

WATER SCARCITY AND COPING STRATEGIES IN ZANGON KATAF L.G.A., KADUNA STATE, NIGERIA



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ABSTRACT: The paper examines the coping strategies put in place to remedy the problems of water scarcity in Zangon Kataf L.G.A. of Kaduna State. The study covers the four chiefdom; Atyap, Bajju, Kamattan, and Ikulu. A multistage sampling technique was adopted where two districts were selected: Zonzon, Ung/Gaya, Zonkwa, Ung/Rimi, Kamatan, Kangun Ashafa, and Kamuru district for Atyap, Bajju, Angan and Ikulu chiefdom respectively. In addition, two villages were selected at random from each district making a total of 16 villages. A total of 250 people were selected from each district and villages sampled. The data obtained were computed using tables of mean and percentages. The study revealed that majority of the settlement in the local Government Area are faced with water problem. Per capita-consumption of water recorded was below 25 litres/day standard recommended for rural areas. It was also discovered that the area suffered from distance and poor quality of the sources of the domestic water that results to late to schools and working place, the prevalent water-related and waterborne diseases such as Typhoid, Cholera and Belhazia. Some of the coping strategies identified include the improvement on storage facilities, provision of hand dug wells, maintenance of existing sources, water community participation should mobilize benefiting communities of Government water projects on the need to form water user association for attainment of the Sustainable Development of the Nigeria Environment.

INTRODUCTION

Water is one of the most essential elements needed for all forms of life and human activities. Its inadequacy is a major limiting factor in human development. The quality and quantity of this important resource is obviously varying over time, yet the demand for water in many parts of the world for various uses especially domestic purposes is increasing. For most regions such as the basement complex, arid and semi arid areas of the world, water availability is already under extreme stress (Stoveland, 1997).

The governmental and non-governmental responses through drilling of boreholes, dams, hand pumps have failed to satisfy the optimum domestic demands in both rural and urban environments. In most of the towns where these facilities are present, operational problems, damages and poor capacity to repair and maintain them make the water supply unreliable. Consequently, communities are left to search for remedies within their reach often resulting in depletion of resources close to settlement and use of poor quality supplies.

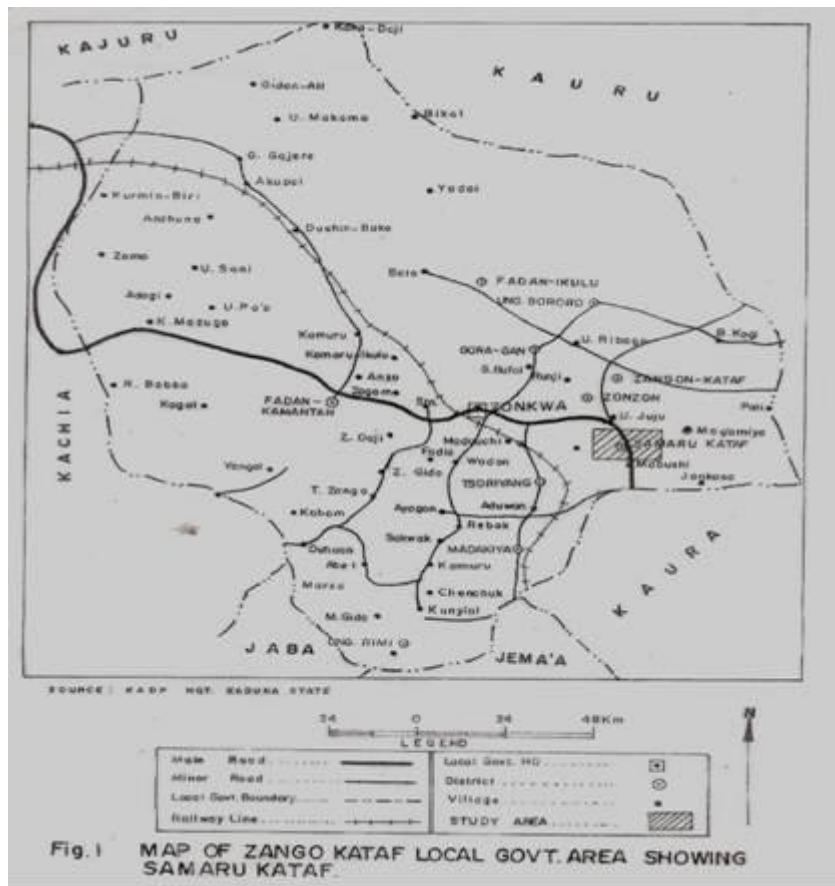
Without water life is impossible. This is because other elements on earth combine with water to constitute living plants, animals and human matter. Remove water from a plant or an animal by overheating it and nothing remains but dry matter and ashes which can never be restored to life. It is unfortunate that most of the rural settlements have exceeded the water supply from the traditional sources like wells, dams, as such critical condition results. These consequently lead to social insecurity, slow rate of socio-economic development and to some extent, outward

migration from areas of poor water supply (Ikelegbe, 2007). However, according to Hamidu (1997), the general policy of provision of adequate domestic water supply for individual in the rural community is 25litres per person per day per.

The growing disparity between the available supplies and the ever-increasing demands for water leads to its scarcity, posing a critical dilemma for global water resources and their uses (Ayoade, 1988). Given the essential role of water in human activities, the impacts of water scarcity are potentially devastating in the study area. The irregular water supplies from the limited sources such as wells, streams and rain go dry in most of the dry seasons causing people to go several kilometers away from their homes to fetch water. The shortage of water manifests in the level of productivity, health condition and quality of life.

A committed approach is thus needed for the development of sustainable water supplies in the area. There is, therefore the need to undertake an in-depth study on the nature, possible causes and extent of the effects of the water scarcity and the coping strategies in the study area.

Zangon Kataf Local Government Area is situated in the southern part of Kaduna state (Fig. 1). It is one of the largest Local Government Areas both in population and landmass in Kaduna State..



The study area is situated on the central highland of northern Nigeria and the region consists of a rolling terrain extended to the Jos Plateau. The climate of the area is part of the tropical wet and dry climate of Nigeria. It is characterized by wet and dry seasons. The wet season begins in April and ends in October, though; there is fluctuation in the beginning and the ending of wet season from year to year. In some years, it begins early May (Ileoje, 1985). The wet season which is characterized by high humidity throughout last for six to seven months with its maximum rainfall in the month of August (Ajayi, 1998)? The main annual rainfall ranges from

1204 to 1567mm. the study area is dominated by the dry dusty cool hamattan wind, migrating from the Sahara desert November to March each year. The average temperature is between 24°C to 38°C (Ileje 1985). The area is located in the slightly thicker wooded vegetation of the north guinea savannah zone, the activities such as overgrazing, bush burning, over cropping, tree felling for fire wood have generally modified the vegetation to wooded shrub like-vegetation. The soils fall within the tropical ferruginous soils, the topsoil is coarse sandy soils (Adetola, 1968), though the southern part of the study area is slightly acidic. The soils have lost its fertility that no crop can grow successfully without the use of fertilizer.

The 2006 census estimated the population of Zangon Kataf to be about 2,508,300 people spread all over the four chiefdoms.

METHODOLOGY

Four chiefdoms in Zangon Kataf L.G.A were selected for the study, namely: Atyap, Bajju, Kamattan and Ikulu. A multistage sampling technique was adopted where two districts were selected (Zonzon, Ung/Gaya, Zonkwa, Ung/Rimi, Kamatan, Kangun Ashafa, and Kamuru district for Atyap ,Bajju, Angan and Ikulu chiefdom respectively). In addition, two villages were selected at random from each district making a total of 16 villages. 250 people were sampled.

Data used for the study were collected by the use of questionnaire. The questionnaire sought to know sources of water supply available to households, problems and consequences of inadequate water supply and strategies employed to curtail these problems. A total of 250 questionnaires were administered to 50 respondents in each chiefdom randomly. Simple descriptive statistical analysis using tables and percentages was employed to analyzed the data.

RESULTS AND DISCUSSION

Demographic Characteristics of the Respondents

From Table 1, female respondents constituted 73% of those sampled. This indicated that in the study area, sourcing water for domestic uses is the responsibility of the women. In addition, the bulk of those sourcing for water were of single status (78%) which suggests that children were the most dominant group in search of water.

Table 1: Sex distribution and marital status of respondents in the study area

Sex	No of respondents	(%)	Marital status	No of respondents	(%)
Male	68	27.2	Married	55	22
Female	182	72.8	Single	195	78
TOTAL	250	100	TOTAL	250	100

Age Distribution of the Respondents of the study Area

Table 2 shows age range between 25-35 years had the highest representation (48%) respondents, followed by groups between 35-45years, (26.2%). Age group 25years had 14%, the least representation was recorded for against on ages range of 55years and above had 2.9%.

Table 2: Age distribution of respondents

Age Interval	Respondents	%
Under 25	35	14
25-35	120	48
35-45	66	26.2
45-55	22	8.8
>55	7	2.9
TOTAL	250	100

Occupation of the Respondents

Table 3 indicates that farming has emerged their major occupation (42.8%), followed by civil servant (28.8%), 15.6% of the respondents were traders and 12.8% craftsmen.

Table 3: Occupation of the respondents

Occupation	No of Respondents	(%)
Farmers	107	42.8
Civil servants	72	28.8
Traders	39	15.6
Craftsmen	32	12.8
Total	250	100

Educational Status of the Respondents

Table 4 indicates that 46% of the respondents had secondary education, 27.2% had primary education. About 16.8% did not attend any formal education while 10% had post secondary education. The educational background is an important determinant of his behaviour.

Table 4: Educational status of respondents

Educational status	No of respondents	(%)
Primary	115	46
Secondary	68	27.2
Non formal Education	42	16.8
Tertiary	25	10
Total	250	100

Household Size of the Respondents

Table 5 indicates that 43.6% of the respondents had a household of 10 and above, 28% had a household of 7 – 10, 12% had with 3-5 household and 8.4% had 1-3 household.

Table 5: Household Size of the Respondents

Household Size	No of Respondents	(%)
1-3	21	8.4
3-5	30	12
5-7	20	8
7-10	70	28
> 10	109	43.6
Total	250	100

Average Income of the Respondents

It was observed that 26.8% of the respondents income was N1,000 – 5,000 monthly (Table 6), 22% had income of N1000, 18% had of N5,000 – 10,000 and 10.8% had of N10,000- 15,000.

Table 6: Monthly income of respondents

Income #	No of respondents	%
<1,000	55	22
1,000 – 5,000	67	26.8
5000 – 10,000	45	18
10,000 – 15,000	27	10.8
15,000 – 20,000	32	12.8
20,000 or more	24	9.6
TOTAL	250	100

Identification of the problems

It was observed from Table 7 that 74% of the respondents experienced water scarcity from the month of March – May, 21.6% between February – March, 2.8% in December – January and 1.6% in the month of May – July.

Table 7: Period of water scarcity in Zangon Kataf LGA

Months	Number Of Respondents	(%)
December – January	7	2.8
February – March	54	21.6
March – May	185	74
May – July	4	1.6
Total	250	100

Source of Water Supply

The analysis has shown a percentage differences in the respondent's sources of domestic water between dry and wet seasons. In the dry period, streams and wells recorded the highest percentages of 47.2% and 37.6% respectively while in wet seasons, rain, stream and well were the dominant sources. These revealed the acute shortage of domestic water supply to the inhabitants of Zangon Kataf LGA. in the dry season. The borehole and tap could not sustain the supply due to dryness of the season and poor aquifer which could inhibit water retention.

Table 8: Sources of water supply

Water Source	Dry Season		Rainy Season	
	No. of Respondents	(%)	No. of Respondents	(%)
Rainfall	0	0	90	36
Well	94	37.6	122	48.8
Borehole	38	15.2	10	4
Stream/river	118	47.2	28	11.2
Earth dam	0	0	0	0
Total	250	100	250	100

The Domestic Household Water Demand and Supply

Table 8 shows that out of the 25litres of water demand by a household for cooking only 15 litres was supplied, for drinking, 20litres is demanded and 10litres is supply, for washing, 15litres was demanded but 10litres is supply. For laundry instead of 50litres, only 15litres was supplied and for washing vehicles 35litres demanded but 15litres supplied.

Table 9: Water Demand and Supply of the Respondents

Purpose	Quantity (litre)/day/household	Supply	Use
Cooking	25	15	15
Drinking	20	10	10
Washing	15	10	10
Laundry	50	15	15
Washing Vehicles	35	15	15
Flower/Garden	0	0	0
Building	0	0	0
Total	145	65	65

PROBLEMS ASSOCIATED WITH WATER SCARCITY IN THE STUDY AREA

Distance covered by the respondents to procure water from source for their household

From Table 9, majority of the respondents, 37.2% travel a distance of 3km – 4km to procure domestic water during the dry season. The least distance of the respondents is 5km (6.8%). During the rainy seasons, the majority, 38% of the respondents travelled a distance of 0.1 – 1km and with least 5km (8%).

Table 10: Distance covered to procure water from source

Distance (km)	Dry Season		Rainy Season	
	No of Respondents	%	No of Respondents	%
0.1km -1km	25	10	95	38
1km – 2km	38	15.2	62	24.8
2km – 3km	55	22	38	11.2
3km – 4km	93	37.2	25	10
4km -5km	24	8.8	20	8
5km -above	15	6.8	10	4.2
Total	250	100	250	100

Time taken by the respondents to procure water from source

Table 10 shows that 40.4 % of the respondents spent 2 – 3hours to fetch water from the source, 69% take 3 – 4hours, 28% spent 4-5hours, 8% spent 1 – 2hours while 2% spent 1hour.

Table 11: Time taken to source of water

Time (Hr)	Number Of Respondent	%
<1hr	3	1.2
1 – 2hrs	20	8
2 – 3hrs	101	40.4
3 – 4hrs	69	27.6
4 – 5hrs	29	11.6
>5hrs	28	11.2
Total	250	100

Nature of the Water Quality of the respondents

Table 12 reveals that 72% of the respondents source of water during the dry season had poor quality one and the remaining 25% had good source of water for their domestic uses. As observed during the rainy season, 64% of the respondents had poor source of water quality, while the remaining 36% had good source of water for their domestic uses

Table 12: Water quality of the Respondents

Nature of Water	Dry Season		Rainy Season	
	No of Respondent	%	No of Respondent	%
Good Quality	70	28	90	36
Poor Quality	180	72	160	64
Total	250	100	250	100

Common Disease Among the respondents

Table 13 reveals that 79.6% of the respondents experienced Typhoid fever, 12% experienced Diarrhea, 4.4% experienced Cholera and 4% experienced Dysentery.

Table 13: Common diseases among the respondents

Diseases	Respondents	%
Typhoid	199	79.6
Dysentery	10	4
Diarrhea	30	12
Cholera	11	4.4
Total	250	100

DISCUSSION

Based on the findings, the rural areas of Zangon Kataf LGA do not have adequate water supply at sustainable level as recommended by Internationally accepted standard of 25litres/person/day. The household water demand for drinking, cooking, bathing washing and

other activities is inadequate especially during the dry season where the demand is greater. Most of the boreholes, wells, streams and rivers dried up during dry season and there is usually inadequate supply of water. It suggests therefore, that access to source of water for domestic uses in the study area is becoming a serious issue threatened by a number of problems and health risk factors. Majority of the respondents during the interview complained that women and children who are responsible for sourcing the water for use in the household travel several kilometers to fetch water sometimes spend 2 – 3hours. This has a negative impact on their health

The study observed serious cases of diseases such as typhoid and dysentery in the rural areas of Zangon Kataf LGA as a result of consuming the untreated or boiled water from contamination sources.

CONCLUSSION AND RECOMMENDATION

As observed from the findings that the rural area of Zangon Kataf Local Government suffers from water scarcity especially during dry seasons. The scarcity of the water in the area has thrown the inhabitant of the study area into serious problems thereby making life very unbearable.

The following recommendations are made towards solving the water scarcity problem in the area.

- Improvement of the pipe borne water system of Manchok – Zonkwa and Zangon Kataf line for daily water supply to the local government.
- Sinking of more boreholes in all the communities in the local government area.
- Construction and erection of underground and overhead tanks in areas prone to frequent scarcity.
- Some considerable fees should be charged from every household for maintaining the partnership projects.
- Boiling of water meant for drinking should be encouraged.

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