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The Role of Women and their Empowerment Options in Household and Community-Based Climate Change Adaptation and Disaster Risks Reduction in the Niger Delta Region, Nigeria

Godwin O. Atedhor*, Andrew G. Onokerhoraye & Verere S. Balogun
Department of Geography and Regional Planning, University of Benin, Benin City, Nigeria.

*Corresponding author: godwin.atedhor@uniben.edu, https://orcid.org/0000-0003-3004-818X

Abstract

This paper examined the role of women and their capacity building options in climate change adaptation and disaster risks reduction at the household and community levels in the ecological zones of the Niger Delta region of Nigeria using Delta State as a case study. Data were collected using structured questionnaire in three selected Local Government Areas (LGAs) each from Mangrove Swamps, Freshwater Swamps and Lowland Rainforest. A total of 400 and 1200 respondents were randomly selected per LGA and ecological zone respectively. Data were analyzed using percentage. Findings revealed that dietary management, proper child care system and augmenting family income constituted important roles women play in household climate change adaptation and disaster risks reduction while mobilization, of women, educating other women/young girls and acting as change agents were key roles of women at the community level. While access to farm inputs, climate information, and training were key empowerment options for women to play leadership role in household climate change adaptation and disaster risks reduction, exposure to training, engaging women as trainers and mentoring were among key empowerment options for building leadership capacity of women at the community stratum. The paper concluded that the role of women and their empowerment options in household and community-based climate change and disaster risks reduction were largely the same in the study ecological zones. The study, therefore, recommended prioritization of identified key empowerment options toward building the capacity of women as significant stakeholders in climate change adaptation and disaster risks reduction in the Niger Delta region of Nigeria.

Keywords: Climate change, Adaptation, Disaster risks, Women, Ecological zones, Niger Delta

Introduction

In the absence of critical interventions, the impacts of climate change in Nigeria could worsen in the future (Federal Government of Nigeria, 2020). Proper management of disaster and climate risk is a vital component for risk-informed viable development (Habtezion, 2016). Women are generally considered as being more susceptible to the adverse impacts of climate change largely because they make-up the largest proportion of the poor and are more reliant on natural resources for livelihoods which are endangered by climate change (Cannon, 2002; Denton, 2002; UN Women Watch, 2009; Djoudi

& Brockhaus, 2011; Rao et al., 2017; Tanjeela & Rutherford, 2018; Balikoowa et al., 2018; Chineka et al., 2019; Onwutebe, 2019; Andrijevic et al., 2020). There is increasing call for gender mainstreaming in climate change adaptation in terms of the regulation of access, use and control of resources, particularly as it relates to land distribution, division of labour and the right to make decision (Forino et al., 2015; Jerneck, 2018; Paudyal *et al*. 2019; Resurrección *et al*. 2019; Chanana-Nag & Aggarwal, 2020). Male responses to climate change and disaster risks such as outmigration have been appraised as further complicating the vulnerability status of the women folks as they are now compelled to take up tasks that were undertaken by the male folks (Djoudi & Brockhaus, 2011; Nizami & Ali, 2017). Thus, increasing involvement of women in livelihoods such as small-scale and rain-fed agriculture renders them particularly susceptible to climate-linked harms more than their men counterparts (Onwutuebe, 2019). Furthermore, the responsibility of women as caregivers aggravates their prevailing dilemmas (Sultana, 2014). Studies have shown that female-headed family units have the lowest adaptive capacities to climate change (Rusmadi et al., 2018; Alhassan et al., 2019).

Disaster risk is conceptualized as possible loss of lives, worsening of health condition and source of living, and probable destruction to resources and services as a result of the effect of existing natural hazard (Tuladhar et al., 2015). There appears to be a consensus that climate change will increase the frequency and magnitude of disasters such as floods, erosion drought and cyclones among others, which stimulate community-based coping strategies. Thus, disaster reduction management now integrates climate change adaptation to the concepts of disaster risk management and disaster risk reduction (Zwi et al., 2013). The impacts of climate change are reported to be more significant at the household and community levels in the form of extreme events which adversely affect livelihoods and individuals (Cutter et al., 2012; Shaw et al., 2015). Poor communities ravaged by climate change-related disasters are bedeviled by little reserves, lack of insurance, savings, or adequate social welfare arrangements to adapt to emerging events (Dankelman, 2002). The low-lying topographical nature of the Niger Delta region makes it increasingly susceptible to climate change-induced adverse environmental conditions such as flooding and salt water incursion. The frequency and magnitude of climate change extreme events and their disastrous impacts in the region have continued to generate responses from diverse stakeholder, including household and community efforts. However, the need to strengthen the resilience of households and communities has been advocated for enhanced management of disaster risks (Rãsãnen et al., 2020). One vital feature of climate change and disaster risks reduction is to incorporate the views of those that are neglected in disaster times, together with those of women, particularly those from disadvantaged areas, and gender marginal clusters (Sorenson et al., 2018; United Nations Environment Programme, UNEP, 2019). Cultural barriers relating to measures women can use to arm themselves during disasters increase the mortality rates of females compared to their male counterparts (Sultana, 2014). Thus, gender-specific barriers that hinder women's capacity to manage and adapt to climate change must be eliminated to the mutual benefits of gender fairness and adaptation efficiency (Terry, 2009). It is therefore essential to identify the roles, responsibilities, limitations, and chances of women in climate change mitigation or adaptation strategies (Sultana, 2014), being that they are more vulnerable to the impacts of climate change (Riviwanto & Basuki, 2019).

Despite intervention programmes such as Territorial Approach to Climate Change (TACC) which covered biogas, solar water heating and water filter (R20 Regions of Climate Action, 2015); there remains disparity in the drivers of vulnerability to climate change and disaster risks among the ecological zones of the Niger Delta region. Arising from the varied stressors are household and community-based adaptation initiatives to climate change adaptation and disaster risks reduction. Although climate change adaptation and disaster studies have been carried in Niger Delta region, studies on the role of women and their empowerment options at the strata of household and community on the basis of ecological subdivisions remain scarce. This paper therefore, examines the roles of women and their empowerment options in climate change

adaptation and disaster risks reduction at the household and community levels in the ecological zones of the Niger Delta region using Delta State as a case study. We believe that the outcomes of this study will be useful for planning ecological zone-specific interventions toward enhanced women involvement in climate change adaptation and disaster risks reduction at the household community levels in the Niger Delta region.

Methods

The study area

The study covers the Mangrove Swamps Forest, Freshwater Swamps Forest and Lowland Rainforest which constitute the three major ecological zones in Delta State (Figure 1). These ecological belts replicate the ecological belts in the Niger Delta region of Nigeria. The region is geographically Africa's largest wetland (Ikelegbe & Umukoro, 2016) and the third largest in the world (Omuta, 2014). The Mangrove Swamp Forest which is characteristically saline owing to its proximity to the Atlantic Ocean is endowed with aquatic and terrestrial biodiversity and it is significant as a stabilizing ecological system and a source of livelihood, especially to the rural populace (Arabomen et al. 2016). Specifically, it offers ecological services, such as fish, flood prevention, erosion prevention, water regulation, and timber products (Feka & Ajonina, 2011). *Rhizophora species*, *Avicennia africana, Laguncularia racemosa* are among the major species in the region (Oboho, 2014; Arabomen *et al*. 2016). Further inland is the Freshwater Swamps Forest which occur in seasonally and permanently waterlogged soils (Igu et al. 2020). Common species include *Musanga cecropioides, Annona senegalensis, Anthocliesta vogelii, Raphia hookeri, and R. vinifera*. The Lowland Rainforest is a complex ecological zone with common species such as *Khaya ivorensis, Entandophragma cylindricum, Entandrophragma angolense, Lovoa trichilioides, Milicia excelsa* (Izah, 2018). These forests ecosystems in the Niger Delta region where the study area is located are being threatened by anthropogenic factors (Adekanmbi & Ogundipe, 2009; Jimoh et al. 2013; Izah, 2018). The wet season lasts from mid-March to October/November with annual rainfall amount ranging from above 2000 mm in the Mangrove Swamps Forest to about 1500 mm in the northward limits of the Lowland Rainforest with the Southern Guinea Savanna while mean temperature is approximately 27 ^{o}C to 28 ^{o}C (Atedhor & John-Abebe, 2017). Elevation varies but largely less than 100 m above sea level in the Mangrove and Freshwater Swamps Forests. The Freshwater Swamps Forest and Mangrove Swamps Forest are rich in crude oil and natural gas reserve. Ironically, a large proportion of the people is poor and depends on environment-based (farming, fishing, hunting). These two ecological zones are fraught with environmental degradations driven by gas flaring, oil spill, deforestation (Eregha & Irughe, 2009; Ugboma, 2015) which make them ecologically fragile and vulnerable to the impacts of climate change (Nzeadibe et al. 2012).

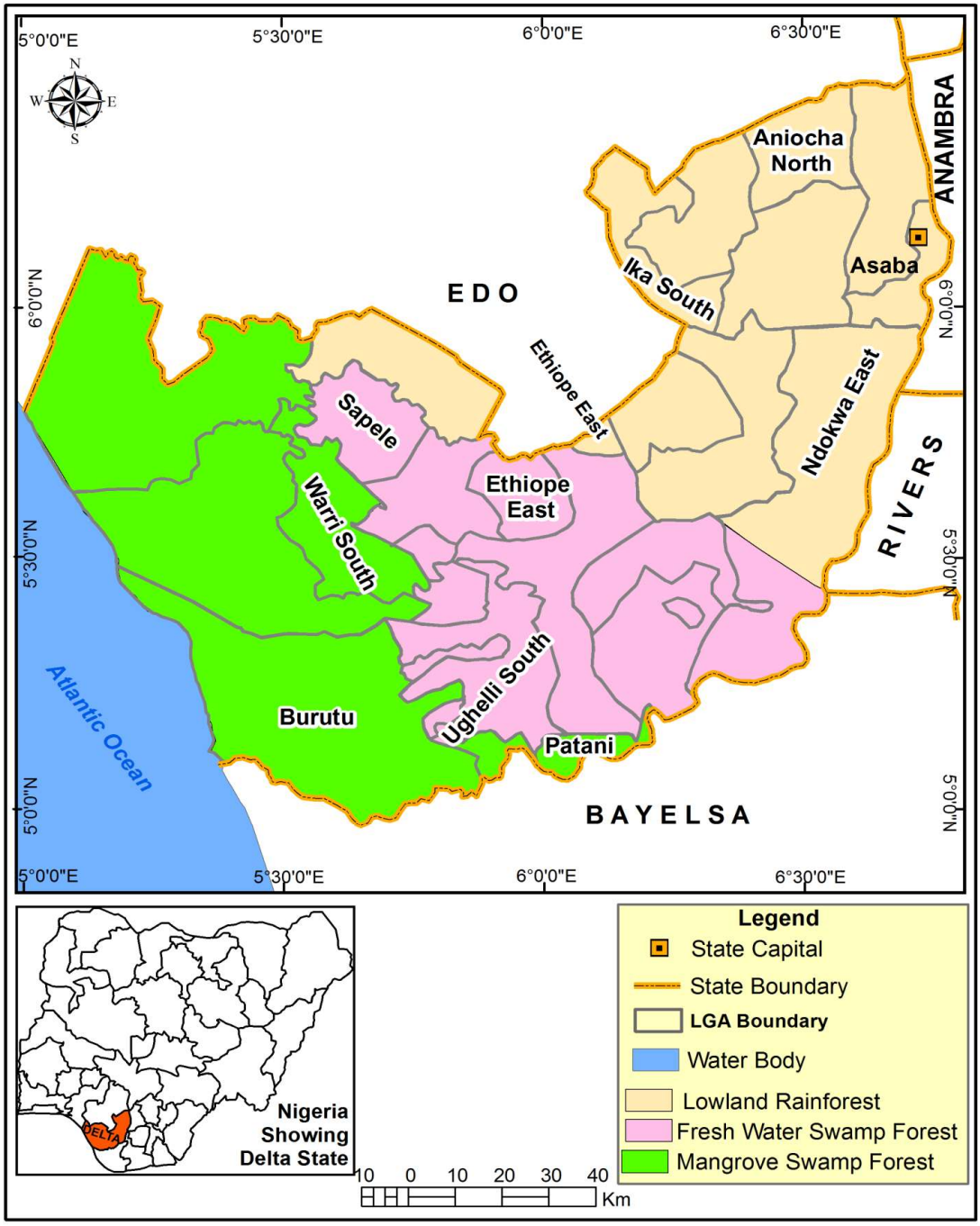

Figure 1: Major ecological zones in Delta State, Nigeria

Data collection

A set of structured questionnaires was used to collect data on the role of women and their empowerment options in climate change adaptation and disaster risks reduction in the ecological zones at the household and community levels. Women in this study are conceptualized as female humans of childbearing age. Environmental factors influence livelihoods, climate change adaptation and disaster risks reduction strategies. Thus, out of the twenty-five (25) Local Government Areas (LGAs) in Delta State, three (3) LGAs were each selected from the Mangrove Swamps Forest (Burutu, Patani and Warri South), Freshwater Swamps Forest (Ethiope East, Sapele and Ughelli South) and Lowland Rainforest (Aniocha North, Ika South and Ndokwa East) for equal representation. There

is an average of 20 political wards per LGA in Delta State out of ten (10) political wards were randomly selected per LGA to ensure that every part of the LGAs have equal chance of being included in the study. Each political ward was demarcated into blocks of 10 housing units to ensure that individual in all parts of the ward have equal chance of being selected because there are no reliable and up-to-date household listings in different parts of Nigeria, particularly in the rural communities. On the basis of the block of housing demarcation, forty (40) respondents were randomly selected per socio-economic and political ward. Male and female respondents were selected in this study. Male respondents were included in this study to eliminate undue bias. We believe that including male respondents could add credence to the outcomes of this study. More so, recognizing, involving and endorsing women's peculiar capabilities in adaptation and disaster risks reduction would permit policymakers to adopt policies that promote resilience in societies while similarly alleviating gender inequality (Habtezion, 2016). Thus, 400 respondents comprising male and female respondents were selected per LGA while a total of 1200 respondents (400 respondents x 3 LGAs) were selected per ecological zone. Therefore, in all, a total of 3,600 respondents; representing three ecological zones were used in this study.

Data Analysis

Data were analyzed on the basis of ecological zones for comparison. This approach was used because livelihood strategies are largely driven by the unique characteristics of each of the ecological zones. Percentage was used to analyze the variation in the responses.

Results and Discussion

Demographic and Economic Characteristics of the Respondents

The demographic and socio-economic characteristics of the selected respondents are presented in Tables 1 and 2. Household heads were relatively higher than other members of the household among the selected respondents in the three ecological zones. The distribution of respondents within the age bracket of 41-60 years was relatively higher in the three ecological zones. While females were higher among the selected respondents in the Freshwater Swamps and Mangrove Swamps forests, males were higher in the Lowland Rainforest. Majority of the participants in the in the three ecological zones are married while a large proportion of them have secondary education. Socio-cultural and socio-economic factors have been identified as some of the barriers that limit disaster risk reduction (Hamachandra et al. 2018). Climate change has varied impacts not just on diverse regions but among diverse population clusters (Haider, 2019). The understanding of climate change by farmers is connected with socio-cultural and socio-economic features in the Niger-Delta (Nzeadibe et al. 2012).

Table 1: Demographic characteristics of the respondents (%)

	Lowland Rainforest	Freshwater Swamps Forest	Mangrove Swamps Forest
	Household status		
Household head	57.4	53.4	55.2
Other members of the household	42.6	46.6	44.8
Total	100.0	100.0	100.0
	Age groups (years)		
18-40	36.1	29.8	37.2
41-60	49.1	54.9	43.4
61 and above	14.8	15.3	19.4
Total	100.0	100.0	100.0
	Sex		
Male	51.1	39.7	45.9
Female	48.9	60.3	54.1
Total	100.0	100.0	100.0
	Marital status		
Single	7.3	8.9	13.0
Married	84.9	74.7	71.5
Widowed	4.0	12.4	11.0
Separated	3.8	4.0	4.5
Total	100.0	100.0	100.0
	Educational attainment		
No formal education	11.1	17.5	9.0
Primary	18.6	31.1	18.4
Secondary	55.3	37.7	36.5
Tertiary	25.0	13.6	36.1
Total	100.0	100.0	100.0

Approximately 52%, 81% and 50% of the sampled respondents engage in farming in the Lowland Rainforest, Freshwater Swamps Forest, and Mangrove Swamps Forest respectively. The scarcity of arable land in the Mangrove Swamps Forest due to the coastal nature of the terrain may have accounted for the relatively lower percentage of respondents who engage in farming *vis-a-vis* the other ecological zones. Our analysis shows that over 70% of the selected respondents have engaged in their main occupation for up to 10 years and above in in the three ecological zones. This makes their knowledge of climate change and disaster risks reliable. Besides, in Africa, small-scale farmers constitute the greatest proportion of the farming population (Frimpong *et al*. 2015). A higher proportion of the selected respondents engage in both subsistence and commercial agricultural activities in three ecological zones. While a higher percentage of the selected respondents earn above N20, 000.00 ($48.16) monthly income in the Mangrove Swamps Forest, higher percentage proportion of the selected respondents falls within ₦10, 000.00-20,000.00 monthly income in the Lowland Rainforest and Fresh Water Swamps Forest.

Table 2: Economic characteristics of the respondents (%)

	Lowland Rainforest	Freshwater Swamps Forest	Mangrove Swamps Forest
Main occupation of respondent			
Farming	51.9	81.1	46.9
Trading	28.4	12.0	26.3
Public sector	7.8	3.7	15.0
Private sector	11.9	3.2	11.8
Total	100.0	100.0	100.0
Number of years respondents have been in their main occupation			
Less than 10	23.9	23.2	28.6
10 – 20	46.1	49.9	36.1
Above 20 years	30.0	26.9	35.3
Total	100.0	100.0	100.0
Type of agricultural activities			
Subsistence	43.4	22.4	38.2
Commercial	3.9	5.8	9.4
Both subsistence and commercial	52.7	71.9	52.4
Total	100.0	100.0	100.0
Average monthly income group of respondents (N)			
Less than 10,000	19.5	18.7	22.0
10,000 – 20,000	49.0	41.7	28.0
Above 20,000	31.5	39.6	50.0
Total	100.0	100.0	100.0

Role Women Play in Household Climate Change Adaptation and Disaster Risks Reduction

The role women play in climate change adaptation and disaster risks reduction in the study area are presented in Table 3. The results showed that a combination of household dietary management, proper child care system and augmenting family income ranks highest accounting for approximately 69%, 51% and 62% in the Lowland Rainforest, Freshwater Swamps and Mangrove Swamps respectively. The choice of household dietary management, proper child system and augmenting family income reflect the susceptibility of the ecological zones to climate change and its related disasters such as floods, ecological degradation, sea level rise, which threaten food security with children and women particularly hit. Specifically, while the three ecological zones are frequently ravaged by floods owing to their location in the low-lying Niger Delta region, the Mangrove Swamps is fraught with sea level rise and coastal erosion. Furthermore, the lower course of River Niger, which is the most prominent river in Nigeria, falls within the Freshwater Swamps and Mangrove Swamps. Characteristically, the river is braided in the area which makes flood incidences to be widespread. Awareness creation is another important role women play in household climate change and disaster risks reduction in the three ecological zones. Agriculture constitutes the primary livelihood in rural communities in the Niger Delta region and elsewhere in Nigeria. The challenging and unsustainable state of agriculture in the region, especially in Freshwater Swamps and Mangrove Swamps, have forced many farmers to embrace livelihood diversification. Non-farm livelihoods such as petty trading, taking up of part-time jobs, artisanship, *inter alia*, flourish in the three ecological zones (Onwuemele, 2015). Women now engage in livelihood activities that were hitherto exclusively engaged in by males. For instance, women now take up brick-making, mason jobs and local gin making in order to augment their dwindling agricultural income. Key among the role women play in climate change adaptation and disaster risks reduction initiatives, is awareness creation. The fairly high percentage responses for awareness creation as role women can plan in climate change adaptation and disaster risks reduction could be ascribed to the predominant engagement of women in primary

livelihoods and prevalent gendered roles in the regions.

Table 3: Role women play in climate change adaptation and disaster risks reduction at the household level (%)

Roles	Lowland Rainforest	Freshwater Swamps Forest	Mangrove Swamps Forest
Household dietary management	2.2	3.7	4.1
Proper child care system	2.5	4.9	3.2
Augmenting family income	1.7	4.9	3.4
Conservation of water resources	0.3	1.0	1.3
Conservation of soil resources	0.0	0.5	1.3
Conservation of forest resources	0.3	0.6	0.1
Energy management	0.0	0.8	1.0
Creating awareness	17.3	17.7	11.1
Advocacy	0.3	0.4	0.3
Household dietary management, proper child care system and augmenting family income	68.6	51.2	61.6
Conservation of water resources, soil resources, forest resources and energy management	2.1	3.3	3.8
Creating awareness and advocacy	4.8	11.0	8.7
Total	100.0	100.0	100.0

Leadership Role of Women in Promoting Community-Based Climate Change Adaptation and Disaster Risks Reduction

The leadership roles women can play in promoting community-based climate change adaptation and disaster risks reduction are presented in Table 4. The analysis shows that a combination of women mobilization, educating other women/young girls, and acting as change agents ranked highest in the three ecological zones. Climate change indirectly aggravates poverty and health challenges (Shaw *et al*., 2015). As in the entire Niger Delta region, the ecological zones are ravaged by environmental degradations which include escalating deforestation, oil spill and loss of biodiversity (Eregha & Irughe, 2009; Ugboma, 2015). The implication is that the already fragile ecological zones are increasingly becoming unsustainable owing to dwindling natural resources. The reliance of several African communities on the extraction of natural resources has frequently prompted aggressive clashes as contending clusters struggle for control of diminishing resources (Enaruvbe et al., 2019).

Table 4: Leadership roles women can play in promoting community-based climate change adaptation and disaster risks reduction (%)

Roles	Lowland Rainforest	Freshwater Swamps Forest	Mangrove Swamps Forest
Women mobilization	4.5	7.5	5.4
Educating other women/ young girls	6.6	8.2	6.4
Act as change agents	0.0	0.3	0.8
Mentoring other women	1.5	2.1	2.7
Awareness creation	2.1	9.5	6.1
Climate change advocacy	0.3	0.6	0.3
Getting involved in climate change action	0.8	1.2	1.6
Women mobilization and educating other women/ young girls	21.1	30.3	22.1
Act as change agents and mentoring other women	0.9	2.9	1.2
Women mobilization, educating other women/ young girls, and act as change agents	48.3	20.3	27.1
Awareness creation, climate change advocacy and getting involved in climate change action	13.8	17.2	26.4
Total	100.0	100.0	100.0

Empowerment Options for Women to Play Leadership Roles in Climate Change Adaptation and Disaster Risks Reduction at the Household Level

Empowerment options that can aid women to strategic roles in climate change adaptation and disaster risks reduction at the household level in the three ecological zones are presented in Table 5. Our analysis shows that a combination of access to farm inputs, climate information and training constitutes the highest percentage empowerment option for women to play key roles in household climate change adaptation and disaster risks reduction at approximately 58%, 42% and 64% in the Lowland Rainforest, Freshwater Swamps and Mangrove Swamps respectively. The high distribution of women who need access to farm inputs and climate information and training substantiates the fact that majority of the women engage in agricultural livelihoods as it is most parts of sub-Saharan Africa. The result corroborates Hemachandra *et al.* (2018) argument that the role of women in disaster risks reduction is limited by multiple factors. The frequent incidence of floods in the Niger Delta often leads to destruction of farmlands. The flood incidences impoverish farmers which consequently makes farm inputs such as fertilizers, seedlings in the succeeding years to be unaffordable. Climate change information is crucial to women in making informed decisions such as timely scheduling farming activities and disaster preparedness. Climate change alters events in an ecological zone. It is therefore desirable that trainings are organized for women in order to enhance their adaptive capacity. Such trainings should cover efficient use of diminishing resources. Specifically, women need training on what to plant, how to plant and best storage practices. A combination of access to alternative sources of renewable energy, climate-smart agriculture tools, land and credit ranks second among the empowerment options for women to play key roles in climate change adaptation and disaster risks reduction in the ecological zones. The susceptibility of women may be aggravated by traditional responsibilities that limit them from building understanding and skillfulness that would equip them to rescue lives and reduce disaster damages (Turnbull et al. 2013). Also, traditional customs and institutional hindrances can obstruct mainstreaming of women as well as additional gender marginal groups in community-based disaster risks reduction initiatives (UNEP, 2019). As earlier noted, women makeup approximately 80 per cent of the farming segment in Africa and they remain susceptible and underprivileged (Denton, 2002). Yet, women are marginalized in decision-making at all strata and their plights are usually not incorporated into preparation for adaptation (Habtezion, 2012).

Equipping women as mentors, caregivers, custodians of knowledge, and driving force of societal change can enhance mitigation and adaptation policy programmes (Sorenson et al. 2018). Also important among the empowerment option for women in climate change adaptation and disaster risks reduction are access to alternative sources of renewable energy, climate-smart agriculture tools, land and credit. Although some intervention programmes have been initiated in the Niger Delta region such as the provision of solar powered boreholes and biogas digester toward enhancing climate change mitigation and adaptation in some communities (R20 Regions of Climate Action, 2019), the top-down approach is often adopted coupled with low coverage. A major disadvantage of top-down approach to climate change adaptation and disaster risks reduction initiatives is poor prioritization of the needs of women arising from neglect of place-specific needs of women. To achieve this, better consideration of gender-related dimensions is pivotal to improving the efficiency of climate change strategies (Alam et al. 2015; Ravera *et al*. 2016). This is in line with the international adoption of Sustainable Development Goals (SDGs) on gender fairness as an issue of human rights and self-esteem as enshrined in SDG 5 (Habtezion, 2016).

Table 5: Empowerment options for women to play leadership roles in climate change adaptation and disaster risks reduction at the household level (%)

Empowerment Options	Lowland Rainforest	Freshwater Swamps Forest	Mangrove Swamps Forest
Access to farm inputs	0.9	1.3	1.7
Access to climate information	2.1	8.4	4.3
Access to training	2.7	3.4	7.5
Access to irrigation	0.1	0.1	0.6
Access to drainage	0.0	0.7	1.0
Access to extension services	0.4	0.1	2.3
Access to alternative sources of renewable energy	0.1	0.2	0.3
Provision of climate-smart agriculture tools	0.2	1.7	1.0
Access to land	0.3	0.3	0.3
Access to credit	6.1	10.6	2.7
Freedom from traditional and cultural barriers	0.8	0.6	1.9
Access to farm inputs, climate information, and training	58.1	41.6	63.6
Access to irrigation, drainage and extension services	2.2	2.5	2.6
Access to alternative sources of renewable energy, climate-smart agriculture tools, land and credit	26.2	28.6	10.1
Total	100.0	100.0	100.0

Ways of Building the Capacity of Women to Play Leadership Roles in Promoting Community-Based Climate Change Adaptation and Risks Reduction

The percentage distribution of the selected respondents on ways of building women's capacity to take leadership roles in promoting community-based climate change adaptation and risks reduction on basis of ecological zones is presented in Table 6. Our analysis shows that a blend of exposure to training, engaging women as trainers and mentoring ranks highest at approximately 61% and 45% in the Lowland

Rainforest and Mangrove Swamps Forest respectively while encouraging girl child education and improving access to credit facilities ranks highest in Freshwater Swamps Forest at approximately 28%. A combination of exposure to training, engaging women as trainers and mentoring also ranks high in the Freshwater Swamps Forest appears important. The need for training highlights advocacy for provision of education for disaster risk management to the susceptible clusters (Karim & Thiel, 2017). Specifically, Onyeneke et al. (2019) have argued that extension, credit, training, among others; enhance climate change adaptation of fish farmers in the Niger Delta region.

Table 6: Ways of building women's capacity to take leadership roles in promoting community-based climate change adaptation and risks reduction

Capacity building options	Lowland Rainforest	Freshwater Swamps Forest	Mangrove Swamps Forest
Exposure to training	6.2	3.0	13.2
Engaging women as trainers	1.5	8.0	3.0
Mentoring	0.3	0.8	0.7
Encouraging girl child education	1.3	5.2	4.4
Improving access to credit facilities	0.8	3.8	0.8
Exposure to training and engaging women as trainers	11.3	11.7	11.3
Mentoring and encouraging girl child education	1.4	2.7	2.8
Exposure to training and improving access to credit facilities	7.6	10.7	8.4
Exposure to training, engaging women as trainers and mentoring	61.0	26.4	44.5
Encouraging girl child education and improving access to credit facilities	8.7	27.6	10.9
Total	100.0	100.0	100.0

Despite national climate change initiatives such as Nigeria's National Adaptation Strategy and Plan of Action on Climate Change (NASPA-CCN), National Climate Change Policy Response and Strategy (NCCPRS) and Nigeria's National Adaptation Plan Framework (NAP), prioritizing the key the roles of women and their empowerment options identified in this study could enhance their capacity as stakeholders in household and community-based climate change and disaster risks reduction in ecological zones of the Niger Delta region. This could provide bases for developing effective policy intervention for enhanced climate change and disasters resilience in the Niger Delta region.

Conclusion and Recommendations

This study interrogated the roles of women and their capacity building options in household and community-based climate change adaptation and disaster risks reduction at the in the ecological zones of Niger Delta region. The results reveal that while a combination of household dietary management, proper childcare system and augmenting family income are more significant among the roles of women in household climate change adaptation and disaster risks reduction, women mobilization, educating other women/young girls, and act as change agents constitute the leadership roles women play in community-based climate change adaptation and disaster risks reduction in the ecological zones.

The empowerment options for women in household and community-based climate change adaptation and disaster risks reduction vary among the ecological zones. A blend of access to farm inputs, climate information, and training being constitutes the most important empowerment options for women in household climate change and disaster risks reduction in the ecological zones. While a combination of exposure to training, engaging women as trainers and mentoring are among important empowerment options for women in community-based climate change adaptation and disaster risks reduction in the ecological zones. The paper concludes that the role of women and their capacity building options are largely the same in the ecological zones of the Niger Delta region. We recommend prioritization of the key empowerment options toward building the capacity of women as vital stakeholders in household and community-based climate change adaptation and disaster risks reduction in the Niger Delta region.

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