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Sources of Information and Awareness of Government Programmes on Climate Change among Rural Households in the Niger Delta Region of Nigeria

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Abstract

Climate change is a clear threat to all sectors of the Nigerian socio - economic development including the natural ecosystems. This study ascertained the available sources of information and awareness of government programmes on climate change among rural households in the Niger Delta region of Nigeria. The region is Nigeria's largest wetland region and the third largest wetland in the world. Both qualitative and quantitative approaches were used in an interactive manner to collect data from 400 rural households selected through multistage random sampling technique. The findings revealed that majority of the rural households received climate change information mostly through mediated and non-professional inter-personal sources. Also, majority of the rural households were aware of the ban on indiscriminate tree felling, bush burning and gas flaring as well as government's efforts in promoting afforestation. They however, perceived these programmes to be poorly implemented. Though the people of Niger Delta were aware of the existence of legislative committees on climate change in the National Assembly, they asserted that their impact were poorly felt in the region. The study therefore points to the need to strengthen communities' capacity to manage their resources, raise awareness of climate change problems among the populace and build the capacities of local institutions to support disaster management policies. There is also the need for government to partner with private telecommunication providers to send short messages services on climate change to their clients at regular intervals.

Key words: *Climate change, Niger Delta, Awareness, Information sources, Legislative committees*

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Introduction

Climate change is one of the most serious environmental threats facing the world today. It is a massive threat to human development and in some places; it is already undermining the achievement of the Millennium Development Goals (MDGs) and the international communities' efforts to reduce extreme poverty.

Africa is highly vulnerable to the adverse impacts of climate variability and change because of the continent's dependence on natural resources and its weak

adaptive capacity. Adaptive capacity is the potential or ability of a system, region or community to adapt to adverse conditions (Anthony, 2005). According to the 4th Assessment Report of Intergovernmental Panel on Climate Change (2007), between 75 and 250 million people may be exposed to increased water stress due to climate change in Africa by 2020 and this will adversely affect livelihoods in the region. The area suitable for agriculture, the length of growing seasons and yield potentials, are expected to decrease due to climate change. Yields from rain-fed agriculture in some countries could be reduced by up to 50%.

The issue of climate change is global and Nigeria is not excluded from its threats as a sea-level rise of just 0.2m due to climate change could flood over 3,400 km² of the country's coast land. A recent study by World Bank (2008) revealed that Nigeria accounts for roughly one-sixth of worldwide gas flaring. Nigeria flares about 75% gas due mainly to lack of technical facilities to make appropriate use of it. This gas is often burnt directly on the ground from where it emerges (www.kas.de, 2009).

The Niger Delta area of Nigeria, which contains one of the highest concentrations of biodiversity on the planet, in addition to supporting abundant flora and fauna, has arable terrain that can sustain a wide variety of crops, agricultural trees, and more species of freshwater fish than any ecosystem in West Africa, could experience a loss of about 40% of its inhabitable terrain in the next thirty years (Finance and Development, 2008). This perceived situation can be attributed to carelessness of oil industries in oil spillage, natural gas flaring, over exploitation of natural resources, and unfavourable farm practice methods found in the area. Agriculture in the Niger Delta is highly dependent on rain as irrigation is seldom practiced. The changes in the rainfall pattern have greatly affected agriculture in the region. Another observable change in the region is change in vegetation. There is almost complete absence of primary forests. This may be partly due to climate change and partly due to human activities. As majority of the people living in the Niger Delta are farmers and fishermen, the environmental and social consequences of climate change is putting livelihoods at serious risks.

A lot of information abounds on sustainable climate change adaptation mechanisms but these pieces of information are underutilized. The lack of reliable communication channels and delays in forecast dissemination has also contributed to increased vulnerability of communities in remote areas to climate related disasters (www.wordpress.com). Poorly developed communication infrastructures are making complex the task of developing location specific responses that can effectively address the impacts of climate change. The role of information in moving forward the climate change agenda and communicating relevant information to the public is very crucial (CTA, 2008) in order to minimize the effects of climate change on agricultural production systems and enhance human survival. Consequent upon this, the pertinent questions that guided this research study included: are members of the rural communities in the Niger Delta aware of climate change as it relates to farming activities? What are the available sources of information on climate change adaptation strategies? What are the current effects of climate change on farming in the Niger Delta? Also, what are the existing government programmes on climate change mitigation?

Purpose of the study

The purpose of the study was to determine the sources of information and awareness of government programmes on climate change among rural households in the Niger Delta Region of Nigeria. The specific objectives were to:

1. ascertain respondents' awareness of climate change as it relates to farming activities;
2. ascertain the available sources of information on climate change adaptation;
3. find out respondents' perceived effects of climate change on farming activities; and
4. ascertain respondents' perception of existing government programmes on climate change.

Methodology

Both qualitative and quantitative approaches (Rapid rural appraisal, community fora, focus group discussions, key informant interviews, and semi-structured interview schedules) were used in an interactive manner to collect data from 400 rural households selected through multistage random sampling technique. In the first stage, three states (Cross Rivers, Delta and Rivers) were randomly selected from the nine states (Abia, Akwa-Ibom, Bayelsa, Cross-River, Delta, Edo, Imo, Ondo and Rivers) that make up the Niger Delta region. Secondly, using the states ADP delineations, two agricultural zones were randomly selected from each state; this gave a total of six zones. From each selected zone, two blocks were randomly selected. This gave a total of 12 blocks. A sampling frame of all households was built during the community forum and focus group discussions (FGDs). From these lists, random samples of 35 respondents were selected from each block and interviewed. A total of 420 respondents were interviewed, however 400 completely filled interview schedule were used for the analysis.

Objectives 1, 2 and 4 were realized using frequencies, percentages and charts, while mean scores and standard deviations were used to achieve objective 3. To ascertain awareness on climate change, respondents were asked to tick against a response options of "Yes" or "No". To ascertain the sources of information on climate change and adaptation, respondents were asked to tick against the appropriate options from a list of provided options. To ascertain the effects of climate change on crop farming activities, a four point Likert-type scale was used. Each respondent indicated his/her responses by checking any of the four options "to a very great extent", "to a great extent", "to a little extent", and "to no extent at all". Values assigned to these options were 4, 3, 2 and 1 respectively. These values were added to obtain 10; this was divided by 4 to obtain a mean of 2.5. Variables with mean scores less than 2.5 were regarded as not having effect on crop farming, while those with mean scores equal or above 2.5 were regarded as climate change variables having effect on crop farming activities.

To ascertain respondents' perception on government's programmes on climate change, respondents were asked to indicate by ticking the policies/programmes on climate change they were aware of and those which were being effectively implemented. They were also required to note if they were aware of existence of

committees on climate change in the National Assembly by ticking against a response option of “Yes” or “No” to the appropriate options. The respondents were required to rate the impact of the committees by ticking against the response options of “high”, “low” and “none”.

Results and Discussion

Respondents’ awareness of climate change and its indicators as it relates to farming activities

The respondents variously defined climate change as bad weather, changes in weather conditions, high temperature, longer duration of sunshine, shorter/reduced rainfall, variation in rainfall pattern, irregularities in rainfall and sunshine, too much sun, heat, and cold. Data on Table 1 reveal that 94.8% of the respondents were aware of climate change effect on farming activities and on the environment in general. This awareness is more from personal observations and experience over time. The reason for this could be attributed to the fact that the respondents have lived in the different communities for a long time (M= 27 years), and would have been able to observe changes in climate over these period of years. Table 1 further show that 56.2% of the respondents perceived climate change as an increased incidence of drought, about 41.2% of them understood climate change to mean high wind and heat waves. From the FGDs, respondents described these as factors that informed them of changes in the climate as it affects them and their farming activities. Excessive sunshine contributed to increase in temperature, which probably brought about the incidence of drought in the area. According to Odjugo (2010), the temperature trend in Nigeria between 1901 and 2005 was 26.6°C, while the temperature increases for the 105 years was 1.1°C. This according to Spore (2008) and IPCC (2007) is obviously higher than the global mean temperature increase of 0.74°C recorded since 1860 when actual scientific temperature measurement started. Odjugo (2010) noted that if this trend continues unabated, Nigeria may experience between the middle (2.5°C) and high risk (4.5°C) temperature increase by the year 2100; this is just 90 years from now.

Table 1 also reveals that respondents understood climate change to mean excessive rainfall (61.0%). Although, there is a general decrease in rainfall in Nigeria, the coastal areas of Nigeria like Warri, Brass and Calabar have been identified to be experiencing slightly increasing rainfall in recent times (Odjugo, 2005, 2007). This is a clear evidence of climate change because a notable impact of climate change is increasing rainfall in most coastal areas and decreasing rains in the continental interiors (Nigerian Environmental Study/Action Team, 2003).

Excessive sunshine which leads to increase in temperature and rainfall are factors that can possibly fuel an increase in pests and disease infestation. This may be the reason why 45.2% of the farmers seemed to understand climate change as increase in pest and disease outbreaks. Another factor that contributed to their understanding of the term is crop failure/poor yield (60.2%). Soil fertility is affected by global warming (www.wikipedia.en.com, 2010). This probably explains the resultant poor crop yields as experienced by the farmers.

Table 1: Distribution of respondents by awareness of climate change and its indicators

Climate change awareness	%
(a.) Awareness on climate change effects on farming practices	
Yes	94.8
No	5.2
(b.) Indicators of climate change*	
Excessive rainfall	61.0
Increased incidence of drought	56.2
Crop failure	60.2
Decline in fish production	24.2
Pests and disease infestations	45.2
High winds and heat waves	41.2

* **Multiple Responses**

Sources of information on climate change

It is evident from Figure 1 that the following sources were the major channels through which the farmers received or sourced information on climate change. These sources include radio/television (61.0%), newspaper (44.0%) and friends (43.8%). Other sources include internet (18.2%), researchers (14.8%), extension workers (13.8%), farmers' co-operatives (10.2%) and politicians (3.5%).

The implication of this finding is that the mass media (radio and television), newspapers and friends were the major sources of information on climate change. The reason for this could possibly be due to the advantages the mass media has in reaching large audience at a faster rate. The implication of this finding to extension service is that in order not to loose sight of their major role of working with the rural people along lines of immediate and felt needs, which involves enhancing their living standards and improving their immediate surrounding, there is need to train and re-train field extension workers on the dangers being imposed by climate change on agriculture and human health and also emerging adaptation measures on climate change.

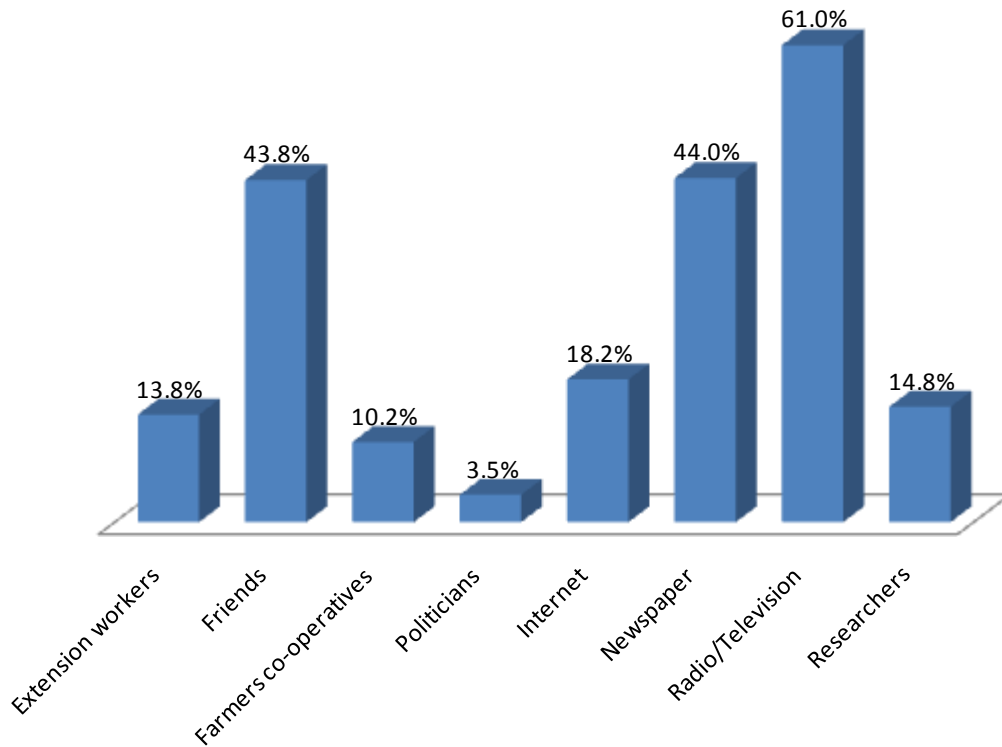


Fig. 1: Sources of information on climate change

Perceived effects of climate change on farming activities

Perceived effects of climate change as indicated by the respondents on Table 2 include low rainfall intensity (M=3.34), late onset of rains (M=3.36), heat from high temperature (M=3.29), high rate of weed growth (M=3.00), poor crop yield (M=2.98), and decrease in soil moisture (M=2.95). Other effects of climate change include erosion problems (M=2.85), excessive soil moisture (M=2.66), premature ripening of crops (M=2.58), destruction of field crops by heavy wind (M=2.66), change in storage quality of fruits and vegetables (M=2.65), change in taste of fruits and vegetable (M=2.53), loss of roots and tubers under storage (M= 2.75), increase in pests and disease infestation (M=2.76), loss of farmland and houses due to over flooding (M=2.70), distortion and destruction of wildlife ecosystem (M=2.61), low fruiting of economic plants (M=2.78) and low productivity of animals (M=2.62).

This finding on change in storage quality and taste of crops is in support of a Wikipedia document which reported that climate change could affect agricultural production in terms of quality and quantity of crops (http://en.wikipedia.org/wiki/Climate_change_and_agriculture). Also, Bert, Gonzalez and Long (1997) noted that protein contents of grains decreases under combined increases of temperature and CO₂. On the incidence of pests and diseases infestation, global warming would cause an increase in rainfall in some areas, which would lead to an increase in atmospheric humidity and the duration of wet seasons. Combined with

higher temperatures, these could favour the development of fungal diseases. Similarly, because of higher temperatures and humidity, there could be an increased pressure from insects and disease vectors (http://en.wikipedia.org/wiki/Climate_change_and_agriculture). Extreme weather events such as heavy downpours and droughts are likely to reduce crop yields because excesses or deficits of water have negative impacts on plant growth. This is in line with the findings of this study, which shows that the effect of climate change is being experienced both as an excess and decrease of soil moisture (<http://downloads.climate-science.gov/usimpacts/pdfs/agriculture.pdf>).

During the FGDs, respondents noted that the effects of climate change cut across every facet of life and not just on climate. They asserted that it is a complete overhauling process of life probably because the end is drawing near. Factors that informed their knowledge on climate change were poor yield of crops, high temperature and excessive heat, delayed rainfalls and high weed growth among other factors.



Picture 1: A farm showing 2-year old cassava plants with stunted growth and washed soil at Iruh, Orhionmwon L.G.A, Edo state (July, 16 2010)

Table 2: Respondents perceived effects of climate change on farming activities

Perceived effects*	M	Standard Deviation
Low rainfall intensity	3.34*	0.95
Late onset of rains	3.36*	0.86
Heat from high temperature	3.29*	0.84
Erosion problems	2.85*	1.00
Lengthening of crop cycle	2.43	1.07
High rate of weed growth	3.00*	1.02
Decrease of soil moistures	2.95*	0.98
Excessive of soil moisture	2.66*	1.10
Increase salinity in the soil	2.28	1.18
Water pollution due to climate variability	2.56*	1.23
Destruction of field crop by heavy wind.	2.66*	1.10
Drying of rivers, lakes and surface waters for crops	2.46	1.17
Premature ripening of crop, fruit etc.	2.58*	1.09
Change in the storage quality of fruits and vegetables	2.65*	1.06
Change in taste of fruits and vegetable	2.53*	1.08
Losses of roots and tubers under storage	2.72*	1.08
Increase in pests and disease infestation as a result of high humidity	2.76*	1.08
Loss of farmland and houses due to over flooding.	2.70*	1.11
Distortion and destruction of wildlife ecosystems	2.61*	1.08
Low fruiting of economic plants	2.78*	1.05
Low crop yield	2.98*	1.03
Low productivity of animals	2.62*	1.11

* *Perceived major effects*



Picture 2: Erosion site at Midomer Street in Ika North East Local government area, Delta state, Nigeria

Awareness of government policies/programmes on climate change

Figure 2 reveals that majority (66.8%) of the respondents reported that they were aware of the government ban on indiscriminate tree felling, 64.2% of them were aware of ban on indiscriminate bush burning, while 58.2% knew of government's promotion of afforestation. About 39% of the respondents knew of the ban on gas flaring, and only 19.0% of the respondents were aware of a bill on climate change in the National Assembly. It can be inferred from these findings that the respondents were aware of available government policies/programmes on climate change mitigation. Their awareness of government efforts in mitigating the negative effects of climate change reveals that the government is directly involved in designing programmes/policies that are capable of addressing the negative impacts of climate change in the Niger Delta region of Nigeria.

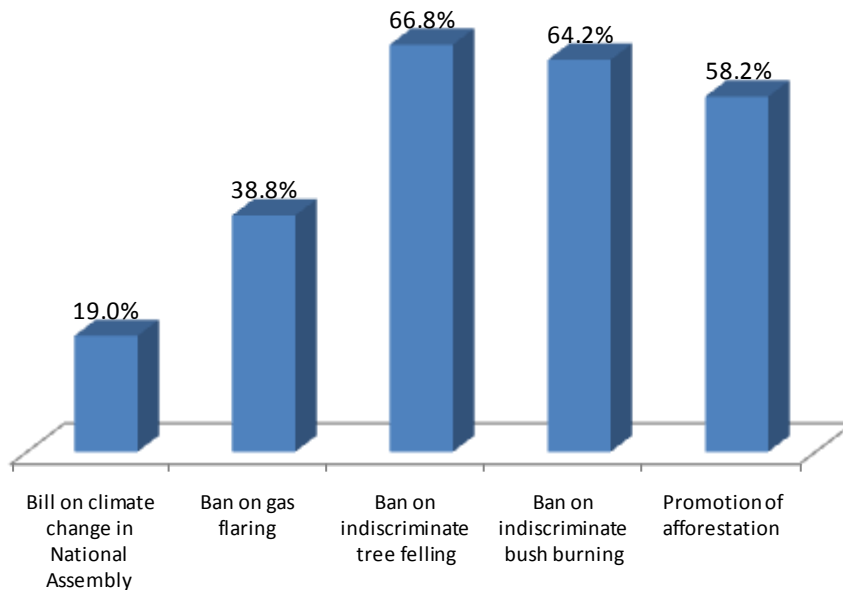


Fig. 2: Awareness of Government policies/programmes on climate change

Respondents perception of the effectiveness of government programmes on climate change

Figure 3 shows that 41.8% of the respondents perceived government's ban on indiscriminate tree felling to be effectively implemented, 40.5% noted that the promotion on afforestation is also effective. About 32% and 17.0% of them were of the opinion that the ban on bush burning and gas flaring, respectively, are also being well implemented. The remaining 6.8% think that the bill on climate change in the National Assembly is being implemented effectively. It is obvious that respondents' perception of the effectiveness of implementing the various programmes on climate change is poor. A reason that stemmed up for this during the FGDs is that the implementation of some of these policies e.g. indiscriminate bush burning and tree felling are achieved mainly through their traditional system of governance as the respondents asserted that they are yet to see the government at the local and state levels directly involved in the implementation of these policies.

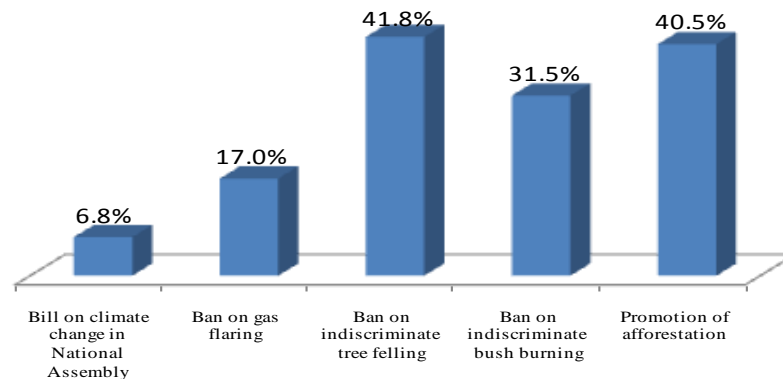


Fig. 3: Respondents' perception of effectiveness of implemented government programmes on climate change

Respondents' awareness of existence of climate change committees in National Assembly

Results on Table 2 and Figure 4 show that only about 24% were aware of the existence of legislative committees on climate change in the National Assembly. Of this number, 62.9% were aware of the nature of the work been done by the committees. On assessment of the impact of the committees' work, only 23.0% of the respondents agreed that the committees were having high impact in discharging their duties. Majority (56.0%) of the respondents noted that the impact of their work was low, while the remaining 21.3% seemed not to have noticed any impact of the committees. It is evident from these findings that the respondents had low level of awareness of the existence of the committees. This is possibly the reason for a low knowledge of the nature of the work of these committees. It can be deduced that, this low knowledge is the reflection of the low impact these committees are having as regards addressing the negative effects of climate change issues within the region.

Table 2: Percentage distribution of awareness on climate change committees in national assembly

Variables	Frequency	%
Awareness of climate change committees in National Assembly (n=400)	97	24.2
Awareness of the nature of their work (n=97)	61	62.9

Source: Field survey, July 2010

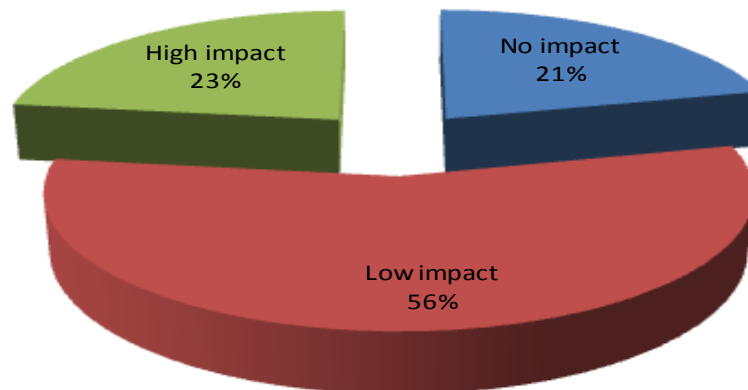


Fig. 4: Perceived impacts of climate change committees in National Assembly

Conclusion

Based on the findings of the study, the following conclusions were made:

1. Majority (94.8%) of the respondents were aware of climate change effects on farming activities.

2. The major sources of information on climate change were from radio/television, newspapers and friends.
3. Majority of the respondents knew of the ban on indiscriminate bush burning; tree felling and promotion of afforestation in the country. However, a greater proportion of them perceived these policies not to be effectively implemented.
4. The findings also showed that even though the people of Niger Delta were aware of the existence of legislative committees on climate change in the National Assembly, their impact were poorly felt in the region.

Recommendations

- (1) Information on climate change and adaptation should be made accessible to farmers. Radio and television should be used to disseminate information to farmers using local languages where possible. Telecommunication providers e.g. MTN, Airtel, Etisalat ,etc., should be encouraged to send short message services on climate change to their clients at regular intervals.
- (2) There is need to provide effective and reliable access to information on climate change to dissuade the minds of farmers from spiritual angle and bring to reality the need to put hands together in the bid to salvage agricultural production.
- (3) Government should put structures in place to ensure that already known mitigation measures are implemented. Also, efforts should be concretized to ensure that effective policies and/or programmes are developed to assist local people in adapting to the effects of climate change in their communities.
- (4) There is need to strengthen communities' capacity to manage their resources, raise awareness of climate change problems among the populace and build the capacities of local institutions to support disaster management policies.

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