DETERMINANTS OF HOUSEHOLD WATER USE IN ABIA STATE NIGERIA

Uchechi Apu, R.P.A. Unamma and O.O Ekumankama

Department of Rural Sociology and Extension,
Michael Okpara University of Agriculture, Umudike, Abia State, Nigeria
E-Mail: ogudu24@yahoo.com Phone: 08053165143

ABSTRACT

The study evaluated the determinants of household water use in Abia State, Nigeria. The study analysed annual government expenditure for the provision of safe water for the use of the people in the study area between 1999 and 2006. It also identified available safe water supply schemes (sources) provided by government and determined the state of those schemes, among others. Multistage random sampling procedure was used in selecting respondents for the study. Data collection was facilitated by the use of structured questionnaire, which was administered on 360 respondents. Of the 360 questionnaire administered, 340 valid returns were recorded and this constituted the sample size for the study. Simple descriptive statistics such as frequency counts and percentages as well as inferential statistics such as the ordinary least squares (OLS) regression were used to analyse data collected. Results revealed huge government expenditure for the provision of water supply scheme within the study area. A high level of formal education was found among the sampled population. Only about 0.2% had no formal education. Majority (83.2%) of the respondents had moderately sized households ranging from 4 to 6 persons. Results further showed that majority of the water supply schemes/ projects (57.1%) which provided water for household use in the area were provided by government. More than half of the sampled populations were found to be moderate in their water use, utilizing betwwater on daily basis. Results of the OLS regression analysis revealed that gender, level of formal education, income of household heads, water source, and the state of the water scheme (source) were all significantly related to the level of utilization of water among respondents in the study area. In other words these are the essential determinants of household water use in the area. Positive relationship was established for gender at 10% level, income of household heads, level of formal education, water source and the state of water source at 1% level of significance respectively. It was recommended that efforts be geared towards scaling up the safe water supply schemes/ projects/ source in the study area, with a view to satisfying the water needs of the people. This should not be the sole responsibility of government, as the rural people also have a role to play in the midst of other stakeholders.

Key Words: Determinants, household, water.

Introduction

One of the major challenges faced by inhabitants of many developing countries is that of the rising demand for available safe and accessible water supply. Inadequacies of social infrastructure especially safe water supply sources had been identified as part of the limitations to the general welfare and economic growth of individuals, households and the rural areas (Apu, 2010). Water is known to be demanded for cultivating crops, for household uses such as drinking, cooking, and sanitation; as a critical input into industry; for tourism and cultural purposes and for its role in sustaining the earth's ecosystem (Oluwatayo, 2006). Fakayode et. al. (2008) reported that water is highly needed by man to support life. According to them, the availability of healthy water helps to prevent

communicable diseases. However, this essential natural resource is under threat. Growing water scarcity poses severe challenges for national governments, international development and environmental communities. The challenges of increasing water scarcity are heightened by rising cost of developing new water schemes, degradation of soil especially in irrigated areas, depletion of ground water, water pollution and wasteful use of already developed water supplies (Rosegrant, Cai and Cline, 2002; Oluwatayo 2006). These portend a threat to the availability for household use, food production and thus putting households, national as well as global food security at risk.

Many experts agree that each person requires a minimum of about 50 litres of water a day for drinking, cooking, bathing and sanitation with only about 5 to 10 litres for drinking (IFPRI, 2002, Oluwatayo, 2006). Oluwatayo (2006) reported that in Nigeria and other developing countries, many poor people get much less than 50 litres a day of which virtually none is technically safe for drinking. The situation is worse in the rural areas, where Cleaver (1993) identified water supply situation as constituting a key constraint to rural development. It is currently estimated that about 35% of the rural population have access to safe and reliable water supply and adequate sanitation facilities (FRN, 2000). The recently launched 2010 report by the World Health Organization (WHO) and United Nations Children's Fund (UNICEF) Joint Monitoring Project (JMP) shows that over 75 million Nigerians lack access to quality water (Daily Sun, April 2, 2010). The report made available by water Aid International, Nigeria, indicated that Nigeria is actually on a downward trend in its pursuit of the Millennium Development Goals (MDGs) target for access to safe drinking water by 2010, with the 50 percent access in 1990 reversed to 47 percent in 2006.The need for concerted efforts to be geared towards increasing people's access to safe water therefore becomes very imperative.

Malaria is the predominant disease affecting the population of Nigeria (FRN, 2000). Many other diseases known to be endemic throughout the country are generally associated with unsatisfactory drinking water supplies, poor sanitation and inadequate health education programmes. These diseases include diarrhoea, dysentery, gastro-enteritis, infectious hepatitis, hook worm, guinea worm and other parasitic infections. Cleaver (1993) reported that waterborne pathogens are the major causes of seasonally or permanently debilitating diseases which severally affect agricultural labour productivity. Of the 3.4 million people killed each year by water-related diseases, 2.1 million people, mostly children, die from diarrheal diseases stemming from lack of access to clean water (UNICEF and WHO, 2000; IFPRI, 2002; Oluwatayo, 2006). Water-related diseases place an excessive burden on the population and health services of many countries worldwide and in particular on those in developing countries (WHO, 2006). Scarcity of water portends a great challenge to its availability for household use. It also poses a threat to the attainment of household food security. Besides, poverty which is prevalent among the rural populace makes access to safe water for household use difficult. Consequently the rural populace often rely on unsatisfactory sources of water for household use. Against the backdrop of lack of access to safe water, which constitutes a critical problem especially in the rural areas, this study focused on the determinants of household water use in Abia State, Nigeria with a view to knowing those factors influencing its use, government expenditure for provision of safe water and suggesting ways of satisfying the water needs of the people.

Specifically the Objectives of the study are to:

i. Ascertain annual government expenditure for the provision of safe water for the use of the people in the study area,

ii. Identify available safe water supply schemes (sources) provided by government and determine the state of those schemes (sources), and
iii. Ascertain the determinants of household water use in Abia State, Nigeria.

Methodology

The study area is Abia State, Nigeria. The State was carved out of the old Imo State in 1991. Abia State is 'located on latitude 40^0 70^0N and 7^0- 8^0E of the equator and Greenwich meridian respectively (NRCRI, 1990). The State is made up of seventeen (17) local government areas (LGAs) with a total land mass of 5,833,775 square kilometers. Abia State has a relatively high population density of about 580 persons per square kilometer (Abia State, 2005). It has a population of 2,833,999 out of which 1,434,193 were males and 1,399,806 were females according to the national housing and population census of 2006 (NPC,2007). It shares a common boundary with Rivers State in the south; Imo State in the West, Ebonyi and Enugu States in the North; Akwa Ibom and Cross River States in the East. Abia State is located within the forest belt of Nigeria and the temperature ranges between 20^0C and 36^{0C}. It is characterized by the dry dust-laden North easterly winds, which blow across the country during the dry season (mid October to March). The rainy period is from April to October, during which period moisture-laden South-westerly winds blow, bringing with it the rains (ABSEED, 2005).

The population of the study was all rural households in Abia State. However, a sample size of three hundred and sixty (360) subjects were selected from this population and used for the study. This was realized using a multi-stage random sampling technique; the stages were:

i. Three extension blocks were randomly selected from each of the three agricultural zones of the state, giving a total of nine blocks altogether.
ii. Two cells were randomly selected from each of the nine blocks, giving a total of eighteen (18) cells in the state.
iii. Twenty households were randomly selected from each of the eighteen cells, giving a total of three hundred and sixty respondents, which constituted the sample size for the study. The simple random sampling technique employed the "names in the hat" method of choosing a random sample (Ladele, 2004). This involved using a list of the households in each of the communities obtained from the community leaders. The various households were then drawn from a hat or container one after the other until the required sample size was obtained.

Data for this study was obtained using structured questionnaire, which was developed, pre-tested and administered to elicit information from the respondents. Of the 360 questionnaires administered, 340 valid returns were recorded and this constituted the sample size for the study.

Descriptive statistics and the ordinary least squares (OLS) regression analysis were used in analyzing the data. The descriptive statistics entailed the use of statistical tools like tables, frequency counts and percentages. This was basically used to describe the socio-economic variables. However, the OLS regression analysis was used to examine the relationship between water use and household socio-economic variables. The dependent variable was utilization of safe water by the rural households. The explanatory variables were selected socio-economic characteristics of the household heads. Four functional forms (linear, semi-log, exponential and translog were tried out and the linear functional form was chosen as the lead equation for explaining the level of utilization of water among the respondents. The implicit form of the model is specified as follow.

$$Y = f(X_1, X_2, X_3, \ldots\ldots X_9, e)$$

Where:

Y = water use by the respondents, i.e level of utilization of safe water by rural households. This was

measured in terms of the cost of obtaining water for household use per day.

X_1 = Age, in years

X_2 = gender, male = 1, female = 0

X_3 = level of formal education (No of years spent in school)

X_4` = Household size (no of people living in the household)

X_5 = Income of household head (N)

X_6 = Water source , pipe- borne water or borehole =1, otherwise = 0

X_7 = proximity of water sources (Km)

X_8 = State of water source (if functional = 1, otherwise = 0)

X_9 = people's participation in providing water source (participated =1, otherwise = 0)

E = error term

Results and Discussion

Socio-economic characteristics of the sampled household heads are presented in table 1.

Table 1: Socio-economic Characteristics of Respondents

N = 340

Age years	Frequency	Percentage
10-20	01	0.012
21-30	54	15.9
31-40	89	26.2
41-50	113	33.2
51-60	68	20.0
61-70	13	3.8
71-80	02	0.02}
Gender		
Male	198	58.2
Female	142	41.9
Level of Formal Education		
No formal education	03	0.2
Primary education: Incomplete	04	1.2
Primary education: Complete	16	4.7
Secondary education: Incomplete	45	13.2
Secondary education: Complete	89	26.2
Teaching training	43	12.7
NCE	44	12.9
HND/BSc/B.Ed/B.Agric	80	23.5
Higher Degrees	16	4.7
Household Size		
1-3 persons	41	12.1
4-6 persons	215	63.2
7-9 persons	74	21.8
10-12 persons	10	2.9

Source: Field Survey. 2008

This involved a description analysis of the households' socio-economic characteristics. Among several features considered were age of household head, gender, level of formal education of household heads, household size and income of household heads.

The mean age of the 340 household heads in the study area was 48.6. More than half of the sampled population (59.4%) were aged between 31-50 years; a sizeable proportion (20%) were aged between 51-60 years, while (3.8%) were aged between 61-70 years. The distribution showed that more than half of the sampled population were within their active and innovative age. The level of water use by this group of active, vibrant and innovative people is expected to be at the optimum.

Households' distribution by gender (Table 1) shows that more than half of the sampled population (53.2%) were males, while 41.8% were females. This distribution generally showed that there were more males than females in the study area. Although household water use is not disaggregated along gender lines, the predominance of males in the study area agrees with the findings of Oluwatayo (2006) who found that majority of his sampled population were males, who were mainly engaged in farming activities more than their female counterparts. However, it is believed that as more of the adult males in the study area get married, the household size increases, thus increasing household water use among the respondents.

The study found a high level of formal education among the sampled population (Table 1) only about 0.2% had no formal education. The others had varying levels of formal education ranging from complete secondary education through tertiary

education. Household water use among the respondents is expected to be positively related to the level of formal education of the household heads. This is because educated people are better equipped in understanding the intrinsic benefits of safe water .Ndubude (1995) reported that educated people are better equipped to know how to capture the benefits of government schools, hospitals, housing, water supply, credit as well as technical assistance.

Results revealed that majority of the respondents (63.2%) Table 1 had household size of 4 to 6 persons; 21.8% had 7 -9 persons; 13.1% had 1-3 persons while 2.9% had 10 -12 persons. Household size is expected to influence the utilization of basic service including safe water. Larger households will be expected to utilize more water than smaller ones. In like manner, the larger the household size, the more expensive it will be to provide water for daily household use.

Table 2 shows details of approved government expenditure for the provision as well as improvement of water supply schemes (sources) in both rural and urban areas in the study area for the period 1999 2006. The table revealed that in 1999, 5.6 percent of total allocation to the Ministry of Public Utilities for improvement of water supply schemes in both rural and urban areas through the ministry of Public Utilities and Water Resources.. The year 2000 witnessed a substantial increase in government expenditure for the provision of safe water supply sources. Out of a total of ₦395,980,000 provided for the year, the sum of ₦114,600,000 representing 28.9 percent was allocated for the improvement in water supply schemes in both rural and urban areas. Out of a total sum of ₦470,000,000 which was appropriated for the provision of safe water in 2001, the sum of ₦120,000,000 representing 25.5 percent of the total

Table2: Approved Estimates of Abia State, Nigeria for provision of safe water

Year	Details of Expenditure	Allocation for Water supply	Total for the ministry	% allocation for water supply
1999	Improvement in water schemes (Rural and Urban)	3,000,000	54,000,000	5.6
2000	Improvement in water schemes (R&U)	114,600,000	395,980,000	28.9
2001	Improvement in water schemes (R&U)	120,000,000	470,000,000	25.5
2002	(i) Improvement in water schemes (R&U)	130,000,000	440,000,000	38.6
	(ii) Rural Water Supply	40,000,000		
2003	(i) Improvement in water schemes (R&U)	50,000,000		
	(ii) Rural Water Supply	100,000,000	437,000,000	34.2
2004	(i) Rehabilitation of existing water Schemes in Rural Areas	100,000,000		
	(ii) Rural Water Supply	450,000,000	800,000,000	68.8
2005	(i) Rehabilitation of existing water Schemes in Rural Areas	150,000,000	—	14.4
	(ii) Rural Water Supply	10°	104,000,000	
2006	Rehabilitation of existing water Schemes in Rural Areas	0	336,500,000	

Source: Approved Estimates of Abia State Official Document No 1 of 2000 - 2006

was allocated for improvement of water schemes in the rural as well as urban areas of the state. Government expenditure for the provision of safe water for her citizenry showed increases in the year 2002, as a total of N440,000,000 was provided. Out of this, the sum of N170,000,000 representing 38.6 percent was allocated for improvement of water schemes as well as for rural water supply. In the year2003, the sum of N437,999,990 was appropriated for the ministry, out of which N150,000,000, representing 34.2 percent was allocated for improvement in water schemes as well for rural water supply. The year 2004 witnessed an unprecedented increase in government budgetary allocation for the provision of water for the people of the state. In that year, a total of N880,000,000 was budgeted, out of which the sum of N550,000,00 representing 68.6 percent was allocated for rehabilitation of existing water supply schemes in the rural areas as well as for rural water supply. However, the year 2005 saw a drop in government expenditure for the rehabilitation of existing water supply schemes in the rural areas. In that year, the sum of N150,000,000 representing 14.4 percent of the total allocation for the ministry was set aside for rehabilitating existing water supply schemes in rural areas. There was no specific budgetary provision in the year 2006 either for rehabilitation of existing water supply schemes or for rural water supply.

The foregoing revealed huge government expenditure for the provision of safe water supply schemes as well as for the rehabilitation of existing water supply schemes in the rural areas of the state. However, in spite of the huge sums of public funds allocated for the provision of safe water supply schemes, most of the rural people (the actual beneficiaries) still perceived the water supply schemes in their communities as inadequate. Thus creating the need for more government expenditure towards satisfying the safe water supply needs of the rural people. This is in tandem with the editorial opinion of The Nation newspaper of Tuesday, April 6, 2010, titled "we need Investment to make pure water available to many Nigerians.

Table 3 shows the distribution of available water supply schemes (sources) in the study area. Results revealed that more than half (57.1%) of the water supply schemes (sources) which provide water for household use within the study area were provided by government. However, a reasonable proportion of the water supply schemes/projects (sources) (42.9%) were provided either by the joint efforts of the rural communities and development (donor) agencies or by private individuals. This implies that there has been a sustained effort by government, the rural communities themselves and often in collaboration with development partners as well as private individuals to provide safe water for household use in the state.

Table 3: Distribution of Available Water Supply Schemes (sources) within the study area

Water Supply Facility	Frequency	Percentage
Government Provided	194	57.1
Community/Private Provided	146	42.9
Total	**340**	**100.0**

Source: Field Survey, 2008

Daily household water use of the respondents was categorized into low, moderate and high based on the quantity (volume) of water used by the household per day (Table 4). Results in Table 4 revealed that majority of the households (59.7%) in the study area were moderate in their daily water use. Sizeable proportions (25%) of the households were rated high in their water use, while 15.3% of them were low water users. Water is used at the household level for drinking, cooking, washing dishes, bathing, laundry as well as for environmental sanitation purposes. Kofi Annan (2001) noted that water is vital to life. According to him fresh water is precious, we cannot live without it, it is irreplaceable and there is no substitute to it. Although the result presented

in Table 3 falls short of the World Health Organisation's prescription, which expected that by 1990 every individual should have at his or her disposal. Thus, household water use among the people is moderate. There is the need therefore to increase and improve upon the sources of safe water supply for the use of the people.

Table 4: Distribution of Respondents by Household Water use Per Day

Quantity (litres)	Category	Frequency	Percentage
10- 60	Low	52	15.3
61-100	Moderate	203	59.7
101-150	High	85	25.0
Total		**340**	**100**

Source: Field Survey, 2008

Furthermore, mean score of daily household water use (91.03) as well as the standard deviation (28.85) were determined. The standard deviation was added to the mean score to determine an upper limit of 119.88, on the other hand the standard deviation was subtracted from the mean score of daily household water use to determine a lower limit of 62.18.

Households whose value of water use were equal to or above the upper limit were considered high while those whose value of water use were equal to or below the lower limit were adjudged low water users. However, those in between the upper and lower limits were considered moderate water users.

Table 5: Distribution of Respondents By Household Water Use Per Day

Category	Frequency	Percentage	Mean	S.D
Low	52	15.3		
Moderate	214	62.9	91.03	28.85
High	74	21.8		

Source: Field Survey, 2008

Results in Table 5 revealed that majority of the households in the study area (62.9%) were moderate in their use of water. A sizeable proportion of the household (21.8%) were rated high in their use of water, while 15.3% of them were low water users.

Table 6: Distribution of Respondents By Daily Expenditure for Obtaining Water.

Daily household expenditure on water	Frequency	Percentage	Mean
₦			
00	51	15.0	
01-50	225	66.2	31.23
51-100	63	18.5	
101-150	01	0.29	

Source: Field Survey 2008

Table 6 shows the distribution of respondents according to daily household expenditure for obtaining water. Results revealed that majority of the households (66.2%) spent between one to fifty (₦1 – ₦50) daily to obtain water, while some of the households (18.5%) spent between one hundred and one to one hundred and fifty naira to obtain water. However about 15 percent of the households obtained water free of charge. These are those households in whose domain government-provided water facilities are still functional. The average amount spent by the households in the study area for obtaining water stood at thirty one naira twenty three kobo (₦31.23). This underscores the importance of water and indicates the willingness of the people to pay for water for their daily domestic use.

Table 7 shows the state of available (government- provided) water supply schemes facility in the study area. Results indicate that governmentprovided water supply sources in twelve out of the eighteen rural communities sampled, representing 66.7% were not functional as at the time this study was conducted. Only about 33.3% of the water supply sources located in six of the sampled rural communities were functional.

Table 7: Distribution of Available (Government-provided) Water Supply Sources in the study area according to the state of the sources.

S/No	Name	Location	State of Facility
1.	Owoahiafor	Obingwa LGA	Functional
2.	Owaelu	Obingwa LGA	Functional
3.	Ohuru	Ukwa East LGA	Functional
4.	Eti Ndoki	Ukwa East LGA	Functional
5.	Umuezekwe	Ukwa West LGA	Functional
6.	Obehie	Ukwa West LGA	Functional
7.	Olokoro	Umuahia South LGA	Non Functional
8.	Ubakala	Umuahia South LGA	Non Functional
9.	Akpahia Afugiri	Umuahia North LGA	Non Functional
10.	Umueze Ibeku	Umuahia North LGA	Non Functional
11.	Umudike	Ikwuano LGA	Non Functional
12.	Umuariaga	Ikwuano LGA	Non Functional
13.	Nkpa	Bende LGA	Non Functional
14.	Uzuakoli	Bende LGA	Non Functional
15.	Ovim	Isuikwuato LGA	Non Functional
16.	Ukwunwangwu, Uturu	Isuikwuato LGA	Non Functional
17.	Ihechiowa	Arochukwu LGA	Non Functional
18.	Ukwuakwu, Ututu	Arochukwu LGA	Non Functional

Source: Field Survey, 2008.

Results in table 7 pose serious questions on the sustainability of available(government provided) water supply sources in the State. These questions arise because government is known to appropriate huge sums of public funds annually in their budget proposals for the provision as well as rehabilitation of social services including safe water supply. The failure of public water supply sources within the study area has given rise to the

emergence of private boreholes which can be found in almost all the nooks and crannies of the state. Since water is not obtained free from the private boreholes, it has thus become a veritable element of trade among the people, especially the private borehole owners.

Results of the ordinary least squares (OLS) regression analysis on the level of utilization of safe water in relation to some socio-economic characteristics of the household heads in Abia State is presented in table 8. The results reveal that five out of the nine coefficients of the explanatory variables were significant, which means that any change in any of these factors resulted in a change in the level of utilization of safe water among the respondents. Positive relationship was established for gender (X_2), level of formal education (X_3), income of household heads (X_5), water source (X_6) and the state of water source (X_8). The positive relationship showed that an increase in any of the explanatory variables (repressors) increased the level of utilization of water among the respondents. Thus from table , it means that as the proportion of a certain gender, presumably adult males increase, so do the levels of household utilization of water increase among the respondents. The reason is that the adult males will be expected to marry and as they do the household size increases with a consequent increase in household water use. In like manner, as the respondents acquired more or higher education, their level of utilization of safe water also increased. Furthermore, as the income of the respondents (Household Heads) increased so do their consumption/utilization of goods and services including safe water. Also, as the sources from which the respondents obtained safe water increased (boreholes, pipe-borne water and the like), so do their level of utilization of water from those sources. For as long as the sources of safe water supply remained functional, the utilization of water from those sources was also sustained.

Table 8: Regression Results of the Determinants Household water use in Abia State.

Variable	Coefficients
Constant	2893.746 (1.65)*
Age (X_1)	–.0338663 (-0.10)
Gender (X_2)	.1308986 (1.93)*
Level of formal education (X_3)	.5677967 (3.97)***
Household Size (X_4)	–.016392 (-0.09)
Income of Household Head (X_5)	.1910094 (2.70)***
Water Source (X_6)	.3280688 (3.12)***
Proximity of water source (X_7)	–.1025775 (1.02)
State of water source (X_8)	566484.1 (2.51)***
People's Participation (X_9)	13.10119 (1.27)
R_2	0.6949
($-R_2$)	0.6535
F-ratio	4.23***

Note: Figures in parenthesis are t-ratios.
* = Significant at 10%
** = Significant at 5%
*** = Significant at 1%

Source: Field Survey, 2008

The coefficients of level of formal education, income, safe water source and the state of water source were all significant at 1% level of significance, while that of gender was significant at 10% level. Indeed the determinants of household water use in the area were gender, level of formal education, income of household heads, safe water source(s) and the state of safe water source(s). In general, about 69.4% of the variations in the level of utilization of water among the respondents in the study area is explained by the explanatory variables in the regression model as indicated by the coefficient of determination ($R^2 = 0.694$). The lower adjusted R^2 ($-R^2$) of 0.653 therefore connotes that the inclusion of any additional variable may not necessarily improve the regression result.

CONCLUSION

It was concluded that availability of safe water sources for household use in the study area is still a major problem militating against the transformation of rural and agricultural economy in Nigeria. This is so

because, majority (64.1%) of the available government-provided safe water supply sources in the state were not functional. There is the need for further investment in the provision of safe water in order to meet the water needs of the people. Therefore, efforts should be geared towards providing as well as rehabilitating existing safe water sources for the use of the citizenry. Rural Communities in whose domain safe Water Supply Schemes/Projects/Sources are located should ensure that the projects (sources) remain functional and sustainable.

REFERENCES

Abia State Nigeria (2005). Abia State Economic Empowerment Development Strategy. Abia State Flaming Commission, Umuahia, pp.3-6.

Apu, U. (2010). "Evaluation of Provision and Utilization of safe water supply, and Health care facilities in Abia State, Nigeria (1999 2006)". A Ph.D Dissertation Department of Rural Sociology and Extension, Michael Okpara University of Agriculture, Umudike, P.1.

Cleaver, M.K. (1993). Infrastructure and town country Linkages; Developing Roads, Water Supply, Education and Health in Rural Areas. **World Bank Technical Paper** No.203, African Technical Department Series, pp.83-90.

Daily Sun, Friday, April 2, (2010). Dwindling Access to safe Drinking water, p.18.

Fakayode, B. Segun; O.A. Omotesho; A.B. Toho and P.D. Ajayi (2008). An Economic Survey of Rural Infrastructures and Agricultural Productivity profiles in Nigeria. *European Journal of Social Sciences* 7(2): 158 171.

Federal Republic of Nigeria, FRN (2000). Water Supply and Sanitation interim strategy Note, 33p.

IFPRI (2002). Dying for a Drink of Water. News and views. A 2020 Visisa for food, Agriculture and the Environment. IFPRI, Washington D.C, UAS.

Kofi Annan (2001). Is the World running out of Water? In: Water: will there be enough? Awake, June 22, 2001. P.3.

Ladele, A.A. (2004). Sampling Technique in Agricultural Extension Research. In Olowu, T.A. (ed). Research methods in Agricultural Extension. Agricultural Extension Society of Nigeria (AESON) pp.83-100.

National Population Commission, NPC (2007). A Blueprint on 2006 National Census.

National Root Crops Research Institute (NRCRI), Umudike (1990). Annual Report.

Oluwatayo, I.B. (2006). Correlates of Water Demand among farming Households in Ekiti State, Nigeria. *Nigerian Journal of Rural Sociology* 6(2): 75-82.

Onugba, A and S.U. Sara (2003). Rural Water Supply and Hand pump Development in Nigeria: Towards the Millennium Development Goals. 29th WEDC International Conference, pp.145-148.

Rosegrant, M. W.; X. Cai and S.A. Cline (2002). World Water and food for 2025. Dealing with scarcity. IFPRI, Washington, D.C. USA.

UNICEF and WHO (2000). Global Water Supply and sanitation Assessment, 2000 Report. General, United Nations.

World Health Organization WHO (2000).

WHO Guidelines for Drinking Water. Quality training pack. WHO, Rome, Haly.