

# Rural Communities' Attainment of Sustainable Development Goal 6: Lessons from Rural Ghana

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**Abstract:** Clean water is an essential element not only for humans but is also a requirement for plants, animals, and other related sustainable developments. Sustainable Development Goal (SDG) 6 recognizes the need for clean water and proper sanitation for all as a human right. This study assesses the attainment of SDG 6 in rural Ghana, using Dandafuro and its environs in the Wa Municipal Assembly as a case study, focusing on targets 6.1 and 6.6b. The study adopted a descriptive and interpretive case study approach using an exploratory research strategy. The data were collected using both primary and secondary data collection techniques and analyzed through qualitative and quantitative research methods. The results revealed that there was some provision of water supply systems in the study area, mainly boreholes; however, only 10% of the boreholes were functioning. In addition, 44% of the respondents had access to safe drinking water throughout the year, with the remaining, relying on untreated open water sources such as dams and dugouts, which are unimproved sources. Furthermore, 82% of the respondents indicated that no management committees were superintending over water and sanitation facilities in their communities. These make the attainment of targets 6.1 and 6.6b in the study area presently to be a mirage. The study recommends the greater involvement of beneficiaries in decision-making and management of water and sanitation facilities in rural areas to increase efficiency and equity in Ghana's efforts towards the attainment of SDG 6.

**Keywords:** Rural Communities, Water and Sanitation, Water Accessibility, WASH Management, SDG 6, Dandafuro, Wa Municipality, Ghana

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## 1. Introduction

The importance of water, sanitation, and hygiene (WASH) to human development and well-being cannot be overemphasized. Consequently, at the expiry of the Millennium Development Goals (MDGs) in 2015 in which WASH issues were prominent, the United Nations (UN) launched the 2030 Agenda for Sustainable Development (SD). This agenda has 17 Sustainable Development Goals (SDGs) with 169 targets, with SDG 6 aimed at ensuring availability and sustainable management of water and sanitation for all by 2030. Clean water is an essential element not only for humans but is also a requirement for plants, animals, and other related sustainable developments. Thus,

SDG 6 recognizes the need for clean water and proper sanitation for all as a human right.

Globally, 2.2 billion people still lack access to safe drinking water and more than half of the global population has no access to safe sanitation [1]. Despite that COVID-19 has put the spotlight on the importance of hand hygiene to stop the spread of diseases, 3 billion people worldwide, including hundreds of school-going children, do not have access to hand washing facilities with soap, with people in rural areas, urban slums, diseases-prone areas, and low-income countries being the most vulnerable and most affected [2]. The consequences of unsafe water and sanitation on children can be deadly. Over 700 children under the age of five die every day of diarrheal diseases due to the lack of appropriate water and sanitation services [3]. Lack of clean

water, sanitation and hygiene lead to health issues like intestinal infections, cholera and other illnesses. Notwithstanding these, Grigg [4] observes that the number of people who lack access to clean water is larger than the population of the United State of America, Canada, Mexico, United Kingdom and France combined.

In Africa, 783 million people are without access to clean water, with 40% of these living in sub-Saharan Africa [5]. Poverty is a huge barrier to access to water and sanitation, and most of the world's poorest countries are in sub-Saharan Africa. Natural disasters, increased pollution, and a lack of resources are all driving forces of the water crisis in sub-Saharan Africa [6].

Besides the drinking-water access challenge in many developing countries is also its 'twin problem' of inadequate provision of sanitation facilities. Sanitation facilities ensure personal hygiene; however, many people in some developing countries do not have access to safe toilets and often resort to open defecation. Consequently, Armah et al. [7] posit that only 28% of people in sub-Saharan Africa have access to basic sanitation facilities. Poor sanitary conditions result in increased vulnerability to water-borne diseases, including diarrhea, cholera, dysentery, and typhoid. Furthermore, when a person does not have access to clean water and sanitation, they are also at risk of decreased school attendance, missed workdays, malnutrition, and poverty [8].

In Ghana, nearly three million people rely on untreated surface water to meet their daily water needs, leaving them vulnerable to water-related illnesses and diseases, and 31% of Ghanaians lack access to improved sanitation or are entirely without toilet facilities [9]. Many households in Ghana cannot access safely managed water and sanitation services due to the lack of upfront funds needed to invest in the solutions such as the connection of pipe water services, where they are available, the drilling of boreholes or the construction of improved latrines.

Therefore, the objective of this paper is to assess rural communities' attainment of SDG 6 in Ghana, using Dandafuro and its environs in the Wa Municipal Assembly of the Upper West Region as a case study. The main thrust of SDG 6 is to "ensure availability and sustainable management of water and sanitation for all" and properly delineated in six targets. However, the focus of this study is on SDG 6.1: "by 2030, achieve universal and equitable access to safe and affordable drinking water for all" and SDG 6.6b: "support and strengthen the participation of local communities in improving water and sanitation management". Water coverage in the Upper West region, particularly in rural areas, has increased significantly over the years due to the dependence on groundwater supply (boreholes). According to the Community Water and Sanitation Agency (CWSA) (2020), the department responsible for water and sanitation services in rural Ghana, the Upper West Region has a rural water coverage of 74.13% serving a rural population of 567, 570 out of 884, 197. The agency further indicates that the Region has 2,139 boreholes and 27 small towns with piped water supply systems of varying sizes with groundwater sources. Support for the

achievements of these has been generally donor-driven. However, sanitation coverage in the Upper West Region is estimated to be less than 10%, despite the persistent sanitation and hygiene promotion in communities over the past decades [10].

In Ghana, three institutions champion water and sanitation activities; namely the Ghana Water Company Limited (GWCL), which is responsible for urban water supply, CWSA which provides water to small towns and rural communities and is also responsible for water-related sanitation activities, and the Environmental Health and Sanitation Department, which is responsible for other forms of sanitation. Notwithstanding the existence of these institutions over the years, overcoming water and sanitation challenges is a herculean task for the government of Ghana, as the country is still struggling to offer even basic amenities such as clean water and sanitation services. Therefore, SDG 6 has brought a new impetus to the water and sanitation sector to enable the country to be more focused on water and sanitation challenges. However, there are many challenges to achieving SDG 6 in rural Ghana, as massive government collaboration with development partners is required to install some services, such as taps in households, household toilets, boreholes for communities, safe recycling methods for organic solid waste, reusing and treatment of wastewater, among others.

There is a high inadequate potable water supply in Dandafuro and its environs, leading to an increase in water-related diseases and conflicts. Access to basic water and sanitation is still a persisting challenge among these communities as they sometimes rely on untreated rainwater from rooftops and dugout wells as sources of drinking water. These communities solely rely on limited shared boreholes as the only improved source of drinking water without pipe connection to households. These limited boreholes regularly break down due to the pressure from continuous usage. Adding to this challenge is the lack of assessing improved sanitation facilities. These communities mainly rely on limited shared pit latrines, though some households construct pit latrines using laterite and timber solely for their usage. These households' latrines in no time collapse when the timber, which is used in constructing the roof to the pit latrine gets rotten. Consequently, open defecation is still rampant among these communities, which pollutes the environment.

This study contributes to the attainment of SDG 6 in rural Ghana and provides some basic data that can support players in the WASH sector to effectively plan and contribute to the attainment of SDG 6 in Ghana and other developing countries.

## 2. Materials and Methods

### 2.1. The Study Area

Dandafuro and its environs are located in the southern part of the Wa municipality. It shares boundaries with Kpongou to the north, Balawa to the south, and Bamahu and Tampieni to

the east and west respectively. The zone covers four communities, which include Dandafuro, Kagu, Gurimuni and Nyuglu. According to the 2021 Population and Housing Census, the Dandafuro and its environs have a population of 1523, of which 745 are males and 778 are females, living in 157 households [11].

## 2.2. Research Design

A summary of all data collected and used for the study is presented in Figure 1. The study adopted a descriptive and interpretive case study approach using an exploratory research strategy because it aimed to know more about the

phenomenon of water, sanitation, and hygiene in Dandafuro and its environs. The data were collected using both primary and secondary data collection techniques and analysed through qualitative and quantitative research methods. The case study method, which is an empirical inquiry that investigates a real-life phenomenon within a given physical, socio-cultural, economic and political context, and relies on multiple sources of evidence, was also employed to enable the researchers to examine the relationships and patterns between the capacity levels of community management structures and its effect on sustainable operation and maintenance of water and sanitation facilities in the study area.

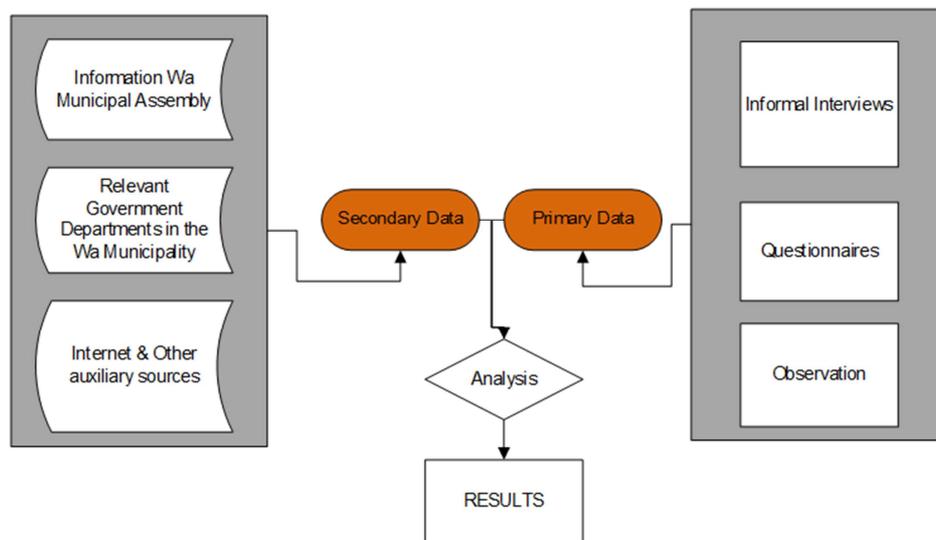


Figure 1. Summarized data collection and general approach to the study.

Furthermore, purposive sampling and simple random sampling techniques were adopted for the study. Purposive sampling represents a group of different non-probability sampling techniques, which relies on the judgement of the researcher when it comes to selecting the units (people, cases/organisations, events, pieces of data) that are to be studied [12]. The first step in the sampling process was to obtain a list of communities with community-operated and managed water and sanitation facilities (boreholes, small towns' pipe systems and improved toilet structures) in Dandafuro and its environs from the Wa Municipal Assembly, CWSA, and Environmental Health and Sanitation Department. The Dandafuro and its environs were then classified into two strata: Dandafuro and Kagu zones and the data was collected in these areas using observations, informal interviews and questionnaire. A simple random sampling method was used in the administration of the questionnaire. Because the target population (number of households in Dandafuro and its environs) was small (157), the researchers decided to use the target population as the sample size. However, during the questionnaire administration, 150 households responded to the questionnaire. The data was classified and analysed using the Statistical Package for the Social Sciences (SPSS) software package and the results were presented in percentages and charts.

## 3. Results and Discussion

### 3.1. Demographic Characteristics of Respondents

One hundred and fifty (150) households responded to the questionnaire. 54% of the respondents were female, while 46% were males. In rural Ghana, traditionally, women and children are the primary collectors and managers of household water and sanitation. Therefore, when water supply systems break down women and children are usually the most affected, since they have to travel far to search for water for household use. Also, when girls and women lack access to safe sanitation and water, their education suffers because they experience period poverty and cannot afford menstrual products, clean themselves safely, or access separate bathrooms [13, 14]. In addition, in sub-Saharan Africa, the task of fetching water tends to fall on women, and this burden can also prevent girls from attending school if they need to walk long distances to collect water before attending school [15].

#### 3.1.1. Age Distribution of Respondents

The majority of the respondents were within the age range of 21 - 30 and 31 - 40 years representing 34% and 24% respectively, as shown in Figure 2. In most rural Ghana,

young people and women are usually responsible for providing WASH services in households. For instance, during an informal interview with a woman, she observed that:

“I fetch water from the borehole for domestic purposes. I do this every day, particularly fetching water for my husband to bathe but some days I do not bathe because I do not want to fetch the water from the borehole several times due to stress in carrying the water ”.

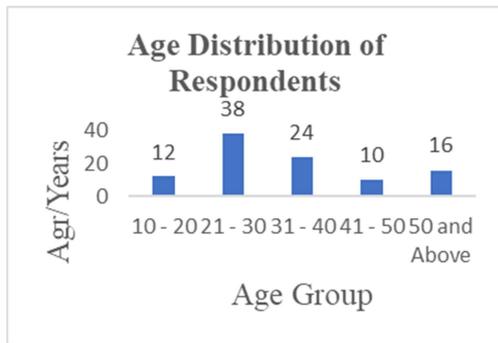


Figure 2. Age Distribution of respondents.

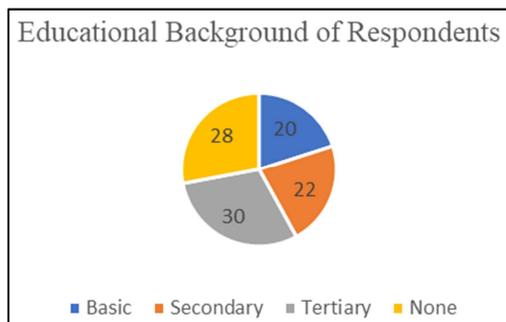


Figure 3. Level of Education of respondents.

### 3.1.2. Educational Background of Respondents

The majority of the respondents had formal education up to the tertiary level (30%), whereas 28% of the respondents had no formal education, as indicated in Figure 3. The researchers found out through informal interviews that the respondents with no formal education were indigenes of the study area, while those with high education were some workers who were residing in the study area due to urban sprawl in the Wa Municipality. The high level of literacy among the respondents could translate into a high level of consciousness of WASH issues in the study area through effective public education, as they should appreciate and have a better understanding of their rights as far as water and sanitation provisions are concerned. Accordingly, Manzano-Solís et al. [16] observe that the advancement of education and WASH issues has created a dependent relationship, one influencing the other and vice versa. Without the necessary education, it is hard to instill the ideas of proper sanitation and health within a poor informal settlement and on the other hand, a lack of sanitation creates an environment that does not support the education system and prevents children from attending school [17].

### 3.2. Access to Safe and Affordable Drinking Water in the Study Area

The majority of the respondents (96%) depended on boreholes as their source of drinking water, while a few numbers (4%) relied on pipe water. Although a majority of the respondents depended on boreholes as a source of drinking water, 52% of the respondents revealed that the boreholes they relied on did not yield water up to their expectations. In addition, the fieldwork revealed that only 10% of the boreholes in the study area were functioning properly; this supports the assertions of some of the respondents that the boreholes were not providing the required yield. The poor yield from most of the boreholes could be attributed to the season of the drilling of the boreholes. Macdonald et al. (2019) [18] posit that boreholes that are drilled in the rainy season may provide poor yields in the dry when the water table may be low if the borehole was shallow. The researchers observed that there were long queues of women and children at the few functioning boreholes in the mornings and evenings. This usually leads children of school-going-age to absent themselves from school or become late in going to school in their quest to secure potable water for their households.

Furthermore, on accessibility to safe drinking water in the study area, 44% of the respondents said that they had access to safe drinking water throughout the year and the remaining 56% claimed that they did not have access to safe drinking water during some parts of the year, particularly during the dry season, usually between November and June. 36% of these relied on untreated open water sources such as water dams and 20% relied on dugouts, which are all unimproved water sources. As a result, some of the households in the study area relied on private water supply vendors for their drinking water. Consequently, Calderón-Villarreal, Schweitzer and Kayser [19] observe that many countries face challenges in providing adequate WASH facilities for their entire populations, leaving people at risk for diseases related to WASH. This makes rural Dandafuro and its environs and other parts of Ghana not to be an exception for inadequate WASH facilities provision.

On the affordability of water in the study area, except for the 4% of the respondents who depended on tank services and usually pay for the service, the remaining respondents said that water was affordable in their communities, as they rarely pay for water collected from the boreholes and unimproved sources. An elderly woman in an informal interview said that:

“The only time we paid for water was when our borehole broke down some long time ago and each household was tasked to contribute Fifty Ghana Cedis (which is approximately Six United States Dollars) for its maintenance”.

The no payment for water collected from the boreholes could be the reason for the 90% non-functioning boreholes, as there were no readily available funds for their maintenance.

### 3.3. Participation in Water and Sanitation Management in the Study Area

Essentially, the management committee plays a major role

in ensuring the sustainability of water and sanitation interventions. It is a normal practice that after the provision of WASH facilities, a committee is put in place to oversee the day-to-day operation of the facilities [20]. This practice is expected to forestall any eventualities that may lead to the total breakdown of the systems. In this study, 82% of the respondents indicated that no management committees were superintending over water and sanitation facilities in their communities, whereas 18% of the respondents said that, there were water and sanitation management committees in their localities. The inadequate management committees in the study area could be the reason for the 10% functioning boreholes, as boreholes that do not have management committees superintending over them may not be maintained and breakdowns not reported for remedial actions. However, user participation in WASH facilities management makes services and service providers more responsive and accountable to beneficiaries, as greater involvement of beneficiaries in decision-making and management of WASH facilities is expected to increase efficiency and equity [21].

## 4. Conclusion

The study assessed the attainment of SDG 6 in rural Ghana, using Dandafuro and its environs in the Wa Municipal Assembly of the Upper West Region as a case study. The focus in the assessment of SDG 6 was on targets 6.1: “*by 2030, achieve universal and equitable access to safe and affordable drinking water for all*” and 6.6b: “*support and strengthen the participation of local communities in improving water and sanitation management*”. The results revealed that potable drinking water accessibility is a serious challenge in the study area, as 44% of the respondents indicated that they had access to safe drinking water throughout the year, with the majority of the remaining respondents relying on untreated open water sources such as dams and dugouts, which are unimproved water sources. In addition, management committees, which are responsible for the operation and maintenance of the water and sanitation facilities, were woefully inadequate in the study area. This has led to the inability to have sustainable use of existing water and sanitation facilities. Thus, the drive behind attempts to meet SDG 6 in most rural Ghana is challenged by the lack of attention paid to the sustainability of WASH facilities by regulators of the sector. There is, therefore, the need to re-look at the issues surrounding the continuous provision of WASH facilities, as more efforts are needed to ensure that WASH facilities are managed sustainably.

## Competing Interests

The authors have declared that no competing interests exist.

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