

Mitigation and Adaptation Strategies against Climate Change by Women Cooperatives in Umuahia North Local Government Area, of Abia State

Leo. O. Obinna

Michael Okpara University of Agriculture Umudike, Abia State, Nigeria

Obinna.leo@mouau.edu.ng

ABSTRACT

Adaptation and mitigation strategies adopted by members of Women Cooperatives in Umuahia North LGA of Abia State were assessed through structured questionnaire and focus group discussion. Sample size of 180 respondents was selected through multi-stage random sampling technique. Data generated were analyzed using descriptive statistics. Results showed that 88.9 % of the respondents were married, 66.7 % were within the age brackets of 27 – 55 years while, 44.4 and 38.9 % of the respondents were farmers and traders respectively. About, eighty eight percent of the households had household size of 1 – 6 persons but 50 % of the respondents earned monthly income of N10,000.00 – N15,000.00. About 66.6 % of the respondents had between 5 – 10 years farming experience, 55.5 % had farm sizes ranging from 0.2 – 2 ha. Majority, (72.2 %) of the respondents had their sources of information on climate change through the media. About, 44.4 % and 50 % of the respondents got their information through cooperative societies and extension agents respectively. Respondents perceived effects of climate change as prolonged droughts, early cessation of rainfall, genetic erosion of important forests species, flooding, prolonged rainy season and excessive heat. Tree planting, cover cropping, diversification of livelihood activities, affiliation to other bodies, affiliation and registration to national bodies, mixed farming, and use of improved early maturity varieties were adopted. Results further, showed that lack of funds, cultural issues, (Slashing and burning of farms), lack of interest, lack of awareness and lack of legislation were factors influencing adaptation and mitigation process. The study recommends that Governments and other stakeholders in the champagne on climate change should increase intensity on awareness, laws on climate change should be enacted and finally, women should be empowered to be more proactive on issues of climate change since they are expert in home management and environmental resources.

Keywords: *Climate change, Women cooperatives, Adaptation and Mitigation.*

1. INTRODUCTION

Climate Change has become a topical and global issue for over a decade now, due to the fact that its consequences are universal. The manifestation of climate change is being observed through extreme variations of different climatic factors such as cloud cover, rainstorm, high temperature ranges, sea level rise, melting ice caps and frequent volcanic activities. All these evidences show the effects of climate change (Agwu and Irohibe, 2013). In addition, the Fourth Assessment Report of the Inter- governmental Panel on Climate Change (4 AR, IPCC) (2007) stated that climate change was already happening and that the effects are already manifesting. Similarly, the report of IPCC (2001) stated that the natural atmospheric balance has been upset by human activities such as burning of fossil fuels (Gas, Coal, Oil) for energy consumption, which are substantially increasing the atmospheric concentrations of heat absorbing greenhouse gases emitted during these processes. The most important amongst these emissions are water vapor, carbon dioxide, methane, nitrous oxide and sulphur dioxide which result in additional warming of the Earth Surface. Agwu and Irohibe (2013) reported that in Nigeria Climate Change would have wide- ranging effects on the environment and socio- economic and related sectors such as water resources, agriculture, food security, human health, terrestrial ecosystem and biodiversity. In the same vein, Ozor (2009) reported that

agricultural production in Nigeria is dependent on weather and climate, that agriculture contributes to about 40 % to Nigeria's Gross Domestic Product (GPD). Studies carried out by Agwu et al (2011), and Muthukumara, Anil and Viju (2008) have shown that impacts of climate change will be mostly felt by the most vulnerable of the society (Women, Children, the handicaps, and the poor). Similarly, Kandlinkar and Risbey (2000) reported that adaptation and mitigation have been widely recognized as vital components of any policy response to climate change, since they help agriculture and other human endeavors achieve sustainability in the face of changing climatic and socio-economic conditions. IPCC (2001) defined adaptation as adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects which moderate, harm, or exploit beneficial opportunities. In like manner, Agwu and Irohibe (2013) stated that adaptation is a process through which societies make themselves better able to cope with an uncertain future. Therefore, adaptation to climate change entails taking the right measures to reduce the negative effects of climate change (or exploit the positive ones) by making the appropriate adjustments and changes. IPCC (2007) defined mitigation of climate change as any human interventions aimed at reducing the sources or enhancing the sinks of greenhouse gases. Additionally, The United

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Nations Framework Convention on Climate Change (UNFCCC) (2003) observed that the effective climate change adaptation strategies will be in improved resilience of the hundreds of millions of people living in rural communities most vulnerable to the impacts of climate change. Therefore, the success in adaptation must be measured in terms of impact on ground at the local level. According to Oxfarm (2011) women's gendered roles make them more vulnerable to climate change but also better placed to figure out how to adapt. In continuation, they stated that rural women's livelihoods depend on natural resources and climate sensitive work, they hold valuable knowledge and expertise on their immediate environment, therefore that they are well positioned to develop strategies on how to adapt to climate change and mitigate its impacts on their communities and livelihoods. On the other hand, Obinna (2012) described Registered Women Cooperatives (RWC) as voluntary organization formed and operated along democratic lines for the purpose of supplying services at a minimum cost to their members who contribute both capital and business. In Umuahia North LGA of Abia state, government encouraged and assisted the formation and registration of the RWC as a means of empowering them. This is in line with the United Nations Development Programme (UNDP) (2004) which identified the crucial role of women in agriculture as a pre-requisite to addressing the food needs of a growing global population and therefore called on all member nations to empower women. Consequently, therefore the study sought to assess mitigation and adaptation strategies of RWC in Umuahia North LGA of Abia State, against the effects of climate change. The specific objectives were to;

- examine the socio-economic characteristics of the respondents ,
- determine the respondents' sources and level of information on climate change
- determine the respondents' perception of climate change, and its effects,
- identify adaptation and mitigation practices adopted to cope with the challenges of climate change,
- Identify factors that influence the mitigation and adaptation practices of the respondents and
- suggest measures to enhance their adaptation and mitigation strategies.

2. METHODOLOGY

The study was conducted in Umuahia North Local Government Area (LGA) Umuahia Agricultural Zone. of Abia State. It is one of the 17 LGAs that make up Abia state. The LGA is made up of 5 Agricultural Extension Blocks with 82 RWC (Obinna, 2012). The LGA is located at about latitude 5°.24' - 5°.30'N and longitude 7°.32' - 7°.32 E. It has a degraded tropical rainforest vegetation in the Southeast agro- ecological zone of Nigeria. The area is characterized by heavy precipitation of over 2,000mm per annum. Its regime is

bimodal, it peaks twice at July – August and October. Air temperature ranges from 21 to 31°C, while relative humidity ranges from 42 % in the dry months to over 80 % at the peak of rainfall. (Chukwu ,2013). The population of the study was all the RWC in Umuahia North LGA. A sample size of 180 respondents was drawn from this population through a multi- stage sampling technique. Primary data were generated through structured questionnaire and Focus Group Discussion (FGD). Data analysis involved descriptive statistics.

3. RESULTS AND DISCUSSION

3.1 Socio- economic Characteristics of the Respondents

Table 1 showed that 88.9 % of the respondents were married, while only 5.6 % were single. About, sixty seven percent of the respondents were within the age brackets of 27 – 55 years, only 5.6 % and 27.8 % respectively were within the age brackets 20 – 28 years and 56 – 73 years (Table 1). About eighty three percent of the respondents spent between 5 – 15 years in school, and 44.4 % and 38.9 % of the respondents were farmers and traders respectively, while 5.6 %, and 11.1 % were civil servants and others respectively. Table 1 equally showed that 88.8 % of the respondents had household size of 1 – 6 persons. Fifty percent of the respondents earned monthly income of between N10,000.00 – N15,000.00, while the other 50 % of the respondents earned between N16,000.00 and above. About, 66.6 % of the respondents had 5 – 19 years of farming experience, while 55.5 % had farm sizes ranging from 0.2 – 2 hectares of land (Table 1). Furthermore, Table 1 showed that 66.7 % of the respondents had held leadership positions.

3.2 Respondents' Sources of Information on Climate Change.

Table 2 showed that 33.3 %, 22.2 %, and 16.7 % of the respondents received information on climate change through radios, televisions and newspapers, respectively. Forty four percent of the respondents got information on climate change through cooperative societies. About 27.8 %, 33.3 %, 50 %, 22.2 % and 16.7 % of the respondents respectively got information on climate change through age- grades, churches, extension agents, neighbors, research institutes and others respectively (Table 1). The implication of the findings as confirmed through focus group discussions is that climate change is a very topical and current issues even within the rural dwellers of the study area.

3.3 Respondents' Perceived Effects of the Climate Change in the Study Area.

Table 3, showed that heavy flooding and erosion were perceived by the respondents as significant effects of climate change with mean score of 3.2. Table 3 equally, showed genetic erosion of some medicinal herbs from the forests, prolonged rainfalls, shift in planting dates, shift in harvesting dates, excessive heat and high humidity and high cost of food items in the study area

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were perceived by the respondents as significant effects of climate change with mean scores of 3.4, 3.2, 3.1 and 3.0 respectively. On the contrary, the respondents did not perceive prolonged drought, severe wind storm, increase in pest infestation and poor yield of crops as significant effects of climate change in the study area with mean scores of 1.9, 2.0, 2.3, and 2.4 respectively.

3.4 Respondent's Adaptation and Mitigation Practices Against Climate Change.

Table 4, showed that tree planting, cover cropping, diversification of livelihood activities, affiliation to other bodies, affiliation and registration to national bodies, other alternatives to firewood and coal in household cooking, mixed farming, alley farming and use of improved varieties were adopted by the respondents as mitigation and adaptation practices against the effects of climate change in the study area with mean scores of 3.3, 2.6, 3.4, 3.9, and 2.5 respectively. On the other hand, Table 4 equally showed that practices such as water harvesting, use of solar energy in the household, efficient use of inorganic fertilizers and bush clearing without burning before planting were not yet significant as practices adopted by the respondents against climate change in the study area with mean scores of 1.4, 1.6, 1.7, 2.1 and 2.2 respectively (Table 4).

3.5 Factors Influencing Adaptation and Mitigation Strategies in the Study Area.

Table 5 showed that 88.9 % of the respondents indicated lack of funds as limiting factors. Seventy seven percent of the respondents indicated cultural issues, (such as slashing and burning of farm lands), 91.7 % indicated lack of awareness, 94.4 % and 100 % of the respondents indicated lack of interest and lack of legislation respectively as factors that influence adaptation and mitigation practices in the study area (Table 5).

4. CONCLUSION AND RECOMMENDATIONS

The study showed that very high proportion (88.9 %) of the respondents were married. About 66.7 % were within the age brackets of 27 – 55 years and 83.3 % spent between 5 – 15 years in school. The study also showed that 44.4 % and 38.9 % of the respondents were farmers and traders respectively. A very high proportion (72.2 %) of the respondents had their sources of information on climate change through the media. About 44.4 % and 50 % of the respondents got their information on climate change through cooperative societies and extension agents respectively. The study equally showed that the respondents perceived the effects of climate change in the study area through heavy flooding and erosion, gradual disappearance of some medicinal herbs from the forests, prolonged rains, shifting in planting dates, shifting in harvesting dates, excessive heat and humidity and high cost of food items respectively. Lack of funds, cultural issues, lack of awareness, lack of interest and lack of legislation in the study area were

factors indicated by the respondents both through structured questionnaire and FGD as limiting adaptation and mitigation practices in the study area. The study recommends that Governments and other stakeholders in the champagne on climate change should increase intensity in the awareness creation. Additionally, laws on adaptation and mitigation against climate change should be enacted and finally, women should be empowered by being well educated and armed against the negative effects of climate change since they are experts in home management and natural resources.

REFERENCES

- [1] Agwu, E. A and Irohibe, J. I. (2013) Agricultural Extension services and Climate Change Adaptation and Mitigation in Nigeria In; Agricultural Extension and Rural Development promoting indigenous knowledge. Eds. Ike Nwachukwu Lamb House Publicatbia Umuahia, Abia State, Nigeria.
- [2] Agwu, E. A.; Egbule, C. L. ; Amadu, F. O.; Morlai, T. A.; Wollor, E. T. and Cegbe, L. W. (2011): Agricultural Innovations for climate change Adaptation and Food security in West Africa; The case of Nigeria, Sierra Leone, and Liberia. ATPS Research paper series No.12.
- [3] Chukwu, O. G. (2013) Soil survey and classification of Ikwuano Abia State, Nigeria. *Journal of Environmental Science and Water Resources* Vol.2(5). Pp 150 – 156, June 2013. ISSN 2277 – 0704 2013 Wudpecker Journals.
- [4] Intergovernmental Panel of Climate Change (IPCC) (2001); *The Science of Climate Change*. Cambridge University Press.
- [5] Intergovernmental Panel of Climate Change (IPCC) (2007) *Fourth Assessment Report . IPCC Secretariat, Geneva, Switzerland*.
- [6] Kandlinkar, M and Risbey, I. (2000) . *Agricultural Impacts of Climate Change; If adaptation is the answer, what is the question?* *Climate Change* 42, 52739.
- [7] Muthukumara, M. , Anil, M., and Viju, I. (2008). *Climate Change: Adaptation and Mitigation in Development Programmes. A practical Guide*.
- [8] Obinna, L. O. (2012) *Comparative analysis of the contributions of Women Cooperatives and Non-cooperative Women Associations in Abia State, Nigeria. A Ph.D dissertation presented to the department of Rural Sociology and Extension Michael Okpara University of Agriculture , Umudike Abia State, Nigeria*.

<http://www.ejournalofscience.org>

- [9] Oxfarm Canada Fact Sheet (2011); Agriculture and Climate Change/Women's right to Food; June, 2011. Pp 1-4
- [10] Ozor, N. (2009). Implication of climate change on national development: The way forward: In Enugu forum policy paper No. 10 (AIAE).
- [11] United Nations Development Programme (UNDP) (2004) World Development Report, Oxford Press, NewYork.
- [12] United Nations Framework Convention on Climate Change (UNFCCC) (2003). Nigeria's First National Communication Strategy Abuja, Nigeria. UNFCCC, UN's office, New York.
- [13] United Nations (UN) (2002) World Survey on the Role of Women in Agriculture and Development, Published by Department of International Social Affairs, pp 12.

Table 1: Distribution of the Respondents According To Other Socio-Economic Characteristics (N = 180)

	Variables	Frequency	Percentage (%)
01	Marital Status		
	Single	10	5.6
	Married	160	88.9
	Widowed	5	2.8
	Divorced/separated	5	2.8
02	Age in years		
	20 – 28	10	5.6
	29 – 37	30	16.7
	38 – 46	40	22.2
	47 – 55	50	27.8
	56 – 64	40	22.2
	65 – 73	10	5.6
03	Years of schooling in years		
	< 5	6	3.3
	5 – 10	80	44.4
	11 – 15	70	38.9
	16 – 25	4	2.2
04	Primary occupations		
	Farming	80	44.4
	Trading	70	38.9
	Civil servants	10	5.6
	Others	20	11.1
05	Household size (No of persons per household)		
	1 – 3	80	44.4
	4 – 6	80	44.4
	7 – 9	15	8.3
	10 and above	5	2.8
06	Monthly income in naira		
	₦ 10,000.00 – 15,000.00	90	50.0
	16,000.00 – 21,000.00	70	38.9
	22,000.00 – 27,000.00	15	8.3
	28,000.00 and above	5	2.8
07	Years of farming experience in years		
	2 – 4	10	5.6
	5 – 7	40	22.2
	8 – 10	80	44.4
	11 – 12	40	22.2
	13 and above	10	5.6
08	Farm size in hectare		
	< 0.2	70	38.9
	0.2 – 1	60	33.3
	1.2 – 2	40	22.2
	2.2 – 3	10	5.6
09	Leadership positions		

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	Yes	120	66.7
	No	60	33.3

Source: field survey 2013

Table 2: Distribution of the Respondents According to their Sources of Information on Climate Change

Sources	* Frequency	Percentage (%)
Radio	60	33.3
Televisions	40	22.2
Newspaper	30	16.7
Cooperatives	80	44.4
Age-grades	50	27.8
churches	60	33.3
Extension agents	90	50.0
neighbors	60	33.3
Research institute	40	22.2
Other discussions	30	16.7

* Multiple responses recorded.

Source: field survey 2013

Table 3: Discussion of the Respondent's According to their Perceived Effects of Climate Change

Perceived Effects	4 High	3 Moderate	2 Normal	1 Low	Mem R
Heavy flood/erosion	70	80	20	10	3.25
Prolonged drought	-	40	100	40	2.0w/s
Gradual disappearance of some medical herbs	80	50	50	-	3.2s
Prolonged rains	90	80	10	-	3.45
Shift in planting dates	80	60	30	10	3.15
Shift in harvesting dates	70	60	40	10	3.05
Excessive heat and high humidity	100	60	15	5	3.45
Severe windstorm	-	80	70	30	2.3 rs
Increase in pest infestation	-	100	60	20	2.4 N/s
Poor yield of crops	20	30	56	80	1.9n/s
High cost of food items	120	60	-	-	3.4 s

Source: Field Survey 2013.

Decision rule: Any mean score that is ≥ 2.5 is regarded to be significant and any mean score that is < 2.5 is regarded not significant.

Table 4: Distribution of the Respondent According to their Adaptation/Mitigation Practices against Climate Change

Practices	4 V/M/A	3 A	N/V/M/A	N/A	Mean	Remark
Tree planting	90	60	20	10	3.3	S
Cover cropping	80	80	20	-	3.3	S
Diversification of livelihood activities	100	60	15	5	3.45	S
Riffiliation to other bodies	-	100	80	-	2.6	S
Affiliation and registration to national bodies	-	100	80	-	2.6	S
Rain water harvest	-	20	60	100	1.6	N/S
Use of solar-energy in the household	-	-	80	100	1.4	N/S
Economic use of energy	-	60	80	40	2.2	N/S
Efficient use of inorganic fertilizer	20	40	80	40	2.2	N/S
Bush clearing without burning before planting	5	25	60	90	1.7	N/S

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Use of improved variables	50	80	30	20	2.95	S
Mixed farming	90	70	20	-	3.9	S
Alley farming	30	50	60	20	2.5	S

* V/M/A = Very Much adopted scored 4 pts.

* A = Adopted scored 3 pts.

* W/V/M/A = not very much adopted scored 2 pts.

* N/A = not adopted scored 1 pt.

Decision rule: any mean score that is ≥ 2.5 is regarded as significant and any mean score < 2.5 is regarded as not significant.

Table 5: Distribution of the Respondents According to Factors that Influence Adaptation/Mitigation Strategies

N = 180

Factors	Frequency	Percentage
Lack of funds	160	88.9
Cultural issues	140	77.8
Lack of awareness	165	91.7
Lack of interests	170	94.4
Lack of legislation	180	100.0

Source: field Survey 2013.