

**AN ASSESSMENT OF RESIDENT'S COPING MECHANISMS
TOWARDS MEETING THEIR WATER NEEDS IN EKPOMA,
EDO STATE**

BY:

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CERTIFICATION

I certify that this Research Project was carried out by **Mr. Unuigboje, Augustine Edekin** of the Department of Urban and Regional Planning, Faculty of the Social Sciences, University of Ibadan. Ibadan.

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DEDICATION

This project dissertation is dedicated to Almighty God for His immense mercy, grace and faithfulness in my life.

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ABSTRACT

The study assessed the resident's coping mechanisms towards meeting their water needs in Ekpoma, Edo State. The objectives of the study are to examine various sources of water supply and to determine the adequacy of the level of drinkable water supply, to examine the coping mechanisms adopted and its inherent challenges and to propose strategies to address the identified challenges in the study area. Both primary and secondary data were used for the study. Secondary data were obtained from both published and unpublished sources. Primary data were obtained via a set of pre-tested questionnaires used to sample 306 residential households heads selected through systematic sampling techniques. Descriptive statistics which include frequency count, simple percentage, mean, mode and standard deviation were used to analyze the data obtained from the respondents (households). T-test analysis was used to test the hypothesis of the study at 0.05% level of significance. This was used to analyze whether there was any association between the variables. It's indicates that 91.9% of the respondents adopted water recycling and water usage regulation, why 8.1% of the respondents only regulates their water usage in meeting their water needs in the study area. It's revealed that the resident's were able to meet their water needs through water usage regulation and water recycling in the study area. It is recommended that the government should adopt a holistic approach in tackling of water supply such as, construction of mini-water schemes, provision of resources to prosecute water supply, providing the enabling environments for the vendors and resident's and orientating the residents on how to recycle their used water and water usage regulation. This will help to reduce the difficulties associated with getting adequate water supply. In conclusion, it was observed that recycling of used water and water usage regulations have been able to enhance the water needs of the resident's. It quite believes that the activities of the resident's will be more effective and efficient if all the aforementioned measures are adequately pursued by all.

CHAPTER ONE

1.0 BACKGROUND OF THE STUDY

1.1 Introduction

Water is a precious natural resource, vital for life, development and the environment. It can be a matter of life and death, depending on how it occurs and how it is managed. Water is a colourless liquid and free of calories. Lack of public water system in the rural areas and the inability of water facilities to function effectively in the towns and cities of Nigeria have made it impossible for most of her population to have access to drinkable water. According to Orebiyi et al. (2010), 52 percent of Nigerians have no access to improved drinkable water supply. Sources such as rivers, boreholes, streams, wells, ponds and rain are still very much depended upon for water needs. The health implications of the use of these sources include alarming rates of water - related diseases and deaths among the population. In World Health Organization's (2000) estimates, 4 billion cases of diarrhea are reported each year around the world, in addition to millions of other cases of illness associated with lack of access to clean water. Gleick (2002) estimated global deaths arising from water- related diseases at between 2 - 5 million yearly. Although there are no accurate data on water related cases and deaths in Nigeria, studies have however shown that cases of typhoid, cholera and other water related disease and deaths have been on the increase in recent times. According to the WHO (2003), 200,000 people in Nigeria were estimated to be blinded of trachoma diseases with overall prevalence blindness of 1.3 percent. Studies on schistosomiasis infection in different parts of Nigeria by Nmorsi et al. (2005) and Pukuma et al. (2007) show that infection rate is high. They attributed this to the use of infested rivers, streams and ponds (Ojeifo, 2011).

Water is very important and without it life and civilization cannot survive or develop. Man requires about 40-60 litres of water daily for drinking to keep healthy (WHO, 1996), However, the average consumption in Nigeria is less than 12 litres per capita per

day (Egunjobi, 1987). Despite the abundance of fresh water on earth, many regions are in crises of drinkable water, especially the third world countries. Every day we make use of large quantities of water. It is vital not only for cooking and of course drinking, but for washing clothes, dishes and ourselves, for flushing the toilets, watering the garden and a hundred other uses about the home. It is the single most important commodity that we all require and yet take most for granted. Water services includes sanitation are essential to life and health, economic development, and human dignity. Everyone knows this and yet many people around the world do not have adequate drinkable water services. The provision of efficient and reliable environmental services, especially water, is very critical in the overall development of any nation. The service is central to the activities of households and to economic production.

Although there is sufficient clean water for everyone's basic needs, more than a billion individuals lack access to adequate water supply, while over 2 billion of persons lack access to adequate sanitation (Centre on Housing Rights and Eviction (COHRE, 2004). The inaccessibility to water has clear human rights dimensions. The poor and other low income groups are always the worst affect. Even in countries with an abundance of water and resources, many individuals don't have access or sufficient drinkable water and other basic needs. Deprived urban and rural areas are frequently neglected or totally ignored in infrastructure development and maintenance and in moves to privatize water supply services. Majority of the households don't receive water from the main utility; even though they would prepare to pay for the services. Others are not connected, but get water for only a few hours a day. Even fewer are connected to a sanitation network often the water isn't drinkable and waste water isn't properly treated. In Nigeria, the public sector have dominates in provision of water. In most places, these services have been provided free or at little cost to the consumers. Despite the responsibility of the Government, most of the local Government Areas (LGAs), most especially those in urban areas have failed woefully. It should be recalled that Nigeria is a country that is endowed with abundant ground and surfaced water resources, yet the water supply

situation in Nigeria remain pathetic. Most part of the country continues to experience water shortage resulting in the outbreak of water borne diseases (Olokesusi et al, 2005).

The social well-being, ecological preservation, human nutrition, production of goods and services communication would be almost impossible with quantitative and qualitative water inadequacies. (Olokesusi et al, 2005). Drinkable water is basic human need that must be satisfied in adequate quantities that comply with minimum health standard. Better access to drinkable water contributes to good health, livelihood and broadens economic development outcomes. Housing is a physical structure used for shelter. It includes all facilities, equipment's, devices needed or desired for healthful living which water supply is very important. The society is made up of various households, which critically need water for survival. Provision of water is important because it determines the overall health of each household. Adequate and access to drinkable water and sanitation facilities are part of the eight millennium development goals (MDGs) which are expected to be realized globally by 2015, with the realization of the above statement will be comfortable to say that water constitutes an essential element of life (Topfer, 1998).

Although rain water is a major source of water in all the rural communities in Nigeria, but the technology for storing and preserving the water is still very poor. There is the need to design appropriate water storage devices for use in the rural areas in order to make water available for the people throughout the year. Considering the fact that most of these rural communities are small, centrally placed storage devices that the whole community can use ensure easy accessibility to everyone in the community.

Historical Antecedents of Water Policy Formulation in Nigeria

Nigeria has abundant water resources although they are unevenly distributed over the country. The highest annual precipitation of about 3,000 mm occurs in the Niger delta and mangrove swamp areas of the south-east, where rain falls for more than eight months a year. There is a progressive reduction in precipitation northwards with the

most arid north-eastern Sahelian region receiving as little as 500 mm a-1 precipitation for about 3-4 months of rainfall. Widespread flooding occurs in the southern parts of the country, while the northern parts experience chronic water shortages during the dry season when rain fed springs, streams and boreholes dry up. The problems associated with the lack of adequate portable water supply in the country threaten to place the health of about 40 million people at risk. According to the World Bank (1990), it would cost in excess of US\$10 million a year to correct such problems if ground and surface water contamination goes unchecked. The people most affected tend to be the urban and landless poor. In the long-term, the present level of environmental degradation could create health problems from water-borne diseases from most of this population. Many people are already affected by having to consume unsafe drinking water. Water contamination also places other resources at risk; fisheries and land resources, for example, have already been affected significantly. Most of the environmental pollution problems arise from anthropogenic sources, mainly from domestic and industrial activities. It is based on the realization of this fact and the importance the Federal Government of Nigeria (FGN) attached to adequate water supply that water resources management has always being part and parcel of the National Policy on Environment. The National Policy on Environment (NPE) The National Policy on the Environment (NPE) was launched by the then Head of State, General Babangida in Abuja on 27 November 1989 (FEPA, 1989). The goal of that policy was to achieve sustainable development in Nigeria and, in particular to:

- Secure for all Nigerians a quality environment adequate for their health and well-being.
- Conserve and use the environment and natural resources for the benefit of present and future generations.

The study focuses on the contribution of the residents and their coping mechanisms in providing water for themselves. This study will make it possible to know whether residents in urban areas make provision towards meeting their basic facilities such as water. Also, to know the cost incurred by the residents in the provision of basic

facilities such as water, whether it is minimal compared with what they would have paid if the Government is involved in the water supply.

1.2 Statement of Problem

Human welfare and economic development generally depend on the use of water. In Nigeria, water resources management and utilization is crucial to the country's efforts to reduce poverty, grow the economy, ensure food security and maintain the ecological systems. Nevertheless, the issue of water resources management in the country focuses mainly on water supply and receives only minimal attention by government. The rate of migration from rural areas in developing countries has led to the emergence of high urbanization. Jinadu,(2004) observed that with high urban population increase, there is the increasing demand of urban dwellers for basic facilities and high rate of unemployment has further worsened the city situation. A number of efforts have been made on water supply and storage to meet the resident's needs. Policy and programmes have also been formulated by the government to meet the residents' water needs. However, researches have been done on water-related issues such as impact of government on the provision of basic facility, water supply and distribution in the urban centres.

Provision of water in Ekpoma is observed by Toolkit, (2005) as being generally unsatisfactory. Households are not provided with water by the government, though they may be prepared to pay for the services. There is no water source in most houses and where there is, many challenges occur in the water supply. The future water demand based on urban population growth rate; often outgrow the rate of provision thereby worsening the problem. Households are not connected to the public water mains but only get water from the well and reservoir. Often the water is not drinkable. In the face of the existing diverse challenges facing residents of Ekpoma in accessing water for drinking and ablution there is need to conduct empirical investigations into the diverse coping mechanisms adopted by the households and individuals in the city. Achieving this is the main thrust of the study.

1.3 Significance of the Study

The importance of water in planning cannot be neglected, as it is a very necessary need, which has an effect on the environmental conditions. The major global development framework today is the millennium development goals (MDGs). The millennium development goals include reducing the proportion of people without access to drinkable water by 2020. In planning, provision of water supply and adequate sanitation is given priority because it determines the overall health of the households. Water provision to the populace needed to be regulated, coordinated and controlled for adequate and efficient water supply. The relevance of this study is to assess the mechanisms that the resident's employed in meeting their water needs, thus making the concept of coping and stress relevant.

1.4 The Scope of Study

The study dwells on the water supply strategies adopted by the residents of Ekpoma. With regards to this, the number of the household in Ekpoma was examined. The study did not cover the aspect of surface/ ground water test analysis of the study area. The study did not also dwell on the effects of lacks of water on the health of the people. The spatial scope was Ekpoma communities consisting of ten communities and the sample size was limited to five randomly selected communities that form the study area.

1.5 The Research Questions.

For the purpose of adequate assessment of the resident's coping mechanisms towards meeting their water needs and their sustainability's, the following research questions were posed for the study.

1. What are the various sources of water supply in Ekpoma?
2. Is the existing level of supply of drinkable water in Ekpoma adequate or not?
3. What are the diverse coping mechanisms adopted by the resident's?

4. What are the various inherent challenges in the adopted coping devices?

1.6 Research Aim and Objectives

The aim of the study is to investigate residents' coping mechanisms towards meeting their water needs in Ekpoma.

The specific objectives of the study are to:

1. Examine various sources of water supply in Ekpoma;
2. Determine the adequacy or otherwise of the existing level of drinkable water supply in Ekpoma;
3. Examine the coping mechanisms adopted by the residents;
4. Examine inherent challenges in these coping mechanisms;
5. Propose strategies to address the identified challenges.

1.7 Hypothesis of the Study

Ho: There is no significant relationship between coping mechanisms and water supply to the households in the study area.

Hi: There is significantly relationship between coping mechanisms and water supply to the households in the study area.

1.8 RESEARCH METHODOLOGY

1.8.1 The Research Design

Survey research design was used for this study, and cross-sectional survey method was adopted. The data for the study were obtained from both primary and secondary sources. The secondary data were collected from libraries, reports, Edo State Water Corporation, Ministries, published and unpublished research works, journals and files of local government's agencies.

1.8.2 Instrument of Data Collection

The primary data was collected through the use of a set of pre-tested questionnaires which were distributed to selected localities in the study area. Observations and In-depth interviews were also used in areas where applicable as the needs arise.

The questionnaire was divided into four sections namely.

Section A, for the demographic characteristics of respondents (households); Section B, for the resident's diverse means of water sources and facilities adopted ; Section C, for the resident's household water needs; and Section D, for the resident's coping mechanisms adopted towards meeting their water needs in the study area.

1.8.3 SAMPLE, SAMPLE FRAME, SAMPLE SIZE AND SAMPLING PROCEDURES.

1.7.3.1 Sample.

The researcher's preliminary investigations revealed that a total of 59,618 residential buildings exist in Ekpoma communities.

1.8.3.2 Sample Frame.

According to the field survey, Ekpoma is divided into 10 localities which are Eguare, Ihumudumu, Idumebo, Illeh, Emuhi, Uke, Ujeolen, Ujemen, Iruekpen and Uhiele. Samples were taken on households in residential buildings; the totality of residential buildings in the study area constitutes the sample frame for the study, the breakdown of which is presented in table 1.1.

Table 1.1: The Number of Buildings According to locality

Locality	Number of buildings
Eguare	9170
Ihumudumu	6628
Idumebo	4061
Illeh	5861
Emuhi	5652
Ujeolen	5302
Iruekpen	4930
Uhiele	6992
Ujemen	6098
Uke	5824
Total	59618

Source: Author's Field Survey, 2012.

1.8.3.3 Sample Size.

Five of the ten localities that make up the study area were randomly selected. These localities were; Eguare, Ihumudumu, Ujeolen, Emuhi and Idumebo. This has a total of 30,813 residential buildings.

1.8.3.4 Sampling Procedures.

1.0% of all residential buildings in each locality were randomly selected and a copy of pre-tested questionnaire was administered on a household in each of the selected buildings. The household to which the first adult resident of the selected buildings belongs to was sampled irrespective of its residential status. In all, a total of 306 copies of the questionnaire were administered. The breakdown of this is represented in table 1.2.

Table 1.2: Distribution of Sampled Buildings.

Locality	Number of Buildings (Sample Frame)	Number (Sample sizes)	Sampled
Eguare	9170	91	
Ihumudumu	6628	66	
Ujeolen	5302	53	
Emuhi	4061	40	
Idumebo	5652	56	
Total	30813	306	

Source: Author's Field Survey, 2012.

1.9 Method of Data Analysis

Descriptive statistics, which include frequency count, simple percentage, mean, mode and standard deviation were used to analyse the data obtained from the respondents (households). T-test analysis was used to test the hypothesis of the study at 0.05% level of significance. This was used to analyse whether there was any association between the variables.

1.10 DEFINITION OF TERMS

Water

Water is a substance compound of the chemical elements of hydrogen and oxygen and existing in gaseous, liquid and solid states. Water is one of the most plentiful and essential of compounds and is vital to life.

Water Supply

This is the quality and quantity of water that is available for the consumption of the populace at a particular time and a given price.

Water Need

This is the required amount of water per person or per household. The need may not be backed up by the ability to pay at a particular price and within a particular period of time.

1.11 Limitation of the Study

The study is limited to the types, location, characteristics, problem and the planning implication of urban water supply in Ekpoma. The sample size and respondents have been limited by the time frame within which to complete the research. The total coverage of the area has been with a lot of constraints but efforts were made to ensure that information gathered were reliable and were utilized in achieving the earlier stated aim and objectives of the study.

1.12 Contribution to Planning Knowledge

The aim of adopting coping mechanisms is to ensure adequate and sustainable water supply to the people. This research discusses the inadequate water supply and the coping mechanisms adopted in meeting their water needs. It means therefore, that effective contributions of residents put in place to supply water will ensure adequate and sustainable drinkable water supply to the people. Water is one of the biggest problems urban areas face daily, not only in Ekpoma towns in Edo State or to Nigeria alone, but all over the world. Planning as a discipline has the responsibility of ensuring the adequate, provision of utilities and infrastructures among other functions. The roles of utilities and infrastructure in enhancing the livelihood of people cannot be over emphasized.

CHAPTER TWO

2.0 CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW

2.1 CONCEPTUAL FRAMEWORK

Basically, two (2) different concepts that are relevant and are adopted for this study are:

1. The Concept of Coping
2. The Stress Concept.

2.1.1 INTRODUCTION

Theories and concepts help to explain happenings around us. Theories, according to Osibanjo,(2004) represent efforts to reduce surprises by giving plausible accounts of how they have come about, accounts which must not contradict anything known by the subject, Such accepted accounts subsequently form basis not only for explaining past and present events, but may also form a basis for controlling the future.

2.1.2 The Concept of Coping

2.1.3 Introduction to the concept of Coping

Coping is action directed at the resolution or mitigation of a problematic situation. There are a number of ways in which this may be attempted, and a number of ways of classifying coping strategy (Ray, Lindop and Gibson, 1982).

The concept of coping had been based on one of two main assumptions. One assumption is that coping is a relatively stable state or disposition. The other assumption is that coping involves processes, i.e. responses/skills that deal with specific situations. Therapy based on the assumption that coping is a relatively stable state or disposition is aimed at improving the application of these relatively stable characteristics to impact on the person's ability to cope. These characteristics include optimism/ pessimism (Carver, Sheier and Weintraub, 1989),

extraversion/introversion/neuroticism/self-esteem and self-efficacy (Bandura 1986), locus of control (internal, external or balanced) (Parkes, 1984), Type A personality (Carver, Scheier and Weintraub, 1989) or the Sense of Coherence (Scheier, Carver and Bridges 2001). Although this state or dispositional assumption about coping provides the basis for the general formulation in the ways that people cope, it does not provide adequate understanding of how people deal with specific situations (Moos and Holahan 2003). An alternative is to see coping as being based on the assumption that coping is a process, which means that improving a person's wellbeing is about improving and developing skills of coping with specific situations. Unfortunately this approach fails to provide a holistic way of understanding the phenomenon of coping (Moos and Holahan 2003).

2.1.4 Approaches to the Concept of Coping

The understanding of coping within the PinC system of Recovery is based the work of Moos and Holahan (2003). They propose that coping as a multifaceted phenomenon consisting of both dispositional and process(contextual) approaches. Understanding of dispositional factors incorporate the contribution of the enduring characteristics of the individual's coping styles e.g. coping styles, self-efficacy and personality characteristics while the process approaches emphasises the person's use of skills in dealing with stressful situations. The person's health and wellbeing is affected by the interplay between these dimensions, life stressors, resources and new life events.

2.1.5 Relevance of Coping to Frank's situation

In the scenario presented Frank's wellbeing is being affected by the changes resulting from the appointment of a new boss. He is feeling very unsettled, overwhelmed, exhausted, has migraines and has increased his use of painkillers. In addition he has sleep disturbances and increased consumption of alcohol. His existing way of coping seems to be cognitive avoidance (process/contextual) in which he distracts himself by the increased consumption of legal drugs, watching television and using an external locus of control, i.e. blaming his boss. While this approach may offer some relief it has

the disadvantage of failing to deal with the core concern namely his additional responsibilities at work and his relationship with his boss.

Encouraging Frank to take a cognitive approach style (process/contextual) in addressing this issue may be helpful. However without making sure that Frank has adequate resources before adopting a cognitive approach style may be detrimental to Frank's wellbeing within the PinC system of Recovery, once a working/therapeutic alliance is formed with Frank, the mental health worker helps him to identify his concerns and priorities them (concerns other than his work situation may figure higher in his list of priorities e.g. his changing role in the family). The mental health worker would encourage Frank to address each of the concerns he had prioritised by talking about them and working with him to identify his usual pattern of coping characteristics (state/dispositional characteristics) such as his coping styles, self-efficacy and personality characteristics and also the ways he deals with stressful situations (processes/contextual factors) e.g. cognitive and behavioural approach and avoidance. The resources that Frank seems to have at the moment are his interest in house maintenance and his relationships with his mates. Frank may be interested in developing these further. Apart from his Saturday drinks with his mates, Frank seems to be socially isolated. A major resource that he could be encouraged to develop is his relationship with his wife. Exploration with Frank into this area would hopefully result in Frank communicating more with her and discussing the issues that he is unhappy about thus getting more social support. Whatever resources are identified and developed success in helping Frank deal with his concerns will be ensuring that a match exists between them and the use of coping approaches.

2.1.6 Challenges of the Concept of Coping

Recent reviews by Haan (1982) and Moos and Billings (1982) speak to the controversy within psychology as to how coping should be conceptualized and measured. Studies assessing whether coping behaviour is cross-situationally consistent have shown that people show little consistency in their coping strategies across different role domains such as coping with work stress or marital dissatisfaction (Pearlin and Schooler,

1978). 'Another controversy focuses around the extent to which people are aware of their coping efforts' presuming some coping efforts are unconscious. Haan (1982) has criticized the assumption that people are able to assess their own coping abilities. However, few attempts have been made to compare self-reports with clinical observations. Numerous coping strategies have been identified and attempts made to classify them into conceptual domains (Moos & Billings, 1982). There appears to be no current consensus about a coping typology. However, three common dimensions of coping responses seem to include those that: (1) modify the situation from which the strainful experience arises; (2) control the meaning of the problem; and (3) manage the stress (Pearlin & Schooler, (1978). These three dimensions are not considered mutually exclusive and can be applied simultaneously or sequentially to a given problem. Lazarus and Folkman (1984) have formulated a definition and conceptualization of the coping process wherein they define coping as a "constantly changing cognitive and behavioural effort to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (p. 141).

2.1.8 The Stress Concept

2.1.9 Introduction to the Concept of Stress

To a scientist, stress is any action or situation that places special physical or psychological demands upon a person, anything that can unbalance his individual equilibrium. And while the physiological response to such demand is surprisingly uniform, the forms of stress are innumerable. Stress may be even but unconscious like the noise of a city or the daily chore of driving the car. Perhaps the one incontestable statement that can be made about stress is that it belongs to everyone- to businessmen and professors, to mother and their children, to factory workers. Stress is a part of fabric of life. Nothing can isolate stress from human beings as is evident from various researches and studies. Stress can be managed but not simply done away with. Today, widely accepted ideas about stress are challenged by new research, and conclusions

once firmly established may be turned completely around. The latest evidence suggested (Ogden Tanner, 1979): - - Some stress is necessary to the well-being and a lack can be harmful. -Stress definitely causes some serious ailments. –Severe stress makes people accident-prone.

2.1.10 The Scope of the Concept of Stress

Stress is a complex phenomenon. It is very subjective experience. What may be challenge for one will be a stressor for another? It depends largely on background experiences, temperament and environmental conditions. Stress is a part of life and is generated by constantly changing situations that a person must face. The term stress refers to an internal state, which results from frustrating or unsatisfying conditions. A certain level of stress is unavoidable. Because of its complex nature stress has been studied for many years by researchers in psychology, sociology and medicine. Defining stress is a very complex matter, which is the subject of different analyses and continuous debate among experts. Beyond the details of this debate, a general consensus can be reached about a definition of stress, which is centered around the idea of a perceived imbalance in the interface between an individual, the environment and other individuals. When people are faced with demands from others or demands from the physical or psycho-social environment to which they feel unable to adequately respond, a reaction of the organism is activated to cope with the situation. The nature of this response depends upon a combination of different elements, including the extent of the demand, the personal characteristics and coping resources of the person, the constraints on the person in trying to cope and the support received from others). Factors in the perception and experience of stress (Chrousos et al, 1992). Stress is involved in an environmental situation that perceived as presenting demand which threatens to exceed the person's capabilities and resources for meeting it, under conditions where he or she expects a substantial differential in the rewards and costs from meeting the demand versus not meeting it (McCubbin et al, 1980).

2.1.11 Approaches of Stress in Occupational Behaviour

Occupational stress can be defined as the harmful physical and emotional responses that occur when the requirements of the job do not match the capabilities, resources, or needs of the worker. Job stress can lead to poor health and even injury. The concept of Occupational stress is often confused with challenge, but these concepts are not the same. Challenge energizes us psychologically and physically, and it motivates us to learn new skills and master our Occupations. When a challenge is met, we feel relaxed and satisfied (NIOSH,1999).Thus, challenge is an important ingredient for healthy and productive work. The importance of challenge in our work lives is probably what people are referring to when they say, "a little bit of stress is good for you. Occupational stress is that which derives specifically from conditions in the work place. These may either cause stress initially or aggravate the stress already present from other sources. In today's typical workplace, stress is seen as becoming increasingly more common. People appear to be working longer hours, taking on higher level of responsibilities and exerting themselves even more strenuously to meet rising expectations about Occupational performance. Competition is sharp. There is always someone else ready to "step into one's shoes" should one be found wanting on the basis of experience and research, NIOSH favors the view that working conditions play a primary role in causing Occupational stress. However, the role of individual factors is not ignored. According to the NIOSH view, exposure to stressful working conditions (called Occupational stressors) can have a direct influence on worker safety and health. But as shown below, individual and other situational factors can intervene to strengthen or weaken this influence. Theresa's need to care for her ill mother is an increasingly common example of an individual or situational factor that may intensify the effects of stressful working conditions.

2.1.12 Relevant of the Concepts to the Study

These two concepts processes are conceptually linked to personality by the hypothesis that the habitual preference for avoidant or vigilant coping strategies reflects individual differences in the susceptibility to emotional arousal or uncertainty. Individuals who are especially susceptible to states of stress-induced emotional arousal are supposed to habitually employ cognitive avoidance. The employment of avoidant strategies primarily aims at shielding the person from an increase in arousal (arousal-motivated coping behavior). Individuals who are especially affected by the uncertainty experienced in most stressful situations are supposed to habitually employ vigilant coping. Thus, the employment of vigilant strategies follows a plan that is aimed at minimizing the probability of unanticipated occurrence of aversive events. Individuals primarily concerned with reducing uncertainty by directing their attention towards stress- relevant information. In employing vigilant as well as avoidant Coping strategies, these persons try to reduce both the subjective uncertainty and the emotional arousal induced by stressful encounters because, the two goals are incompatible in most situations, and high-anxious persons are assumed to show fluctuating and therefore less-efficient coping behaviors.

2.2 LITERATURE REVIEW

Relevant literatures for the study are reviewed under ten features;

1. Introduction
2. Sources of Water
3. Water Supply and Related Health Problems
4. The Right to Water.
5. Water Supply and Availability
6. Water Supply and Quality
7. Water Supply and Accessibility

8. Water Supply and Affordability
9. Revenue Challenges and Affordability
10. Research Gap

2.2.1 Introduction

In this section various works previously done on water supply are reviewed to provide a good basis for this research work. The literature focuses on quantity and quality water supply and its problems, water and coping strategies and water subsistence problem. The main problem facing water supply situation in Nigeria can be categorized as inadequate quantity of water, inadequate distribution network and low quality of water supplied to the general public (Fourth Nigeria National development plan 1981-85). Egunjobi (1987) support this assertion when he itemized inadequate quality, inequitable distribution and incessant shortage of potable water supply as the major problem of water supply in Nigeria.

Many urban water supply schemes carried out by successive government in Nigeria failed because there are wide gaps between their design capacities and ultimate urban water demand (Onibokun, 1986). Adeniji, (1985) attributed the problem of water scarcity to rising demand, outdated equipment, unregulated and wasteful usage by consumer, poor electricity supply, unplanned development and corruption. This was also corroborated by Nnabugwu, (2005) who related water problem with supplies in cities, frequent break down of lift pump, public standpipes and water infrastructures, while city reticulation suffer from leaking rusty pipeline. He stressed further that in most third world countries, capacities of existing treatment plants, main pumps and other components, are already stretched such that supply is only intermittent. He concluded that extension of the reticulation network will only be meaningful when the overall system capacity is increased.

Egunjobi (1986) and Onibokun (1986) opined that rapid urbanization, coupled with high rate of population growth in Nigeria urban centre and high rate of illegal

connection to the existing water distribution mains, are parts of the factors responsible for inadequate water to the Nigerian populace. They stated further that lack of coordination among public agencies, dearth of specialist for right jobs in water sectors, lack of master plans for urban areas and lack of data base or policy guidelines for planning of water projects as the factors responsible for poor water supply in Nigeria. Adeniji (1985) on his parts reiterated that shoddy construction of drinking water supply schemes, excessive administrative centralization, lack of rewards for good operation and maintenance and widespread corruption in supporting organizations are the major cause of water supply problem. This was supported by Ladigbolu,(2003) when he itemized problems such as lack of clear institutional objectives and low wages, as parts of institutional bottlenecks that hamper adequate water provision in Nigeria. He also affirmed that water testing and monitoring for pollutant is not yet a major policy priority in Nigeria. Besides this there is gross inadequacy of information for proper scientific planning and design of water and associated land resources development (Okhae,2005). Hydro-meteorological information such as rainfall, temperature evaporation, stream run off, pollution data among others that are relevant for analytical studies are hard to come by in Nigeria. The dearth of such vital statistics leads to poor policy and poor design interventions. Nigeria is estimated to have 267.3×10^3 cubic metres of surface water and 51.9×10^3 cubic metres of ground water while the various dams in the country store up to 30 billion cubic metres. In order to maximize this resources potential, many water-related agencies have been put in place. In Nigeria, pollution and climate change also constitute major challenge to these resources and fast dwindling of her water resources. Most serious city wide environmental challenges, to the resource value of water stem from issues of water pollution from sewage, industrial effluents, storm and urban run-off that can penetrate supplies of drinking water. It is often opined that virtually all third world cities cause serious water pollution and in most of the cases urban bodies are literally open sewer (Robber et al, 1976).

Life and health, economic development and human dignity require water services and sanitation. Everyone knows this and yet many people around the world do not have adequate, drinkable water services. The provision of water service is unsatisfactory in many developing countries; many households don't receive water from the main utility, even though they would be prepared to pay for the services. Others are connected, but get water for only a few hours a day. Often the water isn't drinkable and waste water isn't properly treated (Toolkit, 2006). Toolkit, (2005) asserted that lack of money is part of the problem. If customers had more to spend on services and the government had more tax revenue, solutions would be easier. Yet the problems run deeper than money.

In the study of quality of well water in Ede area, south-western Nigeria, Adediji et al. (2005) selected a total of 21 hand dug wells. The environmental conditions around the well which are likely to affect water quality composition were noted. In the study, the chemical quality of the water from the well was investigated. However, since most of the inhabitants of the area depend on well water supply for drinking, the researchers recommended that waste disposal facilities should be sited in the outskirts of the towns. In this regard, the site of the well should be at least 30m away from any source of contamination.

Several thousands of Nigeria's rural communities obtained access to drinkable water through UNICEF'S WATSAN (water and sanitation) programme initiated in 1980s (Olokesusi et al, 2005). Millions of households also meet their daily water supply requirements by harnessing their precious resources from the ground and surface water bodies. It should be recalled that Nigeria is a country that is endowed with abundant ground and surface water resources, yet the water situation in the country's settlements, both rural and urban, remain pathetic. Most states of the federation continue to experience acute water shortage resulting in the outbreak of water-borne diseases (Olokesusi et al, 2005). Inadequate drinkable water gave rise to the prevalence of such diseases, which exert considerable toll on human life.

(Olokesusi et al, 2005) says the social well-being, ecological preservation, human nutrition, production of goods and services, communication would be almost impossible with quantitative and qualitative water inadequacies. Safe water supply is a basic human need which must be satisfied in adequate quantity that complies with minimum health standards. Thus, better access to safe drinkable water contribute to good health, livelihood, and broadens economic development outcomes. (Olokesusi et al, 2005) says that prior to 1999; pipe borne water was provided for just 24.4% of households nationally, while 73.6% of the households sourced water from streams, ponds and wells all untreated water heightening the incidence of water-borne diseases.

The water and sanitation policy of the Federal Government in the year 2000 corroborates these findings when it noted that about 71% of those living in the country's rural communities do not have access to either safe water supply or adequate sanitation. (Olokesusi et al, 2005) for the urban and semi urban population only 42% of the population has access to drinkable water supply and adequate sanitation.

They further established that, the gigantic water scheme were planned and implemented but have not succeeded in satisfying the immediate needs of the population. Running water is considered a luxury in many countries. In the third world, the lack of water has contributed to the death of 100 million children in the past 20 years. Water is the single most important commodity that each and every one of us needs without it society and life itself comes to an end (Gray, 1994). Safe treated pipe-borne water is available to about 50% of urban dwellers but only to 30% of rural inhabitants. By and large 39% of Nigeria's population has adequate access to drinkable water (COHRE, 2004). The millennium Development Goals (MDGs) adopted in year 2000 also in its contents shows the importance of water supply to households. The MDGs have eight goals for the entire world which addresses the conditions of poverty and their effect on people's lives, attacking pressing issues related to poverty reduction, health, gender equality, education and environmental sustainability.

Beecher et al, (1994) asserted that, incentives and disincentives for water utilities promote water conservation through their pricing rate structures. He notes that pricing is not always a sufficient way to motivate customers to conserve. He discusses the results of various water price elasticity studies which are often contradictory. Although demand for water is relatively price-inelastic, changes in price can result in changes in water usage. Variations in price elasticity of water demand may be due to the level and design of rates, customer class, geographic region, and type of use (such as indoor or outdoor, peak or off-peak). He concludes that developing industry-specific policies on conservation pricing is a challenge. To meet this challenge, water utilities and regulators have begun to recognize efficiency as a viable resource option. A long-term efficiency-oriented perspective is needed to address concerns about the effects of conservation on water utility revenues

Mitchell et al, (2009) provide a discussion of water rate, structures and conservation. He addresses; the theoretical and empirical underpinnings for viewing rate structure design as a key tool for promoting efficient water use decisions, alternative conservation-oriented water rate structures, and cost-of-service considerations. He describes the various conservation-oriented rate designs and how they can be combined to further refine the price signal or meet other policy or financial objectives. He concludes with a discussion on how the cost-of-service should be integrated into rate design. More sophisticated rate designs reflecting long-run marginal costs and seasonality more equitably and efficiently allocate system costs while helping an agency meet its water conservation policy objectives.

Most international agreements such as the Millennium Development Goals and the universal declaration of Human Rights acknowledge the right of everyone to adequate food (NWRI, 2012). However, access to adequate food in many developing countries depends heavily on access to national resources, including water, that are necessary to produce food. In Nigeria, governments at various levels, NGOs and external support

agencies, have been implementing programmes and projects towards achieving these goals:

1. Revitalizing the River Basin Development Authorities (RBDAs) a pre-requisite for food security in Nigeria;
2. Irrigation infrastructural Development (Reservoirs, Hydraulic Structures and Hydropower, etc);
3. Transboundary Rivers and Nigeria's food Security;
4. Financing options for Irrigation Development (private-sector-partnership, public financing, access to credit facilities, agricultural insurance etc);
5. Sustainability of Irrigation Schemes (Public-Public Partnerships, Participatory Irrigation Management (PIM), Civil Society Engagement, Policy and Legal Framework, etc)
6. Capacity Development (Extension services, Training and Re-training, Research and Development); and.
7. Discourse on National Food and Water insurance versus National Health Insurance.

2.2.2 Sources of Water

Water supply can be derived from sources namely; surface water and ground water (Gray, 1994).

Surface Water: This includes water collected from structures or prepared catchments and water from rivers, natural lakes, storage reservoirs, and oceans. Surface areas made up of ancient, hard rock into which water does not easily sink. Water in these areas is largely to be found at the surface as streams and rivers. In these areas of ancient rocks, the provision of water has to rely largely on the construction of dams. In sedimentary

rock areas, rainwater sinks into the ground more easily, so that rivers are not as many as in the areas of ancient rock (Babajide et al, 2005).

Ground Water: This includes the natural water springs, shallow wells, deep and artesian wells, and horizontal galleries and wells (Seeley, 1974). In the sedimentary rock areas, more water is stored underground than is available on the surface. The provision of water is more on the sinking of tube wells and boreholes. Both surface and groundwater sources are used for community water supply (Babajide et al, 2005).

2.2.3 Water Supply and Related Health Problems

Inadequate supply of water in our environment has great health problems, alarming rates of water - related diseases and deaths among the population.

In World Health Organization's (2000) estimates, 4 billion cases of diarrhea are reported each year and millions of other cases of illness associated with lack of access to drinkable water. Gleick (2002) estimated global deaths arising from water related diseases at between 2 - 5 million yearly. Studies have however shown that cases of typhoid, cholera and other water related disease and deaths have been on the increase in recent times. According to the WHO (2003), 200,000 people in Nigeria were estimated to be blinded of trachoma with overall prevalence blindness. Studies on schistosomiasis infection in different parts of Nigeria by Nmorsi et al. (2005) and Pukuma et al. (2007) show that infection rate is high. They attributed this to the use of infested rivers, streams, ponds and wells.

2.2.4 The Right to Water.

The right to water is also an integral part of other human right to life, which is contained in the international covenant on civil and political Rights, (ICCPR), and the rights to health, food housing and an adequate standard of living, which are included in the international covenant of Economic, Social and Cultural Rights (ICESCR). Regardless of the level of economic development all peoples "have the right to have

access to drinkable water in quantities and a quality equal to their basic needs” (COHRE, 2004).

In the content of the right to water, it was stated that states and Local Governments are required to ensure that each person have access to sufficient, safe, accessible and affordable water for personal and domestic uses (COHRE,2004). These include the uses necessary to prevent death from dehydration, to reduce the risk of water-related diseases and to provide for consumption, cooking, personal and domestic hygienic requirements. While the adequacy of water required for the right to water may vary according to different conditions of the following factors apply in circumstances;

2.2.5 Water Supply and Availability

The water supply for each person must be sufficient and regular for personal and domestic uses, corresponding to WHO guidelines. This will normal constitute 50-100 litres daily per person and an absolute minimum of 20lires.

2.2.6 Water Supply and Quality

The water utilized for personal and domestic uses must be safe and not constitutes a threat to health. It must be of an acceptable colour, odour and taste. Safe sanitation services are required in order to maintain the quality of water supplies, as to protect the right of each person to privacy, dignity and health.

2.2.7 Water Supply and Accessibility

Water must be within safe physical reach, in near each house, educational institution or work place. Water facilities should be in a safe location and address the needs of different groups in particular women. The absolute minimum quantity of water per person normally requires that the water source be within 1 kilometer or about 30 minutes collection time. Accessibility has four overlapping dimensions (1) physical

accessibility (2) Economic accessibility (3) Non-discrimination (4) Information accessibility.

2.2.8 Water Supply and Affordability

Water should be affordable and not reduce a person's capacity to buy other essential goods such as food, housing education and health care. This normally means water must be subsidized for poor communities and provided free where necessary. According to United Nations Committee on Economic Social and Cultural Rights: Concluding observations on Nigeria in 1998, it was reported that, " safe treated pipe-borne water is available to about 50% of urban dwellers but only to 30% of rural inhabitants. By and large 39% of Nigeria population has adequate access to drinkable water (COHRE, 2004).

There were no water in most houses in Ekpoma, and so many interruptions in water supply. The conditions of the well were so bad that partial intervention or replacement was not possible. The problems of water supply in Ekpoma was viewed from this perspective: that of the water vendors and that of the rainwater harvesting system, some the problems includes cracks, surface peeling, leakages or damaged covers and channel of the wells (Ojeifo, 2011).

In addition, Ojeifo et al, (2005) gave a full report on the water supply situation of Esanland. According to him, the major source of water supply is rainwater harvesting. As a result of urbanization and establishment of the state University in Ekpoma made a proposal for the construction of dam to serve the University and the surrounding resident's. However, the problem water shortage could not be solved.

Furthermore, despite efforts of individuals in sinking of wells, the problems has aggravated in the last decade due to high cost of buying water. The poor suffers most because they do not have the resources to construct wells for private uses while people with little resources depend on unprotected wells for their supply. In our present

predicaments in Nigeria, every facet of the home and workplace is in deplorable condition. In many homes, water does not flow even though houses are connected with public water system. Expectation of water running one a week or one a month is becoming a dream. Sales of water in kinds of containers including water tankers that are never cleansed and often contaminated is a most lucrative business.

A lot of contamination can be also being observed when young children as well as water sellers struggle to fetch water in a few running public taps or burst pipes. There is a general belief that water doesn't have enemy, hence people drink water with bare hands or cups used by several others without caring for the obvious disease transmission cycle such as typhoid, fever, tuberculosis, cholera among others. (Iyun, 1996). A regular supply of drinkable water is not only an insurance against water-borne diseases but also essential for the maintenance of healthy hygiene habits not only in the home but also for industrial and commercial use (Aregbeyen, 1996).

2.2.9 Revenue Challenges and Affordability

Utility revenue challenges could be summed up in balancing environmental, political and equity concerns with the costs of providing the water. Affordability is a growing area of concern, and some conservation-oriented rate structures can disproportionately affect low-income persons or families. Gaur (2007) notes that with the rising social and environmental consciousness as well as the increasing cost of providing and delivering water, policymakers will need to implement more equitable and defensible rate structures.

2.2.10 Research Gap

From the earlier researches it had been noted that most of the previous writer(s) had concentrated on the policy and programmes for water supply with no comparative effort or study on the resident's coping mechanisms in meeting their water needs. Also the importance and effects (positive and negative) environmental implication of planning variable are grossly lacking in the contemporaries study which now creates a

gaps that this study intends to critically appraise resident's coping mechanisms towards meeting their water needs in Ekpoma, Edo-State.

CHAPTER THREE

3.0 THE STUDY AREA

3.1. Situation of Ekpoma Within The Context of Edo State.

Before discussing the coping mechanisms adopted by the resident's in the study area, it will be imperative to first of all study Ekpoma Geographical form, it lies or is located between latitude 6°10' and 6°45' north of the equator and between longitudes 6°10' and 6°30' east of the Greenwich Meridian. The latitudinal location implies that the study area falls within the tropical region. Ekpoma is located in the Edo central senatorial districts of Edo State. It has 10 wards which covers an area of about of 502 km². It is bounded to the South by Uhumwode local Government, Igueben and Esan-Central Local Government to the East and to the North by Etsako-East and Etsako-West Local Government.

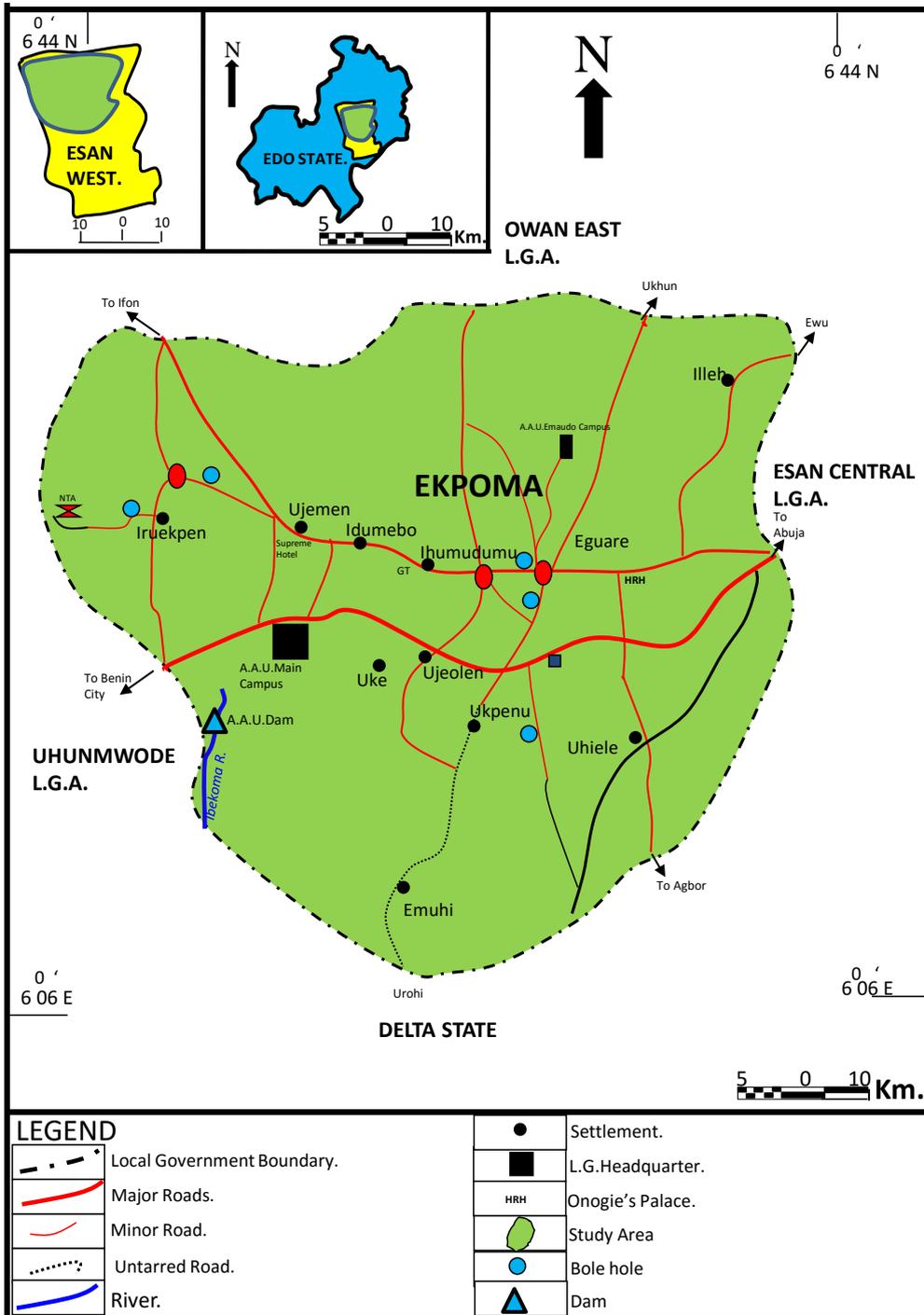


Fig.1. SOURCES OF WATER IN EKPOMA.
 SOURCE: MINISTRY OF LANDS AND SURVEYS, BENIN CITY, 2008.

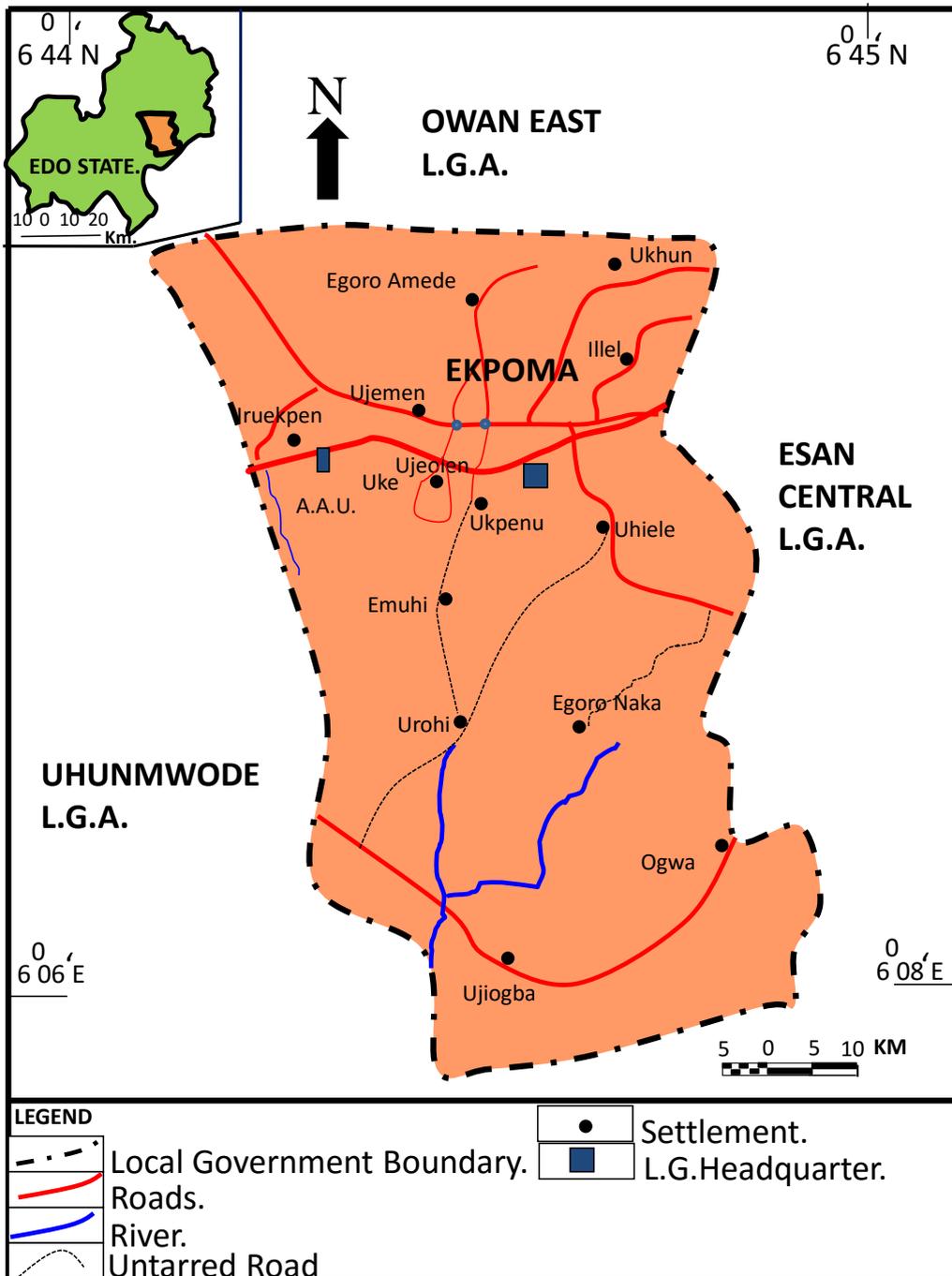


FIG :2 LOCATION: ESAN WEST THE STUDY AREA.

SOURCE: MINISTRY OF LANDS AND SURVEYS,BENIN CITY,2010.



3.2 Historical Geographic's of Esan Land (Ekpoma)

The rich heritage of Esan cannot be emphasized enough. Geographically, Esan-land is located in the former Mid-Western State of Nigeria, which is part of the Niger-Delta zone, now being referred to as the South-South region. Before the creation of Edo State in 1991, Esan-land was located in the defunct Bendel State. Originally, Esan was a division of the Mid-Western Region with Benin City as its Headquarter. It occupies about 43008.42 square kilometers segmented into two local government areas named: Agbazilo to the east and Okpebholo to the west.

In recent times, the number of the administrative units has increased to five, namely: Esan Central, Esan West, Esan North East, Esan South East and Igueben from the former Okpebholo and Agbazilo. The major Esan groups are: Irrua, Uromi, Ekpoma, Ubiaja, Ugboha, Ewohimi, Ewu, Igueben, Ohordua, Uneah, Ebelle, Ugbegun, Opoji, Okhuesan, Ekpon, Ewossa, Emu, Amahor, Ogwa, Ugun, Oria, Ewatto, Ikekato, Urohi, Uzea, Udo, Ukhun, Egoro, Ujiogba, Ido, Orowa, Okalo. It is important for the sake of history to mention that most ancient villages and town that eventually metamorphosed into the groups above still bear their original names and are still in existence except for Ezen, which has gone into extinction.

In the current political dispensation, Edo State is delineated into three senatorial zones that are classified according to their geographical locations. By this classification, Esan land is presently known as the Edo Central senatorial zone. This position aptly describes the central role that Esan land plays in the political process of the state. Esan land serves as the buffer zone between the North and the South districts of the state. Esan people are ardent farmers. They also engage in other productive activities such as regional trading with their neighbors. In the arts/music arena, the Esans have various cultural dances ranging from Agbenojie, Uleke, and Ikhinabojie, Asonogun or Abayon, etc. Most notable is the highly popular acrobatic dance and display called "Igbabonehlimin."

They are also gender sensitive and this reflects in every aspect of the culture. For instances, the dress code for the men (Igene) is the traditional "Ubunuku", while for title holders like Chiefs (Okhaemon), they dress in traditional "Ukponesan" with coral beads (ivie). On the other hand the women are known for their unique hair do "Eto-Okuku" adorned with coral beads as well. Their political structure is monarchical and the principle of primogeniture takes precedence. The first son of the traditional Monarch named the "Onojie" usually inherits the rulership of the village/town after the demise of his father. This historical value is applicable to all independent homesteads. As it relates to religion, Esan's idea of a supreme being is monotheistic, "Osanobua" "God". However, some Esans also acknowledge the existence of lesser gods or deities.

3.3 Geography of Ekpoma

This area is located between latitude 6010' and 6045' north of the equator and between longitudes 6010' and 6030' east of the Greenwich Meridian. The latitudinal location implies that the study area falls within the tropical region. This area is situated on a relatively flat plateau called the Esan plateau and it is approximately 466m above the sea level (Akinbode 1983). Apart from the very few areas where there are remarkable valleys with exposed surface drainage, the study area is almost devoid of surface water sources. The water aquifer of the study area is very low and is put at approximately 150m. This depth has also made it almost impossible to have access to underground water source in the area.

3.4 Physical Features

The latitudinal location implies that the study area falls within the tropical region. The tropical climate is dominated by high temperature, high humidity and heavy rainfall. The area is characterized by two distinct seasons, the wet season which lasts between March and November and the dry season which lasts between November and February of each year. Harmattan dominates the month of November and December. The hottest months being February and March with temperature of 26.7C and the coolest months

are July and August when the temperature is 25C. It occupies the lowland rain forest zone, which occupies the non- riverine or 'upland' areas and upper flood plains of Edo State.

3.4.1 Climate and Vegetation

Ekpoma has a tropical climate which is dominated by high temperature, high humidity and heavy rainfall. The area is characterized by two distinct seasons, the wet season which lasts between March and November and the dry season which lasts between November and February of each year. But the dominant occupation of the people is agriculture. This has been favored over time by the rich and well-drained sandy loam which retains the advantage of good food and cash crop cultivation (Akinbode 1983). The vegetation is the mixed type of forest and Savannah, popularly called derived vegetation. The tropical climate is dominated by high temperature, high humidity and heavy rainfall. Relative humidity is high with monthly average exceeding 60.0 percent.

The vegetation within the study area comprises trees, shrubs, herbs, and the tall and short grass. Two masses influence the climate in the study area. The first is the moisture-laden south-westerly air mass, which originates from the southern Atlantic Ocean. The second is the dry north-easterly (harmattan) air mass, which originates from the sahara desert.

3.4.2 Relief and Drainage

Ekpoma is situated on a relatively flat plateau called the Esan plateau and it is approximately 466m above the sea level (Akinbode 1983). Apart from the very few areas where there are remarkable valleys with exposed surface drainage, the study area is almost devoid of surface water sources. The water aquifer of the study area is very low and is put at approximately 150m. This depth has also made it almost impossible to have access to underground water source in the area. It has an approximately area of 502 km² in a physiographic region of a gently rolling landscape within a radius of twenty five miles, which is good for farming. Ekpoma has Amahama seasonal lake, Egodo, Erade and Okhu streams located at the periphery areas.

3.5 Social- Economic Characteristics.

Ekpoma has in recent years undergone some rapid socio-economic and political transformations. By virtue of its location, it has unique cultural characteristics of the whole Esan-land. The Esan social ethnic group dominates its affairs, especially the economic and political activities. The establishment and successful implementation of the State University led to the exodus of many professionals from the private services and a compensating increase in the number of small scale industrial and commercial firms such as commerce, hotel services, and teaching, banking and health services.

Agriculture has been favored over time by the rich and well-drained sandy loam which retains the advantage of good food and cash crop cultivation (Akinbode 1983). The major agricultural products are cassava, yam, cocoyam, maize, banana and livestock animals. Cash crops such as cocoa rubber, coffee, cashew and oil palm are also cultivated in the area. There are several social facilities in the area; these include electricity, hospitals, schools, markets and roads. The major facility lacking in the area is water. The inability to provide adequate water has been attributed to the far distance of surface water sources such as rivers, streams and lakes and the low water table of the plateau, which has been difficult to access due to lack of technology.

Table 3.1: Economic Activities In Ekpoma Area.

Economic activities	Percentage
Commercial	28.00
Service Industry	18.00
Public service	20.00
Agricultural and proceeding industrial	36.00
Total	100.00

Source: Information Division of Esan-West Local Government, Edo State, 2012.

3.6 Population Distribution of Ekpoma

Ekpoma comprises of Eguare, Ihumudumu, Idumebo, Illeh, Emuhi, Uke, Ujoelen, Ujemen, Iruekpen and Uhiele and they are interwoven in creation. The localities

comprises of ten (10) wards of which Eguare, Ihumudumu and Ujeolen formed the township.

The 2006 national census put the population of the study area as one hundred and twenty-five thousand eight hundred and forty-two (125,842) with 62,057 females and 63,785 males and projected to 2012 at 2.8 percent national growth rate to give 148,494 Mehta (2007). And an area of five hundred and two kilometre square (502km) .And with the population density of about 2 persons per square kilometre. The table below shows the political wards and designated areas.

Table 3.2: Ekpoma Political Wards and Areas

Wards	Areas
1	Ogwa, Izogen-Ogwa, Egoro-Naoka.
2	Ujiogbo, Eko-Oikhenion.
3	Ukhun, Idoa, Ekpoma farm settlement, Egoro-Amede, Oraede, Eguare-Egoro, Egoro-Uen-Obo, Ujemen, Uke.
4	Ekpoma, Evboakhuala
5	Ihumudumu, Ikhideu, Idumebo.
6	Irukpen
7	Ukpenu, Idumigan, Igor/Emuhi, Ujoelen.
8	Ohon,Eguare-Urohi, Ohogho, Evbokhuere, Akugbe,Eko-Omigie, Eko-Ebutemeta.
9	Uhiele, Ukpe, Ikhiro, Ehanle.
10	Ihumudumu-Illieh, Illieh, Imule-Illieh

Source: Information Division of Esan-West Local Government, Edo State 2012.

3.7 Ekpoma Land Uses

According to the local planning authority of Ekpoma 2012, the land uses in Ekpoma includes; Residential land uses, Commercial land uses , Road networks (communication) land uses, Industrial land uses, Public and semi Public land uses. But the major land uses in this area is for residential uses. The residential land uses in Ekpoma can be categorised into High, medium and low density. The high-density residential zones are Eguare, Ihumudumu and Ujoelen etc. All these areas can be referred to as the core area of the localities. The low-density areas are Illeh, Emuhi,

Uke, Ujemen, Iruokpen and Uhiele. Most commercial activities take place in the markets located in the localities especially in the township such as Eguare etc. Industrial land uses are land allocated for both service and light industry, such as mechanic workshop, and Agro-Allied industries sported around in the study area. Example of such can be found at Idumebo area where gari processing and rice mill. There are various institutional developments within the study area. These include schools, churches, health centers, local government secretariat complex, banks, and police station. Circulation land to land used for the connectivity of one area of the activity to the other in the study area. These include Trunks B, C and D roads the circulation network covers less part of the total land mass that span the nooks and crannies of Ekpoma. Table 3.3 shows the land use pattern for Ekpoma.

Table 3.3 Land use Pattern of Ekpoma.

LANDUSE	AREA(HECT)	PERCENTAGE
Residential	49,197.47	58
Commercial	7, 634.09	9
Industrial	4, 046.07	4.77
Public/Semi public	10, 178.79	12
Open-Space	1, 043.33	1.23
Road	12, 723.48	15
Total	84, 823.23	100

Source: Edo State Ministry of Land and Survey Benin-City, 2013.

3.8 Transportation Networks

Ekpoma is linked with other parts of Edo State by road transport facilities. The street pattern of the old town of Ekpoma is reflecting the social organization which gave form to the original settlement, when the town was of modest size and pedestrian oriented. The main radial network and newly constructed roads in the old town are generally wide enough to accommodate heavier traffic in the future. They have appreciable width of land at both sides of the road as right of ways. These roads include Benin-Auchi road, Iruokpen-Ekpoma road, Ukpenu road, Ukhun road, Royal Market road and Dame-Oboh road.

3.9 Characteristics of Sources of Water Supply in Ekpoma.

The major basic facility lacking in the Ekpoma is water. The inability to provide water has been attributed to the far distance of surface water sources such as rivers, streams and lakes and the low water table of the plateau, which has been difficult to access due to lack of technology. Majority of the people of the area therefore rely on other sources for water supply, prominent among which is the use of underground storage tanks popularly called ‘wells’ in this area. Rainwater is collected into these wells during the rainy season while water may be bought into it during the dry season to become the source of supply. And also water vendors provide water into tanks for sale to the populaces. The Amahama seasonal lakes, Egodo, Erade and Okhu streams located in the periphery and the constructed boreholes located in some parts of Ekpoma serve as source of water.

3.10 Water Needs

The supply of water for each person must be sufficient and regular for self and domestic uses, as according to WHO guidelines. This will normally constitute 50-100litres daily per person and an absolute minimum of 20litres (COARE, 2004). Using the minimum consumption of water given by WHO, (20litres per person per day) the water needs is shown below in Table 3.

Table 3.4 Water Needs

Year	Population	Water needs /day per person	Water need per person per year in litres	Total need in (litres)
2006	125842	20litres	7,300	918646600
2012	148494	20litres	7,300	1084006200

Source: Author’s Field Survey, 2012

The table shows the water needs of the residents in the study area for the year 2006 and projected 2012.

3.11 Water Supply

Drinkable water in Ekpoma is provided by the residents through rainwater harvesting system, the government boreholes, lakes and streams and by the water vendors. Having known the population of Ekpoma, based on 2006 census and the projection was made for year 2012.

3.11 Sources of Water Location.

The majority of the rainwater harvesting wells is located at the backyards, besides of the buildings. Others are located in front of the buildings and other places. The borehole in Iruerken supplies its environs and others located in Eguare and University bus/stop serves also its environs as shown in plates.

CHAPTER FOUR

4.0 AN ASSESSMENT OF RESIDENT'S COPING MECHANISMS TOWARDS MEETING THEIR WATER NEEDS

4.1.0 INTRODUCTION

The focus of this chapter is basically on the analysis of the collected data from the field. The approach is to first of all reveal the socio-economic profile of the residents of the study area before discussing the sources of water, households' water needs and the residents' coping mechanisms adopted, among others.

4.1. RESPONSES

The responses from the administered questionnaires are as follows:

4.1.2 SECTION A: SOCIO-ECONOMIC CHARACTERISTICS OF RESPONDENTS'

The socio-economic characteristic of respondents considered in this research are Location, Gender, Age, Marital Status, Occupation, Educational Qualification, Income and number of persons per household.

4.1.3. Location of Respondents

The location of respondents are presented in table 4.1

Table 4.1: Location of Respondents'

Location of Respondents'	Frequency	%
Eguare	91	29.7
Ihumudumu	66	21.6
Ujeolen	53	17.3
Emuhi	40	13.1
Idumebo	56	18.3
Total	306	100.0

Source: Author's Field Work, 2012.

Since the distribution of the questionnaires was based on the population of residential building in the study area, copies of questionnaires administered were not evenly distributed among the localities. They ranged from 40 (13.1%) in Emuhi, through 56 (18.3%) in Idumebo, to as high as 91 (29.7%) in Eguare. An indication that shows that the questionnaires were distributed to the localities according to the numbers of the residential buildings in the study area.

4.2: Gender Analysis of Respondents

The Gender analysis of the respondents in the study area is shown in table 4.2.

Table 4.2: Gender Analysis of Respondents

Gender	Frequency	%
Male	203	66.3
Female	103	33.7
Total	306	100.0

Source: Author's Field Work, 2012.

The breakdown of distribution of respondents by gender revealed that Males are in the majority, consisting up to 66.3% of the respondents while Females account for the remaining 33.7%. . An indication that shows that the first target to be sample are the head of the households, is the absence of the head (male) that the female are sampled.

4.3 Age Distribution of Respondents'

The age distribution of respondents in the study area is shown in table 4.3

Table 4.3 Age of Respondents'

Age Distribution	Frequency	%
20-29yrs	81	26.5
30-39yrs	62	20.3
40-49yrs	89	29.1
50 and above yrs	74	24.2
Total	306	100.0

Source: Author's Field Work, 2012.

Table 4.3, revealed that the most prominent age-group, constituting as high as 29.1% of the respondents, are these aged between 40-49 years. The least are these aged between

30-39 years, constituting 20.3% of the respondents. An indication that shows that the households will consume more water, these implies that water management system should be adopt to manage their available water and also more water sources should be provided to adequately meet their water needs.

4.4 Marital Status of Respondents

The marital status of the respondents in the study area is shown in table 4.4

Table 4.4: Marital Status of Respondents

Marital status	Frequency	%
Single	111	36.3
Married	95	31.0
Divorced	36	11.8
Separated	64	20.9
Total	306	100.0

Source: Author's Field work, 2012.

The marital status of the respondents as reflected in table 4.4 revealed that the singles constituted 111(36.3%), 36 (11.8%) constituted the divorced, while 64 (20.9%) make up the separated. An indication that shows that more water needs will be required in the study area as the singles will needs more water to meet their water needs. The implication of these is that additional water sources should be provided to meet up their water needs.

4.5. Occupation Distribution

The response of the respondents on the occupation in the study area is shown in table 4.5.

Table 4.5: Occupation Distribution

Occupation Distribution	Frequency	%
Civil servant	44	14.4
businessman/woman	41	13.4
Artisan	67	21.9
Trader	17	5.6
Pensioner	35	11.4
Others(student)	102	33.3
Total	306	100.0

Source: Author's Field Work, 2012.

Table 4.5 revealed that 44 (14.4%) out of 306 respondents are the civil servants, and the traders are the lowest which constitute 17 (5.6%) of the respondents, while 102 (33.3%) are the students which account for the highest occupational distribution. An indication that shows that occupation of the residents' determines their water consumption. The implication of these is that coping mechanisms should be adopted to manage their available water in the study.

4.6 Educational Qualification of the Respondents

The level of education of the respondents is reflected in table 4.6

Table 4.6: Educational Qualification of Respondents.

Educational Qualification	Frequency	%
No Formal Education	30	9.8
Primary	44	14.4
Secondary	34	11.1
OND/NCE	41	13.4
Undergraduate	149	48.7
Postgraduate	8	2.6
Total	306	100.0

Source: Author's Field work, 2012.

Table 4.6 revealed that most of the respondents are undergraduates which account for 149 (48.7%), 41 (13.4%) of the respondents had Ond/Nce certificate, and 8 (2.6%) account for the postgraduate students. For as high as 48.7% being the undergraduates,

an indication that shows that the level of education determines water consumptions, these implication that more water usage and provision will be require in the town.

4.7. Income Distribution of Respondents.

The response of the respondents on income distribution in the study area is shown in table 4.7.

Table 4.7: Income Distribution of Respondents.

Income distribution	Frequency	%
Below N10,000	98	32.0
N10,000-N19,000	74	24.2
N20,001-N39,000	78	25.5
N40,001-N59,000	33	10.8
N60,000 – 79,000	15	4.9
80,000 and Above	8	2.6
Total	306	100.0

Source: Author's Field work, 2012

Table 4.7 revealed that majority of the respondents which is 32.0% (98 respondents) earned less than N10,000 per month, 10.8% (33 respondents) of the respondents are earning between N40,000- N59,000, and while 2.6% (8 respondents) earns N80,000 and above. Since the majorities of the households income distribution are below N20,000 monthly, an indication that shows that the residents' does not have much to spend on water. This implies that less of their income will be spent on water and these indicate that Government subsidies for water are required.

4.8: The Number of Households Distribution

The number of people per households in the study area is shown in table 4.8.

Table 4.8: Number of Households Distribution

Households Distribution	Frequency	%
Between 0 – 2	125	40.8
Between 3 – 6	155	50.7
Between 7 – 10	26	8.5
Between 11 – 15	0	0
Between 16 and Above	0	0
Total	306	100.0

Source: Author's Field work, 2012.

Table 4.8, revealed that the majority of respondents were between 0-2 persons per household which account for 125 (40.8%), 8.5% (26 respondents) of the respondents are between 7-10 persons while between 11-15 and 16 above have no response. An indication that shows that majorities of the number of households are between 2-6, it implies that the consumption of water will be determined by numbers of each households, it indicate that less water will be required in the study area.

4.2.2 SECTION B: WATER FACILITIES AND WATER SOURCE

The facilities and water sources of the respondents (Households) in the study area that were considered in this research are water sources, reservoir wells, water assessments, water providers and cost of water.

4.9: Sources of Water Supply

The source of water supply in the study area is shown in table 4.9.

Table 4.9: Sources of Water Supply

Source of Water	Frequency	%
Public stand Pipe	29	9.5
Bore Hole	16	5.2
In-House Water Tap	0	0.0
From reservoir Well	256	83.7
Water Vendor	5	1.6
Total	306	100.0

Source: Author's Field work, 2012.

From table 4.9, it is clear that majority (83.7%) of the population in the study area depend on reservoir well water, 5.2% (16 respondents) fetch water from the borehole, while none (0%) of the respondents have no in-house water tap. An indication that shows that the majorities of the households gets their water from the reservoir well, it implies that more water harvesting reservoir well should be provided to ensure adequate water supply.

4.10 Regularity of Reservoir Well Water

The regularity of reservoir well water is shown in table 4.10

Table 4.10 Regularity of Water from the Reservoir Well

Regularity of Water	Frequency	%
Everyday	150	49.0
few hours in a day	66	21.6
some few days in a week	76	24.8
Monthly	14	4.5
Total	306	100.0

Source: Author's Field work, 2012.

According to table 4.10, account that the majority(49.0%) get water from reservoir well everyday, 21.6% account for few hours in a day, while 4.5% get monthly. This implies that more than a half (51%) of the sampled population needs to provide water storage facilities to ensure adequate water supply for their daily needs.

4:11. Water Provider

The response of residents for who provide the water they use in their area is shown in table 4.11.

Table 4:11 Water Providers

Water Providers	Frequency	%
Landlord	260	85.0
Tenants	7	2.3
Neighbours	24	7.8
Government	15	4.9
Total	306	100.0

Source: Author's Field work, 2012.

From table 4.11 above, 260 (85.0%) which is the majority claimed that landlords provide the water they use, 24 (7.8%) claimed that is their neighbours, while 7 (2.3%) of the respondent says tenant. An indication that shows that the majorities of the water provider are the landlords, this implies that the Government and the communities should measure up in water provision.

4:12: Payment for the water

The response of residents on whether they pay for the water they use in the study area is shown in table 4.12

Table: 4:12: Payment for the water

Payment for the water	Frequency	%
Users pay	219	71.6
Users do not pay	87	28.4
Total	306	100.0

Source: Author's Field work, 2012.

From table 4.12, revealed that majority (71.6%) of the respondents claimed that they pay, while No account for the remaining 28.4%. This indicates that the majorities buy water and it implies that the Government and the communities should embark on water provision to lessen the household expenses on their water needs.

4:13. Amount of Money Spent For Water Monthly.

The resident's amount of money spent for water monthly is shown in table 4.13.

Table: 4:13. Amount of Money Spent For Water Monthly.

Amount of Money (₦)	Frequency	%
Between 200-500	175	57.2
Between 600-900	122	39.9
Between 1000-1300	6	2.0
Between 1800-2100	3	1.0
Total	306	100.0

Source: Author's Field work, 2012.

Table 4.13 shows that, 175 of the majority (57.2%) spent between N200- N500 for water monthly, 122(39.9%) of the respondents spent between N600-N900 monthly, while 3 (1.0%) spent between N1800-N2100 monthly. An indication that shows that majorities of the respondents spent below ₦1,000 for water monthly, this implies that less money is being spent on water monthly in the study area.

4:14. Cost of Water.

The cost of water in the study area is shown in table 4.14

Table: 4:14. Cost of Water

Cost of Water	Frequency	%
High	67	21.9
Normal	154	50.3
Low	85	27.8
Total	306	100.0

Source: Author's Field work, 2012.

Table 4.14 shows that the majority (154) says that the cost of water is normal 50.3%, 67 claimed that the cost of water is high 21.9%, while (85) claimed that the cost of water is low 27.8%. There is an indication that shows that the cost of water is normal, these implies that spending for water does not affect the residents income.

4:15. Available Source of Water

The source of water that is available for the residents is shown in table 4.15.

Table: 4:15. Available Sources of Water

Available Sources of Water	Frequency	%
Public main	38	12.4
Borehole	28	9.2
Reservoir well	232	75.8
Water vendors	8	2.6
Total	306	100.0

Source: Author's Field work, 2012.

Table 4.15, revealed that 8 (2.6%) claimed to be water vendor, 28 (9.2%) of the respondents claimed borehole, while the majority 232 (75.8%) of the respondents claimed reservoir well. An indication that shows that most of the residents' sought their water from reservoir well, this implies that reservoir well is available in most of the residents (house).

4:16. The Regularity of water from Vendors

The response of the respondents on the regularity of water from the vendors is shown in table 4.16.

Table: 4:16.The Regularity of water from Vendors

Regularity of Vendors Water	Frequency	%
Regular	190	62.1
Not Regular	116	37.9
Total	306	100.0

Source: Author's Field work, 2012.

From table 4.16, revealed that the majority (62.1%) claimed that the water from the vendors is regular, while (37.9%) of the respondents claimed that the water from the vendors is not regular. These indicate that the water from the vendors is regular and it implies that the vendors always make water available for the residents'.

4:17. Reservoir Well Water

The response of the residents on whether they have reservoir well water is shown in table 4.17

Table: 4:17. Reservoir Well Water

Reservoir Well Water	Frequency	%
Available	297	97.1
Not available	9	2.9
Total	306	100.0

Source: Author's Field work, 2012.

Table 4.17, shows that substantial number (97.1%) of the respondents claimed that they have reservoir well water, while 2.9% of the respondents claimed that they doesn't have. These indicate that the majorities of the houses are served with reservoir water harvesting well, this implies that the majorities of the residents depends on reservoir well water.

4.2.3 SECTIONC: HOUSEHOLDS' WATER NEEDS

The analysis on household water needs of the respondents in the study area that were considered in this research are number of occupants, construction materials, building type, age and distance of water source and water treatment.

4.18. Number of Occupants of Each House

The response of the respondent total number of occupants of each house is shown in table 4.18.

Table: 4.18. Number of Occupants of Each House

Number of Occupants	Frequency	%
Between 2–4	174	56.9
Between 5–7	116	37.9
Between 8–10	16	5.2
Total	306	100.0

Source: Author's Field work, 2012.

Table 4.18, shows that 174 (56.9%) of the respondents are between 2-4 occupants in a house, 37.9% of the respondents live between 5-7 occupants, while 5.2% of live between 8-10` occupant in a house. These indicate that the majorities of the occupants are between 2-7 in each houses, it implies that there will be less of water required in the study area.

4.19. Building Construction Materials

The response of the respondents on the type of building construction materials is shown in table 4.19.

Table: 4.19. Building Construction Materials

Construction Materials	Frequency	%
Mud	142	46.4
cement block	147	48.0
Others	17	5.6
Total	306	100.0

Source: Author's Field work, 2012.

According to table 4.19, 147 (48.0%) used cement block for their building construction, 142 (46.4%) used mud for their building construction, while 17 (5.6%) of the respondent claimed that they use other building materials. An indication that shows that most residents used between mud and cement block materials for the construction of their buildings, the implication is that more water will be needed for construction of their buildings.

4.20. Type of Buildings

The response of the residents' type of building in the study area is shown in table 4.20.

Table: 4.20.Type of Buildings

Type of Buildings	Frequency	%
Duplex	37	12.1
story building	83	27.1
Bungalow	175	57.2
Others	11	3.6
Total	306	100.0

Source: Author's Field work, 2012.

Table 4.20, revealed that the majority (57.2%) of the residents live in bungalow, 3.6% of the respondents claimed to live in other type of building, while 12.1% claimed they live in duplex. This indicates that most of the residents' lives in bungalows buildings.

4.21. Age of Building

The response of the residents on the appropriate age of building is shown in table 4.21.

Table: 4.21. Age of Building

Age of Building	Frequency	%
Between 5-9yrs	61	19.9
Between 10-14yrs	141	46.1
Between 15-19yrs	50	16.3
Between 20-24yrs	39	12.7
Between 25-29yrs	15	4.9
Total	306	100.0

Source: Author's Field work, 2012.

Table 4.21, revealed that most (46.1%) of the buildings are between the age of 10-14 years, 16.3% of the respondents claimed between the age of 15-19 years, while 4.9% claimed between the age of 25-29 years. An indication that shows that most of the houses fall between the age-group of 10-14 years, this implies that the houses roof (zinc) will still be healthy for rain water harvesting.

4.22. Building Structure Condition

The response of the respondents on the building condition is shown in table 4.22.

Table: 4.22. Building Structure Condition

Building Structure Condition	Frequency	%
Sound	113	36.9
poor and needs minor repairs	108	35.3
poor and needs major repairs	85	27.8
Total	306	100.0

Source: Author's Field work, 2012.

From table 4.22, 36.9% (113 respondents) claimed that their building structure condition is sound, whereas 35.3% (108 respondents) claimed that their building structure condition is poor and needs minor repairs, while 27.8% (85 respondents) claimed poor and need major repairs. An indication that shows that majorities of the buildings structures condition are neither sound or poor and needs minor repairs, this implies that the buildings structure condition are liable for long life span.

4.23. Fetching of Water

The response of the Respondents on who bring in their fetched Water into their house is shown in table 4.23

Table: 4.23. Fetching of Water

Fetching of Water	Frequency	%
The wife	53	17.3
The husband	60	19.6
Children	102	33.3
Others	91	29.7
Total	306	100.0

Source: Author's Field work, 2012.

Table 4.23, shows that majority (33.3%) claimed that their children fetch their water, 17.3% claimed that is their wife's, while 29.7% of the respondents claimed that they fetch their water through other means. An indication that shows that the children do the fetching of the water in the study area, it implies that there will be more water usage and needs in the study area.

4.24. Trips per Day

The response on how many trips must the person make in order to obtain enough water daily in the study area is shown in table 4.24.

Table: 4.24. Trips per Day

Trips per Day	Frequency	%
2	73	23.9
3	143	46.7
4	43	14.1
5 and above	47	15.4
Total	306	100.0

Source: Author's Field work, 2012.

Table 4.24, shows that majority (46.7%) of the residents make up to 3 trips per day to have enough water, 23.9% claimed that they make up to 2 trips per day, while 14.1% of the residents says they make up to 4 trips. An indication that shows that most of the residents make 3 trips to have enough water in each households, these imply that the residents spent less of their time in fetching water.

4.25. Distance of Water Source

The response of the residents on distance of water source to their house in the study area is shown in table 4.25.

Table 4.25. Distance of Water Source

Distance	Frequency	%
1km	224	73.2
2km	25	8.2
3km	16	5.2
4km	33	10.8
5km and above	8	2.6
Total	306	100.0

Source: Author's Field work, 2012.

From table 4.25, revealed that most (73.2%) of the residents claimed that they travelled within 1km, 5.2% travels within 3km and while 2.6% claimed that they travels 5km

and above. This indicates that most of the residents' sources of water are located within their residents, these implies that the residents' takes less stress in fetching their water.

4.26. Buckets of Water Used Daily

The response of the residents on the number of buckets of water use daily in each household is shown in table 4.26.

Table 4.26. Buckets of Water Used Daily

Buckets of Water Used daily	Frequency	%
2	58	19.0
3	32	10.5
4	62	20.3
5	87	28.4
6 and above	67	21.9
Total	306	100.0

Source: Author's Field work, 2012.

Table 4.26, revealed that 32 (10.5%) of the residents' used up to 3 buckets of water daily. While most (28.4%) claimed that they used up to 5 buckets of water daily and 21.9% of the respondents claimed they used up to 6 buckets and above daily. An indication that shows that the residents' used different numbers of buckets according to their water needs in the study area, this implies that the residents' adopted water regulation.

4.27. Water Treatment

The response of the respondents on the treatment of water before drinking in the study area is shown in table 4.27.

Table 4.27. Water Treatment

Water Treatment	Frequency	%
Boiling	286	93.5
Filtering	8	2.6
No treatment	12	3.9
Total	306	100.0

Source: Author's Field work, 2012.

Table 4.27, shows that the majority (93.5%) claimed that they boiled their water before drinking, 2.6% of the respondents claimed that they filtered, while 3.9% of the respondents claimed that they do not treat their water before drinking. An indication that shows that most of the residents' in the study area treat their water before drinking, this implies that water diseases will be drastically reduced in the study area.

4.2.4 SECTION D: RESIDENTS' COPING MECHANISMS

The analysis of the coping mechanisms of the respondents (Households) in the study area that were considered in this research are water source, water collection and storage, water recycling, water regulations and community participation in water supply,

4.28: Major Sources of Water

The response of the resident's major sources of water supply in the study area is shown in table 4.28.

Table 4.28: Major Sources of Water

Major Sources of Water	Frequency	%
Rain	292	95.4
Tap	12	3.9
Borehole	2	0.7
Total	306	100.0

Source: Author's Field work, 2012.

According to table 4.28, revealed that majority (95.4%) of the residents claimed that their major source of water supply is rain, 3.9% of the residents claimed tap water as their major source of water, while 0.7% of the residents claimed borehole. An indication that shows that most of the residents' sources and depend on rain water harvesting, this implies that more rain water harvesting and storage facilities should be

provided by the Government and the communities to have adequate water supply to the residents' in the study area.

4.28: Medium of Water Collections

The response of the resident major medium of water collection in the study area is shown in table 4.28.

Table 4.28: Medium of Water Collections

Water Collections	Frequency	%
Rain water channelling	280	91.5
Tap water channelling	16	5.2
Vendor	10	3.3
Total	306	100.0

Source: Author's Field work, 2012.

Table 4.28, shows that most (91.5%) of the residents claimed that they adopted rain water channelling, 5.2% of the residents claimed tap water medium, while 3.3% of the respondents claimed vendor. An indication that shows that the residents' adopted rain water channeling, as a medium of collecting of their water, this means that rain water channeling is adequate in harvesting and storage of water to meet their water needs.

4.29: Means of Water Storage

The response of the resident's means of water storage in the study area is shown in table 4.29.

Table 4.29: Means of Water Storage

Means of Water Storage	Frequency	%
Inbuilt underground reservoir well	222	72.5
Underground tank	27	8.8
Overhead tank	50	16.3
Basins/jerry cans	7	2.3
Total	306	100.0

Source: Author's Field work, 2012.

Table 4.29, shows that the majority (72.5%) adopted inbuilt underground reservoir well for water storage, 16.3% (50 respondents) of the residents claimed that they adopted overhead tanks in storing their water, while 2.3% (7 respondents) of the residents claimed that they adopted basins/jerry cans for their water storage. An indication that shows that most of the residents' adopted inbuilt underground reservoir well in preserving their harvested water, these implies that the method, conditions and location of the well is adequate and hygienic for the supply of healthy water in the study area.

4.30: Recycling of Water

The response of the residents on whether they recycle their water after use in the study area is shown in table 4.30.

Table 4.30: Recycle of Water

Recycling of Water	Frequency	%
Adopted	280	91.5
Do not adopted	26	8.5
Total	306	100.0

Source: Author's Field work, 2012.

Table 4.30, shows that most (91.5%) of the respondents recycle their used water, while 8.5% account for the remaining that does not recycles their used water 8.5%. An indication that shows that most of the residents' re-used (recycle) their used water, this implies that recycling of used water is adequate and sustainable in meeting their water needs in the study area.

4.31: Means of Recycling

The response of the resident's means of water recycling in the study area is shown in table 4.31.

Table 4.31: Means of Recycling

Means of Recycling	Frequency	%
Filtering	273	89.2
Boiling	25	8.1
None	8	2.6
Total	306	100.0

Source: Author's Field work, 2012.

Table 4.31, revealed that most (89.2%) of the residents recycle their water through filtering, 8.1% of the residents claimed that they boil, while 2.6% of the residents claimed that they don't recycle their used water. An indication that shows that most of the residents adopted filtering of their used water for cleaning of floors and flushing of toilets, this has reduced the demand for water and also money spent on water supply in the study area.

4.32: Regulation of Quantity of Water Usage

The response of the resident on whether they regulate the quantity of water use daily is shown in table 4.32.

Table 4.32: Regulation of Quantity of Water Usage

Water Regulation	Frequency	%
Regulate	296	96.7
Does not regulate	10	3.2
Total	306	100.0

Source: Author's Field work, 2012.

Table 4.32, revealed that the majority(96.7%) of the residents regulate the quantity of water used daily, while the remaining percent does not regulate 3.2%. An indication that shows that the residents adopted regulations of their quantities of water usage, these have significantly helped the residents in sustaining their water needs.

4.33: Regulation Methods Adopted

The response of the respondents on the different methods of water regulation adopted in the study area is shown in table 4.33.

Table 4.33: Methods of Water Regulation Adopted

Methods of Regulation	Frequency	%
Measurement	231	75.5
Periodically	55	18.0
Hourly	20	6.5
Total	306	100.0

Source: Author's Field work, 2012.

Table 4.33, revealed that the majority (75.5%) regulate their water use through measurement, whereas 18.0% claimed that they set up periods which they use to regulate their daily water usage, while 6.5% claimed that they adopted hourly. An indication that shows that most of the residents' regulates their usage of water and they adopted measurement as means of regulation, these implies that residents' used water wisely in the study area.

4.34: Other Methods of Water Collection Adopted

The response of the residents on other methods of water collection adopted in the study area is shown in table 4.34.

Table 4.34: Other Methods of Water Collection Adopted

Water Collection Methods	Frequency	%
Channeling of drainage to reservoir wells	139	45.4
Pavement of floors to reservoir wells	24	7.8
None	143	46.7
Total	306	100.0

Source: Author's Field work, 2012.

Table 4.34, shows that 45.4% (139 respondents) adopted the method of channeling of drainage to reservoir well as means of sourcing water, 46,7% (143 respondents) of the residents says no, while 7.8% (24 respondents) of the residents claimed that they adopted the pavement of floors to reservoir well. An indication that shows that the residents also adopted other means of sourcing of water by channeling of drainage to

reservoir wells and these has helped them to sources more water for other domestics used.

4.35: Adequacy of the Strategies Adopted

The response of the respondents on the adequacy of the strategies adopted in the study area is shown in table 4.35.

Table 4.35: Adequacy of the Strategies Adopted

Adequacy of the Strategies	Frequency	%
Adequate	284	92.8
Not Adequate	22	7.2
Total	306	100.0

Source: Author's Field work, 2012

Table 4.35, shows that the majorities (92.8%) of the residents' claimed that the strategies adopted are adequate, while 7.2% (22 respondents) of the residents claimed that the strategies adopted are not adequate. An indication that shows that the residents' method of drainage channeling to reservoir wells was significant in the study area.

4.36: Community Participation in Water Supply

The response of the respondents on community participation in water supply in the study area is shown in table 4.36.

Table 4.36: Community Participation in Water Supply

Community Participation	Frequency	%
Participate	175	57.2
Does not participate	131	42.8
Total	306	100.0

Source: Author's Field work, 2012

Table 4.36, shows that 57.2% (175 respondents) of the residents' claimed that the communities participates in water supply, while 42.8% (131 respondents) of the residents claimed that the communities does not provide means of water supply .An indication that shows that the communities neither participates nor does not participates

in water provision in the communities. These imply that the communities' participation in water supply should be felt in all the communities in the study area.

4.37: How the Community Participate

Response of the residents on how the communities participate in water supply in the study area is shown in table 4.37.

Table 4.37: How the Community Participate

Means of Participation	Frequency	%
Provision of finance	46	15.0
Construction of storage facilities	31	10.1
Orientation and advocacy	98	32.0
None	131	42.8
Total	306	100.0

Source: Author's Field work, 2012.

Table 4.37, revealed that the communities (15.0%) participated through the provision of finance, 10.1% of the residents' claimed that the communities participate by constructing of storage facilities, while 42.8% claimed that they do not participate in water supply. An indication that shows that the communities have either participates in one way or the other in water supply, these implies that there is relationship between the communities and the residents' in water provision in the study area.

4.4. TEST OF STATISTICAL HYPOTHESIS

For testing the hypothesis, the statistical analysis of the reaction of residents to how they meet their water needs were used with particular emphasis being paid to the coping mechanisms that were adopted in meeting their water needs.

In order to test the hypothesis, T-test was employed where the "Null hypothesis" which is represented by H_0 , is interpreted thus; "There is no significant relationship between coping mechanisms and water supply to the households in the study area".

The alternative hypothesis is given as H_1 and this is interpreted as follows: “There is significantly relationship between coping mechanisms and water supply to the households in the study area”.

Decision Rule: If the P-value exceeds 5% (0.05%), then there is strong evidence that H_1 is not true, we will reject H_1 and accept H_0 but if otherwise (that is p-Value is less than 0.05%) we reject H_0 and accept H_1 .

Table 4.38. An Analysis of the Assessment of the Resident’s Coping Mechanisms Towards Meeting their Water Needs

Question	Option	Frequency	Valid%	T-test	Df	p-Value	Decision
Recycling of Water after Usage	Filtering	281	91.9	49.928	305	0.000	S
	Boiling	25	8.1				
Total		306	100.0				
Regulation of Quantity of Water Use Daily	Measurement	231	75.5	89.142	305	0.000	S
	Periodically	55	18.0				
	Hourly	20	6.5				
Total		306	100.0				

Source: Author’s Field work, 2012.

4.4.1 FINDINGS

We observed from the SPSS output that the computed T-test with a value of 49.928 has a p-value of 0.000 which is less than the significant value of the test at 5% (0.05%) level for the relationship which considers how the residents’ recycles their used water. Hence we reject H_0 and accept H_1 which states that, “There is significantly relationship between coping mechanisms and water supply to the households in the study area”.

Similarly when considering, the methods of water regulation adopted in sustaining their water needs by the residents', the p-value of 0.000 was also arrived at. This shows that the test was significant. Hence we reject H_0 and accept H_1 which says that "there is significantly relationship between coping mechanisms and water supply to the households in the study area

CHAPTER FIVE

5.0 SUMMARY OF FINDINGS, RECOMMENDATIONS AND CONCLUSION.

5.1 Summary of Findings

The findings made from the analysis of returned questionnaires from respondents coupled with fieldwork and personal observations conducted in the study area revealed that the majority of the residents were able to meet their water needs in their households through water recycling and water usage regulation.

Findings

The research revealed that:

Majorities of the respondents in the study area are undergraduates. Most of the residents' have little to spend on the provision of water and water from the reservoir wells is what most of the people in the study area adopt. Residents' in the study area get water from the reservoir well every day and Landlords are the major provider of water for the residents' in the study area. Most of the residents' pay for the water they use and majorities of the residents' in the study area have and equally make use of reservoir well water.

Residents' use either cement blocks or muds for the construction of their buildings and majorities of the residents' in the study area lives in bungalow. Most of the residents' travel within 1km distance before they access the water source they use and as most of the residents' in the study area source their water from rain water.

Majorities of the residents' use rain water channeling method in collecting their water and they adopted inbuilt underground reservoir wells for water storage. Most of the residents' in the study area do normally recycle their used water and also that the

majorities of the residents regulate their water usage daily. Communities' participations in water supply in the study area are not adequate.

5.2. Recommendations

Considering the existing situation of high demand for water and the traditional indigenous techniques of rain water harvesting have become inadequate due to population growth and erratic rainfall pattern as a result of Climate change, and storage facilities for storing rain water have become obsolete and are not conducive for rain water harvesting and this has reduced the volume of rain water collection in the study area, it is advised that great concern and attention should be given in handling of water provision in Esan-land in general and the study area in particular. To this end, it is recommended that;

The provision of water for the populace is not a task which the residents can do alone, the idea of Public-private partnership concept should be employed for effective and efficient supply of improve water.

Implementation and construction of mini-water schemes in the study areas will reduce the problem of water scarcity in Ekpoma, as this will assist in serving some of the population.

Community mobilization, consultation and advocacy visits, focused group discussion, installation of plastic storage tank for rain water collection, training workshops on rain water harvesting and preservation and publication of case study.

Orientation should be given to the people on how to apply the method of water recycling and adoption of water usage regulation that will reduce the shortage of water.

The installations of single household grey water recycling schemes should be advocated and implemented by the Government.

The disinfection chemicals, such as hypochlorite, chlorine dioxide and bromine etc should be made available by the Government for possible recycling of used water.

Government should provide assistance in the form of aids, grants or loans to the residents' to construct rain water harvesting system or boreholes to enhance water supply.

Government should provide water treatment for the residents' to curtail water diseases and health officers should be employed and equip to inspect and monitors the sources of water.

5.3. Conclusion

From investigation conducted, it is concluded that though the coping mechanisms adopted by the resident's in Ekpoma towards meeting their water needs has succeeded. Identifiable challenges of the strategies include government assistance, water treatment, and channelling and storage facilities.

In conclusion, the collaborative effort of all the stakeholders, like the members of the public, the urban managers, the various government authorities, government agencies, parastatals and other non-governmental organization regarding public enlightenment and awareness strategies on water provision will proffer a unifying solution towards a sustainable measures in maintaining a balance between the water supply and the coping strategies adopt in meeting their water needs.

5.4. SUGGESTED AREAS FOR FURTHER RESEARCH

5.4.1. Assessment of the structural conditions of the channeling and storage facilities.

The construction materials of the channeling and storage facilities of the rain water harvesting system is a good area which one can research into. The chemical component of the roofing material and the structural materials should be assessed in accordance to human health.

5.4.2. The assessment of the storage facilities locations in relation to the refuse disposal and the toilets areas.

Refuse disposal and toilets areas have an inevitable impact on healthful state of the reservoir well water. The incessant dumping of refuse/waste most especially the solid waste determines the healthful state of the wells. The research will assess the relationship between the wells and the refuse/waste disposal areas and the toilets.

REFERENCES

- Akinbode, A. 1983. *The Geography of Ekpoma*. Ekpoma: Bendel State University Press.
- Adediji A, Ajibade LT 2005. Quality of well water in Ede area, south-western Nigeria *Journal of Human Ecology*, 17: 223-228.
- Adrienne H. W. 2011. “The Concept of Stress Revisited of Relief for Infertility Patient on Fertile Ground”, Published on September 6, 2011.
- Aregbeyen J.B.O. 1996, “The Economics of healthy Cities Approach” in Agboola S. Babatunde and Ejunjobi Layi (ed). *Environmental Health and the Potential of the Healthy City Approach in Nigeria*. Agbowo, Ibadan. Joytal Printing Press.
- Babajide, Idowu, Adegunle Tomisi, Boyede Babafemi, Okpobrisi Othuke, Olaniyi Abidemi, Soleye Grace, Obihinone Kenneth, Olarewaju Gabriel, 2005. *Water system: policy, planning, design, management and relationship to housing*, unpublished paper presented to the Department of Urban and Regional Planning, University of Ibadan, Ibadan.
- Bandura A. (1986) *Social Foundations of Thought & Action*. Prentice Hall, Englewood Cliffs, New Jersey.
- Carver, C.S., Scheier, M.F., & Weintraub, J.K. 1989. Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology*, 56, 267–283.
- Chrousos G.P, Gold P.W. 1992 “The concepts of stress and stress system disorders. Overview of physical and behavioral homeostasis”, National Institute of Child Health and Human Development, Bethesda, Md 20892. Jama Publishers.
- COHRE, 2004, *Legal resources for the right to water: international and National standards*. London. Center on Housing right and evictions right to water programme, COHRE.

Egunjobi, Layi 1999. Our Gasping cities, an inaugural lecture, Vantage publishers limited, Ibadan.

Folkman, S., and Lazarus, R. S' 1980. An analysis of coping in a middleaged community sample" Journal of Health and social Behavior, 21, 219-239.

Gleick, PH. 2002. Dirty Water. Estimated Deaths from Water Related Diseases 2000-2020. Oakland: Pacific Institute of Studies in Development, Environment and Security.

Gray, N.F, 1994. Drinking Water Quality: problem and solution, London: Wiley publishers.

Haan, N. 1977. Coping and defending: Processes of self-environmental organization New York: Academic Press'

Haan, N. 1982. The assessment of coping, defence, and stress' In L. Goldberger and S. Breznitz (Eds.), Handbook of stress: Theoretical and clinical aspects (p p.254-269). New York: The Free Press'

Iyun, 1996, "Epidemiological contributions to Environment Health policy", in Agbola, S. Babatunde and Egunjobi Layi (ed). Environmental Healthy and the potential of the Healthy City Approach in Nigeria, Agbowo, Ibadan, Joytal Printing Press, Pp 60-61.

Jinadu, A.M. 2004, Understanding the basic of Housing, Minna, Nigeria. King James Publisher.

Ladigbolu, A.G.A, 2003. Oyo State at 27 (1976-2003). Litchfield Communications Limited, Lagos.

Lazarus, R. S. and Folkman, S' (1984)' Stress' appraisal' and coping' New York: Springer'

McCubbin, H. I., Joy, C' B', Cauble' A' E" Comeau' J' K" Patterson' and Needle, R.H-1980)'Family stress and coping: a decade review' Journal of Marriage and the Family; ' 42 ' 855-87

Moos, R. H. and Holahan, C. J. (2003) Dispositional and contextual perspectives on Coping: Towards an Integrative Framework. *Journal of Clinical Psychology* 59(12) 1387 – 1403.

Moos, R. H., Billings, A. G. 1982. Conceptualizing and measuring coping resources and processes. In L. Goldberger and S. Breznitz (Eds.), *Handbook of stress: theoretical and clinical aspects* (pp. 212-230). New York The Free Press.

National Population Commission Nigeria, Popul. Cens., NPC Lagos, (2006)

Nmorsi OPA, Egwunyenga OA, Ukwandu NDC, Nwokolo NQ 2005. Urinary schistosomiasis in rural community in Edo State Nigeria. Eosinophiluria as a diagnostic marker. *African Journal of Biotechnology*, 4: 183-186.

NWRI 2012. National Water Resources Institute, Kaduna, “Water and Food Security”, Presented at the 3rd National Water Conference Water week. Kaduna. 19th-21st June, 2012.

Ogundiji, Bukola, 2005. The Millenium Development Goals (MDGS) challenges and opportunities in Ibadan. Unpublished paper, Department of Urban and Regional Planning, University of Ibadan, Ibadan.

Ojeifo OM 2011. Assessment of Rain Water Harvesting Facilities in Esanland of Edo State. Nigeria. *Journal of Human Ecology* 34:7-16.

Ojeifo OM, Kadiri MA 2008. Analysis of spatial pattern and prevalence of water related diseases in Owan East Local Government Area of Edo State. A case study of Otuo and environs. *GRP Journal of Environmental Planning and Management*, 1: 5-15.

Ojeifo OM, Uwadiae TB 2005. Waste Disposal Problems in Emerging Urban Centres. A Case of Ekpoma and Irrua Towns of Edo State. In: SO Osuide (Ed): *Proceedings of the National Seminar on Population and Growth Architecture and the Environment*. Irukepen: Rasjel Publishers, pp.169-183.

Okhae EA 2005. The Distance Factor in Water Use for Domestic Purpose in Ekpoma Metropolis, Esan West Local Government Area, Edo State. M.Sc. Thesis, Unpublished. Ekpoma: Ambrose Alli University

Olokesusi, Femi, Soji, Adesanya, Joe Ogbuozobe, Demola Adeagbo and Felix Olorunfemi 2005. "Public- private partnership for national development: the case of water supply and solid waste Governance in Nigeria" in Bankole Oni and Bayo Akinbinu (ed), public-private partnership in Nigeria development, a multi-Disciplinary Approach, Ibadan. NISER, Pp 147-153.

Orebiyi EO, Awomeso JA, Idowu OA, Martins O, Oguntoke O, Taiwo AM 2010. Assessment of pollution hazards of shallow well water in Abeokuta and environs, South Western Nigeria. *American Journal of Environmental Science*, 6: 50-56.

Osibanjo, T.O, 2004. Domestic water supply and utilization in Ibadan North east local Government, unpublished undergraduate project, Department of Geography University of Ibadan, Ibadan.

Pearlin, L., and Schooler, C. 1978. The structure of coping. *Journal of Health and Social Behavior*, 19,2-21.

Pukuma MS, Musa SP 2007. Prevalence of urinary schistosomiasis in Wuduku, Nigeria. *Nigerian Journal of Parasitology*, 28: 65-68.

Ray C, Lindop J, Gibson S. 1982 " The concept of coping". *Psychological Medicine*. National Center for Biotechnology Information, U.S. National Library of Medicine 8600 Rockville Pike, Bethesda MD, 20894 USA.

Robber, J. Saunders and Jeremy, J. Warford, 1976. Village water supply, World Bank Research Publication.

Scheier, M.F., Carver, C.S., & Bridges, M.W. 2001. Optimism, pessimism, and psychological well-being. In E.C. Chang (Ed.), *Optimism and pessimism: Implications for theory, research and practice* (pp. 189–216). Washington, DC: American Psychological Association

Seeley, H. Ivor, 1974. *Building Technology*. Great Britain, the Macmillan Press Limited.

Toolkit .A. 2006, Approaches to private participation in water service Washington, The World Bank.

Topfer, K. 1998. Editorial Comments on Fresh Water.Our Planet, 9.3.

WHO 2003. Report of the Seventh Meeting of the WHO Alliance for the Global Elimination of Blinding Trachoma. Prevention of Blindness and Deafness. Geneva: WHO.

World Health Organization, Guidelines for drinking water quality, 2nd Eds. Geneva, 27, (1998).