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EDITORIAL REMARKS

Dear Reader,

This year the Centre for Human Settlements & Urban Development (CHSUD) will mark her 20th anniversary. This edition of her journal is intended as a prelude to launching of the Anniversary Edition tagged “Managing Human Settlements in the Urban Century”. This will highlight the requisites of having and keeping cities, towns and all forms of human settlements as humanity finally moved into the age where urbanization and urban activities, for the first time in history, dominates the planet. The special call for a focus on urbanization is further hinged on the fact that besides dominating human settlement types, urban related human activities have had the greatest impact on earth and its environment. This has resulted into a phenomenon now referred to as “The Anthropocene” – an interconnected, complex global systems in which humanity’s impact has become clear.

This volume nine and particular edition (number one) feature works that explored elements and scenarios that increasingly dominates African cities today. Many of them exhibiting lack lustre state of burgeoning cities and towns in sub-Saharan Africa. But shown here exhibiting the different efforts being made towards having sustainable living and livelihood. This is evident from widespread poverty and deprivations highlighted by “*Implications of Spatial Variation of Household Poverty Incidence in Neighbourhoods of Minna, Nigeria*”, to the explorations of the limitations of interventions shown by “*Climate Change Mitigation Paradox: Poverty and Greenhouse Gas Reduction in A Global South City*”. The different negative effects of increasing human activities on the natural and social environment enumerated by “*Spatio-Temporal Analysis of Land Use and Land Cover Change of Birnin Kebbi for Sustainable Development*”, and, “*Reduction in the Effects of Climate Change: Efforts Towards Safeguarding the Built Environment in Kaduna, Nigeria*”; have drawn attention to the dimensions and consequences, at local, national and regional levels, the increasing effects of human activities dominated earth and arguably the planetary system.

Dr Aliyu M. Kawu MNITP, RTP, MeRSA

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CHSUD Journal

Papers for Journal

The journal accepts well researched papers, including case studies, from all disciplines in Environmental Sciences and other disciplines or subject areas related to the built environment. However, papers to be considered for a specific volume of the journal should fall within the theme and sub-themes specified. The theme for each volume of the journal will be specified.

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APPRAISAL OF HOUSEHOLDS' COPING STRATEGIES TO WATER POVERTY IN BIDA, NIGER STATE

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Abstract

Water is needed to support socio-economic activities such as agriculture, mining, food production and for maintaining healthy ecosystems. This paper examines household coping strategies to water poverty by residents of Bida. Data was gathered using structured questionnaires administered to 420 households in the ancient city in North-central Nigeria. Field data was acquired through social survey involving multistage sampling – (cluster and Random sampling) and analysed with computer statistical packages of Microsoft Excel and the Scientific Package for Social Sciences (SPSS). Focused group discussion (FGDs) was also utilized to solicit further information from the residents. Most of the respondents sampled were married (93.6%) and uses water borehole as the primary source of domestic water, that is usually located outside residential compounds (81.4%), that imposes walking long distances to get water. The inadequacy or non-availability of domestic water is partly due to failure of public water supply system and rapid increase in urban population and unguided urbanization in the study area. The economic factors of pricing of water; social factors of conflict over limited water sources; physical factor of topography; together with the political influence were also observed as major factors militating against effective access to water. The study recommends that community participation from the planning to management levels should be encouraged to meet urban water needs that emphasized equitable distribution of water facilities without undue political influence, but rather accessed by the factors of sustainability viewed through population and levels of usage.

Keywords: Access to Water, Coping strategies, Water, Water demand, Water poverty

Introduction

Water is one of the human priceless resources but generally taken for granted until its use is threatened by reduced availability and/or quality. Water remains one of life's necessities that have no substitute. It is the life blood of the biosphere (Griggs et al., 2013; Miller et al., 2010; Rockström et al., 2021) as it is needed to support socio-economic activities such as agriculture, mining, food production and for maintaining healthy ecosystems. About 1.1 billion people do not have access to improved water supply. This is in addition to over two million people, mostly children of less than 5 years age mainly from developing countries with poor implementation of sustainable water programmes that die every year of diarrhoea diseases (World Health Organisation, WHO, 2011). In Nigeria, water scarcity is common in all urban areas as the public water supply is unreliable, intermittent and in most cases inaccessible and unavailable, thus giving rise to a high dependency on unsafe sources of

water supply (Ocheri, 2016) susceptible to water borne diseases like dysentery and typhoid fever. Low-income earners in urban areas are deprived of provision of good water services and do pay exorbitant prices for small quantities of water of doubtful quality (Bussu & Kawu, 2007; Kawu & Owoyele, 2008; Umar & Kawu, 2011). It is however, necessary to make water available in the required quantity and quality in order to meet the demands of the various users especially in third world countries. World Health Organizations also emphasized that improved water provision will instantly improves health, especially in poor communities, as hours spent in fetching water could be invested in other activities that will lift people out of poverty (IRIN, 2016). Also, there is increasing pressure on government and public water utilities to meet the demand in a number of small and intermediate towns that aspire to have urban services. Unfortunately, most developing countries, including Nigeria, do not invest rationally on this sector thus

grievously affecting the sustainability of urban water supply (Bussu and Kawu, 2007; Kawu, 2016; Mohammed, Jiman, and Kawu, 2019). In many human settlements, the overall effective water supply is diminishing due to poor maintenance, unrealistic supplies, and aging facilities. In Manila city for example, people pay as much for water as rent (UN-HABITAT, 2015; Biemans and Siderius, 2019; Momoh *et al.*, 2018; Murgatroyd and Hall 2021), and have to walk long distances to get it as nearby supplies may be limited.

People can also be 'water poor' because they are 'income poor' - although water is available, they cannot afford to pay for it. A number of studies have established that water poverty and water degradation have serious effects on household economies and personal health (Kawu, 2012, 2015; Kayser, *et al.*, 2013; Roy & Pramanick, 2019; Sadiq *et al.*, 2018). However, few of these works have examined the effects of water poverty on families, communities, and cultural institutions (Sullivan, 2002). This is needed to highlight its economic and health impacts and also to quantify possible setbacks to national development in addition to understanding how urban water scarcity affects social, economic, and cultural institutions dear to the urban poor. In cities of developing countries, urban water distribution generally takes a centre/periphery form, in which well-provisioned downtowns give way to outskirts with progressively fewer municipal services (Kawu, 2016; Mohammed *et al.*, 2019). Without adequate infrastructure, the urban poor suffer from severe water scarcity even in cities that have enough water to meet their residents' needs. Hence, the need to understand the socioeconomic settings of urban residential areas facing water scarcity; assess their sources and characteristics of primary sources of water; and, identify the factors mitigating against effective strategies to addressing water poverty in Bida and similar settlements.

Concepts and Meaning of Water poverty

Definitions play a vital role in identifying the beneficiaries or prioritizing water investment. While defining water poverty, context

specific or location parameters need to be considered. Therefore, it is important for the development agencies to carefully consider or adopt the definitions in the local context rather than the global context. The definitions in the global context may fail to address the local problems and hence may not be applicable to the local conditions (White, 2015). This has also necessitated the need to stop seeing water as an infinite gift of nature but as a resource that needs to be conserved and managed for optimal usage. This is because of the growing awareness of global water crisis that is imminent and the need for proper management of this resource to sustain human existence. According to the Food and Agriculture Organization (FAO) and UN Water, global water use has been growing at more than double the rate of population increase in the last 100 years (UN-Water, 2011).

Water is a natural resource of fundamental importance. It is a basic need that has become the dominant development priority for most countries especially in the developed parts of the world. Water supports all forms of life and creates jobs and wealth in the water sector, tourism, recreation and fisheries (Ntengwe, 2005 cited in Abaje *et al.*, 2015). Unfortunately, most countries do not have sufficient water resources to meet per capital water needs for their rapidly expanding population. It is documented that less than ten countries have about 60% of globally accessible water (Swaminathan, 2013), suggesting inequitable distribution of water globally and nationally, indicating the scarcity of the resource. Water scarcity is the lack of access to adequate quantities of water for human and environmental uses, and it is increasingly being recognized in many countries as a serious and growing concern (White, 2015).

Causes of Water Shortage according to a study by Mangizvo and Kapungu (2010) include aging equipment plays a role in water shortage. Equipment in the water provision system is dilapidated as a result of old age. The pump equipment has outlived the efficiency of its design and, as a result, the

city council of Harare, Zimbabwe, is incurring huge maintenance costs to keep them functional. Due to obsolete equipment, the water treatment plant is producing an average of 12,000m³/day instead of at least 18,000m³/day. In the same study by Mangizvo and Kapungu (2010) there are extensive leakages along the main pipe line that supplies water to the city from the water works. This resulted in the loss of approximately 30 percent of treated water. Bursting of water pipes were also being experienced in the oldest reticulation mains feeding the residential areas. According to Chigumira and Mujere (2019) the water system had several underground leakages and small leak was estimated to put to waste more than 500,000 liters of water per year. These were all attributed to the age of the pipes. The aging equipment compromises the efficiency of the water supply system, meaning that water shortages were becoming a regular occurrence in the city of Harare. Another cause of water shortage is attributed to the power outages. Zimbabwe has been experiencing serious power shortages, which have resulted in power cuts that negatively affect the supply of water. The magnitude of the problem has worsened in Harare, as the water works could go without electricity for periods ranging from 6 hours to 18 hours on a daily basis (Mangizvo and Kapungu, 2010). Chigumira and Mujere (2019) revealed that power outage problem started manifesting in Kadoma in 2005. The Zimbabwe Electricity Supply Authority has not been able to dedicate a power line to the water pumps to avert water problems, yet water is a key component for human wellbeing. Load shedding has been on the increase in the recent past.

Ending poverty in Nigeria begins with clean water; that, apart from the issue of conflict, climate conditions and political crisis that are related to poverty in Africa; the one prominent factor that has been neglected that has caused much poverty in Africa is potable water. According to a study by Water Project Organization (cited in UN-HABITAT, 2015), the lack of access to quality water makes it difficult for one to grow crops, stay healthy

and cook good food. In many Nigerian communities, able-bodied men and women have to trek long distances in search of water (Abaje, *et al*, 2015; Mohammed, *et al*, 2019). The United Nations stress that the countries in the Sub-Sahara Africa lose 40 billion hours annually searching for water. More than one billion inhabitants in developing countries do not have access to potable water and there is a possibility for the figure to increase (Barker *et al.*, 2015). In most cases, local communities in Nigeria fetch water from streams. This water is said to be contaminated with waterborne diseases; and further accounted for the high rates of typhoid fever, dysentery and cholera in the country (Abaje, *et al*, 2015; Ocheri, 2016; Mohammed, *et al*, 2019).

Study Context

Bida is located in Niger State of Nigeria that was created on 1976 from the then North-western State. The State is bordered by Zamfara, Kebbi, Kogi, Kwara, and Kaduna States, while Abuja, the Federal Capital Territory (FCT) is about 180km South East of Minna – the administrative capital of the State. Niger State covers a land area of 76, 469.903Km² (about 10% of the total land area of Nigeria) out of which about 85% is arable (NSPC, 2011). Bida is located on Latitude 9⁰06'E and Longitude 6⁰01'N of the Equator, about 86km Southeast of Minna, the Niger state capital. Presently, Bida has its boundaries extending beyond the spatial settings of Bida Local Government Area as it has spread beyond the town's ancient walls with a high population density especially at the core or central area of the ancient town. Rapid urbanization has extended the development of Bida into the immediate surroundings Gbako, Lavun, and Katcha Local Government Areas of the state; with prominent institutions located in these local governments. As at 1980s, the size of the town was around 51km² but in about two decades it has extended to over 200.50km² (NPC, 1991 & 2006).

Spatial structure of the Study Area

Settlement structure in the older Bida city is predominantly large where extended families live together with their children and

grandchildren. This attribute contributed to the spatial form found in Bida today, with a great family tie that is not readily broken but housed within clusters of compounds. Of recent, there is increasing dissociation from family compounds; hence, the indigenous population as against settlers now build

residential structures outside their family compounds with better organized housing and residential neighbourhood than those in the traditional town (NSBS, 2012). Figure 1 highlights the main traditional and sample wards in the study area.

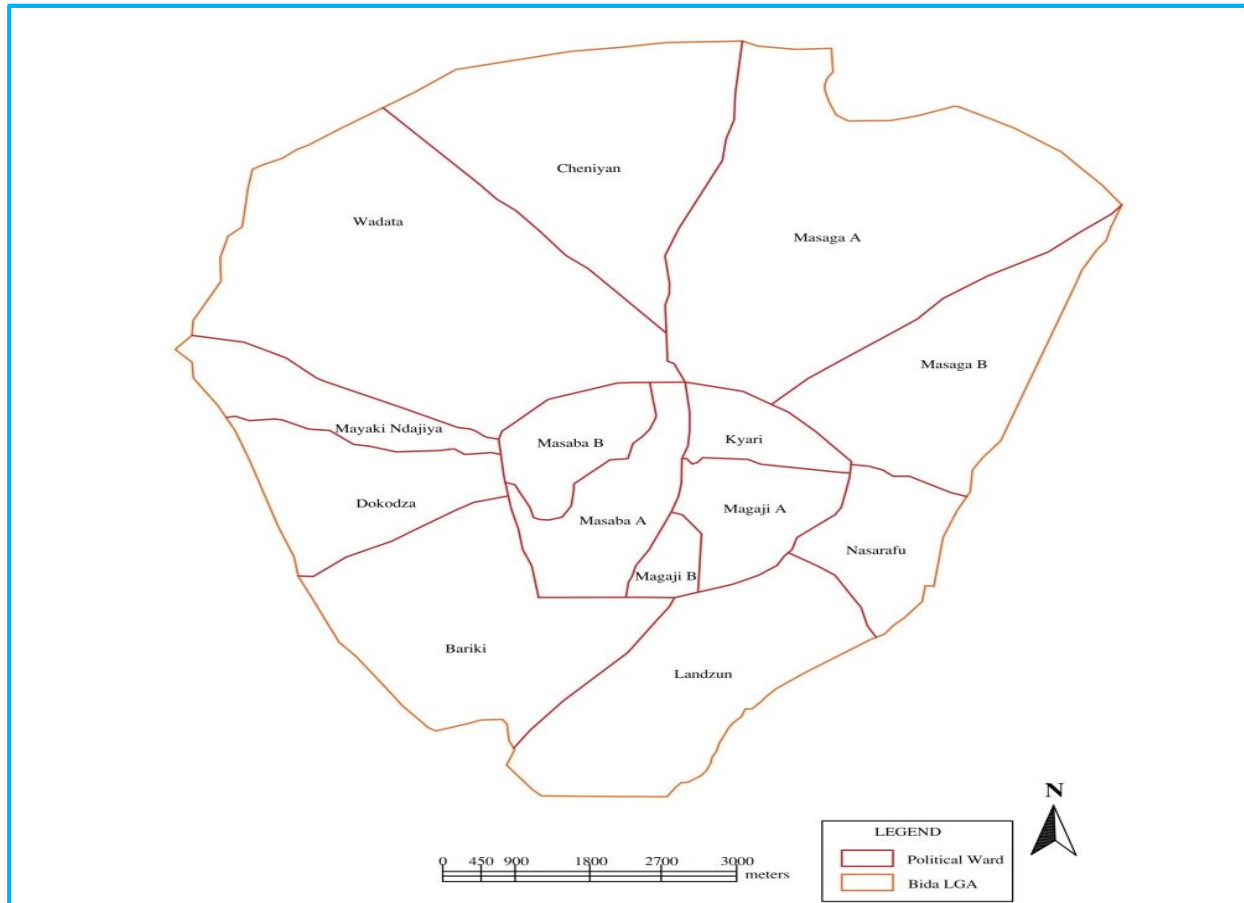


Figure 1: Traditional and Sample Wards in Bida

Source: Department of Urban and Regional Planning, FedPoly, Bida (2017)

Methods

Data Collection and Analysis

Data for this research was sourced from primary and secondary sources, with the primary data collected through physical field surveys, physical observations and the administration of questionnaires. Primary data are the socioeconomic characteristics of the people, living conditions, and the environment. Secondary data were achieved through a review of related works from books, journal articles, maps and satellite imageries, and online publications. The questionnaires were administered via Open Data Kits (ODK) platform and Global Positioning System (GPS) that captures spatial data including positions of the

available water facilities across the study area. Digital Camera was used to capture images of water sources, conditions of the facilities and coping strategies. In other to achieve a sample size that serves as a good representative for the study population, Dilman and Salant (1997) sample size formula was adopted and gives a sample size of 420. Therefore, a total of 420 structured questionnaires were administered to households in Bida. The sampling technique for the administration of questionnaire for the study involves two stages (Multistage). The first stage entails the use of cluster sampling, while, the second stage involves the use of Random sampling. Data collected were analysed using computer software – Microsoft Excel and the Statistical

Package for Social Sciences (SPSS), for high accuracy and avoidance of human errors of computation.

Results and Discussion

Socio-Economic Characteristics of Respondents

Field survey showed that 87.9% of the respondents sampled were female while male respondents account for only 12.1 percent. The high number of women as respondents showed that women are the custodians of water in the communities and use water more for domestic chores. The field assessment further shows that the household size of 6-10 has the highest percentage with 56.4%, followed by 5 with 23.8%, while the major household size is having 6-10 members (56.4%). The respondents with ND/NCE are the highest with 39.5%, those with HND/Degree with 20.0%, and secondary education with 32.9%, as those with only Quranic education and PG recorded the lowest percentage with 4.5% and 3.1% respectively. The majority of the respondents (93.6%) are also married and tend to use water more as a result of family setup. The field survey on the income of the respondents shows that about half (51.9%) earn between N18,000-30,000 which is the highest in the study area, followed by 39.3% that earn between 30,100-40,000, 6% earn 40,100-50,000 and only 2.9% earns less than N18,000. This is an indication that more than half of the respondents live on less than United Nations' standard poverty line of USD2.00 per day.

Sources and Characteristics of Household Water Supply

Figure 2 reveals borehole is the major primary source of water in the study area with 92.4% of the respondents while well and tap water takes 6.7% and 1.0% respectively, and, only 0.4% indicated that they use stream water. It can then be deduced that majority of the respondents depend on borehole water for domestic water.

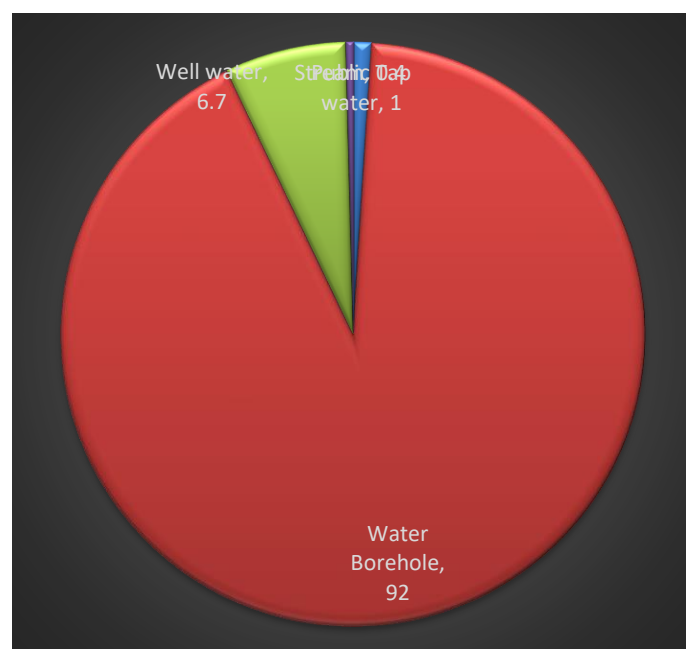


Figure 2: Primary sources of water

Source: Authors' Field work, 2021

Field surveys also revealed that over 81% of the respondents have their water sources located outside the compound of residence; while about 16.7% are located inside the compounds, with only 1.9% of water sources in far distance. Hence, the sampled residents have their water sources located outside their home and house of residence suggesting high water poverty rate (Figure 3 and Plate I).

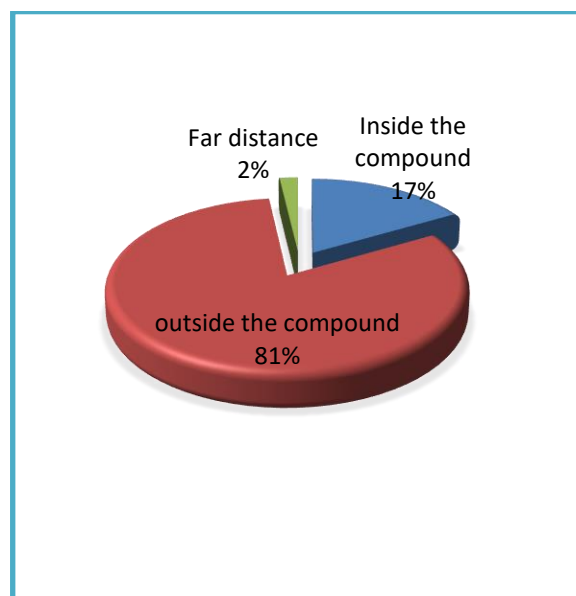


Figure 3: Location of domestic water sources

Source: Authors' Field work, 2021



Plate I: A borehole water source located outside residential compound
 Source: Authors' Field work, March 2021

Domestic water usage and sourcing

Field survey revealed that the number of litres an individual used per day in the study area is majorly 25 litres (66.2%), this is followed by 100 litres (as accounted by about 16% of the respondents), another 12.4% use 75 litres, and only 1% of the respondents used up to 125 litres of water every day (Figure 4). The girl child or the youngest female child of the family is shown to be the main member of the family with the highest responsibility for getting water for the household (80.5%). Others are with relatively lower frequencies like the boys with only 4%. The girl child (mainly teenagers) fetches domestic water for the whole family thereby rubbing them of the full time and opportunity for schooling, reading and learning of skills. See Figure 5.

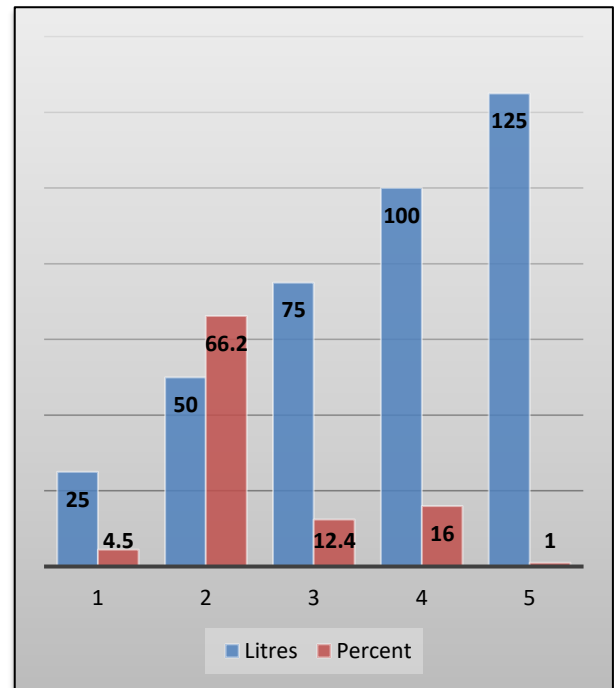


Figure 5: Daily water consumption by the urban residents of Bida
 Source: Authors' Field work, 2021

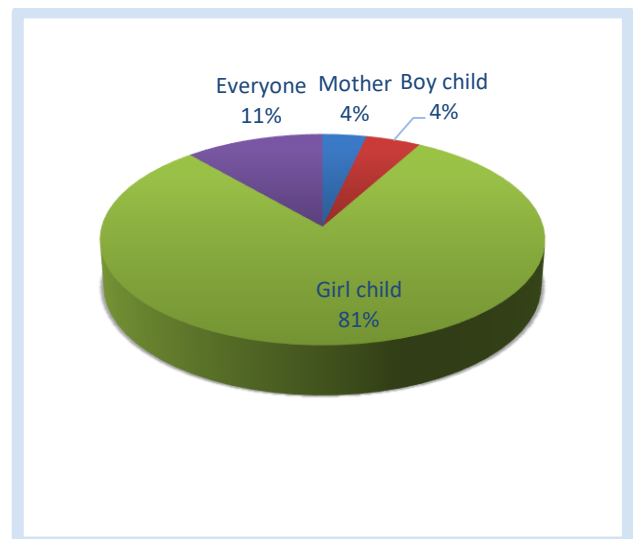


Figure 7: Water fetching responsibility
 Source: Authors' Field work, 2021

Factors Mitigating against effective access to water

Economic Factors such as the price of a container of water (25litres) varies between N15.00 to N30.00, with about 53.6% of the city residents paying N25.00. However, another 42% and 3.6% are paying N30.00 and N20.00 respectively for the same quantity of water – bringing the average price of water in the study area to be high. Another mitigating factor to effective and affordable access to water is social factors such as conflict over

water points – tap or communal borehole stands. It was observed over 81.4% of the respondents with water sources located outside their residential compounds; do experience conflict with other residents who are also for the same commodity at the same time from a lone source (Plate 2).



Plate 2: Conflict at the water source
Source: Authors' Field work, 2021

Physical Factor such as the topography of the area is also another factor Mitigating against effective access to water as areas such as Landzun, Masaba A and Masaba B are well endowed with water much more than other wards as demonstrated by the presence of more water borehole facilities than other places. Political influence is also observed to be another player in water accessibility in the study. The borehole facility as another source of water in this growing city is not evenly distributed - some areas have high concentration of water this facility while there is scarcity in many other areas. Focused group discussion (FGDs) revealed that the uneven distribution is due to the fact that some wards produced more legislatures thereby given rise to more water facilities.

Conclusion and Recommendations

There is water poverty in Bida; hence residents have devised strategies to cope with the rising situation. Their efforts however have not sufficiently helped to resolve the lingering age-old water scarcity problem. The agencies responsible for provision and maintenance of public water supply are incapacitated. The residents have equally

observed these causes and have devised means to overcome the obstacles; however, government and the urban authorities are yet to put in place effective policies on water resources provision, management and conservations that annex the growing solutions and innovations adopted by the residents.

With the larger municipal water works facilities abandoned, the easiest and cost-effective solutions to augment water provision in Bida and similar towns and cities in Nigeria would be the creation of more potable water sources like digging well and sinking of water boreholes to accommodate the increasing water needs. There is also need to strengthen the State's Water Board technical and finance departments in other to be able to effectively carry out their constitutional functions as stipulated by the edict establishing them.

Community participation from inception of water provision projects cannot be over-emphasized in other to maximize supports and the needed community care for water and its related facilities. User participation in this regard can include mobilization for the regular payment of bill, fees and charges and even volunteering in servicing the public infrastructure whenever in need. Hence, the high relevance globally placed on community participation and inclusion. In this case for effective management of public water supplies, as it entails the integration of the target communities in planning, execution and management of the facilities. This would ensure sustainable water supply that would reach all nooks and crannies of the community for sustainable life and livelihood activities.

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