

Water issues essay



1ST BUILDING TECHNOLOGY DEPARTMENT NATIONAL CONFERENCE 27TH - 29TH 2009 THEME: CHALLENGES IN BUILDING AND ENVIRONMENTAL ISSUES. ACCESS TO POTABLE WATER SUPPLY FOR SUSTAINABLE DEVELOPMENT OF NIGERIAN CITIES, TOWNS AND URBAN CENTRES – A CASE STUDY OF AUCHI, EDO STATE. BY 1 2 3 4 FADELE . S . O . , USMAN . D. D. , ELAMAH . D. , EBUBE . O. C. (1, 2, 3, & 4) DEPARTMENT OF BUILDING TECHNOLOGY AUCHI POLYTECHNIC

AUCHI EDO STATE ACCESS TO POTABLE WATER SUPPLY FOR SUSTAINABLE DEVELOPMENT OF NIGERIAN CITIES, TOWNS AND URBAN CENTRES – A CASE STUDY OF AUCHI, EDO STATE. ABSTRACT Water is important to life, and the World possesses fixed amount of water, which is found to occur naturally in various forms, such as oceans, lakes, rivers, streams, underground waters, ice caps, glaciers and rain. This water plays an important part in maintaining the balance of the world's weather, especially through the presence of water vapour in the atmosphere.

Water is also essential for the growth of vegetation such as trees, vegetables and food crops as well as raising farm animals. Man needs a small amount of water for drinking but much greater amounts are needed for washing and waste disposal, in homes, industry and commerce. The daily consumption of water in some cities is less than 10 litres per person on average (Oyebande 1993 and Morenikeji 2006). This is at variance with the acceptable International Standard of 180 litres per person per day and The Third National Development plan of 112 litres per person per day (Okpalla 1986).

The total supply of natural water in the earth is enormous and should be adequate for man's needs. However, local shortages do occur especially when droughts are combined with poor management resources. This paper dealt with sources of water, quality and quantity of potable water supply to persons, in Urban centres and towns with Auchi, the Headquarter of Estako West Local Government Area of Edo State as case study. The paper also investigated at the activities of the state's utility Board and factor responsible for its low level performance.

The paper recommends the need for private and public sector participation in water supply and distribution if the standard set by the UN is to be realized. Keywords:-Potable water, sustainable development, acceptable standard. 1. 0 INTRODUCTION Water ranked 2nd in the hierarchy of human needs, with air taking the lead. (Bella – Omunagbe and Fadele 2006). Scientists described water as a compound, a combination of Oxygen and Hydrogen atoms. An atom is a tiny bit of matter much too small to see. Water is made of one atom of oxygen (O_2) and two atoms of hydrogen ($2H_2$).

The three atoms make the tiniest possible drop of water called water molecule. Water can be a liquid, a solid or a gas. Liquid water flows. Solid water is ice. Water in the form of gas is called water vapour which most often rises to the atmosphere after the sun had heated the surface water. Water being one of the free gift of the nature is found in every part of the world, liquid water found on the surface of the earth as oceans, lakes, ponds, rivers and swamps. Water droplets form rain clouds.

Liquid water makes beads of dew on the grass. It seeps down into ground. It fills underground lakes and streams. Ice falls as hail or crystals of snow. Ice forms on ponds and frosty windows panes. Huge sheets of ice makes glaciers and Ice caps at the North and South poles. Water vapour is always present in the air. Water vapour makes clouds in the sky. Water vapour makes fog that hangs close to the ground. It is the steam that comes out of a tea-kettle.

Provision of potable water to the entire citizens of the state is one of the basic responsibility of every successive government (federal, state or local), and this had been a major cardinal programme in the manifestoes of all political parties seeking the mandate of the electorate since the Nigeria independence election of 1960. Governor Mimiko of Ondo State while flagging off his rural water scheme recently affirmed that “ the health of a state is deeply rooted in the health of individual member of that state, and that a community without effective, efficient and adequately accessible potable water is vulnerable to all manner of disease”

Urban centres, large towns and cities are generally characterized by high concentration of human population and activities in complex interactions with the environment and its contents include the air, water and land over a finite space. The influx of people to Urban centres is attributed to heavy concentration of infrastructural facilities and social amenities to those area. These peculiarities induce changes in the water cycle in the pre-Urban landscapes and make them vulnerable to pollution, flooding and drainage hazards (Oyebande 1993). SOURCES OF WATER

SURFACE WATER: The major sources of water in Auchi were; surface water gotten from rivers Omemlu, Orle, Orhio, Ukpelegi, Ame’udo and Barekhi,

these rivers got their intakes from annual rainfall which were erratic or scanty, incomparable with what is obtainable in other southern states of the federation. The medium of distribution is not hygienic and it is at variance with any acceptable standard. Water vendors usually besiege the river with water tankers to collect, transport and distribute the intakes to all household with a fee charge per litre of various sizes of container used.

More also, carts and wheelbarrow pushers came to the rivers with all manner of containers and jerry cans to collect, and sell water at exorbitant rates to the consumers. However a household that could not afford the services of the water vendors, the women and children in the household would have to trek to the rivers to fetch water for the family use, in most cases, the quantity gotten are relatively insufficient for the family. And the distance between the rivers and their respective house/homes is by no means a short distance as many people trekked between two and five kilometers to fetch a bucket of between five and twenty liters. RAIN-WATER IMPOUNDED:- Each building owner had to cough out between one hundred and two hundred thousand naira to construct a well fortified impermeable underground concrete reservoir to conserve water for the household use during raining season. The water so impounded could last a family for a period of three to four weeks, depending on the number of people and the living standard of the household. BOREHOLES: Of about seventeen, boreholes visited only a few sell water to the water vendors and the inhabitants.

Most of the boreholes were owned by corporate bodies mostly banks and they provide water for the staffs and office use. We have Auchi polytechnic boreholes supplying water to the students and staffs living within the

polytechnic community, Oceanic bank boreholes, Bank PHB Borehole, Intercontinental Bank borehole gives free water to Iyekhei community in Auchi, Zenith Bank borehole, Abbas Braimah boreholes, Oseni Elamah borehole, Aliu boreholes, Sakiss boreholes, Mr.

Biggs boreholes, Basil boreholes, Kayoko boreholes, Popular Boreholes, Oyarebu boreholes, Texaco filling station borehole, Geogina borehole and NNPC borehole supplying water mainly to their staffs. The few ones that sell water sells water at exorbitant rate. SACHET WATER I. E PURE WATER BUSINESS: More also, pure water business thrive well within Auchi and its environs due to the fact that most of the supply gotten from major water vendors were from doubtful source, and pure water is the major source of drinkable water. We have varieties of brand names in the pure water business.

These include; Jojo pure water, Notre Dam pure water, Pamos Gold pure water, Esitsemhe pure water, Elvon pure water and Trinity pure water selling a pack between N50 and N70 to the wholesalers. QUALITY OF WATER FROM THE SOURCES DISCUSSED The primary objective of water treatment and purification. (Punmia etal 1995) revealed is to collect water from best available source and subject it to processing which will ensure water of good physical quality, free from unpleasant taste or odour and containing nothing which might be detrimental to health.

Supplies of water may be obtained by drawing directly from rivers, lakes, or springs. Depending largely upon the source from which they are derived, the various water so obtained may differ greatly in purity and suitability for the

purpose for which they are required. Rain Water–When precipitation take place, the rain water, falling through atmosphere absorbs various gases and vapour which are normally present in the atmosphere. Thus, rain water absorbs oxygen, carbon-dioxide, rare gases, sweep particulates salt nuclei (principally chlorides) radio-active fallout etc.

Surface runoff water –When the rain water falling on the ground surface takes the form of surface run off', it picks up particulates (silt and clay), organic matter nitrates, phosphates etc. The characteristics of the surface runoff water thus depends upon the topography and vegetation of the catchments, along with land use and management. River water – Since the surface runoff water normally joins the rivers and streams, the characteristics of river water are practically the same as those of surface runoff water.

However, if the river receives the municipal and industrial waste waters, additional pollution parameters are added to it. Ground water – When rain water infiltrate into the ground to join the water table it becomes ' ground water', ground water has the following characteristics. – It absorbs gases of decomposition and degradable organic matter (such as hydrogensulphide, methane) within the pores of soil mantle through which they percolates. – In earth strata which is rich in organic matter, oxygen is removed from percolating water and carbondioxide is added. Ground water has lower PH value – Soil minerals are dissolved in ground water. Carbonates, sulphates and chlorides are added, resulting in hardness. – Ground water may contain iron and manganese in soluble form. 2. 0 REVIEW OF PREVIOUS WORK Water is not a luxury, but a necessity to sustenance of the ecological succession in <https://assignbuster.com/water-issues-essay/>

the built-environment. Any community hits by acute water shortage is vulnerable to all manners of diseases and sickness. Auchi community is a fast growing rural – Urban centre and the administrative headquarters of the Estako West Local Government Area of Edo State.

It is a distance of only one hundred and thirty kilometers from Benin City, the capital of the state. A host town of Auchi Polytechnic and many cottage companies and infant industries including banks solid minerals etc boosting her economic potentials Punmia, Jain and Jain (1995) posited that ‘ Man and animals not only consume water, but they also consume vegetation for their food vegetation, in turn, cannot grow without water. Growth of vegetation also depends upon bacterial action, while bacteria need water in order to thrive.

The bacterial action can convert vegetable matter into productive soil. New plants, which grow in this soil, grow by sucking nutrients through their roots in the form of solution in water. Thus an ecological chain is maintained.

Water supply is the process of self-provision or provision by third parties in the water industry, commonly a public utility, of water resources of various qualities to different users. Blower (1989) asserted that an “ adequate supply of pure water on tap is one of the prerequisites of modern living”, a fact sometimes not fully appreciated by the average person.

Local water authorities are required by law to provide a pure and wholesome supply of water, often referred to as potable water, a term implying that it is fit for drinking and culinary purposes. Morenikeji (2006) drew attention to the goals of the third National Development plan in Nigeria as regards water

supply which were, “ to make potable water available to an increasing proportion of the population at reasonable rates and to meet the minimum target of 25 gallons (112 litres) per person per day in all major Urban centres and to ensure that all communities of 20, 000 or more are supplied with piped water during the plan”.

From the data gathered by Okpala (1986), the statistics indicated a general shortage of water supply. He asserted that the country fell below that national target set in the third National Development plan supplying an average of 13. 3 litres per capital day and far more below the International Standard of 180 litres per capital per day”. Sotade (2008) posited that, “ the Earth’s Surface consists of 70 per cent water, but only a few have access to potable or drinkable water. In Nigeria in particular, many people do not even in Urban areas.

And, over the years the growing consciousness to have access to safe drinking water has brought about the emergence of a burgeoning commercial water business in the country – a – big growing sector in the food and beverage industry. Oyebande (1993) highlighted the policy objectives of the Federal Government as regard Urban water supply during the 1975 – 1980 plan period as follow; To ensure that all communities of 20, 00 or more people are provided with pipe borne water by 1980; To provide 112 litres per head per day in all Urban centres by that date.

This crave for potable drinking water has, however led to the proliferation of commercial drinking water supply, at first in sachets (pure water) and now in bottles with various brand names. With the burgeoning business, consumers

are now left at the mercy of manufacturers as many don't really know the source of the sachets or bottled water they are drinking. And, since water is key to health, one needs to be sure of its source. 3. METHODOLOGY Data for this study were gotten through oral interview and administration of well structured questionnaires.

The questionnaires were administered on the eight quarters that constituted Auchi Community. The eight quarters are Igbe, Aibotse, Usogun, Egelesor, Iyekhei, Akpekpe, Afobemehe and Afadokhalu. The questionnaire were structured in five phases, the first phase discussed source of water to the community, the second was on the quality of water from the sources enumerated in the first phase, the 3 third bothered on the medium of distribution, the 4th was on the quality of water use daily, while the 5th was on the source of Drinking water for each housing units.

However, of the one hundred questionnaire administered, eighty duly filled and returned, the eighty were adopted for this study analysis 4. DATA

ANALYSIS AND DISCUSSION It is noted that the larger percentage of the respondent got the water for domestic use via Rive water about seventy (70) representing 87. 50% while five (5) representing 6. 25% each got their domestic water via rain water and Borehole respectively. Table 4. 1 Sources

S/N	Frequency	Percentage	Cumulative Percentage
1.	River water 70	87. 0	87. 50
2.	Rain water 5	6. 25	6. 25
3.	Borehole 5	6. 25	6. 25
4.	Pipe borne water Nil	-	100

Source: Field Survey (2009)

S/N	Frequency	Percentage	Cumulative Percentage
1.	Well treated and purified	5	6. 25%
2.	Not sure	50	6. 25%
3.	Personal treatment		

10 | 12. 50% | 13. 00 | | 4. | Not treated | 15 | 18. 75% | 18. 75 | | | | | 100%
|

Table 4. 3: Medium of distribution of water | S/N | Description | Frequency | Percentage | Cumulative Percentage | | 1. | Pipe laid | 5 | 6. 25% | 6. 25 | | 2. | Water tanker | 60 | 75. 00% | 75. 00 | | 3. | Wheel barrow/cart | 10 | 12. 50% | 12. 0 | | 4. | Head carriage | 5 | 6. 25% | 6. 25 | | | | | 100% |

From table 4. 3 above it was observed that the large percentage of the respondents relied on water tanker supply, while (5%) i. e 6. 25% got their in take via borehole laid pipe, 12. 50% used wheelbarrow and carts to transport their water while about 5 respondents representing 6. 5% used head to carry their own water.

| S/N | Description (LCD) | Frequency | Percentage | Cumulative Percentage | | 1. | 5 - 25 | 50 | 62. 50% | 62. 50 | | 2. | 25 - 50 | 20 | 25. 00% | 25. 00 | | 3. | 50 - 75 | 10 | 12. 50% | 12. 50 | | 4. | 75 - 100 | Nil | Nil | - | | | 100 - Above | Nil | Nil | - | | | | | 100% |

Table 4. 4 above shown that fifty (50) representing the larger percentage (62. 50%) of the respondents used between 5 - 25 litres per day, while twenty (20) and ten (10) respondents representing 25% and 12. 0% use between 25 - 50, 50 - 75 litres per day respectively. Table 4.

5 sources of drinking water | S/N | Description | Frequency | Percentage | Cumulative Percentage | | 1. | Borehole | 25 | 31. 25% | 31. 25% | | 2. | River water | 10 | 12. 50% | 12. 50% | | 3. | Rain water | 5 | 6. 5% | 6. 25% | | 4. | Sachet/bottled water | 40 | 50. 00% | 50. 50% | | | | | 100% |

Source: Filed survey (2009) The table 4. 5 above shown that half of the respondents forty (40) 50% lean on sachet or bottled water for drinking, while twenty five (25) or 31. 25% got their drinking water via borehole and ten (10) or 12. 50% and five (5) or 6. 5% got their drinking water from river water and rainwater

respectively. 5. 0 CONCLUSION AND RECOMMENDATION CONCLUSION It would take a man who grew up in the desert to appreciate the importance of water. Our present world is surrounded by huge or massive water bodies, yet, mankind is experiencing acute water shortage. Water is critical for sustainable development, including environmental integrity, alleviation of poverty and hunger and its indispensable for human and being. – From investigation carried out so far, it could be concluded that Auchi community is not adequately provided with potable water. The dearth of shortage of water supply is alarming yet the population continue to soar by day. – The quality of water a household could access is at variance to acceptable standard WHO 112 litres per person per day. – The government had abdicated her duties to the citizens in the area of water, health and sanitation and the citizens are at the mercy of private water vendors. – The quality of water supply by the water vendors are susceptible and could not be guaranteed, making the anticipated health and sanitation agenda of the MDGs unrealizable. – There are no adequate or sufficient information on the soil condition.

So that alternative means of extracting water could not be undertaken. – Adequate funding and management of water resources were not taken serious hence the state water board now comatose. RECOMMENDATION In the light of the above conclusions we made this under listed recommendation – There should be a collaborative effort among stakeholder in water supply scheme prominent among which is the government, the community and the private sector. – The state moribund water board should be resuscitated including laying of pipes to replace rusted and worn out

pipes. Public – private partnership initiative should be initiated to private portable water for the environs. – There should be efficient management and proper funding of water project by all stakeholders in and out side the community. – Attention and monitoring of disbursed funds for water project should be given urgent attention. – NGO’s and other public and private sector participate should be attracted to erratic water situation in Auchi metropolis. REFERENCES Bella – Omunagbe C. and Fadele S. O. (2009), “ Introduction to Building Services, 2nd Edition, God is Good Publication Auchi.

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APPENDIX Some standard water requirements

Table 1: Water Requirements of Domestic purposes. | S/N | Description | Amount of water in litres per head per day | | 1. | Bathing | 55 | | 2. | Washing of clothes | 20 | | 3. | Flushing of W. C | 30 | | 4. Washing the house | 10 | | 5. | Washing of Utensil | 10 | | 6. | Cooking | 5 | | 7. | Drinking | 5 | | Total | 135 litres |

Source: IS:- 1172 - 1957 recommends a per capital water consumption of 135 litres per day. Table 2: Consumption of water for domestic animals and livestock's | S/N | Animals | Water consumption in litres per animal per day | | 1. | Cow and buffalo | 40 to 60 | | 2. | Horse | 40 to 50 | | 3. Dog | 8 to 12 | | 4. | Sheep or goat | 5 to 10 | Source: IS: 1172 - 1957 Table 3: Water for

Domestic and Non-Domestic Needs | S/N | Description | Amount of water in litres per head per day | | 1. For communities with population up to 20, 000 | 40 (min) | | | Water supply through stand post | | | | Water supply through service connection | | | | For communities with population 20, 000 to 100, 000 | 70 to 100 | | | For communities with population above 100, 000. | | 2. | | 100 to 150 | | | | | 3. | | 150 to 200 | Source: Manual on water supply and treatment, prepared by the ministry of Urban Development (MUD, New Delhi.

Table 4: Water for institutional needs S/N | Institution | Water requirement (litres per head per day) | | 1. | Hospitals (including laundry) | | | | No of Beds exceeding 100 | 450 (per bed) | | | | No of Beds not exceeding 100 | 340 (per bed) | | 2. Hotels | 180 (per bed) | | 3. | Hostels | 135 (min) | | 4. | Nurse's homes and medical quarters | 135 | | 5. | Boarding schools/colleges | 135 | | 6. Restaurants | 70 (per seat) | | 7. | Air ports and sea ports | 70 | | 8. |

Junction stations and intermediate stations where mail and express stoppage| 70 | | |(both railways and bus stations) is provided. | | | Terminal

stations | | 9. | Intermediate stations (excluding mail and express stop) | 45
 | | 10. Day school/colleges | 45 (could be reduced to 25 where bathing
 facilities are not | | Offices | provided) | | 11. | Factories | 45 | | 12. | Cinema,
 concert halls and theatres. | 45 | | 13. | 45 – could be reduced to 30 if bathing
 facilities 15 are not | | 14. | | provided. | Source: Manual on water supply and
 treatment, prepared by the ministry of Urban Development (MUD), New
 Delhi. ————— Long term – lasting solution Medium term – Maintaining
 Short term survival 70L 60L 50L 40L 30L 20L 10L Gardens Recreation
 Business (Crops Production Livestock) Waste Disposal (Sanitation) Growing
 Food (domestic Use) Cleaning Home Washing clothes Personal washing
 Cooking Drinking Figure 1: Hierarchy of Water requirements (after Abraham
 Maslow's (1908 . – 1970) hierarchy of needs).