to produce the best water governance decisions because it is neoliberalism is "characterised by hierarchy, bureaucracy, individualism and material inequalities.

They offer limited opportunities for the poor to participate in the public sphere. Consequently, neoliberalism is accused for nurturing an atomised individualistic focus on the private sphere which makes it a poor breeding ground for ecological consciousness and responsible citizenship needed to bring about a sustainable society" (Neil 2018:51-67). Another critique for rejecting the neoliberalism agenda to PE is that the socio-economic and political systems in rural settings which restrict public participation, control resources and influence decision making apparatus in such a way that households and basic users of water resource have little or no voice in matters of water and ecological policies which impact on their livelihoods (Ayee 2008; Cook and Bakker 2012). This argument strongly aligns with this study's problem statement which queries how the politico-ecological experiences and participation of rural people in water delivery affects the distribution and sustainability of quality drinking water in rural settings. In effect, the liberalist agenda in PE is to replace neoliberalism with participatory democratic model, characterised by discursive, deliberative, decentralized practices, and presumes that active participation of rural people in the provision of social amenities is the ultimate panacea for sustainable water governance (Barber 1984; Hope 2010).

This argument wads into a wider political tradition of democratic theory founded on social systems where participatory democracy means decision making are decentralized, citizens are consulted, and local people are freely, actively involved and fully engaged in ecological decisions which affect their livelihoods

(Pateman 1970). Typically, participatory democrats invoke the governance model of the ancient Greek city-state which assumed that a “face-to-face popular/widespread dialogue would invariably, produce communities that are more in-tune with their socio-economic surroundings and therefore, considerate towards their natural environment” (Tokar 1992: 104). In principle, democrats perceive “participatory democracy should produce more responsive government, ecologically aware, educated and eco-friendly citizens.

Moreover, participatory democracy would nurture a “democratic personality, responsible citizenship” and impact values needed to alter attitudes and shape human-environment relationships (Gould 1988). Meanwhile, “institutions would be more responsive and accountable because power would be dispersed/shifted away from the hands of the few: from central government to local communities, from managers to workers, from the central party bureaucracy to the local branch and from elite-few to majority of community members” (Goodin 2014: 127–8). Furthermore, as Neil (2018) have argued, a participatory society which draw on wider experiences, interest, skills, opinions and knowledge of local people (beyond the dominance of politicians and professional elites), ultimately, improves in ecological conservation.

Since a better information diffusion is an irrefutable precondition for effective participatory democracy, it will serve as ammunition and catalyst for powerless communities to conserve their ecosystems and a potential conduit for education and disseminations on ecological issues. By compelling the “institutions of civil society to respond to popular water demands, participatory democracy is more likely to produce, if not morally perfect outcomes, then at least morally better ones” (ibid.: 128). Nonetheless, eco-realists and authoritarians have questioned the democrats approach to PE because democratic decision making does not ultimately generate eco-friendly outcomes and equitable water allocation. This is because governments are often reluctant to implement unpopular and radical environmental policies for fear of discontent among local electorates which could jeopardise their electoral fortunes. Furthermore, infallible ecological policy decisions do not simply happen, so the socio-economic means (capacities, power, legitimacy) and procedures (structures, rules and regulations) for reaching decisions are fundamental for achieving a sustainable society (Waithaka 2013). The arguments which defend the use of non-democratic and authoritarian approaches often erroneously “entail implicit technocratic assumptions that a governing elite of politicians, scientist and professionals knows best” (Ophuls 1977: 159). This implies that certain water decisions, policies and legislations “should be made by those people possessing power and this ‘superior knowledge’ and not left to the whims and frivolities of democratic procedures” (Saward 1996: 80).

This viewpoint effectually empowers and legitimizes a privileged elite minority while at the same time, it projects scientific knowledge over local people’s knowledge and perceptions on ecological issues. This study argues that though technical knowledge and scientific technology are, of course, essential in community water dialogue and decision making, it constitutes only a one-sided narrowed-view to water governance and sustainability of communities. Therefore, in line with Barry (2009), this study includes “alternative perspectives and considerations for (non-technical, economic, local, ethical, social, cultural, traditional and political context) in the decision-making process to ensure a more informed and inclusive decisions that can attract widespread community support” (Barry 2009: 199-201).

This is because a self-governing and democratic mechanisms including “openness and transparency, power balance, participation and effective communication, policy coherence, gender equity, accountability, effectiveness and efficiency, responsiveness and sustainability” (Roger and Hall 2003:56) are fundamental for good water and ecological governance. Moreover, from the pluralist and political economy perspective, in a stable socio-economic and politico-ecological society, power is diffused and decentralized among societal actors (Lele 2010; Mabogunje 2015). Meanwhile, the scope of powerholders, hierarch/structures and dominant actors are controlled by legislations, ensuring equality, fairness and participation of powerless actors in resource allocation. The division of scopes between the parties is often the result of a local consultation and mediation processes which may or may not have followed open struggle for power over decision making (Wrong 2017). The scope and manifestations of power (inter-cursive or integral) determines the type of water governance arrangements in any society. The exercise of inter-cursive power occurs in communities characterized by balance of power, role division between actors, consensus building and joint decision making on matters which affect their common interest and collective goals. For Wrong (2017), this type of power is exercised in pluralist and democratic systems where there is collective bargaining, participation, consensus building and partnerships. This is contrasted with integral power, where water decision making, and initiatives are either centralized or monopolised by few actors. This raises the question of who “rule-the-ruler” and or who “guards-the-guardian”, since the power to decide is unlimited, indissoluble, uncontrolled and is based on own discretion and cannot be eliminated by local people (Neuman 1957). The next section now presents the study area and methodology which guided the data collection.

## STUDY AREA AND METHODOLOGY

The study was conducted in three preselected districts of Bole, Gonja Central and Gonja West, located at the Bole, Central Gonja and West Gonja Districts in the Savannah Region of Ghana (see Figure 1). The study districts had a total rural household population of 19,646, composed of Bole (7,765), Gonja Central (8,905) and Gonja West (2,976) (GSS 2014a; GSS 2014b; GSS 2014c). The northern ecological area of Ghana, composed of Northern, Upper West, Upper East, Savannah and North-East regions, covers a total land area of 70,383 km<sup>2</sup>, making northern Ghana the largest in terms of landmarks in Ghana (GSS 2012; CWSA 2015). As a result, the North-East and Savannah Regions were carved out of the Northern Region in 2019. The map of the districts where the study was conducted is presented in Figure 1. The quantitative research approach founded on the post-positivist paradigm and cross-sectional design (Babbie 2012) were appropriate for exploring the participants emic views and to understand how they structure and give meaning to their experiences on participation in water supply and ecological governance activities of the districts.

Probability sampling approaches (Babbie 2016), that is proportionate, systematic and simple random techniques (Bernard 2011) were used to sample 450 adults (aged 18-50+), composed of 392 rural householdheads and 58 officials in order to address the link between decentralization (political, fiscal, administrative), participation and sustainability of water at the rural household level. The sample selection was based on a statistical model;  $\{n=N/[1+N(\alpha)^2]\}$ , established by Miller and Brewer (2003) where,  $n$  = sample size,  $N$  = sampling frame (19,646),  $\alpha$  = error

margin, set at (0.05) and 1 = constant value, hence  $n = 19,646/[1+19,646(0.05)^2]$ ,  $n = 392$  households. Similarly, determination of the 58 sample size for the institutional officials was based on the same sampling model. The selection of elements at household and institutional levels was proportionally determined based on population strata of each target group. Moreover, a simple proportional formula  $\{P \times n/N\}$ , where  $P$  = rural household population per each stratum or community,  $n$  = total sample size and  $N$  = total rural household population, was used to select the respondents per the population strata. Using the above formula, the proportionate sample for Bole was determined as  $\{7,765 \times 392/19,646 = 155$  respondents), Gonja Central  $\{8,905 \times 392/19,646 = 178$  respondents), and Gonja West  $\{2,976 \times 392/19,646 = 59$  respondents}, a summation of which was 392. Utilizing the same formula, the 58 institutional respondents were drawn as follows {CWSA = 17, Council for Scientific & Industrial Research-CSIR = 4, District Assemblies = 9, local authorities (chiefs) including NGOs = 13, leaders of community representatives = 13, government agencies-MWRWH = 2}. Having established homogeneity and obtained the total sample size for each of the population sub-groups, the systematic technique was utilized to select the householdheads. The systematic selection from the household population was based on a random starting point but with a fixed, periodic interval. This interval, called the sampling interval, was calculated by dividing the population size by the desired sample size. Meanwhile, the simple random sampling technique (Babbie 2016) i.e. the lottery method was utilized for selecting the units of analysis from the various sub-groups/ strata of the institutional staff. These techniques allowed respondents in each sub-group to have equal and fair chances of being selected for the study (Neuman 2010).



**Figure 1:** Location of the districts where the survey was conducted  
Source: Kojo (2019)

Drawing from Chilisa (2011), a self-designed questionnaire was administered to the officials while semi-structured interviews provided opportunity to listen to the views and experiences of the householdheads for an extended period of time and to ask probing questions to explore ideas further. The data collection instruments were validated and pre-tested for reliability in a neighbouring Savelugu community. Descriptive statistics and correlation test (Pallant 2003) were utilized to analyse the data and test the hypotheses. With 95% confidence interval and error margin ( $e$ ) = 0.05, the decision rule for hypothesis test was; accept null hypothesis ( $H_0$ ) if p-value is greater than ( $>$ ) the alpha level ( $\alpha$ )= 0.05 and do not accept the null hypothesis if the significant level (p-values) are less than or equal to ( $\leq$ ) the critical value (i.e. alpha level,  $\alpha$  = 0.005). Like any other academic research, this study was approved, and ethical clearance was obtained from the University of Johannesburg, CWSA, MMDAs and institutions with oversight responsibilities at the three localities (Bole, Gonja West and Gonja Central) where the fieldwork was conducted. As admonished by Neuman (2010), ethical considerations prevailed at every stage of the study while voluntary participation, security of data and respondent's confidentiality were scrupulously maintained. The results of the study are presented in tables and charts to enable a pictorial illustration and a basis for discussion of the findings.

## FINDINGS AND DISCUSSION

### *Drinking water and sanitation access*

The literature and theoretical framing of this study demonstrate that the intensions for democratisation and decentralization are to develop localities and improve access to essential social amenities including water and sanitation. These services can be improved with measures for better water and ecological governance. It appears that rural water and sanitation delivery are inherently interrelated in the communities. This is because the benefits rural populations derive from having access to improved drinking water sources can only be fully realised when there is improved access to sanitation, through the formulation of inclusive policies and adherence to good environmental hygiene practices. Moreover, a healthier and well-hydrated population has profound wider socio-economic impacts and sustainability of rural livelihoods. Nevertheless, from Table 1, the results of this study revealed majority of the respondents (64%) indicated water and sanitation access in the communities were totally unacceptable, about (11%) acceptable, 10% indicated slightly acceptable while only 9% indicated water and sanitation access were perfectly acceptable in the communities. The findings agree with Gleick (2010), who found that access to water and sanitation are basic human rights that demand the participation of stakeholders in decision-making at all levels, regardless of gender, social status nor geographic location.

**Table 1:** Water and sanitation access in the study communities

Water and sanitation access (rating)	Frequency	Percent (%)
Perfectly acceptable	39	8.7
Acceptable	48	10.7
Slightly acceptable	45	10.0
Neutral	16	3.6
Slightly unacceptable	12	2.7
Unacceptable	4	0.9
Totally unacceptable	286	63.6
Total	450	100.0

Source: Fieldwork (2019).

In addition, the findings of this study showed that equitable access to water and improved hygiene could potentially transform rural-poor communities and previously disadvantaged households within the Savannah area from peasantry and periphery of the economy into the mainstream economy. Therefore, in line with the liberalist PE agenda (Neil 2018), since water and sanitation are essential catalysts for growth and inexorably affects the development of rural economies,

and since the majority of the respondents perceived water and sanitation access as totally unacceptable in the communities, it is reasonable for this study to infer that the failure to equitably allocate water and improve sanitation conditions in these deprived rural households undermined the 'principle of equity' and the fundamental human rights of these rural dwellers due to their geographic locations. The inadequate access to drinking water and lack of environmental hygiene could, in effect,

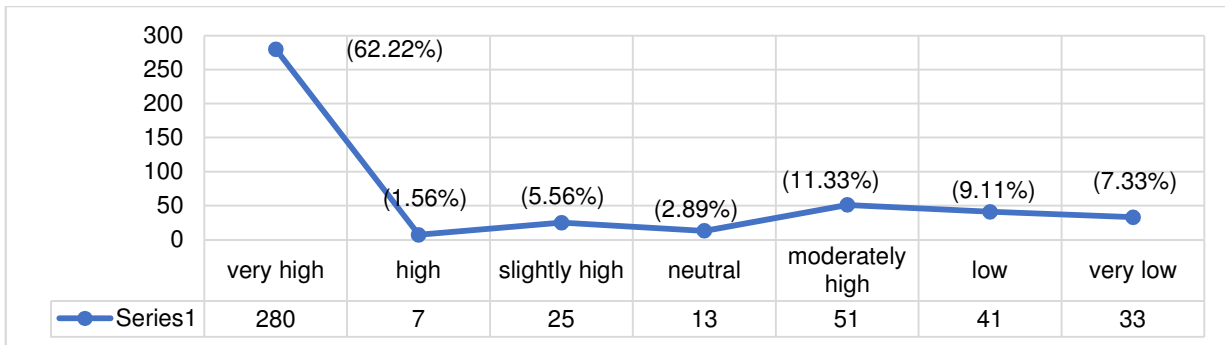


exacerbate rural poverty in the area, serve as a recipe for conflict over scarce water and, consequently, affect rural livelihoods and sustainable socio-economic development among rural communities located within the Savannah ecological areas. Similar studies have shown that access to water have positive impact on reducing poverty (Oluwu and Wunsch 2004), empowering localities (UN 1992), attainment of human rights (Gleick 1998; Gleick 2010) and improving the sustainability of water (Roger and Hall 2003). Similarly, Ayee (2008) found that decentralized approach to social amenities including water was intrinsically linked to poverty reduction, wealth creation and socio-economic livelihoods of rural dwellers. Similarly, from the “green ecological agenda” (Barry 2009), the majority of rural dwellers are poor smallholder peasant farmers, for whom a common constraint and a crucial factor in determining rural poverty is the insufficient availability of and unreliable access to water, not only for food production, but also for socio-economic livelihoods and environmental sustainability. The findings of this study further give credence to SDG6 of the United Nations (2015) which lay emphasize on universal and equitable access to water, sanitation and hygiene, improvement of water quality and empowerment of local communities to enable them to participate in water supply and sanitation governance locally. Inferably, the lack of access to the communities further indicates the lack of good water governance structures among deprived

residents within the Savannah ecological area of Ghana. In effect, the findings affirmed GWP (2004) which indicates that governing and securing access to water and sanitation for all is not only a question of money, technology, and human resources but equally a matter of good water governance.

**Cost and affordability of drinking water and sanitation tariffs**

In terms of cost or affordability of water and sanitation tariffs, the study found that majority of the respondents (62%) confirmed that water tariffs in the communities were very high, 11% indicated cost of tariffs were moderately high, 9% perceived tariffs to be low, 6% indicated tariffs were slightly high with only 7% respondents indicating that the cost of water tariffs were very low (see Figure 2). The average per litre cost for water from mechanised boreholes ranged between GHC 0.20 - GHC 0.50, while garbage collection ranged between GHC 1.00 - GHC 1.50, which were considered by consumers to be rather high, relative to the endemic poverty and social conditions prevalent in the settlements. Similarly, earlier studies by the GSS (2012), CWSA (2015) and the GICG (2018) found that the ‘pay-as-you-use’ schemes were predominantly employed for improved water from dug-out-wells and mechanised boreholes in rural communities.



**Figure 2.** Cost and affordability of drinking water  
Source: Fieldwork (2019), n = 450

Even though rural water supply from public taps was not commercialised, however, the district assemblies had instituted bye-laws for a token (money) to be collected from consumers in respect of periodic maintenance and rehabilitation of water facilities in the communities. Inferably, households with large family sizes and high-water consumption demands are likely to pay more for water and sanitation services in the communities. The findings (see Figure 2) imply that the majority of the residents could possibly not have access to potable water and sanitation services due to the high cost of water and sanitation tariffs set by the Assemblies. In effect, since

water is a basic need and central for human survival, households which would not be able to afford the cost of improved water sources are likely to rely on contaminated surface water for drinking, thus, exposing themselves to the risk of ill-health from water-borne diseases and related infections.

This affirms GSS (2012), which argues that the cost of water and sanitation has implications on the source of households drinking water supply and inversely, on the burden of diseases, particularly diarrhoea infections in rural settlements. Moreover, setting water and sanitation tariffs without considerations for rural employment and

income disparities of water consumers would inevitably result in the unwillingness or failure of consumers to pay for such tariffs. The findings of this study suggest that making a commitment to pay for water and sanitation tariffs would only happen if ordinary people are consulted, actively participate in tariffs setting and have adequate access to relevant information on household sanitation and environmental hygiene. Similarly, MWRW (2012) found that relatively impoverished localities and rural communities in Ghana largely remain without improved water services. The reasons for this include unemployment, inability to pay for water tariffs, inability to afford the upfront connection fees and lack of land title ownership among rural residents (MWRW 2012). Nonetheless, the findings disagree with neoliberalist emphasize on market-solutions to rural water and sanitation delivery as it could increase the cost of social services beyond the capacity of impoverished populations (Johnston 2003).

#### ***State-of-the-art facilities and decentralized rural water distribution***

This study discovered that while the distribution of drinking water to residents could be a respite, the capacity and reliability of the water schemes to reticulate quality water in the study communities from their primary water sources, including drilled boreholes, mechanised dug-out-wells, pipe-borne schemes etc mostly depended on the existing condition of water amenities in the area. This is because access to quality water can easily be compromised without investment in state-of-the-art facilities. From Table 2, most of the respondents (66%)

perceived that the condition of water facilities in their communities were totally unacceptable. Due to protracted usage and the culture of neglect by service providers, they perceived their water facilities were either outdated or in a state of disrepair and thus, were no longer providing quality water to the communities. Approximately, 10% of the respondents indicated water facilities in the communities were slightly acceptable, 9% perceived amenities to be acceptable while only 3.1% affirmed water amenities were in perfect condition and, thus, were effectively reticulating water supply within the communities. The results presuppose there were no sustainable measures/strategies for such facilities post-construction. This view was validated by staff from the district assemblies and the CWSA who indicated that the cost of maintenance, water quality testing and provision of new water facilities were beyond impoverished communities. As a result, to safeguard public health and safety, dilapidated water amenities in the communities were clamped-down. From the findings (see Table 2), the study inferred that while the cost for improved water could become an obstacle for accessing potable water in rural settlements, at the same time, low water and sanitation tariffs may not necessarily be the appropriate responses to affordability, access, and rural water quality issues. This is because under-financed rural water utilities could become a recipe for low quality service, use of inappropriate water technology access and lack of funding to maintain outmoded facilities. This could directly hamper the capacity of the local assemblies and the CWSA to ensure universal access to water, hence, ultimately harming lower-income households and marginalized rural communities.

**Table 2:** Condition of water distribution facilities in the communities

Condition of water facilities	Frequency	Percent (%)
Perfectly acceptable	14	3.1
Acceptable	40	8.9
Slightly acceptable	44	9.8
Neutral	22	4.9
Slightly unacceptable	23	5.1
Unacceptable	12	2.7
Totally unacceptable	295	65.6
Total	450	100.0

Source: Fieldwork (2019).

The findings as illustrated by Table 2 corroborate MWRWH (2012) and the United Nations (2015), which found that while population soars, access to water and sanitation presents a different narrative and this is more pronounced in rural communities of Ghana, where the lack of maintenance of water facilities poses great

challenge to water sustainability, threats to rural livelihoods and socio-economic development. Similarly, the World Bank's (2008) found that water facilities in Ghana are generally provided within a project scheduled framework, but post-construction support is often either non-existent or truncated with the completion of the

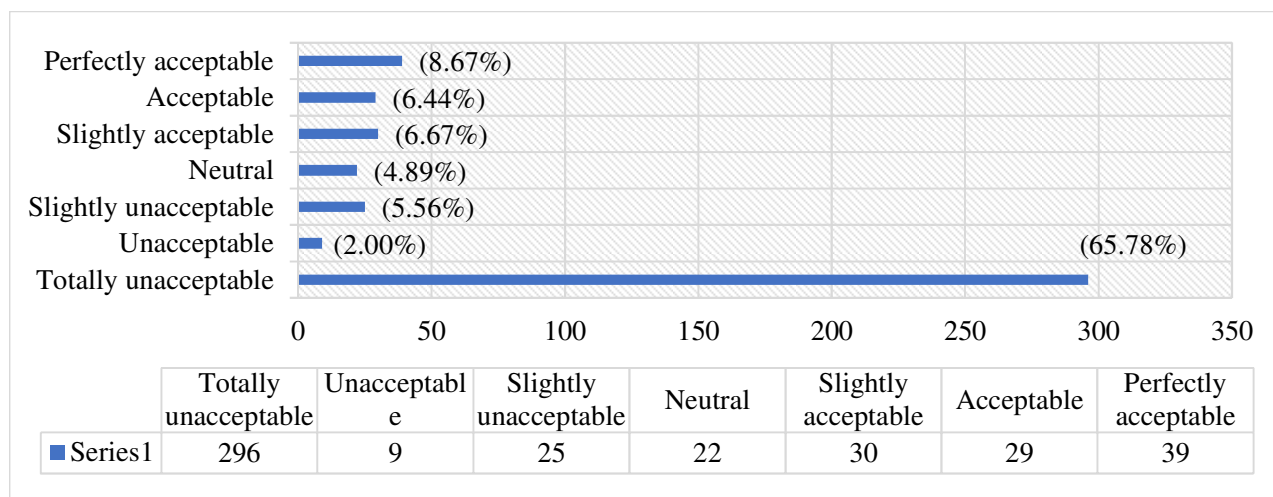
implementation phase. From the theoretical framework of this study, the findings have departed from the state-centric approach to water allocation, while at the same time, highlighted and conveyed to the forefront the decentralization theory (Oates 1972). This is because as local agents, Municipalities and water actors being closer to local communities, are regarded as having better knowledge of local preferences, either in the sense of having access to information denied to state/central governments, or in the sense of observing needs and preferences, and being better able to sustainably meet such needs at relatively lowest possible cost (Ahwoi 2010).

Therefore, drawing from the ecological democrats debates, the findings showed that in order to address local constraints to water and ecological governance, it would necessarily require the transfer of adequate funding, managerial capacities, authority and power to ensure that local actors (less powerful agents) are adequately resourced to discharge services at the micro level of governance (Zanu 1996). The decentralization of water should afford localities greater control over programmes and opportunities to plug and mobilize resources locally for effective water resource development (Hope 2010). In line with this thinking, democrats and liberal ecologist (Barry 2009; Neil 2018) maintains that a top-down decentralized water delivery approach would address existing constraints of exclusivity, non-participation of local communities and principal-agents role conflict in water resource governance (Oates 1972). However, the findings of this study appeared to have broadened this view as it became apparent that without local capacity considerations and adequately resourcing the rural water sector, decentralization into dysfunctional or ineffective rural bureaucratic structures could further deepen development gaps and water delivery inefficiencies in the rural water sector. Therefore, since water issues and ecological complexities differ between communities, decentralization of water should be context specific, with commitment towards addressing the most intractable

social, economic, political and ecological conditions under which rural people live and water is delivered.

### ***Decentralization, environmental and socio-economic context of rural water delivery***

The decentralization approach is perceived as governance pathway which recognises the importance of sustainable water resources governance and efficient water utilization for sustainable development of the rural communities. In part, this aims at promoting rapid economic growth, reducing rural poverty and promoting healthy living. This study discovered that it was the poor who suffered most from either the lack of or inefficiency in water service delivery and environmental degradation arising from pollution and mismanagement of rural water. It is worthy to note that though water appears to be an abundant resource in Ghana, yet the rural parts of the Savannah Region are facing a number of grave constraints related to water access and resource governance. In this study, the findings showed that some of these challenges arises from various environmental factors and inactions of actors, both within and outside the rural water sector. In terms of water pollution control in the communities, this study found (see Figure 3) that the quality of pipe-borne and surface water sources such as streams, lakes, dug-out-wells, dams and rivers are mostly an essential indicator and good reflection of the behaviour and way of life within a community through which such water sources exist and flow. Moreover, rural environmental conditions are critical indicators of the socio-economic conditions, ecological awareness and attitude of users of water in such communities. This is because, the activities surrounding water catchment areas are often reflective of the quality and sustainability of the water that flows through such communities, since the results of human activities and lifestyles of settlement communities, ultimately end up in water sources through runoffs. In Figure 3, most of the surveyed respondents (66%) agreed that drinking water within the communities were polluted and the practice of water pollution was totally unacceptable as it posed public health risk to households in the communities.



**Figure 3:** Rate of drinking water contamination and environmental pollution  
 Source: Fieldwork (2019), n = 450

The quality of water for most systems were not monitored, on a wrong assumption that groundwater, which is the most commonly used water source in rural Savannah, has a constant quality. Hence, high levels of iron, manganese, fluoride, arsenic, hardness, and salinity were perceived to be common. Moreover, there appeared to be water management knowledge gap at the rural and community levels. Hence, 6% of the respondents perceived water pollution levels were slightly unacceptable, while some 7% and 9% of the surveyed respondents perceived the pollution of water in the communities to be slightly acceptable and perfectly acceptable respectively. Approximately, 6% of the respondents perceived pollution levels to be acceptable, 5% were nonaligned while 2% indicated the level of pollution of water sources in the communities had reached alarming and unacceptable proportions. The ratings of water pollution across gender were similar for both males and females (50% males; 50% females), while across age groupings, the activities of the youthful populations, aged between 29-39 years, were more likely (51%) to pollute drinking water sources while most populations of 50 years and above were less likely (49%) to pollute drinking water sources. Hence, ensuring gender parity and representation on issues of water and sanitation in the communities should be critically considered for quality rural water supply. In terms of education and water pollution, respondents with tertiary education (80%) were less likely to pollute water in the communities while households with low education (basic or non-formal education), were more likely (70%) to pollute the quality of drinking water sources in the communities. Therefore, civil society activities meant to promote household hygiene and environmental pollution must critically consider the prime, economically active, most youthful populations and residents with less/non-formal education. With respect to community location and

water pollution, the findings showed that drinking water sources in Gonja Central (50%) and Bole (40%) were more polluted than Gonja West (10%). The variations could be attributed to different socio-economic conditions, governance practices surrounding water, environmental pollution and variabilities of drinking water sources across the communities. The respondents who bemoaned the undesirable levels of water pollution in the communities had observed the continuous change in taste, colour and smell of the water they consumed from their main point sources. This assertion was confirmed by staff of the CWSA, Assemblies the local chiefs and the CSIR, who observed that the pollution of drinking water in the communities occurs within the major stages of water production and distribution channels in the communities, namely, water siting, reticulation, storage/community water reservoir, water haulage and households' hygiene practices. Furthermore, as depicted by Figure 3, the results of this study revealed that the quality of human life in rural communities in the Savannah areas, mostly depend on water and the quality of drinking water sources of the communities are dependent on human interaction with water sources and surrounding catchment areas. Furthermore, the rural economy appeared to be mainly agrarian with pockets of the populations engaged in small-scale mining. The major causes of water pollution in the area appeared to mainly include, industrial chemicals, illegal mining (sand wining and uncontrolled mineral exploitation), indiscriminate felling of trees surrounding drinking water sources, improper disposal of both solid and liquid waste in the communities. Since the quality and sustainability of water sources owe their existence to the nature of catchments and the relationship between humans and their environment, the findings of this study conclude that excessive pollution can potentially maintain a resilient rural economy, yet if unchecked, could equally disrupt

ecological processes, degrade water quality/ quantity, endanger animal species and pose public health risk to rural residents within the Savannah ecological area. Moreover, Utilizing the liberal conceptual framing, the effects of decentralized governance constraints on the environment and water were empirically examined. The findings showed that good governance matters for mitigating against environment risks and hazards of water pollution (see figure 4). Consequently, the study argues that if appropriate home-grown policies and legislations are not implemented by the decentralized structures including the Assemblies and CWSA to among other measures, promote rural environmental health, it could result in possible drinking water shortages within the Savannah part of Ghana. Moreover, it can be inferred from the findings that a cautious change in attitudes and behavior surrounding water is required in order to preserve drinking water sources and improve upon the quality of human life in the communities.

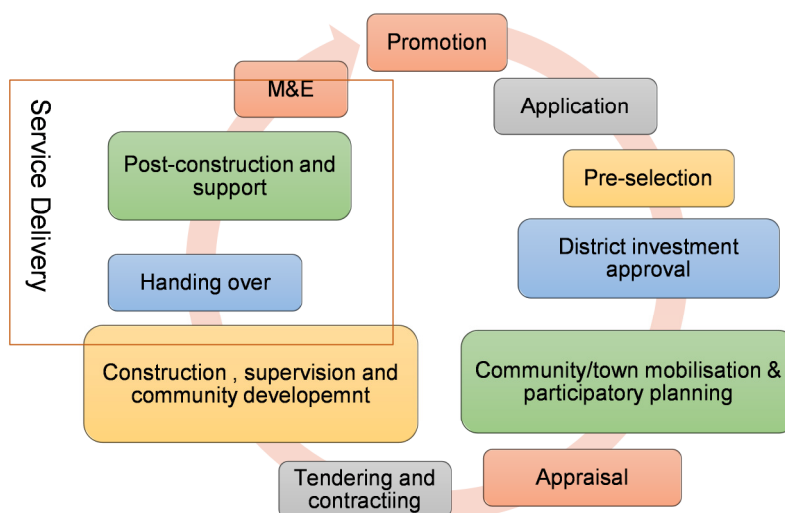
This would necessitate appropriate legislations and promotional strategies for the avoidance of environmental degradation, ecological policy measures for pollution control, human settlement planning and technology adaptations for water resources management to forestall the indiscriminate pollution of rural drinking water sources. The findings of this study resonate the “*green*” and “*blue*” ecological activists who argue that *neoliberalism*, results in increased economic activities which could affect water pollution, deteriorate the quality of human health, increase the cost of water production and cause severe damage to facilities used for transportation and delivery of drinking water to rural households (Neil 2018; Barry 2009). Similarly, Wanjiru (2014) discovered that water pollution occurs in societies where human activities have no regard for water preservation and this has been found to decrease the availability of potable water (MWRWH 2012) to rural settlements, particularly in Ghana. To forestall the severity of economic impacts on rural environments, community water governance systems which evolve based on the *green and blue* ecological principles, such as resilience, preservation of water resources, ecological justice, eco-friendly activities, health and public safety promotion could effectively respond to rural water management and control of environmental pollution (Munasinghe 1992).

### ***Decentralization and participatory constraints in rural water service delivery***

The 1992 Constitution and the Local Government Act (LGC), ACT (936) of Ghana provides for decentralization and local participation in service delivery and series of justiciable socio-economic rights to citizens as they

constitute essential local stakeholders and beneficiaries of development. In terms of Act 936, the MMDA's are mandated as the highest local development authorities, to ensure progressive realisation of human rights and within available resources, facilitate the delivery of quality water and sanitation services in the districts towards the achievement of the SDGs by 2030 of which goal six includes clean water and sanitation service delivery to local communities. Consequently, the Local Government (Departments of District Assemblies) Commencement Instrument, 2009 (LI 1961), established decentralized Departments of the Assemblies including the District Works Departments (DWDs). This study found that the communities, where this study was conducted, had established sections within their respective DWDs concentrating on Water, Sanitation and Health (WASH) service delivery in partnership with state institutions, agencies, water consumers, investors and other sub-district structures. This study found that these Assemblies, per the Districts Operational Manual (DOM) of the CWSA, were to ensure that all activities within the Service Delivery Cycle (SDC) of water are effectively carried out by the appropriate stakeholders, whereas, the CWSA Regional Offices, in turn, provide technical backstopping to the MMDAs as part of the Agency's facilitation role, to ensure that set targets on water delivery within the communities are timely achieved.

As illustrated by Figure 4, the water service delivery cycle of the areas begins with promotion and ends with post-construction sustainability, monitoring and evaluation. The SDC in the areas were mainly divided into two parts, namely 1) facility delivery, which encompasses the phases of promotion to handing over; and 2) service delivery, which is activated upon the handing over of completed water facilities. In theory, the study found that the service delivery cycle utilized by the districts within the Savannah area of Ghana seems to be based on a well-structured participatory and community-based project approach for the delivery of water and sanitation services in the communities. According to staff of the district assemblies, where a water project was funded by non-public sources or during emergency situations (which required immediate redress of public health needs), the SDC is remodified and the initial phases of promotion and application (see Figure 3) may not be applicable, hence, the process for water and sanitation service delivery would commence from the pre-selection phase. Notwithstanding the existence of a well-recognised, institutionalized and locally participatory structure for water and sanitation service delivery, this study discovered that the reality with the quality of water and sanitation service delivery revealed that the concrete operationalisation of the principles set out in the DOM for water services were fraught with implementation constraints/bottlenecks.



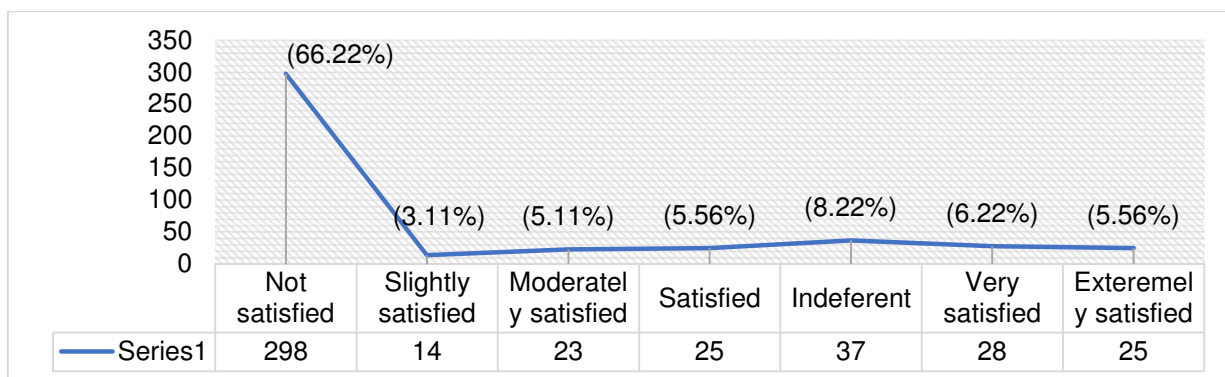
**Figure 4:** Water service delivery structure in the study districts  
 Source: Adapted from CWSA (2014)

The findings re-echoed Aye (2008) and Ahwoi's (2010) contentions on the financial, human resource and technical capacities of the Assemblies to effectively deliver quality water and sanitation services at the district levels. The study further found that the "continuous" capacity building required, and support of community water managed schemes as stipulated by DOM and SDC of the CSWA (CSWA 2014; CSWA 2012) reveal traces of "continuous dependency" than empowering communities to control and own-manage their water delivery points. Hence, despite the noble claims of inherent benefits of decentralizing water supply (Oates 1972), including efficiency, reliability and effectiveness of service delivery (Hope 2010), the findings of this study completely depart from this "wishful view" since the results showed that in practice, the decentralization of water supply have not fully translated into self-reliance and sustainability of water service provision, especially at the rural community level. The results showed that decentralization could only be practicable through a policy change where a people-centred approach plays critical role in the identification of ecological conditions surrounding water. Moreover, in line with Zanu (1996) this study confirmed that for decentralization to benefit the poorest of the poor, provision of essential social services including water should be structured on participatory, transparent and bottom-up pathways, with localities contributing to problem identification, strategy formulation and implementation in collaboration with development partners at the local, national and international levels. The local people should be recognized as equal development partners and not merely passive recipients of corporate philanthropy. This study argues that ceding decision making power and authority to the local people could create an efficient and reliable administration of water facilities, intensify accountability and improve local

development, while also ensuring the civil rights and liberties of the local population are protected. Moreover, the empowerment of minorities in democratic and decentralised environments will enable them to have equal voice in governance and local level development.

**Localisation and satisfaction with water service delivery**

The ultimate goal of decentralized governance is to overcome disparities in development by ensuring the well-being of people irrespective of geographic location, economic variations and social class. This study argued that since regional differences tend to deepen development gaps, lower social cohesion and human well-being based on such indicators including population and income variations, policymakers must work to close these gaps, and this could be achieved possibly through "place-based" and participatory development strategies. In terms of general satisfaction with the quality of social amenities and services provided by local government agencies within the localities. As depicted by Figure 5, the findings showed that most of the respondents (66%) were completely dissatisfied/disappointed with the pace and quality of water service provision, 3% were slightly satisfied, 5% moderately satisfied and 6% were satisfied. Meanwhile, some 8% of the respondents appeared to be indifferent, 6% indicated they were very satisfied and only 6% showed they were extremely satisfied with the quality of water service delivery in the communities. In terms of satisfaction levels for water services across gender and age groups, the study found that the level of dissatisfaction for females were on average higher (70%) than their male counterparts (30%) while the 29-39 age group's average satisfaction levels were higher (68%) than all other age groups. With respect to water service.



**Figure 5:** Rate of satisfaction with water service delivery

Source: Fieldwork (2019), n = 450

The ultimate goal of decentralized policy is to overcome service delivery blockages and widespread satisfaction across the communities (Hope 2010). However, the findings of this study showed fairly distributed levels of dissatisfaction, with rural residents/households of Gonja Central District being highly dissatisfied (52%) with water service delivery while households in the Bole District (51%) and Gonja West District (50%) being the least dissatisfied with water services provided in the communities. Besides, the findings of this study showed that the often-slow pace of improvement in water services and the quality of services provided do not, in most cases, match the expectations and satisfaction of many (66%) citizens and households in the communities. In terms of education and satisfaction levels of water delivery, respondents with tertiary education were the least satisfied (52%), followed by respondents with SHS education (30%), while consumers with JHS, basic education and non-formal education offered appreciably more positive appraisals (70% respectively) on average with the quality of water services in the communities.

The respondents from Gonja descent/ ethnic background recorded higher levels (80%) of dissatisfaction compared with other ethnic groups in the study communities. In effect, poor service delivery and variabilities could potentially fuel violent protests arising from rural water scarcity, thus, bring the capacity of local governance of water under the spotlight and adversely affect public health and safety within the study communities. The findings, therefore, generally supports the liberal political framing (Neil 2018) of this study which suggest that in an endeavour to resolve water service delivery obstacles/ constraints and facilitate the development transformation agenda in the Savannah areas of Ghana, the Assemblies, CWSA, local citizens and civil society actors in water delivery activities needs to priorities reforms to promote effective decentralization and local citizen participation in water supply at the community levels. Furthermore, this study revealed that

even though government and local stakeholders including NGOs, and other civil society organizations participate through infrastructural and capacity development initiatives, the quality of water service delivery indicate that progress has been generally uneven across the districts with different restraints confronting the rural communities. This perhaps reflects the variabilities in socio-economic situations, capacities and competencies of the district assemblies to achieve transformation of service quality within the study areas. Again, the findings showed that the local strategies for restoration of service quality were probably multifaceted, hence, the real needs and interest of local citizens should not be overlooked. Besides, the staff of CWSA and the district Assemblies confirmed that the way local citizens and households in the communities express their dissatisfaction in the quality of water service delivery were varied, hence, a signpost of the level of participation and engagement with ordinary citizens in water service delivery.

While the powerholders “wealthier households”, mostly utilized official conduits to register feedbacks and complains on water service quality, the powerless “poor and marginalized households” on the other hand, mostly utilized public protest as indication of their dissatisfaction, frustration and disillusionment with service delivery in the communities. Meanwhile, contrary to stipulations in the NWRSP (MWRH 2012), the DOM and the CWSA (2014) sustainability framework, which sought to localize water supply services, this study revealed traces of “bottom-up dependency” rather than empowering local communities and professionalizing the local structures such as the WSMT and WATSAN committees to own-manage and operate their water schemes. From the findings (see figure 4 and figure 5), the study deduced that the outcomes of decentralization and participatory strategies in the delivery of social services, in terms of democratisation, efficiency, accountability, district, regional and local development, largely depend on the way the strategies are designed and implemented. In the case of the Savannah Region, the findings imply that

though decentralization of social service delivery is not “full proof” but with enabling environment, it could contribute to better development outcomes. As a social welfare strategy, decentralization could work better for the poorest localities and marginalized populations if well-coordinated and implemented. Therefore, making the most benefits out of decentralized water systems are crucial, particularly in the context of a “geography of discontented populations” and increasing marginalisation between localities and communities which feel left behind in the allocation of water resources. Moreover, the findings demonstrate that community schemes and decentralized water schemes in the area have been established in such a manner that they need to be supported by donors, NGOs and government. However, with the exit of funding, sustaining such water schemes locally at the post-construction phase is often marred with myriads of constraints. This support the assertion that the practice of decentralizing water supply and governance without enabling capacities, empowerment (colonial legacies) (Brukum 1998) and resources has made communities appendages (overly dependent) on central government and development partners for budgetary allocations, technical personnel and logistical support for the provision and management of critical services including water resources (Ahwoi 2010). In addition, the result validates the arguments put forward by political ecologist on eco-governance which is typically premised on participatory democracy (Neil 2018) and envisions ecologically friendly communities modelled on decentralization and grassroots participatory democracy (Barber 1984). The study supports the eco-democrats assertion that decentralization approach must be a

stereotype of eco-governance which extends beyond mere political organizations, popular representation and institutional establishment into the social, economic and political arenas where the basic form of policy making and implementation is based on public opinion (Wrong 2017), collective activism, inclusive and communal organization (Barry 2009), consensus building and the common good of the citizens.

### **Legislations, policy framework, capacities and governance constraints**

The pursuit for decentralization has resulted in post-independence institutional reforms to readdress colonial legacies and establish institutional, legal, and regulatory structures, particularly for the rural water supply subsector. Specifically, the passage of the local government act (2016) Act 936, was meant to accelerate decentralization, devolve powers to MMDAs in order to revolutionize social service delivery including water. However, from Table 3, the results of this study appear to have confirmed that the decentralization of water has been ongoing without resolving existing constraints confronting local government agencies particularly the MMDAs. Although a robust rural water system requires institutional and financial capacities at the local level, the findings of this study reveal that capacity improvement such as training and logistical support (22%), appropriate technologies (14%), human resources (12%), policy enforcement (20%) and financial empowerment (22%) required for empowering local government agencies at the local level have either been erratic, inadequate or completely unavailable..

**Table 3:** Policies, capacities and legislative frameworks of the rural water sector

Institutional and environmental constraints/ indicators	Respondents' Ratings					
	Adequate (effective)		Inadequate (not effective)		Total	
	Frequency	%	Frequency	%	Frequency	%
Operational logistics	10	2	100	22	110	24
Human resources	5	1	52	12	57	13
Technology	20	4	60	14	80	18
Financial empowerment	3	1	100	22	103	23
Ecological policies/ legislative enforcement	90	20	10	2	100	22
<b>Total</b>	<b>128</b>	<b>28</b>	<b>322</b>	<b>72</b>	<b>450</b>	<b>100.</b>

Source: Fieldwork (2019)

From Table 3 the study was aimed at creating a snapshot of the existing context which hinders participation in the rural and community water sector by giving an overview of the institutional situation or conditions on site, and to appropriately inform industry stakeholders of the opportunities available to them in the

rural and community water sectors. The adequacy of water is used in terms of the sufficient availability, quality and reliability (fit-for-purpose) of resources in order to enable public water actors (Assemblies and the CWSA) to effectively and adequately respond in time to specific water demands at the community level. Inadequate is



used in this context with reference to the insufficiency or lack of quality or quantity of water required (not-fit-for-purpose) to effectively and timely respond to rural and community needs. The findings revealed that although institutional structures exist at the districts community and rural water sectors, the allocation of funding dedicated to rural water at the local level are still largely centrally-driven and this tend to adversely affect the capacity of the Assemblies to steer their own water and development agendas. The Assemblies, although are the highest local political organizations and authorities mandated to provide basic infrastructure and services to support social and economic development, in practice, the MMDAs are constrained by capacities to effectively implement rural water policy decisions.

Hence, it appears rural water projects and decisions in the communities are largely driven by NGOs, donor agencies, individuals and civil society organizations. Moreover, the lack of capacity tends to affect development ownership, implementation of strategies and services toward the rational development, utilization and management of water resources in rural spaces which supports the socio-economic advancement of deprived and impoverished populations who are largely engaged in the agriculture and industrial sectors. In addition, the rural water sector lack sufficient technologies for water purification and adequate data to estimate the number of people that have access to basic services but lack access to safely managed drinking water. Hence, to enhance the efficient operation of decentralized and participatory community-based water systems, ecological policies and plans should, among other things, focus on creating enabling environments for public-private-partnerships (PPP) and increased investment in rural water supply to support the development of rural water sources.

The findings imply that innovative blue and green approaches should be developed and legislations, policies and bye-laws governing rural water delivery at the community level must be enforced. Moreover, the bye-laws and policies of water actors in the communities should be context specific and refocused on improving cost-effectiveness, keeping prices affordable for the poor while ensuring the financial viability, sustainability, and attracting appropriate funding to the rural water sector. The findings of this study affirm the assertion that although decentralization as a development pathway decongest power and authority (Hope 2010; Pateman 1970), creates local institutions which brings governance and service delivery closer to local constituencies (Oates 1972), yet at the same time, Ghana's version of decentralizing water without enabling environmental and institutional capacities has not fully translated into desirable local development outcomes (Olowu and Wunsch 2004; Ayee 2008). This is due to the existence of capacity constraints for engendering effective social service delivery at the district and rural levels. From the

liberal ideology, an inept local government is predisposed to the infringement of fundamental human rights, liberties and coercive use of power by privileged minorities in the terms of power to influence policy formulation and water supply at the local level (Neil 2018; Bhatnagar and Williams 1992).

### Hypothesis (Ho) and Development Implications

The basis for the hypothesis test was to estimate whether the null and alternative hypothesis statements were mutually exclusive about the rural population in the communities. The hypothesis test determined the association between the variables and established whether the assumed null hypothesis (HO) for the sampled data "stands true" or "best-fit" the sampled data and the entire rural population or not. As illustrated by Table 5, the correlation test results revealed time limitation ( $r = 0.597$ ,  $p\text{-value} = 0.002$ ,  $n = 450$ ), family or occupational commitments ( $r = 0.597$ ,  $p\text{-value} = 0.021$ ,  $n = 450$ ), finance ( $r = 0.639$ ,  $p\text{-value} = 0.015$ ,  $n = 450$ ), social inequalities ( $r = 0.639$ ,  $p\text{-value} = 0.015$ ,  $n = 450$ ), HHs knowledge levels ( $r = 0.460$ ,  $p\text{-value} = 0.021$ ,  $n = 450$ ) and walking distance involved to decision making centres ( $r = 0.494$ ,  $p\text{-value} = 0.004$ ,  $n = 450$ ), significantly influenced household's participation in decision making on WASH within the local communities. Since the "p-values" of the listed variables, namely, time limitation, family or occupation commitments, finance, social inequalities, HHs knowledge levels, and geographical distance to decision making centres were generally less than ( $<$ ) the alpha level ( $\alpha = 0.05$ ), the study proceeded to rule out the null hypothesis (HO3), which implied that the alternative hypothesis (H3) remained valid.

The test results meant that among the rural households, time limitation, family or occupational commitment of the people, financial capacities, social inequalities, knowledge level of households and geographical distance involved in walking to decision-making centres had significant influence on the resident's engagement and participation in decentralized water allocation and hygiene promotion in the communities. In Table 4 the study determined the significant socio-economic indicators which adversely affect participation in decentralized rural and community-managed water supply systems. The dependent variable was the annual rate of decision making by the Assemblies/CWSA while the independent variables and measurement scales utilized were; time limitation (average hours per meeting), family/occupational commitment (daily labour hours), financial capacity of HHs (monetary contribution per household towards water projects), prevailing social inequalities (number of times excluded from decisions), HHs knowledge capacities (number of trainings attended households) and walking distance involved to decision making centres (kilometres covered) by participants

**Table 4:** Socio-economic effects of decentralized and participatory approach to water governance (*Spearman rank ordered correlation diagnosis*)

Nonparametric Correlation Coefficients (Spearman's rho)			
Constrain factors	Test Statistics		
	Correlation Coefficients (r)	Sig. (2-tailed)/ (p-value)	n
Time limitation	0.597*	0.002	450
Family/occupational commitment	0.597*	0.021	450
Financial capacity of HHs	0.639*	0.015	450
Social inequalities	0.639*	0.015	450
HHs knowledge capacity (education, training)	0.460*	0.021	450
Geographical distance from decision-making cores	0.494*	0.004	450

\*. *Correlation is significant at the 0.01 level (2-tailed).* Source: Fieldwork (2019).

In practice, the findings resonate the guidelines of the National Water Policy (NAWAPO) which indicates that community's contributions are the amount of valued resources in cash, in-kind and labour, as well as time and local knowledge, committed by community members toward planning, implementing and managing interventions for improving water and sanitation services (MWRWH 2012). Similar studies found that time limitations for development facilitators, socio-economic commitments technical constraints and knowledge disparity (Bhatnagar and Williams 1992) adversely impact on participation in local level development. Other studies confirm that human behaviour, household's income, occupation, geography, socio-economic inequalities and financial support remains critical constraint, especially for rural households in developing countries (Guerrinin 2011).

#### **Strategies for improving decentralization and participatory rural water supply**

This study argues that if developing countries, particularly Ghana is to achieve the SDG 6 target by 2030, social, political, economic, and ecological conditions would have to dramatically improve, particularly in rural areas where the poorest, marginalized and low-income populations live. Achieving desired results would require strengthening institutions and empowering communities at the local level by increasing their capacities to provide public services and offer economic opportunities not only in urban areas but also in remote and less privileged rural communities. In this respect, different conventional strategies including local governments and use of government departments and agencies have been adopted in order to promote local

level development. Despite, these innovations, there appear to have been difficulties of coordinating efforts of getting resources to intended beneficiaries and realizing desired policy outcomes and sustainability of public investment on water initiatives. The findings of this study showed that due to practical constraints in meeting increasing demand for basic social services, community-led approaches could be integrated into public service delivery as a measure to accelerated water delivery and water investments more effectively at the rural level. The study maintains that a possible pathway is to decentralize (*human, capacity, power, authority, finance*), introduce participatory and demand-based approaches into community-driven development, public service delivery and water initiatives at the rural level. This is because the idea of decentralization and "community participation" has been heralded by civil society, governments and NGOs as the panacea for local level development. The findings of this study confirm that even though communities may significantly differ economically, culturally, and geologically in life-styles, social norms, beliefs and values, the active involvement of beneficiary communities in local development activities would significantly enrich the provision of social amenities and enable residents of such communities to assert their human rights. Since local knowledge systems are important considerations for decentralized policy formulation and implementation, this study interrogated the respondents on their perceptions of durable initiatives and measures for addressing existing impediments to citizen participation in decentralized water allocation in rural settings. As illustrated by Table 5, the findings showed the districts had multifaced bottom-up development approaches and strategies for motivating the participation of the local people in water governance.

### **Networking, partnerships and collaboration with local citizens and rural households**

From Table 5, the results showed that most of the respondents (62%) indicated that the engagement and partnership with local citizens was indispensable/essential priority for addressing decentralized water and sanitation related constraints. Besides, some 17% considered citizen engagement and partnership as high priority, about 6.2% rated citizen engagement/partnership as low priority, 4.9% moderate priority, 4.4% did not see any prospect with citizen engagement, networking and partnership as a priority for resolving water allocation and sanitation delivery, 3.6% considered citizen engagement/partnership as somewhat priority, while 2% of the respondents were neutral/unaligned. The findings have affirmed that decentralized water and ecological governance should enable “effective engagement, networks and partnerships” with the local citizens at highest levels would empower the local communities, increase their self-reliance, self-awareness and enhance local confidence in self-examination of water problems, while at the same time, enabling them seek sustainable “home-grown” solutions which work-best in resolving constraints to water allocation and sanitation delivery. Moreover, behavioural variations would be promoted, utilization of water and support sanitation services would be facilitated, which are crucially significant to all

communities’ efforts and visions for better water delivery (see conceptual framework), particularly among villages/settlements which are deprived of water allocation and confronted with environmental hygiene challenges. From the findings, the study confirmed that rural communities are unique, based on varied histories, demographics, geographies and natural resource endowments. These essential assets in rural settlements highlights the significance for networking, collaboration and partnerships with external actors (i.e. development partners) which harness development prospects and rural creativities, external technologies and innovations by bringing together shared experiences from representatives across the social, economic and environmental spaces in order to plan and implement rural development initiatives. As depicted by Figure 6, a revitalised rural water sector and desired community development outcomes would require the collaborative efforts and synergies of both external and internal rural stakeholders. This means water actors would have to explore opportunities which bring localities together, strengthen their stay together, shared growth and collective development. The united strength of communities in their “diversities” would create social cohesion and synergies among stakeholder towards a shared community growth and development outcomes which are reflective of the common good and welfare of residents.



**Figure 6:** Partnerships for decentralized and participatory water governance  
Source: Author’s construct (2019)

Moreover, though this study acknowledges the diversities and peculiarities among rural communities, it at the same time argues that the gap between urban and rural settlements in terms of water access could possibly

be closed if local development initiatives evolves out of deliberations which involves different stakeholders (*individuals affected or potentially affected by water decisions*) including private businesses, organizations,

government agencies and local residents who build action-plans and development pathways based on community-wide understanding, shared ecological issues and exploitation of local development opportunities. From the literature, the findings of this study support the assertion that ecological constraints (Johnston 2003), including climate change, water scarcity and pollution have no regards for regional/communal boundaries and, therefore, require integrated approach (Neil 2018), collaborative action and partnership (GWP 2004) across communities. Similarly, from the pluralist and democrats camp (Lele 2010), symmetrical power over ecological resources is exercised where there is collective bargaining, participation, consensus building and partnerships (Wrong 2017). In theory, the findings depart from the ecological anarchist and totalitarians approach which seeks to centralize development (Ophuls 1977; Saward 1996), but at the same time, the study validates Arnstein's (1969) symmetrically pre-arranged ladder of participation which assumes that development partnerships constitute the most ideal form of participation and accountable local development. This is because it empowers citizens and local communities to enter into partnerships which enable them to negotiate for change and engage in trade-offs with traditional power holders at the topmost level of policy making and local development. Moreover, through development partnerships, citizens have some genuine bargaining influence over the outcome of the development plans which commonly affect their welfare.

### ***Capacity building, training and empowerment of residents in rural communities***

An empowered, educated, trained and involved local communities were found to be indispensable in identifying, prioritising and managing water allocation and sanitation needs as well as the development of sustainable strategies for meeting these needs. Building resilient, effective and decentralized rural water systems and sustainable ecosystems do not just simply happen. This study argues that a water literate and ecologically knowledgeable population allows community members to effectively contribute to water discourses, innovations and problem solving at the district level. Besides, good governance and effective management of rural water resources, including watersheds and river basins and integrating all aspects of rural water governance – *policy formulation, implementation, water supply, water quality/quantity, ground water, surface water, flooding, droughts, stream flows, channel stability* – would inevitably demand public sensitization, education and collaboration in order to archive the necessary structural, cultural and behavioural changes, particularly in remote

areas. Therefore, as illustrated by Table 5, the findings of this study revealed that more than half (55.1%) and 20.7% of the respondents respectively confirmed that building capacities and empowering the local communities through education and training were of “essential priority” and “high priority” for achieving effective water allocation and promoting hygienic communities. Nonetheless, some 7.6% considered capacity building as a low priority, 6% moderate priority, 5.3% somewhat priority, 3.1% not a priority while 2.2% of the respondents were unaligned/ neutral. Therefore, since local citizens better understand local problems than would remote actors, this study has affirmed that building the capacities (training at individual and group levels) of local communities in rural settings located along the Savannah ecological area is essential to enabling them to make medium-long term and best-fit decisions (home-grown), control and sustainably resolve water allocation discrepancies and sanitation issues locally (see Table 5). The findings support the indigenous approach to development and ecological conservation which assumes that “home-grown” resources and capacities are best-fit for home-grown problems. Nonetheless, the study departs from the elitist development pathways and ecological decisions which are technocratic and externally imposed (Saward 1996). Such decisions may not attract widespread community support, negatively affect rural livelihoods and productivity (Munasinghe 1992) and result in policies that ignore the existence of the implicit needs of consumers (Neil 2018; Hoppe 2010), which in rural ecological context, are the beneficiary households. In line with Barry (2009), the findings rather affirm the need to develop local knowledge and decentralized systems based on alternative strategies which are non-technical, yet embrace the social, economic and traditional contexts in which rural water and ecological decisions are made and implemented. Similarly, Waithaka (2013) contends that a better strategy for effective decentralization and improving ecological governance is to build local capacities and skills required for efficient planning, regulation, ownership and management of water resources.

### ***Information dissemination, public education, shared knowledge and experiences on water and environmental sanitation among residents in rural communities***

This study maintains that an ineffective and inefficient rural water sector is most likely to improve under a decentralized and governance arrangement where water service providers including the CWSA, government, Assemblies, Private organizations, NGOs, are collectively held accountable for development outcomes in the water sector. This could significantly increase citizens

participation for improved operation of community-based water delivery systems. The findings re-echo the liberal model, which argues that a well-structured rural water system requires the decentralization of power, delineation of authority and resources, transparency, accountability and responsibilities at the local level (Bhatnagar and Williams 1992). This study further demonstrates that unimpeded access to multisectoral, adequate and actionable information are vital for knowledge sharing, fruitful engagement and fostering purposeful citizen participation for better rural water policy and development outcomes. The findings (see Table 5) revealed that a little above half (56.2%) and 21.3% of the respondents perceived that unrestricted information access were “paramount/ high priority” and “essential priority” respectively, for enhancing citizens interest and increasing their participatory levels in water and

sanitation service delivery. Moreover, about (6.2%) of the respondents perceived information dissemination as being somewhat priority, 6.2% considered information dissemination as low priority, 4.7% were neutral, 3.8% moderate priority and 1.6% indicated publicity in water information and education were not a considered priority as these did not contribute to enhancing the level/rate of citizens participation in water allocation and improved hygiene within the communities. It could be inferred from the findings (see Table 5) that an ineffective systemic change requires adequate information which is understandable by all actors in the rural sectors. The rural water sector could be buffeted with significant winds of change, if sufficient non-technical information is disseminated through a decentralized system which enables free communication and knowledge-exchange among water actors.

**Table 5:** Strategies for addressing constraints to decentralization and participation in rural water delivery

<i>Innovations for effective decentralization &amp; participation in water allocation</i>	<i>Levels of support by Respondents (Percentage Scores)</i>															
	not a priority		low priority		somewhat a priority		neutral		moderate priority		high priority		essential priority		Total	
	N	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Engage, partner and network with citizens	20	4.4	28	6.2	16	3.6	9	2.0	22	4.9	76	16.9	279	62	450	100
Build capacities and empower local communities through education and training	14	3.1	34	7.6	24	5.3	10	2.2	27	6.0	93	20.7	248	55.1	450	100
Information dissemination/ publicity	7	1.6	28	6.2	28	6.2	21	4.7	17	3.8	253	56.2	96	21.3	450	100
Accountability, transparency, public consultation and gender equity in rural water allocation decisions	20	4.4	27	6.0	12	2.7	7	1.6	23	5.1	319	70.9	42	9.3	450	100

Source: Fieldwork (2019), n = 450

Invariably, a well-informed rural populace would have equal opportunities for experience sharing and ecologically friendly best-practice learnings which empowers communities to understand their inherent relationship with their natural environments and thus, take ownership and responsibilities over the management of water and conservation of their ecological systems. The findings imply that the more people are aware,

knowledgeable and equipped with unabridged relevant information, the better they understand decision making processes, effects of their actions on their environment, and livelihoods, they would be ultimately predisposed to take actions to conserve their water systems. From Table 5, the results suggest that through effective information dissemination, individual behavior and attitudinal changes could be fostered, grapevine communication

would easily enable effective dissemination and reception of first-hand information among members of the community and, therefore, could become leverage cover for the powerless and impoverished populations to influence decision making locally. For effectively decentralized rural water outcomes, it is essential for actors to design multisectoral communication strategies including press releases, posters/bill boards, community floats, news & conferences, public displays, newsletters, annual reports, public announcements during traditional durbar, radio talk shows etc to keep local citizens constantly updated and abreast with vexed matters on water and sanitation within the communities. Similarly, Alberti et al. (2003), discovered that the unrestricted access to information on water improves the knowledge level of citizens, hence, their capacity to participate in decision making on water quality and water delivery projects.

***Political commitment, structures for accountability, transparency and consultation and gender equity in decision making***

Furthermore, from Table 5, this study found that enabling communities actively participate and benefit from decentralized rural water and sanitation services delivery would necessitate that the community members become involved as equal partners with development actors in identifying, prioritising water and sanitation needs, strategising for meeting essential needs, holding service providers accountable/transparent and that the local communities should be empowered to make autonomous decisions about their own water and sanitation issues. The study discovered that (70.9%) of the respondents recognised that an accountable and transparent regulatory framework was considered as a high strategic precondition for improving water and sanitation provision. Meanwhile, about 9.3% perceived local accountability and transparency as an essential priority, 5.1% moderate strategic priority, 6% low priority, 4.4% not a priority, 2.7% somewhat priority, while some 1.6% of the respondents were neutral/unaligned. The findings imply that development workers within the Savannah Region of Ghana (District Assemblies, NGOs, CBOs, Central Government etc) and external investors should demonstrate commitment by remaining accountable and transparent to the local constituents (household consumers) and that they should not impose their “perceived priorities” of specific communities’ water and sanitation needs onto the local communities, even if these might have been grounded on scientific surveys and palpable scale-up projects justifications.

From Table 6, the local assemblies must be responsive to service delivery and for this to occur, there is the need for innovations and reforms in order to provide electoral

accountability, improve participatory processes and effectiveness of local civil society. At the community level, local accountability ensures efficient allocation of water resources, formulation of appropriate decisions and empowerment of marginalized groups. In addition, the capacity for communities to control over decision making and resource allocation would build social capital to press for efficiency in water service delivery among decentralized administrative hierarchies at the local level. The findings sufficiently demonstrate that the development of local communities requires a multidisciplinary, gender-based and intersectoral collaboration between local citizens and all state and non-state agencies involved in the promotion of local level development. The LGs institutional settings that formulate policy decisions on water should support women’s role as stakeholders in the sector.

In Figure 6, institutional reforms and restructuring of governmental agencies responsible for rural water delivery are urgently required to ensure more appropriate institutions, supportive policies, strategic investments and to mainstream gender in the rural water sector. Moreover, the findings in Table 6 suggest that home-grown policies, indigenous knowledge and traditional systems regarding the security of water, access to water, credit for water, and representation in water associations are essential hallmarks for refining the overly elitist approaches to water policy formulation and implementation at the local government levels. This has the potential of encouraging women to either assume leadership roles in water or develop professional careers in the rural water sectors. Moreover, the consultation of households through “direct community support” which collate their common/collective needs and interest was considered a critical approach for interest aggregation, articulation and popular representation of powerless citizens in the local decision-making and development processes. In Table 5, the findings showed that the consultation approach could become effectively tool for responding to constraints and motivating citizens participation in water allocation and sanitation services delivery in the communities. An overwhelming support for consultation with communities prior to the design and implementation of water projects imply that local institutional reorganization is needed to enhance water standardization, decentralize water management responsibilities, with the overarching aim of increasing transparency, user participation, ownership and sustainability. Similarly, an accountable and transparent water system would only be possible if local leadership is readily available and where institutions timely divulge detailed information on water activities to beneficiary communities in the districts. This should be done through appropriate media, which are devoid of jargons and technicalities beyond the understanding and interpretation of water consumers. Besides, appropriate

public consultation is fundamental to incorporate the local communities' contributions and accountable reports into local level development processes. Community participation remains a multifaceted issue because it can only be sustained locally if water and ecological projects are locally initiated, collectively acceptable by the community concerned, the local residents and the government of the country. Therefore, the individuals, groups and community as a whole are indispensable for promoting participation and in striving to achieve the ideals of community-based self-care, democratisation of water allocation and hygienic rural communities. In Table 6, the study argues the need to revitalise the decentralized water structures of the Assemblies and CWSA. However, for this to occur there is the need to

introduce innovations and strategies which are community-driven and include marginalized groups and indigenous people such as women, youth, smallholder farmers, pastoralists and fisher folks whose livelihoods depend on water. The local NGOs can facilitate community organizations through support for livelihood empowerment and capacity building to address structural challenges to existing and future water insecurity in the communities. In addition, since women play critical roles in rural water and sanitation, there is the need to empower rural women on water security, engage them in environmental health and develop their knowledge systems on wastewater re-use, by linking rural water technology with indigenous systems for improved household water security, water quality and sustainability of rural livelihoods.

**Table 6:** Integrated strategies for decentralized and innovative rural water service delivery.

	DECENTRALIZED SECTORAL APPROACHES	LOCAL GOVERNMENT (LG) APPROACHES	DIRECT COMMUNITY SUPPORT APPROACHES
<b>KEY LESSONS</b>	<ul style="list-style-type: none"> <li>De-concentration within administrative hierarchies is necessary but not sufficient for effective service delivery</li> <li>Demand responsive arrangements are useful in establishing appropriate service levels and standards</li> <li>CBOs as coproducers and oversight bodies can improve service delivery</li> <li>Linking public organizations to private firms and NGOs enhances local capacity to deliver services</li> <li>Local planning processes not only allocate resources but also increase accountability of service providers</li> <li>Service delivery arrangements should be adapted to the local institutional environment.</li> </ul>	<ul style="list-style-type: none"> <li>LG responsiveness requires electoral accountability as well as other participatory processes</li> <li>Decentralization is most effective when LG reform is linked to sector reform</li> <li>Local governance quality depends not only on LGs but also on the effectiveness of local civil society</li> <li>LGs can lead local development as coordinators of private initiative as well as advocates for local interests</li> <li>Effective service delivery requires collaboration between LGs and sector agencies</li> <li>LG strategic planning helps build partnerships among public, private and Community-based Organizations (CBOs).</li> </ul>	<ul style="list-style-type: none"> <li>Community driven funds can channel resources in response to urgent, specialized or complex demands</li> <li>Participatory community planning can efficiently allocate resources</li> <li>Community-based management of resources and investments can be transparent and efficient</li> <li>Targeted community-driven approaches can empower marginalized groups</li> <li>Community control over decisions and resources can build social capital</li> <li>Strengthening CBOs can increase poor people's voice</li> <li>Community contributions help ensure that investments are demand driven and "owned" by beneficiaries</li> <li>Increased links between LGs and CBOs can speed "scaling-up" and improve sustainability</li> </ul>
<b>FREQUENT LIMITATIONS</b>	<ul style="list-style-type: none"> <li>Little local discretion to adjust national sector policies and service priorities to local conditions or preferences</li> <li>Difficulty ensuring coordination and collaboration across interdependent sectors</li> <li>Emphasize on operational management limits strategic response to local conditions and priorities.</li> <li>Difficulty ensuring adequate responsiveness and accountability of sectoral officials.</li> </ul>	<ul style="list-style-type: none"> <li>Risks associated with transfer of responsibilities to LGs without adequate resources</li> <li>Incomplete decentralization policies can limit LG capacity to respond to local priorities</li> <li>Excessive politicization of decision-making or "elite capture" may lead to inequitable allocation or poor management</li> <li>Weak service delivery focus and technical capacities among some LGs</li> <li>Problems coordinating between devolved LGs and sectoral organizations</li> <li>Inadequate contact between LG officials/LG agencies and communities</li> <li>Vulnerability to "demand overload" when citizen expectations and devolved responsibilities exceed LG capacity</li> </ul>	<ul style="list-style-type: none"> <li>Risks of "elite capture" and weak accountability resulting from entrenched inequalities of power and resource access within communities</li> <li>Difficulty resolving problems across several communities and achieving economies of scale</li> <li>Sustainability problems due to insufficient coordination with sectors and LGs</li> <li>Weak links to public sector systems for planning, governance, and fiscal management, and accountability</li> <li>Lack of strategic perspective on local economic development</li> </ul>

Source: Author's construct (2019)

The findings of this study disagree with the neoliberal approach (Neil 2018; Barry 2009) to local water governance. It further departs from Adank et.al. (2014) water operational guidelines which do not offer opportunities for accountability and transparency of the WSMTs, community ownership and feedback learning mechanisms for the replicability and sustainability of water and sanitation projects in rural communities. Nonetheless, the findings validate the theoretical conjecturing for decentralized (Oates 1972) and democratic approaches to water supply and local development (Barber 1984; Pateman 1970; Lele 2010) which streamlines and strengthen principal-agency relationships in order to marshal adequate capacities, resources and empower localities as active participants and collaborators in local development. In general, the study confirms that ecologically conscious and self-governing rural communities can be achieved through the advocacy for and strengthening of rural water accountability and transparency structures as geopolitical processes for sustainably managing rural water demands. A decentralized and community-driven water sector approach tends to have local self-regulating mechanisms which are participatory, transparent, community-own-managed and remain accountable to local residents and constituencies.

## CONCLUSIONS

This study has showed that in order to sustain a decentralized rural and community water service delivery, there is the need to overcome the broader institutional, environmental, social and economic participatory constraints to water governance. The study proposed a paradigm shift to the current status-quo by offering the adoption of an integrated politico-ecological strategy, founded/evolved from three pillared multisectoral and intersecting water service delivery approaches with corresponding opportunities for knowledge and lesson-learning in order to mitigate existing limitations, most vexed matters and constraints to people's participation in decentralized water governance. The three sustainable water governance approaches identified by the study are; sectorial decentralization, pursuit of direct local government strategies/approaches and direct support for the local communities. At the national and sectorial level, the study argued that the focus for decentralization in the rural and community water sector should rely on the creation of specialised institutions at the local level, with adequate level of allocated operational capacities and autonomy for making policies and legislation on water and the environment. Although in the Savannah area, the CWSA and the MMDAs are the key pillars to rural and community water service delivery, operational capacities

appear to be minimally provided and thus service delivery quality and management of water are generally below the expectations of the local people. Moreover, local government strategies should be territorially specific and should be related with the political, administrative and resource capacitation of government agencies at the local level. This could be achieved through policies and allocation of autonomy for local self-ecological governance. In addition, community empowerment and community-driven development initiatives which aims to mobilise resources, through partnerships and networks while NGOS, CBOs and civil society empowerment initiatives which lay emphasize on community mobilisation, collective action and participation in public service delivery should be specifically encouraged.

## Contribution to knowledge

The major theoretical contribution of this study was that the participatory constraints in water and ecological governance at the rural level are multidimensional and multisectoral. Therefore, as a practical measure, this study proposes an integrated rural political ecological governance model, as a new conceptual model which serve as an analytical tool for enabling problem identification and sustainable solutions to the socio-economic, political and institutional challenges confronting the rural water sector. This study argues that participatory constraints in the rural water sector can only be measured from three intersecting strategies, namely, national, regional and sectorial decentralization; local government innovations; direct community empowerment and support initiatives. These three approaches share common emphasize and synergies as their conceptions must evolve based on good governance practices; empowerment of local citizens to interact with national, local government, institutions responsible for water delivery and the essence of beneficiary households water demands. As basis for determination of social services delivery, this study highlights the need for greater capacities and autonomy among water service delivery institutions, along with bottom-up and top-down accountability to communities and consumers and in order to enhance organizational efficiencies, increase development impacts and water sustainability. This model is suggested because there has been no universally accepted conceptual framework applicable in the field of rural and community water governance. This model harmonizes, synergies efforts and strengthens complementarity of principal-agents relationships and their contributions to water governance and exploiting their comparative advantages. This way, there would be a coordinated approach towards addressing contextual constraints towards water and ecological governances. At the same time, an integrated political ecological model



serves as a context-relevant diagnostic methodology which offers a more comprehensive approach for enhanced understanding of existing management and governance weaknesses, socio-economic resistance to change and how they plaque decentralized, participatory, and multisectoral development programmes in rural settings. It advocates for the adaptation of more decentralized and territorially specific prescriptions which are suitable to local conditions and addresses the systemic and multisectoral nature of community level development.

This local development model could be helpful to policymakers and water managers as it enables them to understand specific development problems, analyses alternative pathways and sustainable solutions, understand cross-cutting and sectoral ecological issues. This model can be useful as a local blueprint and analytical tool for strategy identification and appropriate methods for filling development gaps and integrating efforts of various governmental and institutional levels while at the same time, ensuring water aid efficiencies which guarantee water access and livelihoods of rural households and communities. This innovative approach lay emphasize on the principles of bottom-up-development, empowerment, community-driven and greater development autonomy along with enabling capacities for downward and upward accountability in water governance.

The study maintains that the pursuit for integrated efforts at local levels utilizing this unifying conceptual framework could redress institutional rigidities, differing organizational perspectives, lack of coordinated efforts and synergies between central government, sector agencies, departments, local actors and water consumers at the rural and community levels. In addition, the position of the study is that this unified three pillared development strategy would invariably dynamize social service provision by resolving peculiar challenges related to local access to water, funding gaps, efficiency in public service and socio-economic opportunities, empower local actors and enhance the sustainability of rural water and development processes. In Table 6, the study asserts that local development and social service delivery including water are the primarily responsibilities of local actors in the water sector. Even though evidence emerging from this study suggest these actors are constrained by broad social, environmental, political and local economic conditions, the study maintains that supported with external resources, social mobilisation and institutional capacities, rural water delivery and ecological governance could be evidently improved. Therefore, a community-driven water governance approach and sustainability of local development activities depends upon empowerment of rural agencies and home-grown actions at the local level which are

rooted in the commitment by international, national and local actors to assume responsibilities for improving their own water systems and well-being.

## RECOMMENDATIONS AND POLICY IMPLICATIONS

The study recommends that ecological decision making should not only involve the most powerful government officials, civil society organizations, water managers and the wealthy class, but equally important are interested but powerless parties such as households. In addition, decentralized and participatory policy initiatives are required to transform the CWSA into a professional, non-profit seeking and community-based public utility service organization. To ensure innovations and professionalism, the CWSA must have powers, autonomy, adequate capacities and responsibilities for water governance and provision of community-based piped water supply infrastructure, including boreholes, surface water, dugout-wells and hand-pumps, in collaboration with the MMDAs, water and environmental research institutions. This will ensure the delivery of quality, dependable and inexpensive public water services to rural communities on equitable and sustainable basis. The best model for sustaining water services delivery is the professionalisation of the governance and management of water systems, modifications of the current Community Management Model (CMM), which has proven to be ineffective into an integrated and liberal political ecological governance model, which advocates for a synergy between international, national, local government, civil societies and community management efforts and exploitation of their comparative advantage.

Moreover, strategies to professionalize the operation and maintenance of rural water systems, improve operational efficiencies of public water systems and sustainably mobilize resources and funding from rural water systems for maintaining, expanding and constructing new quality water systems must be pursued by stakeholders engaged in rural water supply. As an autonomous entity, the CWSA should be empowered to apply appropriate technologies (territorially specific) to reduce non-revenue water, adaptation of state-of-the-art technology to redress water quality challenges and support structures for sustained operation and maintenance of point water systems and create partnerships with government, local communities and development partners, whose collaborative work are essential for sustainability of rural ecological systems including water. Unlike CMM, a liberal PE governance model emphasizes on decentralizing financial, human resources, administrative capacities, empowering communities to participate effectively and collaborate with institutions in public water services delivery. If religiously

and democratically applied, this model will save the huge public investments in water infrastructure from deterioration and create a common pool of revenue for sustainable operation and maintenance of existing water supply systems and also, providing new ones to communities with no access.

## AREAS FOR FURTHER RESEARCH

This study suggests an in-depth qualitative or mixed research approaches to capture the qualitative experiences, ideas and perspectives of rural populations who have had mixed feelings, or negative experiences with their involvement in water and ecological policy decision making. This is particularly helpful since they may be less enthusiastic to voluntarily participate in local decision making which are exclusionary, elitist and technocratic in orientation. Similarly, an exploration of the relatively rare qualitative experiences of marginalized and seldom-heard groups including Persons with Disabilities (PWDs) in rural water and ecological issues could become a subject for other researchers. In addition, other researchers could explore traditional leadership roles of community members, including chiefs, queen mothers, and how collective leadership and traditional institutional setups might support effective public participation in water and ecological governance in rural settings.

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