



The Capacity of Local Institutions to Respond to Gender Related Issues in Climate Change Scenery in Nigeria's Niger Delta Region

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Author's contribution

The sole author designed, analyzed and interpreted and prepared the manuscript.

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ABSTRACT

Gender is an important socio-economic variable in determining vulnerability and ability to adapt to a changing climate and local institutions are known to help in connecting local populations and social groups to external support. The research determined the capacity of local institutions in the Niger-Delta to respond to gender issues in climate change by ascertaining their level of gender awareness and responsiveness, their awareness and knowledge level of climate change, and the implications of the findings for climate change adaptation. Primary data used were collected using a set of close and open ended questionnaires from 750 randomly selected respondents, representing 30% of the study population. Analysis was done using frequencies, percentages and ranking. Their knowledge and awareness was determined by calculating their knowledge and awareness index. Result showed that local institutions' level of awareness and knowledge of climate change issues and their understanding of key drivers of climate change/variability was commendable as majority of respondents were aware of climate change and variability in their locality. On the gender dimension of climate change, respondents generally felt that adverse climatic events would have more negative impacts on women than men. Majority however, do not have a gender mandate/policy, gender focal points, trained staff on gender issues, are gender blind, and as such, will not be able to

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handle gender issues in climate change hazards. There is therefore a need to build the capacity of local institutions in climate change and gender through appropriate policies and partnerships. This will ensure that resource support in any climate change adaptation programme through local institutions get to those affected.

Keywords: Gender; adaptation; local institutions; climate change; response.

1.INTRODUCTION

Climate change as a result of global warming has widespread implications from the exacerbation of poverty, to the breakdown of infrastructure, to the loss of environmental, political, economic and social security. Intergovernmental Panel on Climate Change [1] experts agree that climate change threatens to set back development efforts by decades, placing least developed countries and Sub-Saharan African countries, including Nigeria, and already vulnerable populations in an even more precarious position. It has thus become the most important topical development policy and global governance issue in the 21st century [2]. Climate change affects people in different ways, depending on a myriad of factors that determine their vulnerability to it and their ability to adapt to it and sustain their health, security and livelihoods.

Gender, a fundamental organizing principle in all societies, is a central factor in determining vulnerability and ability to adapt to a changing climate. The workings of gendered roles and power relations, as they intersect with other factors such as age, ethnicity, socioeconomic status, etc, play an important role in conditioning access to all sorts of resources, opportunities, services, and participation and authority in decision-making. Research has shown that women's/girls' and men's/boys' differential vulnerabilities and ability to adapt to the impacts of climate-related changes or disaster events primarily result from socially constructed gender-specific vulnerabilities that are built into socioeconomic, local institutions and socio-cultural norms and practices [3,4]. According to [5], research based on data compiled from statistics on disasters that took place between 1981 and 2002 in 141 countries showed that, overall, women are affected more adversely than men in terms of the effect of disasters on life expectancy at birth. Furthermore, the likelihood of women being killed in natural disasters increases significantly with decreasing socioeconomic status [6]. In Bangladesh in 1991, 90 percent of those who died in the cyclone-related disasters were women [7]. In Sri Lanka in

2004, between 70 percent and 80 percent of fatalities caused by the tsunami were women and in the US in 2005, African-American women – the poorest demographic category – were the worst affected by Hurricane Katrina [8].

In many rural societies, for example, women - beyond often carrying out a large proportion of the work needed to sustain the community's livelihood-are responsible for providing water and fuel. These responsibilities become more onerous, more time-consuming, and potentially dangerous, in conditions of drought and desertification- which are already affecting and increasingly likely to affect a large proportion of the populations of Sahel countries. In such instances, girls' education is threatened because of the extra burdens placed on them by the demands of living in an increasingly water-scarce environment [9] as they will have to spend longer hours on the search for water and in performing other water related household chores instead of getting ready for school and doing take-home assignments. Traditional expectations and home-based responsibilities that limit women's mobility also limit their opportunities for political involvement, education, access to information, markets and a myriad of other resources, the lack of which reinforces the cycle of their vulnerability [10].

This study has become imperative due to the following facts:

- The effects of climate change is not gender neutral;
- The gendered nature of vulnerability to climate change events;
- New realities of a changing climate might change gender roles and relations and gendered access to resources and opportunities, potentially deepening already-existing inequalities;
- The gendered differences in ability to adapt and the need to mitigate the circumstances through which inequalities in adaptive capacity materialize as well as identify opportunities to empower the most vulnerable;

- The potential for men and women, boys and girls to play different roles in adaptation, according to their different experiences and knowledge of the environment; and
- Local institutions being known to have shaped how rural residents responded to environmental challenges in the past.

Also, because adaptation to climate change is local, it is critically important to understand better the role of local institutions in shaping adaptation and improving capacities of the most vulnerable social groups. This is in recognition of the crucial role of local institutions in enhancing adaptation to climate change in that they connect households to local resources and collective action; determine flows of external support to different social groups, and link local populations to national interventions. A relationship between climate-related vulnerabilities, adaptation practices, and the gender preparedness of local institutions for climate change adaptation is assumed. This research is therefore necessary to assess the capacity of local institutions in Nigeria to respond to gender issues in climate change. [11] categorized local institutions into three:

- **Local Public Institutions:** local governments, local agencies (e.g., extension services and other arms of higher levels of government operating at local levels).
- **Civil society institutions:** rural producer organizations, cooperatives, savings and loan groups etc.
- **Private institutions:** service organizations such as NGOs and charities, private businesses that provide insurance or loans.

For climate change adaptation and sustainable development, there are advantages and disadvantages with each kind of local institution. None is likely to be best for all purposes. Public sector institutions backed by authority are better able to achieve consistency and predictability in performance. But they operate at a fairly high cost, and they are often slower or more rigid than other institutions. They are amenable to policy direction, which is important for sustainable development if this goal has backing from the government. They are also liable to politicisation, which can have adverse consequences. Private institutions can be more or less committed than

public ones to sustainable development, depending on the values and priorities of the business persons or philanthropists involved. Concern with profit often gives precedence to short-run calculations. Usually private institutions cannot aggregate and dispose of such large amounts of resources as public institutions can. But what they have can be used more flexibly, so this may offset the advantages of scale. The criterion of profitability gives an incentive for private enterprises to use resources efficiently. Charitable institutions are likewise likely to be concerned with efficiency to the extent that their financial resources are scarce, not assured by the power of the state. Their principal advantage is flexibility, so long as this is not abused.

Participatory or self-help institutions are most variable in their performance. All local institutions tend to offer certain advantages but voluntary organisations are most inclined to have and to use local knowledge, to respond quickly to changes, to handle conflict, and to create climates of opinion influencing behaviour. Which kinds of local institutions are most desirable for supporting sustainable development cannot be generalised. All categories of local institutions were accommodated in this study.

1.1 Objectives

Generally, the research determined the capacity of local institutions to respond to gender issues in climate variability/change. Specific objectives included to:

- (i) Characterize local institutions in the study area;
- (ii) Determine local institutions' gender awareness index;
- (iii) Determine respondents' perception of gender issues in climate variability/change;
- (iv) Examine the climate change awareness and knowledge index of local institutions by gender.

2. RESEARCH METHODOLOGY

The research was carried out in Nigeria's Niger Delta which is the largest mangrove swamp in Africa [12]. One of the nine Niger –Delta states was selected for a more in depth study, from where seven hundred and fifty (750) respondents were randomly selected, and questionnaires administered.

2.1 Study Area

2.1.1 Akwa Ibom state

Akwa Ibom state is one of the nine states of the Niger Delta which is located in the Atlantic Coast of southern Nigeria where River Niger divides into numerous tributaries. The state was purposively selected because it is representative of the region in terms of centrality of location, climate, topography, livelihoods and mineral deposits. It also lies below the sea level and will be more adversely affected by sea-level rise. The state falls within the tropical rain forest zone. The ecosystem of the area is highly diverse and supportive of numerous species of terrestrial and aquatic flora and fauna and human life. The state is divided into four ecological zones namely (i) coastal inland zone, (ii) mangrove swamp zone, (iii) freshwater zone and (iv) lowland rain forest zone. It has a total population of 3,920,208 [National Population Commission, 2006], with a population density of 587 persons per square metre and a land mass of 6,674 Km². Inhabitants of the state fit into three major linguistic groups, described as Ibibio, Oron and Annang. The upland areas are more densely populated, while the mangrove swamps have scattered settlements [13]. The state has 31 local government areas and six agricultural zones according to the classification by the Akwa Ibom State Agricultural Development Project (AKADEP).

Akwa Ibom state is characterized by two seasons- the dry and rainy seasons. The state experiences heavy rainfall leading to flooding. The dry season is only experienced for a few months in some coastal sections of the region. Intense petroleum exploration and production in the state have resulted in gas flaring with adverse effects on the environment including climate change [14]. The state is richly endowed with mineral-rich sedimentary formations which yield minerals such as petroleum, clay, glass sands, and limestone. The exploitation of petroleum accounts for over 90% of the Federal government export revenue. The soils support a variety of food and cash crop production. Aquatic resources such as fish, shrimps, crabs, etc are in abundance in the state. There are also forest resources including timber, medicinal plants, fruits, nuts and fuel wood. Crop farming, livestock rearing, fishing and petty trading are important livelihoods of the people of the state. Petty

trading is mainly an adjunct to farming in the rural areas and local and imported goods and foodstuffs are exchanged for cash in the market place. Market place consists of mere open space under large trees in small hamlets or large cleared space with temporary sheds for display of goods in the larger rural settlements which serve as the principal venues for this exchange activity. Agriculture in the state is rain-fed and provides a source of employment for a substantial proportion of the rural population. Therefore, climate change will have greater negative impacts on a greater number of farm households as they have the lowest capacity to adapt to changes in climatic conditions.

2.2.2 Type of data and analysis

Primary data obtained from local institutions were used for analysis and include information on institutional type, headship, source(s) of income, challenges and constraints. Others included information on kinds of services offered, level of operations, level of knowledge and awareness of climate change, awareness and knowledge of gender dimensions of climate change, its key drivers and impacts, level of connectivity of households (men and women) in a given community to the existing institutions and the benefits gained from the institutions as a result of such connections.

Primary data were collection using a set of close and open ended questionnaires. Also, content analysis of relevant mandate/policy documents of the institutions where applicable was done. Analytical tools used included frequency distribution, percentages and simple ranking. To measure climate change knowledge level (CCKL), Climate Change Knowledge Index was developed to assess the local institutions' awareness and knowledge of climate change and climate variability issues and the gender dimension of climate change. The level of knowledge was measured using a scale of 2 and 1, 2 representing the correct response and 1 incorrect response. The maximum, average and minimum scores were established. The mean score of each respondent on all climate change issues was compared with expected maximum score to ascertain their knowledge level. This was used to gauge the awareness and knowledge of the respondents of particular climate change issues.

3. RESULTS AND DISCUSSION

3.1 Characterization of Local Institutions in the Study Area

Selected characteristics of local institutions in the study area are presented in Table 1.

Table 1 shows the characteristics of the sample with the highest frequency. Most of the institutions were between 3-5 years old, accounting for 28% of the sample, 63% were male-headed, with majority (79%) of the heads of the sampled institutions being between 31 -50 years old. Seventy four percent have their operational headquarters in the city and the major source of funding is by voluntary organizations (57%), 45% are funded occasionally, while 73% are privately owned.

Table 2 shows that most institutions (73.5%) are aware of the gender policy of the federal government of Nigeria, although, 21.7% have mainstreamed gender into the thematic area of their operation while 78.3% attested otherwise. Furthermore, 14.3% of the local institutions have gender focal persons as against 85.7% that do not. Responses on whether the institutions trained their workers on gender issues or related issues indicated that about 80.80% of the total response agreed to "No" option. This implies that, about 81% of the local institutions are yet to train their worker(s) on gender issues. This gives opportunity for partnership and capacity building between local institutions and external development agencies in this area. On the other hand, a fraction of institutions representing 19.20% trained their workers on gender related issues. The result of this response is the reflection of the fact that many local institutions in the study area are aware of the gender policy document of the federal government; but are yet to mainstream it in their operation areas. Further investigation of the gender awareness of the institutions revealed that 11% of them substantiate the existence of gender inequality in their domain; while majority (about 89%) rejected the prevalence of gender inequality in their locality. The results suggest a degree of gender blindness and insensitivity to gender issues and the differential impact of institutional policies on both men and women. This will naturally influence the ways in which the institutions address community issues.

3.2 Respondents' Perception of Gender Vulnerability in Climate Variability/Change Scenario

The result presented in Table 3 shows respondents all agree that climate change has impact on women and men, with fuel wood scarcity ranking first for women and sea level rise for men. Responses by the local institutions on several climatic issues concerning men and women were counted, recorded and ranked. The result reveals that in case of adverse climatic conditions, women will be mostly affected compared to their male counterpart in areas such as insufficient fuel wood (88.10%), water scarcity (85.60%) and food scarcity (82.90%). Some of the local institutions also felt that, destruction of farm lands (77.90%), extreme temperatures (77.50%) and destruction of houses (63.10%) are additional areas women would be affected more than men in case of climatic hazards in their environment. These responses are closely related to the gender roles of women both in the household and in the community. However, the analysis reveals that respondents perceived that adverse climatic condition will affect men more than women mostly through the effects generated by the sea level rise (43.30%) and increase desertification (41.20%) as well as frustration brought about by the occurrence of land slide (41.10%). In addition, the local institutions also reported that flooding (37.50%), storms (37.10%) and mud slide (37.10%) would affect men more than women in case of their occurrences. However, based on their responses, it was observed that the sampled local institutions feel that adverse climatic conditions affect women more than their male counterpart.

3.3 Climate Change Awareness and Knowledge Level of Local Institutions by Gender

The climate change awareness and knowledge index was constructed for both male and female headed institutions. The essence was to compare the climate change awareness indices for the two groups and identify which of them had more knowledge and was also more aware. To measure climate change knowledge level (CCKL), Climate Change Knowledge Index was developed to assess the local institutions' awareness and knowledge of climate change and climate variability issues and the gender dimension of climate change. The level of

knowledge was measured using a scale of 2 and 1, with 2 representing the correct response and 1 incorrect response. The maximum, average and minimum scores were established. The mean score of each respondent on all climate change issues was compared with expected maximum score to ascertain their knowledge level. This was used to gauge the awareness and knowledge of the respondents of particular climate change issues. It was hypothesized that the odd (probability) that an institution will have the capacity to respond to climate variability and its gender dimension, is a function of some measures of knowledge of climate change. The result for the male and female headed institution's climate change awareness and knowledge index are shown in Tables 4, 5, 6 and 7 respectively. The head or the secretary of the institution was interviewed in each case on behalf of the institution.

Table 4 reveals that out of 360 male headed institutions, 10.55% had climate change awareness index of 0.00–0.30. This means that over 80% of the male headed institutions have moderate to high climate change awareness score. About 30.28% exhibited very high climate change awareness index. Given this result, the

implication is that good proportion of the male headed institutions is aware of climate variability in their environments.

Table 5 indicates that the distribution is skewed to the left (increasing positive region), meaning that more respondents are concentrated on one side of the distribution. Only 42 respondents representing 10.77% of the total female headed institutions (390) fell in the index category of 0.00 - 0.300. This result is similar to that displayed by the male headed institutions. It implies that few female headed institutions are not really aware or have limited awareness on the climate change in their domain. Compared to data in Table 4, female headed institutions are more aware of climate change than their male counterpart.

Comparing the knowledge gap on climate change between the two groups, Table 6 gives details of the knowledge index for male headed institutions, while Table 7 gives that of the female. The result shows varying levels of climate change knowledge, with 18.61 having very strong knowledge, while over 60.0% of the female headed institutions have very strong knowledge on climate change phenomenon.

Table 1. Characterization of local institutions

Characteristics	Indicator	% Contribution
Age of Institution	3-5	28.00
Male headed	473	63.00
Age of head	31-50 years	79.00
Operational Hqts	City	74.00
Source of funding	Voluntary organizations	57.00
Freq. of funding	Occasionally	45.00
Ownership	Private individual	73.0

Source: Field data, 2012; Sample size: 750

Table 2. Local Institutions Level of Gender Awareness

Level of awareness	Yes	No	% of no in total	% of yes in total
a Institutions that are aware of the gender policy of the federal government of Nigeria	551	199	26.53	73.47
b Institutions that mainstreamed gender policy into the thematic area of their operations	163	587	78.27	21.73
c Institutions that have gender focal person(s)	107	643	85.73	14.27
d Institutions that trained members of their organization on gender issues or gender related issues	142	606	80.80	19.20
e Institutions that attest to gender inequality in their operations	85	665	88.67	11.33

Source: Field data, 2012; Sample size: 750

Table 3. Perception of respondents in climate variability/change scenario

Activity	Responses			
	Men	Ranking	Women	Ranking
Flooding	281(37.5)	4	469(62.5)	8
Desertification	309(41.2)	2	441(58.8)	10
Lack of fuel wood	89(11.9)	11	661(88.1)	1
Water scarcity	108(14.4)	10	642(85.6)	2
Sea level rise	325(43.3)	1	425(56.7)	11
Destruction of farm lands	166(22.1)	8	584(77.9)	4
Destruction of Houses	277(36.9)	6	473(63.1)	6
Land Slide	308(41.1)	3	442(58.9)	9
Mud Slide	278(37.1)	5	472(62.9)	7
Food scarcity	128(17.1)	9	622(82.9)	3
Storms	278(37.1)	5	472(62.9)	7
Extreme temperature	169(22.5)	7	581(77.5)	5

Source: Calculated from field data, 2012; Sample size = 750. Figures in bracket are percentages

Comparing the climate change knowledge index for the two groups, it is evident that the female headed institutions have a better understanding of the climate change issues than their male counterpart.

Table 4. Male headed institution awareness index

Index category	Frequency	Percentage
0.000–0.300	38	10.55 ^{NS}
0.301–0.600	73	20.28 ^S
0.601–0.900	140	38.89 ^S
0.901–1.000	109	30.28 ^S

Source: Computed from field data, 2012. Note: Total number of male sample is 360

Table 5. Female headed institution awareness index

Index category	Frequency	Percentage
0.000 – 0.300	42	10.77 ^{NS}
0.301 – 0.600	47	12.05 ^S
0.601 – 0.900	62	15.90 ^S
0.901 – 1.000	239	61.28 ^S

Source: Computed from field data, 2012
Note: total number of female sample is 390

Table 6. Male headed institution knowledge index

Index category	Frequency	Percentage
0.000 – 0.300	37	10.28
0.301 – 0.600	87	24.17
0.601 – 0.900	169	46.94
0.901 – 1.000	67	18.61

Source: Computed from field data, 2012
Note: Total number of sample is 360

Table 7. Female headed institution knowledge index

Index category	Frequency	Percentage
0.000 – 0.300	25	6.41
0.301 – 0.600	48	12.31
0.601 – 0.900	80	20.51
0.901 – 1.000	237	60.77

Source: Computed from field, 2012

Note: Total number of sample is 390

4. CONCLUSION

The study concludes that local institutions in the study do not have the capacity to adequately address gender issues in climate change scenery. This is primarily because the institutions do not have a gender mandate and therefore do not mainstream gender into their activities. They are however, aware and have a knowledge of climate change and its key drivers, and are also aware of the differential impact of climate change events on individuals.

5. SUMMARY, RECOMMENDATIONS AND IMPLICATIONS

5.1 Summary

The study has shown that the institutions generally do not have an in-depth knowledge of gender dimensions of climate change and do not also have clear cut gender policies to guide them in gender related project development, implementation and monitoring. These however, present opportunities for capacity building through appropriate training workshops targeted at the local institutions. Most surveyed local

institutions have gender-blind mandates/policies, have not trained their staff on gender issues and may not be able to handle gender issues in climate change hazards. In a similar study on 'local institutions, external interventions, and adaptations to climate variability', [15] explored the role of local social institutions in long-term adaptation to environmental change, how extra-local actors interacted with local social institutions in development and adaptation efforts and how they act as the means of delivery of external resources to facilitate adaptation, and thus govern access to such resources. It was found among others that local institutions also act as important media for interventions and this agrees with the present study, though the way they do this depends very much on the strategy taken by extra-local actors (e.g. development agencies, private sector, etc.). Where extra-local actors have deliberately bypassed or worked against those institutions that structure responsibilities, changes have been remarkable, although not beneficial for everyone. One result may have been increased autonomy for women and youth, this is part of the same process where elderly experience an erosion of respect, or are unable to utilize their responsibilities, knowledge or experience. This supports the recommendation of this study for the need to build the capacity of existing local institutions and work through them in climate change adaptation.

In an exploration of access to institutions and linkages between them, the report by [16] shows that people's responses are certainly shaped by their ability to access institutions and by the influence of institutions on their status and their activities. Nevertheless, when individual agency is recognized, it is clear that institutions do not do everything by themselves. People select and appropriate what suits them based on the range of institutional channels and options at their disposal, and while one channel may be inaccessible, others remain open. For example, local institutions with gender knowledge will more readily address the gender needs of those affected by climatic events and also be more accessible to both men and women, as against those who have no gender policy or knowledge. [17] studied the 'mediating role of institutions in the context of climate impacts-NGOs in the Philippines' and discovered that Local institutions played a key role in recovery after disasters by shaping the direction, effectiveness, and allocation of external assistance. Thereby, further emphasizing the connectivity of institutions with the communities they serve. Thus, the local

NGOs integrated relief and rehabilitation strategies into their action programmes. These strategies included socio-economic projects to reduce local vulnerability, mediation of the flow of government and international assistance, community-based disaster management, small scale infrastructure development, and training for capacity building [18]. These studies further strengthen the need for local institutions in the study area to be adequately prepared to assist communities in climate change adaptation.

5.2 Recommendation

There is a need for capacity development in the area of gender dimensions of climate change, sensitisation for the domestication of the national gender policy of the government and mainstreaming of gender issues into all capacity building programmes of agricultural extension and development. The study also agrees with [19] on the need to: 'Understand local institution articulation and access patterns before providing resource support in any development project. There are different social groups and individual households that all have different levels of access to existing institutions. Vulnerable groups in general have lower institutional access than do those who are more powerful or better off. In this wise, before any external support for greater adaptation is made, an analysis of the nature of institutional linkages and access for different social groups becomes very necessary. It is when a clear understanding of such existing relationships and connections is available that particular institutions can be selected as intermediaries for channelling resources'.

5.3 Implications

Studies by [20] have shown that even with very effective mitigation strategies, adaptation to climate change impact will still be the key for survival especially among poor and very vulnerable populations and communities like those in the Niger-Delta region. This study has shown that local institutions have a role to play in climate change issues as it affects local communities because they are located in these communities, work with them and can be used as vehicles for change. Their lack of adequate knowledge of the gender dimensions of climate change and the fact that they generally do not mainstream gender into their activities, have no gender focal points and no gender policy implies they will not be able to handle gender issues in

climate change scenery in the communities where they work.

COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCES

1. Intergovernmental Panel on Climate Change. Climate Change 2001: Synthesis report. A contribution of working groups I, II and III to the third assessment report of the intergovernmental panel on climate change. Watson, R. T. and the core writing team, eds. Cambridge, UK: Cambridge University Press; 2001a.
2. African Development Bank. Annual Report. 2010; Available: <http://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/Annual%20Report%202010%20EN.pdf>.
3. Steiner A. 3rd Global Congress of Women in Politics and Governance: Gender in Climate Change Adaptation and Disaster Risk Reduction. Proceedings. Manila, Philippines. 19-22nd October; 2008.
4. Aguilar, L. in 3rd Global Congress of Women in Politics and Governance: Gender in Climate Change Adaptation and Disaster Risk Reduction. Proceedings. Manila, Philippines. 19-22nd October. 2008.
5. Neumayera E, Plümper T. The Gendered Nature of Natural Disasters: The Impact of Catastrophic Events on the Gender Gap in Life Expectancy. 2007;1981-2002. Available: <http://ssrn.com/abstract=874965>
6. Neumayera E, Plümper T. The Gendered Nature of Natural Disasters: The Impact of Catastrophic Events on the Gender Gap in Life Expectancy. 2007;1981-2002. Available: <http://ssrn.com/abstract=874965>
7. International Union for the Conservation of Nature. Climate change briefing, Gender and climate change: Women as agents of change; 2007. Available: <http://genderandenvironment.org> <http://iucn.org/climate>.
8. Araujo A, Qusada-Aguilar A. Gender Equality and Adaptation. Available: https://www.gdnonline.org/resources/IUCN_FactsheetAdaptation.pdf. 2004.
9. Integrated Regional Information Networks; 2009. Available: <http://www.irinnews.org/report/84215/afghanistan-flood-emergency-declared>
10. Lambrou Y, Pianna, G. Gender. The Missing Component in the response to Climate Change.' Food and Agriculture Organisation of the United Nations. October; 2005.
11. Agrawal A, Sweeney MC, Perrin, N. Local Institutions and Climate Change Adaptation. Social Development Notes: Community Driven Development. The Social Dimensions of Climate Change. 2008;113.
12. Constitutional Rights Project. Land, Oil and Human Rights in Nigeria's Niger Delta Region. Constitutional Rights Project, Lagos.1999;65.
13. Constitutional Rights Project. Land, Oil and Human Rights in Nigeria's Niger Delta Region. Constitutional Rights Project, Lagos. 1999;65.
14. Ibeanu. Gender and power relations in Nigeria, ed. Ako-Nai, R. I; 2000.
15. Howard, RJ. Local Institutions, External Interventions, and Adaptation to Climate Change: The case of southern Mali, Oxfam America Research Backgrounder series. 2012. Available: <http://www.oxfamamerica.org/publications/climate-change-adaptive-processes-mali>.
16. Howard RJ. Local Institutions, External Interventions, and Adaptation to Climate Change: The case of southern Mali, Oxfam America Research Backgrounder series; 2012. Available: <http://www.oxfamamerica.org/publications/climate-change-adaptive-processes-mali>.
17. Luna, E. Disaster mitigation and preparedness: the case of NGOs in the Philippines. Disasters. 2001;25(3):216-226.
18. Luna E. Disaster mitigation and preparedness: the case of NGOs in the Philippines. Disasters. 2001;25(3):216-226.
19. Agrawal A, Sweeney MC, Perrin, N. Local Institutions and Climate Change Adaptation. Social Development Notes: Community Driven Development. The Social Dimensions of Climate Change. 2008;113.

20. Intergovernmental Panel on Climate Change. Climate Change 2001: Synthesis report. A contribution of working groups I, II and III to the third assessment report of the intergovernmental panel on climate change. Watson, R. T. and the core writing team, eds. Cambridge, UK: Cambridge University Press; 2001a.

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