

The Environmental Effects of Seasonal Flooding in Ughelli North Local Government Area, Delta State, Nigeria

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Abstract: *The menace of seasonal flooding ravaging different areas of Delta state, Nigeria has been a recurrent phenomenon in recent years. This study focuses on the environmental effect of seasonal flooding in Ughelli North Local Government Area, of Delta State with emphasis on the community livelihood. Data for the study were obtained from questionnaire survey, interview and direct field observation. A total of 100 respondents, were sampled for this study using multi stage, random and systematic sampling techniques in selecting houses for in-depth study. The data collected was analyzed using frequency table, charts and percentages. The postulated hypothesis was tested using chi-square analysis and the result showed that there is no significant difference on the livelihood of the four towns sampled, Agbarho, Ewreni, Uwheru and Orogun in Ughelli north. The study concluded therefore that the effects of the flooding in one sector can affect another sector, and some of the measure effects of flooding in the towns in Ughelli North includes: Business destruction, destruction of farmland, increase in poverty and reduction of aesthetic beauty of the environment. The study thus recommends that the inhabitants be conscientized about these harmful effects of seasonal flooding in the area. The awareness of the inhabitant on the dangers facing them will cause them to take up their responsibilities and join forces with the government and non-government bodies to contain the menace.*

I. INTRODUCTION

Flooding is one of the major environmental crises one has to content of within the century.

This is especially the case in most wetland of the world. The reason for this is the general rise in sea level globally due to global warming as well as the saturated nature of the wetlands in the Niger Delta. Flooding occur and developed and developing world where lives and properties, misery, hardship occur in developed and developing world where Lives and Properties, misery, hardship, diseases and at times famine are recorded as their effects. No wonder, (Abam, 2006); defined flood as large volume of water which arrive at an occupy the stream channel and its flood plain in a time too short to prevent damage to economic activities including homes. Periodic floods occur on many rivers, forming a surrounding region known as flood plain. The national erosion

and flood control action plain committee, (2005); define flooding as a condition when the discharge of a river cannot be accommodated within the margin of its normal channel so that water spread over adjoining land. Floods are among the most dramatic forms of interaction between man and his environment. Floods are one of the major factors that prevent Africa's Population from escaping poverty level (Action Aid, 2006). Flood result from a number of causes of which the most important are climatological in nature (Okorie, 2010). Habley (2001) identifies the major cause of flood in Africa to be inadequate of drainage system. On the contrary the major cause of flooding in Nigeria has been identified to be excessive rainfall and intensified by various conditions (Duru and chibo, 2014). These conditions may include the following among others; The geology, soil cover, topography, vegetation cover and even land use. Flooding occurs in Nigeria in three

main forms: Coastal flooding, river flooding and urban flooding (Gwary 2008 and Adesti et al, 2010).

The effects of flood are not wholly negative as painted by many researchers, but also have it positive impact. Although flooding, generally, is a bane to most people, floods can be quite beneficial. The higher the flood waters from the river the better the harvest for that year (Bariweni et al, 2012). The organic material and minerals deposited by the water keep the soil fertile and productive (Abowei and Sikoki, 2005). Actually, believe it or not nature benefits more from natural floods than from not having them at all. The thing that makes natural floods a disaster is when flood waters occur in areas populated by humans and in areas of significant human development. Otherwise, when left in its natural state, the benefits of floods outweigh the adverse effect (Bradshaw et al, 2007). During flooding clean water becomes scarce. Unhygienic condition and spread of water borne disease result. In extreme cases flooding may cause a loss of life. Torrential rains pushed river over their banks, collapsed and submerge Buildings and washed away livestock (Adelye and Rustum, 2011). The economy can also be severely affected by flooding. Business may lose stock, patronage data and productivity. Electricity and gas supplies can be interrupted to individual properties, but also to community if sub-station and transformers themselves are flooded. At the same time most flood victims feel devastated and are emotionally and psychologically traumatized (Ugwu and Ugwu, 2013).

In Nigeria often send down the rain is the supplication of Nigerians early in the years in expectation of bountiful harvest. In recent years the rain came indeed, but in torrent giving rise to deadly flood instead, causing harvest of pains. From Lagos, Ibadan, Abeokuta, Calabar, Port-Harcourt and Warri in the Southern Region through Ilorin, Abuja, Lokoja and Minna in the middle belt, Kanu, Kaduna, Jalingo, Maiduguri and Gombe in North the rains came down and flood came-up washing away streets, battering dams, collapsing bridges. Nothing is spared by the marauding floods (Adedeji and Kuyoro, 2011). For instance apart from the Ogunpa flood in Ibadan that killed several people and completely grounded socio-economic activities in 1980, in August, 2008, the residents of Makurdi were thrown out of their residence and their farmland left impoverished after two days of heavy down pour of rainfall, it was described as very disastrous (Taiwo, 2008). Akani and Bilesanmi, 2011 reported how flooding in Lagos 2011, left many homes swamped with the resultant loss of property and human lives. Properties estimated at several millions of Naira were destroyed in many communities in Ajegunle – Ikorodu axis Lagos. In what seems like wild-five, Kogi State became another casualty. About 90 communities particularly in Lokoja, Ibaji, and Kogi Local Government Areas of the State were sacked by the raging flood of 2011 which displaced over 500,000 people. In some area only farmland were affected while others, both homes and farmland were all swept away. Again floods recently sacked over 5000 people in two communities in Sagbama and Kolokuma Local Government Area of Bayelsa State. Many homes were affected forcing residents to paddle their canoes to neighbouring communities in search of refuge (Etuonovbe, 2011).

The seasonal flooding of 2004/2005 2007/2008 and 2011/2012 remains indelible in Nigeria as the heavens let loose the rains, which led to flood disaster beyond human control. Delta state was one of the worst hit, belonging to category A on the Federal Government Impact Assessment Rating (IAR). The Negative and destructive effect of flooding has caused and is still causing damage globally and Ughelli North a Local Government Area of Delta State has had its share of the menace as will be further discussed in this project.

II. LITERATURE REVIEW

The following is a summary and substantive analysis of existing social science literature on effect of flooding on different continents as well as a conceptual framework. We started with a literature review written by Opondo (2013) under the sub-heading flood hazard and disaster. Then we move into four studies under the same sub-heading. Here are some selected and related literature around the world under the following appropriate sub-headings.

FLOOD HAZARD AND DISASTER

Olajoka Abalade et al (2013) Paper focused on the causes and effects of flood in Agege Local Government area of Lagos State. Data were collected through the use of structured questionnaire from the respondents. A total of two hundred and seven (207) questionnaires were administered. The questionnaires were distributed using the systematic random technique at intervals of ten housing units. Data collected were analyzed through the use of descriptive statistics such as cross tabulation and frequency. The study reveals that the major cause of flood in the study area was the non-functionality of the drainage system as the case maybe. Also, high rainfall and dumping of waste into the drainage and water bodies have contributed to the regular recurrence of flood in the area. The study recommends enforcement of environmental laws that will restrict dumping of waste into the water body and sponsoring of public awareness and dominative programs on how man's activities has contributed to flood occurrence.

Musah and Abayomi (2013) study focused on how flood disaster affected livelihood system in Tolon/Kumbungu district, Ghana. Twenty-two disaster prone communities were purposively selected and the simple random technique was applied to select the six communities out of the twenty-two. A descriptive statistics was used in the analysis using SPSS version 17. The study discovered that floods in the district were seasonal occurring in August/September every year and mainly caused by the opening of the Bagre Dam in Burkina Faso. It was also realized that floods destroyed farmland of the people in the study area every year leading to instances of total crop destruction and failure. The study recommended that the disaster response committee should be equipped and resourced adequately to respond quickly to any disaster occurrence.

EFFECT OF FLOODING

Michael and Oyewale (2013) investigated the causes and effects of flood in Apete area of Ibadan Oyo State. The data for their research was obtained through both secondary and primary sources. The secondary data were gathered from 2012 reports of NEMA in Nigeria, and other available published literature. Primary data were obtained through a set of questionnaire administered to the residents of the study area. The sampling method used for the questionnaires administration was systematic sampling where the first building was selected randomly followed by a systematic election of the next building at an interval of every 8th houses. The data collected from the primary sources was analyzed using scientific packaged for social scientist (SPSS). Descriptive statistic like tabulations frequency counts, chart and graphs were used to present the research data. The findings of their research show that there is poor waste management practice among the residents of Apete. There is high rate of building construction along water channels which usually result to floods. Their study concluded that flood disaster has diverse affects associated with both in developed and developing world. This they say can be reduced and properly managed by adopting both remedial and preventive action to combat the problem of flooding.

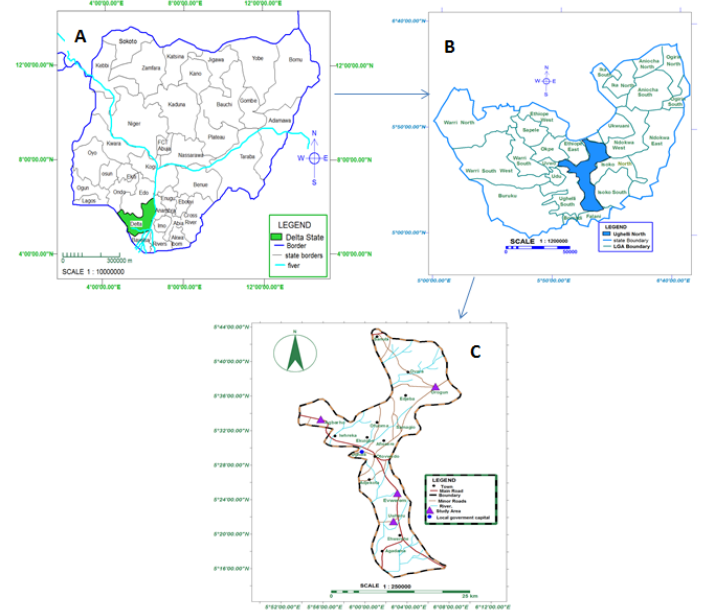
ADAPTATION TO FLOODING

Koerth et al (2014) analysis was carried out in two steps first they employed a cluster analysis in order to investigate whether they can identify categories of households likely to carry out a number of similar adaptation measures at the same time in different coastal areas in Denmark, Germany, Argentina. To test the stability of results, different method employing varying proximity measures and clustering algorithms were applied. In the second step, they conducted uni-and bivariate statistical analysis and X^2 as well as Eta tests to analyze whether the cluster attained (i) differ in their distribution between the sample sites, indicating that membership to a specific house type depends on the historical or institution context, and (ii) could be explained through temporal variable on which data was also collected through the questionnaires i.e. age of the respondent as well as length of residence in the house and at the coast. Coast households were found to cluster in four groups they term; the comprehensives, the theoreticians, the minimalist and structural. They concluded that risk communication can only reach the entire group of household and increase versatile adaptation behavior by addressing all behavioural types of households.

III. STUDY AREA

Ughelli north is a local government area in Delta State, Nigeria (See Figure 1.1). The study area is situated in the centrally part of Delta State and located between Latitude 5°28' 39.0"N and 5°58' 30'.5"E and Longitude 5°30' 53"N and 6°01' 04.3"E of the equator (See Figure 1.2). It attitude is 26m. Ughelli North has it's headquarter located in Ughelli, and is

one of the oil producing areas of the state with at least 45oil wells (See Figure 1.3). The area is bounded to the east by Isoko North Local Government area, to the west, it shares boundary with Uvwie local government area. The study area also shares boundary with Ughelli-South Local Government Area. According to National Population commission 2006 Census, the population of Ughelli North Local Government Area has a population of 321,028 persons. Using the approved population growth rate of 3.2% by NPC, the Population has been projected to 426, 246 in 2015.



A. Map of Nigeria
B. Map of Delta State
C. Map of Ughelli North

Figure 1

IV. METHOD OF DATA COLLECTION

The study adopted the use of questionnaire, observation and interview. The researcher in his quest to get accurate data used two method of investigation (Open ended question and precoded question). The researcher also employed fine linker scale in almost all the question to enable respondents to choose correctly from the options. The questionnaire was retrieved by the researcher and the answer provided in them by respondents formed the data. The simple percentage tables and bar charts were used in data presentations. In testing for the hypothesis chi-square method was used.

V. RESULT

The study area, Ughelli North, Delta State Nigeria has more males than females. Table 4.1 show the gender distribution of sex affected by flood in the study area, from the 43.8% were females while 56.3% were males. The research revealed that the first most livelihood sources for the communities in the study area are farming (30%) followed by fishing (26.3%), 18.8% of the householders are traders and

13.8% are civil servant. Other sources of livelihood were confirmed to be 11.3%.

The research revealed the adverse effect of seasonal flooding in Ughelli North in terms of their socio-economic activities and resources. Computation in table 4.13 shows that 30% attested that their business were disrupted, 27.5% attested to crop damage, 17.5 attested to infrastructural damage and 13.8% attested to destruction of amenities and 11.3% attested to an unhealthy environment. Furthermore the computation confirmed destruction of farm produce as the most adverse effect of seasonal flooding in Ughelli North because it has greatest percentage of affirmation. Beneficial effect of seasonal flooding in Ughelli North in Figure 2 show householder's affirmation on the beneficial effect on either soil fertility, road cleansing, severity and multiplied fishes. 16.3% of the householder's strongly agree that flooding has a positive effect, 37.5 strongly disagree, 32.5 agree, 13.8 disagree while 0% of the householders are undecided. The study confirmed that soil fertility is the most beneficial effect of seasonal flooding as greater number of householders attest to that.

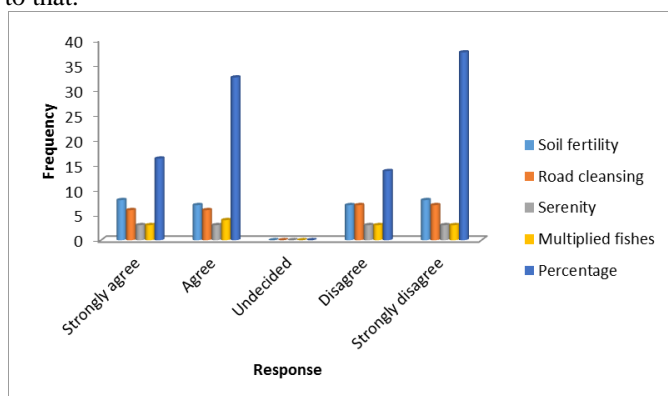


Figure 2: Beneficial effect of seasonal flooding in Ughelli North

VI. DISCUSSION

From the study, Ughelli North is situated on flat swampy land with sand stone soil texture resulting from over flooding of the area during the rainy seasons. Floods have been a source of environmental hazard for centuries and most of the occurrences were severe and devastating in nature (UNDP, 2000). Ughelli North flooding generally come into conflict with man's activities on its environs causing damage to landed and households properties, reduction in the price of goods, business slow down, poor commerce, turbid water unsuitable for use, psychological trauma and movement problem in accordance with the work carried out by Etuonovbe (2011) that flood socked over 5000 people in Sagbama and Kokokuman Opukuma local government of Bayelsa State that this cause of the flood was the over flow of River Nune which affected many homes and business, forcing them to paddle their causes to neighbouring communities as refugees. The adaptation measures adapted by communities includes: raising of foundation and floor high, to hand objects avoid keeping valuable items on the ground level, means of transportation and knowledge of swimming. Thus, these autonomous flood

adaptation measures would not be effective to achieve adaptation of protected flood impacts in coming decades, since it has been asserted that there would be continual increase in the global temperature consequent to extreme in precipitation. Therefore, there is need for planned adaptation solution and policy coordination to facilitate adaptation to flood damage. These include improve governance, developing state backed flood insurance schemes, flood warning alert, flood controls and monitoring team and appropriate infrastructures investment.

VII. RECOMMENDATIONS

Sequel to the above findings, the study recommends the following to better check seasonal flooding menace in the area.

1. The inhabitant should be conscientized about the harmful effects of flooding in the area and their role in fighting flooding through a colloration with the government and non-governmental organizations or an integrated approach. The awareness of the inhabitants on the damagers facing them will cause them to take up their responsibilities and not dodge them some of the responsibilities of the inhabitant in managing the flooding problem are contained in the following points (2-6).

- ✓ There is need for massive campaign against improper dumping of refuse in the drainage system as it not only great room for flooding but also encourages flooding in the area.
- ✓ That sorting of waste before disposal could effectively reduce the effect of flooding in Ughelli North.
- ✓ Construction of sound drainage system is highly needed in controlling and checking flooding in Ughelli North.
- ✓ There is need for creating environmental awareness to keep the drainage systems from waste dumps could help in providing lasting solution to environmental problems of flooding in Ughelli North.
- ✓ People should be encourage to open their drainage system constantly in order to help check and control flooding in an area especially in Ughelli North.

VIII. CONCLUSION

As discussed under various literatures in the study, it is clear from the study that flooding had both positive and negative effect on the social economic status of livelihood for the people in Ughelli north. To a large extent the study has established that livelihood patterns play an important role in settlement patterns. It is also evident that there are varying underlying cause of people's vulnerability and this pose a challenge for reducing or minimizing vulnerability proximity to the flood prone areas, residing in flood prone area and poverty were identified as being the main underlying causes of vulnerability. The study has further demonstrated that effect of flooding in one sector can effect another sector for instance as discussed under the social economic effect sector, the effects of flooding including: Business disruption, destruction of farm produces and reduction of aesthetic beauty of the environment

among others. Clearly, then a good and pro-active government action in the area of flood plain management will be very important step. This will entail a policy paradigm shift from haphazard measures to more permanent measure to tame seasonal flooding devastation in Ughelli North.

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