An Estimate of the Budgetary Allocation for Environmental Sanitation and Hygiene Practices for the Realisation of Vision 20, 2020 in Adamawa State, Nigeria

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Abstract

The paper forecasts the estimate of budgetary allocation for environmental sanitation and hygiene practices for the realization of vision 20, 2020 in Adamawa State, Nigeria. It made use of secondary data obtained from Adamawa State Rural Water Supply and Environment Sanitation Agency, Yola and Federal Office of Statistics in Federal Government Secretariat, Yola. The two variables examined are budget for environmental sanitation and hygiene practices (response variable)and population size (explanatory variable). Secondary data on the two variables were obtained for the period (2002-2009) and were tested to determine the strength of linear relationship between the two, using covariance and correlation analysis. It was confirmed that the variables are positively related linearly. This enabled the researcher to conduct a regression analysis in order to forecast the budget for environment sanitation and hygiene practice for year 2020. The forecast reveals that budget for environmental sanitation and hygiene practices will grow on average by 8.1% between 2015 and 2020. This growth rate is higher than the official projected population growth rate of 3.2% per annum in Adamawa State; this will enable Adamawa State, government to realize vision 20, 2020. In order to perform this feat, it is recommended that Adamawa State, government should provide more facilities for an organized solid waste management and environmental sanitation.

Keywords: environment, sanitation, hygiene, practice, waste

Introduction

It is an open secret that Nigeria, like many other developing countries, has failed to meet one of the key targets of millennium development goals (MDGS), that is a remarkable improvement on environmental sanitation and hygiene practices. Despite the renewed efforts of the united nations, in the form of awareness campaigns and many other measures, it is regrettable that over one billion people around the world are still involved in open defecation practice (this day newspaper, 2014). Open defecation practices is the habit of defecating in bushes, in fields, at the sides of roads or railway tracks or in the body of waters (WHO /UNICEF JMP, 2010) . This statistics is very alarming considering the fact that one billion people constitute 14% of the world population or one person in seven.

Regretting this unpleasant development, Ubani (2014) enlightened that where there is open defecation, pathogens spread quickly, causing diarrhea, cholera, bilharzias (a fresh water worm) and other diseases.

Recently, 50 percent of the United Nations children's fund (UNICEF) - moderation U-reporters polled responded that the biggest dangers of open defection are snake and scorpion bites. Despite the risk, however, large numbers of people continue to embrace the practice due to the non-availability of socially acceptable sanitation means of excreta disposal. U-reporters accepted the fact that open defecation is a major problem for Nigeria due to its health –related challenges.

In another development, WHO/UNICEF JMP figure for Nigeria shows that the number of people with access to improved sanitation facilities has dropped from 31percent in 2013 to 28percent in 2014. This percent age, if translated in absolute term, implies that 122 million Nigerians do not have access to improved sanitation. The study further revealed that a staggering 39 million Nigerians (23 percent of the population) are involved in open defecation practices.

If this statistics is a source of concern for the government and people of Nigeria, the prediction for the African sub- continent is gloomer. In fact, the prediction is that sub- Saharan Africa overall will not become open defecation free until 2063. Unimpressed by the gloomy statistics, water aid, an international non-governmental organization has set another deadline of year 2030, the time by which everyone, every where must have access to safe water and basic sanitation .the non-governmental organization is concerned that 748 million people in the world are without safe water while another 2.5billion are without adequate sanitation.

As the united nation prepare to develop a new set of development goals to replace the original millennium development goal (MDGS), campaigns for access to improve sanitation facilities will occupy the front burner. This is the case because, if the overall universal target on water has been met with the exclusion of some individual countries like Nigeria, the target on sanitation remains the most off-track.

As a responsive measure to address the twin challenges of water scarcity and open defecation, Nigeria in April 2014 joined other developing countries at the sanitation and water for all High Level Meeting and committed once again to achieving universal access to water and sanitation and elimination of open defecation nationwide by year 2025. But would the latest commitment bring about a desired result? Or the outcome will be a dashed hope like the commitments towards International drinking water supply and sanitation decade (IDWSSD) of 1981-1990 and commitment towards millennium development goals (MDGS) that is terminating this year, 2015? Nigerians are waiting to see.

The main objective of the study is to estimate the budgetary allocation for environmental sanitation practices for the realisation of vision 20, 2020 in Adamawa State,, Nigeria. Besides, the study aims at using the forecasted estimates to determine if vision 20, 2020 is realizable in Adamawa State, Nigeria.

Therefore, the study will be focused to answer the following questions:

I. Does positive linear relationship exist between the budget for environmental sanitation and hygiene practice and population size in Adamawa State,, Nigeria?
II. What amount of budgetary allocation will impact positively on environmental sanitation and hygiene practices in Adamawa State, Nigeria?
III. How realisable is the vision 20, 20, 20, in addressing environmental sanitation challenges in Adamawa State, Nigeria?

Literature Review

This section identifies the four major concepts that are related to environmental sanitation and hygiene practices, they are “unconventional toilet” “access to sanitary means of excreta disposal” “organized solid waste management “ and “ unsatisfactory refuse disposal” Unconventional toilet : this concept derives its definition from “ access to sanitatory mean of excreta disposal” which definition is given as follows: the percentage of the population that use any of the following : water flush toilet linked to septic tanks or a sewage system, ventilated improved pit(VIP) latrines and covered pit latrines (Mabogunje, 1999, cited in Adewusi (2012) Unconventional toilet, therefore, refer to the toilet that do not conform to the aforementioned facilities.

Unsatisfactory refuse disposal : this concept derives its definition from an “ organized solid waste management” which definition is given as follows : a system of refuse collection including HH bin collected by government ,HH bin collected by private agency and collection through government bin or shed (UNICEF/ NPC,2001) . Unsatisfactory refuse disposal, therefore, refer to any form of refuse collection that do not conform to the above system.

The characteristics of unconventional toilet are well documented by Cody lundin’s book on emergency sanitation which is titled” when all hell break loose” A great deal of information was also compiled by the “bureau of land management, river station at Minam. These unconventional toilets are elucidated as follows.

Trash bags: it is recommended for use in the circumstance where there is no ample supply of water to fill the toilet reservoir. A person should be able to use the toilet within his/her home through the use of trash bags, and then remove the waste at a later time. The idea is to place the bag in the toilet, and once we are done, seal the bag until next use.

Bucket toilet: this is unconventional toilet facility that facilitates the use of a lid. The advantage of using a bucket is the option of sealing it with a lid. The lid will help keep the smell in and insect out.

This is to prevent a fly that gets on the faces from landing on the food. With the use of bucket toilet provided with a lid insects will not be able to carry the waste to the food.

Cat hole and straddle trench: these are waste management methods that are recommended for the resident of rural location, and are the most widely accepted method of waste disposal. It is recommended that cat holes be located at least 200feet from water and camp. The hole should be 6-8 inches deep and 4-6 inches in diameter. Cat holes should be covered and disguised with natural materials when finished. Cat holes are easy and are preferable to other unconventional toilets because they are easy to disguise after use, they are private and they disperse the waste rather than concentrate it.

Emergency Toilet: - they are the types that are created in order to cope with emergency situations. The lack of sanitation facilities following major disaster can bring serious health risks. Proper steps must be taken to avoid post disaster illness. Certain rules are usually observed when building an emergency toilet. It is always important to locate the toilet away from food preparation or eating areas. Portable toilet must be located at least 100 feet away from surface water bodies such as lakes, rivers, steams and at least 100 feet down hill or away from any drinking water source (well or Spring), home, apartment, or camp site,. In addition to these, a place must be provided close to the emergency toilet to wash hands. Soap, running water and paper towel are to be provided in order to facilitate the washing and drying of hands.

Portable Toilet: - They are the types that are provided in order to meet the requirements of population out door destinations which attract higher numbers of visitors and surrounding natural resources: this can lead to concentration of human waste and other refuse, which pollute the environment and presents a serious human health hazard. A portable toilet is a pack –it – out toilet system that is contained which can be washed and re-used. It is sturdy, lack –proof container and either a liquid or dry base material. The job of the container is to effectively enclose and transport the waste. Until it may be properly disposed of

The Study Area:-

The Study Area is Adamawa State which is located in the North-east geo- political zone of the Federal republic of Nigeria. Like in the most state of the federation, access to sanitary means of excreta disposal is limited. The implication of the scenario is that most households are associated with unconventional toilet facilities. The outcome of an earlier study conducted on environmental sanitation and hygiene practices on the state, revealed that on, average, percentage of households with unconventional toilet between 1995 and 2000 hobble around 46.11 percent. The lowest within the period, being 38.40 percent (1997) and the highest being 53.46 percent (2000). With the dismal performance at national level in respect of environmental sanitation between year 2000 and 2014, it is unlikely that the state would have fared better.

If the situation is bad in the case of the first indicator, (percentage of households with unconventional toilet) the situation is worse if the second indicator (percentage of households with unsatisfactory refuse disposal) is taken into consideration. The result of a parallel study which focused on organized solid waste management in the state between 1995-2000 revealed that on average 86.42 percent of households in the state were involved in unsatisfactory refuse disposal. That is, refuse disposal practiced by such households do not conform to HH bin collection system by the government, HH bin collection system by the private agency and collection through government bin or shed.

Therefore, if environmental sanitation and hygiene practices are tied to the access to sanitary means of excreta disposal and organized solid waste management, it is evident that the state has not been performing well in respect of this key sector which is the focus of attention of the United Nations. Data from National Bureau of statistic for the two indicators for the year 2007 are presented in the table below.

Table1

Percentage distribution of households by type of toilet facility in Adamawa State (2007).									
1	2	3	4	5	6	7	8	9	10
None	Toilet on water	Flush to sewage	Flush to septic tank	Pail/ bucket	Covered pit latrine	Uncovered pit latrine	VIP latrine	Other types	% of households with unconventional toilet (1+2+5+7+9)
5.1	0.2	3.3	0.1	0.0	54.3	20.5	4.3	12.2	38

Percentage distribution of households by type of refuse disposal facility in Adamawa State (2007).						
1	2	3	4	5	6	7
HH Bin collected by Govt. agency	HH Bin collected by private agency	Govt. Bin or shed	Disposal within compound	Unauthorized refuse heap	Other types	% of households with unsatisfactory refuse disposal (4+5+6)
0.1	0.7	8.2	34.2	51.1	5.7	91

Source: NBS: Social Statistics in Nigeria (2007)

If access to sanitary means of excreta disposal is defined as the percentage of the population that use any of the following: water flush toilets linked to septic tanks or a sewage system, ventilated improved pit (VIP) latrines and covered pit latrines (Mabogunje, 1999), it is clear from the upper division of table I that columns 3, 4,6and 8 satisfy this definition .this implies that 38 percent of the household are associated with unconventional toilet. More worrisome is 5.1 percent in column 1 because none refers to the percentage of households that are involved in open defecation

On the other hand, if an "organized solid waste management " is defined as a system of refuse collection including HH bin collected by government , HH bin collected by Private agency and collection through government bin or shed (UNICEF/ NPC, 2001), it is clear from the lower division of table 1 that column 1, 2 and 3 satisfy this definition. Consequently, households represented by columns 4, 5 and 6 are involved in unsatisfactory refuse disposal in Adamawa State.

Since remarkable improvement in environmental sanitation and hygiene practices is one of the targets of vision 20, 2020, the study aims at forecasting budgetary allocation that will guarantee such improvement in Adamawa State, Nigeria.

Methodology of the Study

The task before public authorities in Nigeria today, is to mobilize resources for the realization of vision 20, 2020. The development strategies, as encapsulated in vision 20,2020, provide that Nigeria economy is to be elevated to the 20th position in the world by the year 2020. In order, to actualise the vision, public authorities in Nigeria seek to strengthen those infrastrures that are considered vital for economic development and to improve on those areas that can enhance standard of living of Nigerians. Because of the negative implication of poor environmental sanitation to the well- being of the people and economics as a whole, the study examines the budget of Adamawa State government on environmental sanitation and hygiene practices, to enable us conclude on how prepared is the administration of the state in realising the vision. The study was conducted with the aid of secondary data obtained from Adamawa State rural water supply and environmental sanitation agency, Yola, and Federal Office of Statistics in federal government secretariat, Yola. Budget on environmental sanitation and hygiene practices was used as the response variable while population size was the explanatory variable. Secondary data on the two variables for the period (2002-2009) were collected by the researcher. The researcher tested the strength of linear relationship between the two variables in order to determine if the outcome could be used to forecast the estimates for environmental sanitation and hygiene practices for year 2020. The covariance and correlation analysis conducted confirmed a positive linear relationship between the two variables. This enables the researcher to forecast estimates for environmental sanitation and hygiene practices for year 2020, using regression analysis as a tool. An appraisal of the growth rate of the estimate compared to the population growth rate in Adamawa State enable the researcher to conclude on how realizable is the vision 20,2020, in respect of environmental sanitation and hygiene practices in Adamawa State.

Discussion and Finding (1)

Does positive linear relationship exist between the budget for environmental sanitation and hygiene practices and population size in Adamawa State, Nigeria. Having obtained data on the approved budget for environmental sanitation and hygiene practice and on the population size of Adamawa State (2002-2009) as shown in table below, we assume that the former variable is denoted by Y and the latter variable denoted by X

Table 1 approved budget for environmental sanitation and hygiene practices and population size in Adamawa State Nigeria (2002-2010).

Year	Approved budget for environmental sanitation and hygiene practice (#m)	Population (million people)
2002	2.0	2.79
2003	4.6	2.88
2004	4.6	2.98
2005	5.5	3.10
2006	8.3	3.20
2007	12.0	3.30
2008	28.0	3.40
2009	7.0	3.50

Source: Adamawa State rural water supply and environmental sanitation agency, Yola Adamawa State, Nigeria.

From the data in the table, we can establish if there is positive linear relationship between budget for environmental sanitation, and hygiene practice and population size

$$\text{COV}(Y, X) = \frac{9.096}{7} = 1.29$$

$$\text{COR}(Y, X) = \frac{9.096}{\sqrt{474.46X\ 0.4437}} = \frac{9.096}{210.52} = \frac{9.096}{\sqrt{14.50}} = \frac{9.096}{} = 0.627$$

It Is Clear From Covariance and correlation analysis that there is strong positive linear relationship between Y and X. Consequently, budget for environmental sanitation and hygiene practice and population sizes are linearly related in Adamawa State, Nigeria.

Discussion and Finding 11

What amount of budgetary allocation will impact positively on environmental sanitation and hygiene practice is dependent on population size of Adamawa State. Covariance and correlation analysis has also confirmed positive linear relationship between the two variable. The next step, therefore, is to compute the population size of Adamawa State for the years leading to year 2020. We can obtain these by using the official population growth rate of 3.2% per annum. The projected population size of the state is, therefore, derived as shown in table 2

Table2: Projected Population Size of Adamawa State, Nigeria. (2010-2020)

Year	Population "million people"
2010	**3.61**
2011	**3.72**
2012	**3.84**
2013	**3.96**
2014	**4.19**
2015	**4.22**
2016	**4.36**
2017	**4.50**
2018	**4.64**
2019	**4.78**
2020	**4.94**

Source: projected population size of Adamawa based on official growth rate of 3.2%

Denoting the budget for environmental sanitation and hygiene practices by Y and population size by X, the relationship between the two variable, if expressed as a linear model will be

$Y= \beta_o + \beta_1 x + £,$

Where β_o and β_1 are model regression coefficient, which is otherwise known as the parameter and E is a random disturbance or error. By using the model, the forecast for the environmental sanitation and hygiene practices budget can, therefore be determined for the year beyond year 2015 and up to the year 2020.

Consequently, budget for environmental sanitation and hygiene practice will be

$\beta_o + \beta_1$. Population + E_1

$\beta_1 = \frac{9.096}{0.4437} = 20.5$

$\beta_o = \underline{Y} - \beta_1 \underline{X} = 9 - 20.5\ (3.14)$

$= -55.37$

Then, the equation of least squares regression line shall be:

Budget for environmental sanitation and hygiene practice = - 55.37+20.5xpop

From this equation forecast for budget on environmental sanitation and hygiene between year 2015 and 2020 can be determined as follow:

Table 3: Forecast for Budget on Environmental Sanitation and Hygiene Practice in Adamawa State, Nigeria (2015- 2020)

Year	Projected population size (million people)	Forecast for budget on environmental sanitation and hygiene practices (#m)
2015	4.22	31.1
2016	4.36	34.0
2017	4.50	36.9
2018	4.64	39.8
2019	4.78	42.6
2020	4.94	45.9

The outcome of the regression analysis reveals that estimates for environmental sanitation and hygiene practices in years 2015 will be # 31.1 million. This amount will rise on the average by 8.1% per annum and increase to 45.9 million naira in year 2020.

Discussion and Finding (111)

How Realizable is the Vision 20, 2020 in Adamawa State, Nigeria?

If the official population growth rate is stable at 3.2% and the growth rate of budget on environmental sanitation and hygiene practice hobble around 8.1% per annum it gives room for optimism in Adamawa State. The implication is that, if the government is able to provide this funding greater percentage of Adamawa Indigenes will be provided with better sanitation facilities. Besides, more facilities can be provided for an organized solid waste management in the State. With reference to the upper division of table1, Indigenes of Adamawa State will be expecting to see the percentage in columns 1, 2,7,and 9 drastically reduced and percentages in columns 3,4 ,6 and 8 significantly increased. In respect of the lower division of table1, indigenes of Adamawa State will be expecting to see percentage in Columns 4, 5 and6 drastically reduced and percentages in columns 1,2 and 3 significantly increased. The total sum of such scenario is that the state is able to realize vision 20, 2020 in respect of remarkable improvement in environmental sanitation and hygiene practices.

Summary and Conclusion

Public authorities in Nigeria were signatories to the global commitments which were aimed at improving environmental sanitation and hygiene practices over the world.

The most celebrated attempts were documented by international Drinking water supply and sanitation Decade (1981-1990) and the Millennium Development goal (2000-2015). However commitment of public authorities in Nigeria toward these global attempts failed to salvage the environmental sanitation sector.

Development strategies, encapsulated in Vision 20, 2020 presents another opportunity to take environmental sanitation sector out of the wood. The vision seeks to record remarkable improvements in the key sectors of national economy (environmental sanitation sector inclusive) with a view to elevating Nigerian economy to 20th position in the world. Being a stakeholder in the realization of vision 20, 2020, Adamawa State is selected as a case study. Believing that effort of the state government at improving environmental Sanitation and hygiene practices will be a mirage, without taking population growth into consideration, the two variables were examined together by the study. The study attempted to recommend to the Adamawa State government the estimates on environmental sanitation and hygiene practice that will facilitate realisation of vision 20, 2020 in the state.

On an optimistic note, the study finds out that forecasted estimates for environmental sanitation and hygiene practices will grow on average by 8.1 percent per annum between years 2015 and 2020. If the annual population growth rate remains stable at 3.2% in the state, the annual growth rate of the former will outstrip growth rate of the latter. This translates to more sanitation facilities being provided for more indigenes of Adamawa State. The out come will manifest in the reduction in the percentage of households that are represented by columnus1, 2, 7 and 9 and an increase in the percentage of households that are represented by columns3, 4, 6 and 8 in the upper division of table 1. In the same vein the outcome will manifest in the reduction in percentage of household that are represented by columns 4, 5 and 6 and an increase in the percentage of household that are represented by columns 1,2 and 3, in the lower division of table 1. In order to perform this feat, it is recommended that Adamawa State government should increase votes for environmental sanitation and hygiene practices from #31.1m in 2015 to #45.9m in 2020. This will enable the state government to provide more facilities for an organized solid waste management and environmental sanitation.

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