ORIGINAL RESEARCH ARTICLE

Climate change and climate justice: procedural gender analysis in redd+ piloted site, South-South, Nigeria

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ABSTRACT

Climate change adaptation plan has been marred with assertion that genders are not treated equally both in designing and implementation which have been eventually the cog in the wheel of progress of many developmental programmes in forest-based communities such as REDD+ (Reducing Emissions from Deforestation and Forest Degradation). This assertion has however not been "perceptionally" proven aside from the general vulnerability-gender relationships. This study used both quantitative and qualitative methods of data collection. Primary data was collected with the aid of questionnaire from 200 respondents (male and female category) randomly selected within six purposive UN-REDD+ piloted villages according to Cochran formula in South-South, Nigeria. Sixteen perceptional statements were developed with Likert scale rating along categorical variables such as participation, decision making, recognition and inclusion, forest resources management as well as village institution composition to assess and explain different factors militating against procedural component of climate justice (participation, decision making and level of engagement) at an individual level. The result of the research showed that the participation and decision making rate of women/female in the REDD+ in South-south Nigeria is weak, mostly only at the level of Tokenism, where over 97% were not aware of such project in the community, but the remaining 3% were privy to the information via their husbands where either their views or opinions have influenced policy. The female participation level about REDD + projects is low. This is due to cultural and socio-political societies that still retain traditional gender roles which only locate and position women/female for domestic affairs thus undermining their position and responsibilities in public places as attested to by Focus Group Discussion(FGD). Besides, discrimination by male leaders and their lack of self-esteem, and low levels of education weaken them from playing a role in their village community even in the implementation of the REDD+ project. This underscores the importance of proactive gender mainstreaming with all encompassing inclusiveness intervention rather than " male versus female" or "men versus women" in order to address gender bias both in designing and implementation of adaptation action plan such as REDD+. This study has extended the "individual perceptional statements" of climate justice to create the most flexible approach in

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analysing the level of engagement of disaggregated "gender level" in REDD+ piloted site in South-south, Nigeria.

1.0 Introduction

Climate change and climate variability is a global phenomenon that has caused serious concern to many sectors of the economy and people's livelihoods. According to IPCC (2007b), Climate change refers to "a change in the state of the climate that can be identified (using statistical tests) by changes in the mean and / or the variability of its properties, and that persist for an extended period, typically decades, or longer.

Communities all over the world encountered changes and events that impact their lives both positively and negatively. Climate change and variability contrived gender and access to natural resources differently based on the different capacity/roles they played (Kakoka *et al.,* 2011). Climate change action plan has been described as the most effective means or platform to eradicate or mitigate the effect of climate change, encourage livelihood and developing adaptive capacity. According to Basiru *et al.* (2018), vulnerabilities to the impact of climate change in forest-based communities in Southwest Nigeria is gender sensitive, therefore, achieving the optimum and workable strategies to combat climate change impact and adaptive capacity lies in the hand of well performing balanced gendered action plan in form of procedural (participation and decision making) concept. In Nigeria like any other countries, most current challenges facing livelihood and economic stability of people living adjacent to forest were being aggravated by exacerbating existing gender inequality, consequently leads to more unclear strategies linking gender and forest management for decision makers (IUCN, 2012). Larson *et al.,* (2015), reported that, there is gap between the group participation both in design and implementation in REDD+ (Reducing Emissions from Deforestation and Forest Degradation) policy and initiative. Environmental degradation and loss of forest resources also has compounded the problem of inability of the policy maker to strike the balance between gender in form of distributive and procedural climate adaptation plan in many parts of the world. REDD+ is one approach for implementing the Paris Agreement to mitigate climate through the land use sector. Primary goal of REDD+ initiative is to maintain and enhance forest carbon stocks. Climate action studies and research have been focusing on the "win-win" solution, while the gender efficacy, and important factors such as: decision making, participation, knowledge and gender social value were being neglected.

Gender strata/categories (men, women, youth and elderly) often have differing roles, responsibilities and main concern in a community, as in usage, knowledge, experiences and close affinity of forest adjacent to their abode. This can suggest serious inputs to policy and field interventions that will enable the long-term success of REDD+ on the ground. Nevertheless, social, economic, and cultural inequalities and legal impediments often mean the exclusion of vulnerable (and other marginalized groups, such as indigenous peoples, the poor, youth, and disabled) from full participation in REDD+.

There is an evidence of gender documentation as far as climate change and vulnerabilities is concerned in the world (Terry, 2009; Hahn *et al.,* 2009; Balikoowa *et al.,* 2019; Basiru *et al.,* 2018) but little is known about how the procedural justice is being implemented in climate

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change action and adaptation plan initiative site in Nigeria (REDD+). Consequently, it is thus crucial that deliberate and meaningful efforts are taken to ensure REDD+ actions are inclusive, fair and gender-responsive both in policy and in practice. Therefore, this research investigated the gender and climate justice in form of procedural concept in REDD+ piloted site in Nigeria.

2.0 Materials and methods

2.1 Study area

Geographically, Cross River State (CRS) is situated in the South-Southern part of Nigeria, and bound by Latitudes 4° 27' to 5° 32'N and Longitudes 7° 50' to 9° 28'E with an approximate landmass area of 20,156 square kilometres (Figure 1). For this study, three key sites (known as REDD piloted sites) were selected. The cluster used in this study formed part of the piloted sites for the on-going United Nation REDD+ programme (Reducing Emissions from Deforestation and Forest Degradation) currently on-going in CRS, Nigeria. The sites of interest include: Afi-Mbe cluster, Ekuri-Iko-Cross River (CR) South cluster and Mangrove forest cluster from which communities was selected accordingly (Figure 1). The sites Afi-Mbe and Ekuri-Ukpon-CR South clusters are made up of community forests and forest reserves, jointly managed by local communities, government (Cross River Forestry Commission – CRFC) and conservation Society – WCS). In the Afi-Mbe cluster, the existing protected areas include the Afi Mountain Wildlife Sanctuary, Afi River Forest Reserve (FR), Mbe Mountains and a community forest south of the Cross River National Park (Okwangwo Division). The Ekuri-Iko-Cross River (CR) cluster is made of the Ukpon River Forest Reserve, Ekuri Community Forest, parts of the Oban Block Forest Reserve and the Cross River South Forest River.(Onoghejugo *et al.,* 2016)

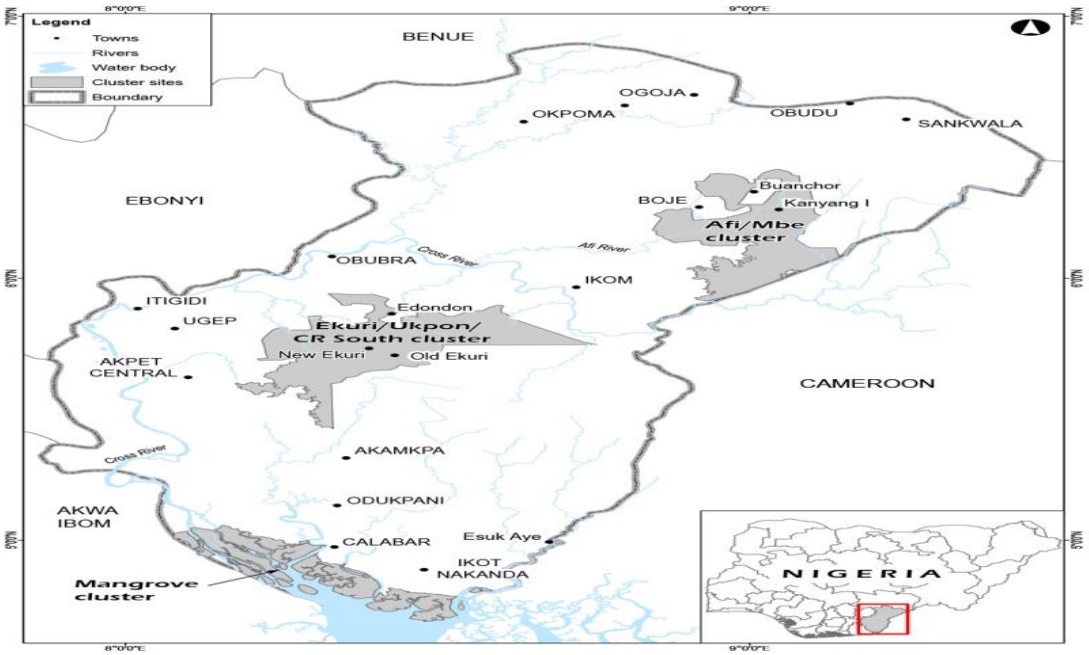

Figure 1: Map of Cross River State showing the Three Cluster Sites and an Insert Map of Nigeria (Culled from Onoghejugo et al., 2016)

2.2 Study design

Both quantitative and qualitative approaches was adopted for this study. Qualitative

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approaches such as in-depth interview, focus group discussion and life histories were being adopted first in identifying important factors that can help us to interpret and give better understanding of the complex reality of the research study and the implication of quantitative data.

2.3 Study population

The population for this research study consists of some selected villages adjacent to where climate change adaptation initiatives such as REDD+ is being piloted. This was purposefully selected based on UN-REDD+ on-going project recommended site.

2.4 Sampling design

Six villages that are living adjacent to the REDD+ piloted site were selected purposively for the study (Two from Afi-Mbe, Ekuri-Iko and Mangrove villages respectively). After the purposeful selection of the study population from the sample frame collected from Cross River State Ministry of Forestry, multi-stage sampling was used to determine the respondents for the survey. In each village, respondents was classified as gender categories along age line into both male and female (youth, men and elderly);3 strata for each gender which was later collapsed into two main category (Male and Female) based on sex and gender role and responsibility. Within each stratum, simple random sampling was applied to select respondents in each category through picking numbers randomly and assigned it to represent the people within the stratum.(Basiru *et al.,* 2018)

2.4.1 Determination of sample size

According to Cochran (1977), using the formulae below was paramount because the total population was available which give the right to assign the proportion according to the variability of population in each community. This was projected to be:

$$n = \frac{N}{1+N(e)2} \qquad n = \frac{N}{n+\propto 2N}$$

$$lim = \frac{1}{\propto 2} \quad \text{Where } n \to \infty$$

(For finite population) (For Infinite population)

Where:

n= Sample size

N=Total Population

e=is desired level of precision,

A= acceptable margin of error for proportion) =0.05

Confidence level of 95%

∝=Alpha

p=0.05

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2.5 Data collection

2.5.1 Instrument of data collection

According to Wilhelmi and Hayden (2010), cited by (Lundgren & Jonsson, 2012), they argued that the gender participation and decision making were built on quantitative data from measurements taken, likewise aggregated demographic data revealed level of engagement where social inclusion is studied using qualitative data from household level interview in addition to quantitative data. Therefore, the research study employed questionnaires, Focus Group Discussion, Review of Literature and observation schedule as tools/instrument for data collection. The main strength of quantitative measurement instrument in this study is that the researcher has control over the topics and the format of the interview. On the other hand, qualitative measurement strength is its ability to provide complex textual descriptions of how people experience a given research issue. It provides information about the human side of an issue that is often contradictory behaviours, beliefs, opinions, emotions and relationships of individuals. Qualitative measurements are also effective in identifying intangible factors, such as social inorms, socioeconomic status, gender roles, ethnicity and religion, whose role in the research issue may not be readily apparent. Therefore, using qualitative alongside quantitative methods has a major advantage over being used solely because qualitative approach will help us to interpret and better understand the complex reality of a given situation and the implications of quantitative data. Moreover, these tools were utilized based on their established nature, prominence, popularity/acceptance, adaptability and the potential they offered in helping to obtain the data required for this type of study.

A total number of 200 questionnaires (based on result from Chocran size formula) were administered for all the selected villages. The method of administration was done in selection of the respondents from the households in the village until the required respondents are selected in village to avoid possible bias and achieve actual representation of the entire village. Questionnaire contains both structured questions with rated response answer and open-ended questions requiring short answers were developed through informal survey to the study site before an effective formal survey. An informal survey using semi-structured interviews and discussion with the residents, key informants survey, and participant observation in the selected piloted villages were formed an important part to develop and understanding how to formulate the outcome variables needed for the research was done, because as cited by Lundgren and Jonsson, 2012 there is “difficulty in developing a common approach for addressing these justice and it is generally addressed in different languages in different scientific communities’’. The use of different terminologies and conceptual frameworks becomes especially problematic in research of climate change and justice, which builds on different scientific traditions and knowledge. Rather than handing the questionnaires to the respondents to fill themselves, interviewers were used to fill the forms for better collection of data given that level of education is expected to be low.

The questionnaires were used as data collection instrument for this study to assess the procedural justice as related to gender issues in the communities (respondents’ participation and decision making in policy formulation regarding climate change mitigation and adaptation action plan and sustainable forest management)

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2.5.2 Validation and reliability of multi-item measures

Construction of instrument validity is necessary as recommended by literatures on methods of using questionnaires to collect data. This was done after carefully selection of contents of the interview schedule and passed through a series of critical examinations to certify its content and face validities. The instrument was subjected to critical scrutiny and consequent modification by other researchers to guarantee its content validity.

According to Tuckman (1972), the useful formula to determining the reliability of an instrument when the respondent's score on each item can take on a range of values is coefficient alpha. Therefore, Cronbach's reliability analyses was conducted on the pilot data to re-assess the reliability of the instrument.

2.5.3 Pre-testing of data collection tools

After the pre-testing of the structured interview schedule, the instrument were implemented to collect the data required for this study. The data were collected by a team; made Forest Officer from Cross River State Ministry of Forestry, data collection personnel that was also consisted of instructor from Cross River State Ministry of Forestry. All the enumerators that were recruited from the community/villages were someone that can speak and interpret English and local dialect which are prominent indigenous language in the study area. In addition to their lingual capabilities, these enumerators was trained before the field pre-test and actual data collection exercises. As part of the training, the enumerators were taken through the nuances of the interview process to reduce the bias that might arise from conformity and social desirability. The study instrument was translated and back-translated and the measure was explained to them in order to enhance their capacity to interpret the questions and administer the instrument competently.

To meet the requirement for informed consent, informal approval of the respondents were soughted before being interviewed. Also, the study respondents were enlightened on the purpose of the study in the introductory statement of the interview schedule. In addition, they were also informed of the potential benefits of the study to their community and to the society at large. Moreover, they were also be briefed on what their participation entails and the estimated length of time required to complete the survey. Following this, they were assured of their anonymity and complete confidentiality of any information they will be provided, after which their passive/implicit consent to participate were finally sought. Depending on the literacy level of the respondents, this information was transmitted to him/or her in English or native language.

The structured and open-ended questions was designed in a way to make data management and analysis easy through numerical coding of responses. After coding the various responses, data were entered into MS Excel, removing non-meaningful responses and then analyzed with SPSS version 20 using descriptive and inferential statistics such as: means, ranges, standard deviation, percentages and non-parametric statistic instrument.

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2.6 Data analysis

To measure the level of involvement in participation, decision making on sustainable forest management and climate change related issues, a 5- point Likert rating scale was adopted. The scale was graded by gender, for each of the participation and decision statements: Strongly disagreed = 1; Disagree=2, Somehow agree=3, Agree=4 and Strongly agree=5. Based on this grading, the level of engagement was ranked using a weighted mean. The mean scores of the respondents based on the three- point scale were computed thus: 5 + 4 +3 +2 +1 = 15/ 5 = 3. Using the interval scale of 0.05, the upper limit cut-off was 3.0 + 0.05 = 3.05, while the lower limit was 3.0 – 0.05 = 2.95. Based on this, any mean score for a particular participatory statement below 2.95 (i.e mean score < 2.95) was regarded as disagreed, those between 2.95 and 3.04 were considered as agreed and any mean score greater than 3.05 was regarded as strongly agreed. The results were discussed based on the agreement and disagreement on the selected statement to determine the level of participation and involvement in decision making. (Otitoju, 2013).

These variables considered includes:
Participation, Decision making, Recognition and Inclusion, Forest Resources Management, and Village Institution Composition

A Chi-square at 5% level of significance was used to compare numerical and categorical statements for the two gender categories respectively. (Balikoowa *et al.,* 2019)

For X^2 (chi square),

$$X^2 = \frac{(O-E)^2}{E}$$

O = Observed frequency
E = Expected frequency

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3.0 Results

Table 1: Gender Perception of Respondents on participation, decision making and level of engagement in climate change, REDD+ project and forest management

	Male		Female	
Perceptional Procedural statements	**Mean**	**S.D**	**Mean**	**S.D**
I have heard of climate change before	3.45***	2.22	2.95**	1.82
I know climate change adaptation programme is going on in this community	2.64*	1.45	1.88*	0.62
I have participated or called upon concerning ongoing REDD+ in the community	2.96**	1.35	2.09*	0.98
We discussed climate change programme in my house	3.00**	1.74	2.51*	1.39
I involved in community management of forest resources	2.98**	1.76	2.35*	1.18
I belong to decision making organ in the community	3.14**	1.85	2.46*	1.27
I have been involving in the decision that deals with climate change and forest management in the community	3.01**	1.89	2.40*	1.36
I made decision in my household	3.45***	2.23	2.69*	1.60
I have voice in decision making in this community	3.04**	1.83	2.16*	1.02
I was recognized in all activities in this community	2.91*	1.69	2.54*	1.41
I always included in community activities and vital dialogue	3.14***	1.87	2.38*	1.23
I belong to community institution composition	2.95**	1.71	2.20*	1.03
I always contacted for forest management and conservation	2.75*	1.53	2.07*	0.89
I always contacted before any vital decision being made concerning on-going climate change adaptation plan in the community	2.56*	1.40	1.99*	0.77
Decision and management of forest reserve is a joint action of both community and the government	3.47***	2.22	2.73*	1.63
I belong to village cabinet member	2.83*	1.60	2.19*	1.06

*** *Strongly Agreed*
** *Agreed*
* *Disagreed*

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To ascertain that the aforementioned level of engagement attributes, (Participation, Decision making, Recognition and Inclusion, Forest Resources Management and Village Institution Composition) was examined using different perceptional statements as shown in Table 1. Male category performed better with the following procedural statement with "strongly agreed" in affirmation by the respondents in REDD+ piloted in South-South, Nigeria with their mean scores greater or equal to 3.05 (i.e. MS≥ 3.05) namely; *"I have heard of climate change before"* (3.45), *"I made decision in my household"* (3.45), *"I always included in community activities and vital dialogue"* (3.14) and *"Decision and management of forest reserve is a joint action of both community and the government"* (3.47). Those agreed as a result of perceptional statement with mean score between 2.95 and 3.04 (i.e. 2.95≥ MS < 3.04) were; *" I have participated or called upon concerning ongoing REDD+ in the community"* (2.96), *" We discussed climate change programme in my house"* (3.00), *"I involved in community management of forest resources"* (2.98), *"I belong to decision making organ in the community"* (3.14), *"I have been involving in the decision that deals with climate change and forest management in the community"* (3.01), *"I have voice in decision making in this community* (3.04) and *"I belong to community institution composition"* (2.95); while the remaining statement were all *"disagreed"* with mean score below 2.95 (i.e. MS <2.95).

On the other hand, result of the perceptional statement reveal that only "*I have heard of climate change before* "in female category was *"Agreed"* with mean score between 2.95 and 3.04 (i.e. 2.95≥ MS < 3.04), while the rest of the statements were *"disagreed"* with mean score below 2.95 (i.e. MS <2.95) value.

3.1 The Chi-Square result on respondent level of engagement in the study area

Chi-square analysis was used to test the hypothesis that respondents' level of engagement attributes are associated with performance of REDD+ with some perceptional variable statements that were considered in this study, namely Climate change awareness, Climate justice information, Knowledge about REDD+, REDD+ Initiative planning, REDD+ structure and gender balance, Impact of REDD+, Acceptability of REDD+ adaptation, Component of REDD+ and Implementation of REDD+ Initiative .The result of the Chi-square analysis showed that there was no significant association between Climate change climate and justice awareness, Climate justice information, Knowledge about REDD+, REDD+ Initiative planning, REDD+ structure and gender balance, Impact of REDD+, Acceptability of REDD+ adaptation, Component of REDD+ and Implementation of REDD+ Initiative variables (Participation, Decision making, Recognition and Inclusion, Forest Resources Management and Village Institution Composition) for female category. On the other hand, there was significant association between Participation and ability to know Climate change awareness and have Knowledge about REDD+ for male category ($\chi2 = 20.40$, $p < 0.05$) and ($\chi2 = 73.50$, $p < 0.05$) respectively, while there was no significant association with the other variables. (Table 2).

Furthermore, REDD+ structure and gender balance ($\chi2 = 64.30$, $p < 0.05$) was significantly associated with both Decision making, and Recognition and Inclusion while there was no significant association with the other variables for male category. Lastly, there is a relationship between Implementation of REDD+ Initiative ($\chi2 = 0.90$, $p < 0.05$), and Forest Resources Management while association with the other variables are not significant (male category)

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Table 2: The Chi-Square Result of Gender Engagement Level in the Study Area

Variables	Male	Female
	(n=100)	(n=100)
Climate change awareness		
Participation	20.4***	12.1
Decision making	4.70	1.50
Recognition and Inclusion	11.3	9.2
Forest Resource Management	6.7	4.2
Village Institution and Composition	5.4	2.3
Climate justice information		
Participation	15.7	10.3
Decision making	11.4	9.4
Recognition and Inclusion	10.3	8.9
Forest Resource Management	12.3	10.1
Village Institution and Composition	60.4	43.6
Knowledge about REDD+		
Participation	73.5***	65.7
Decision making	65.7	54.8
Recognition and Inclusion	25.1	19.3
Forest Resource Management	12.2	9.3
Village Institution and Composition	19.5	15.3
REDD+ Initiative planning		
Participation	55.8	46.6
Decision making	77.4	66.8
Recognition and Inclusion	21.2	18.5
Forest Resource Management	33.8	27.8
Village Institution and Composition	23.5	20.3
REDD+ structure and gender balance		
Participation	64.3	56.7
Decision making	55.2***	43.5
Recognition and Inclusion	72.4***	68.8
Forest Resource Management	66.1	59.6
Village Institution and Composition	61.3	58.4
Impact of REDD+		
Participation	44.2	33.6
Decision making	33.2	27.9
Recognition and Inclusion	22.9	18.4
Forest Resource Management	12.1	9.7
Village Institution and Composition	11.8	10.4
:ability of REDD+ adaptation		
Participation	30.3	25.6
Decision making	29.4	22.4
Recognition and Inclusion	42.1	39.5
Forest Resource Management	38.5	25.7
Village Institution and Composition	7.2	4.6

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Component of REDD+		
Participation	22.1	18.5
Decision making	11.5	10.3
Recognition and Inclusion	21.8	19.5
Forest Resource Management	7.3	5.3
Village Institution and Composition	6.7	4.2
Implementation of REDD+ Initiative		
Participation	1.8	1.1
Decision making	1.2	0.9
Recognition and Inclusion	1.1	0.6
Forest Resource Management	0.5***	0.2
Village Institution and Composition	0.9	0.4

Asterisks indicate statements where there was significant difference between the gender categories at 95% (***) level of significance

3.2 Focus group discussion (FGD)

The majority of FGD participants, couples and opinion leaders noted that the dominant community perception is that men are the heads of households and have decision-making authority over their wives: *"In our culture, husband is the head of this household. Every responsibility lies in his hand including thinking for us; he gives orders and our response is to obey"* (Female, house-wife).

A few female partners of couples noted the frustration or disappointment caused by their husbands' insistence on making household decisions and not being consulted: *"He can't consult me about doing a certain thing; he does only what he thinks and that also makes me sad."* (Another housewife response)

Several opinion leaders attributed men's household authority to cultural norms: *"Normally, man has final authority or the last word in the family contrary to the saying that gender equity and equality has come to stay, rather, the culture says otherwise".* (Opinion leader).

As the above quotes make clear, men's authority in the household is closely linked to and derives from the notion of male cultural setting and norm.

In addition to headship, respondents noted several other sources of male authority. One opinion leader reflected that many men believe that they have the right to make decisions in the household, community and other developmental project in the community because they paid bride wealth to their wives' family. Another religious leader discussed how many church members problematically misinterpret the bible, such as verses prohibiting women from preaching, or that Adam was created before Eve, to justify men's decision-making authority.

Several male and female FGD participants discussed how men are prone to dismiss their wives' advice for contradicting the salient norm of men as ultimate decision-makers: "*Women usually give advice to their husbands, but husbands dismiss the wife's advice because they feel they are the ones to lead the household. The husband thinks his point is the most important. From that he feels that 'what I said is what has to be done."*

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FGD participants, couples and opinion leaders shared the widespread perception that women who make decisions are domineering and constrain men's freedoms, which can be a source of less representation in climate action plan such as REDD+. A few male FGD participants, partners of couples and one opinion leader expressed the notion that wives may charm or bewitch their husbands as a means of gaining control, a view that implies that female authority threatens the natural order. One opinion leader highlighted how women tend to defer ultimate decision making and/or public recognition of decisions to their husbands as a sign of respect: "Men whose wives make decisions are called dominated men. In that case, a man makes a decision, but the idea having been brought by the wife. In order to respect her husband, she brings the idea and the husband makes a decision because he is the head of the family. It may even happen that the wife has more means than her husband, but in order to show respect for her husband, she says 'I cannot make a decision without telling my husband first."

4.0 Discussion

The preceding results of this study corroborate the belief that level of engagement and composition of gender in adaptation initiative programme are not gendered-balance with wide margin. According to Ise and Mariaty (2018), the disparity in participation and decision making could be better explained by the fact that this lack of participation is due to socio-political and cultural societies that still retain traditional gender roles which only locate and position women for domestic affairs thus undermining their position in public spaces compare to their men counterpart. This study investigated whether the observation that lacks of recognition and inclusion both in intra-household and community can be extended to imply that there will be a sharp differences in designing and implementation of climate adaptation programme like REDD+ among gender based on constructive role and responsibility in Nigeria. Duncker (2001), also found little difference in gender level of engagement between male and female by raising a vital point that and concludes that the biggest obstacle to women becoming empowered is their own attitude and lack of confidence in their abilities, but it appears that these feelings of insecurity are strongly accentuated in situations where men lead. This conclusion highlights the risk that may result from concluding that both participation and decision making of female as a gender were generalized based on perceived neglected female level of engagement. The study makes a sharp distinction between male and female since gender perceptional statement data was collected.

As a point of departure, this study recognized that not all female that gives statements in the community participate or make decision regarding climate change and forest resources management. Like Terry (2009) observed, female versus male-headed household's comparisons ignore the status of female in male-headed households and in a particular oversimplifies the nature of households with couples (which are mostly male-headed). Furthermore, conclusions about inclusion, participation and decision making of male or female cannot be made from engagement of male or female due to the mediating effect of the household or community where there is collective action and responsibility of the household members.

This study promotes the need to make procedural arm of climate justice assessment using

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perceptional statements such as participation, decision making, recognition and social inclusion as a categorizing variable. Empirical studies have shown that involving women in decision-making at all levels has positive effects on many forest management issues, including resource sustainability, forest regeneration and conflict management (Mai *et al.*, 2011).

Whether the incidence of less participation and decision making of female is as a result of cultural and social norms (Sunam and McCarthy, 2010), the result is usually the same for such households. It is evidence that social perceptions about forestry is a male domain, laws and regulations deliberately exclude women, under representation of women in decision-making bodies and lack of recognition of heterogeneity among women (Colfer, 2005) among others which probably explains the results of this study as further illustrated below.

Whereas a conducive environment and opportunity exist in the area for both male and female to be heard of climate change but gender stereotype couple with maintaining traditional gender roles may constrain female to be privy to information about changing in climate change and variability (Ise and Mariaty, 2018). The low level of awareness of climate change has been reported as a major gap in climate change adaptation implementation and success (Mandleni and Anim, 2011), the result of this study corroborates this constraint.

Consequently, female may not be able to adapt or adjust to the adverse effect emanated from climate change. Moreover, male category in this study were also found to have been making decision in the household. Being a patriarchal setting, cultural norms dictates, this corroborate Stern *et al.,* (2018) as quoted in one of the FGD of research study in Rwanda *"A husband is the head of the household. He is the one who thinks for the household; he is the one who also gives orders and the wife is there to help him"* Another respondent was also quoted *"Normally the person who has authority or the last word in the family is a man. Even if we are saying we have gender equity and equality, the culture also says that a man is a pillar of the family"* This is a great disadvantage to the female category in the sense that, they will miss out a lot in contributing their own quota in both designing and implementation of climate adaptation plan such as REDD+.

According to inclusion in community activities and where vital dialogue is been discussed, female category in this study were nowhere to be find. This obstacle to women voice to be heard in the REDD project area might have been attributed to a very weak educational background of their community, limited access to a decent education, with the economic limitations and illiterate gap (Ise and Mariaty, 2018). In light of this, female exclusion may spell doom for the success of REDD+ in Nigeria.

Going by the results about these selected statements, *I have participated or called upon concerning ongoing REDD+ in the community", " We discussed climate change programme in my house", "I involved in community management of forest resources", "I belong to decision making organ in the community", "I have been involving in the decision that deals with climate change and forest management in the community", "I have voice in decision making in this community* and *"I belong to community institution composition"* with inference of "Agreed" by male and "Disagreed" by female postulate a lot and sending signal. This might be due to

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lack of awareness to increase the involvement of women in REDD+ programme, lack of power and opportunity to influence and make decisions in the project, deliberately weakness by the social structure and system constituted by project designer, implementer and the community in its participation and gender fragility in related to understanding and equality within the scope of the project. This corroborate what is often reported that the participation rate of women in REDD+ project is feeble, mostly only at the level of Tokenism, where the role is only heard and allowed to argue, but their views and opinions have not influenced policy (Ise and Mariaty (2018).

There are good relationships between Participation, Decision making, Recognition and Inclusion, Forest Resources Management and Village Institution Composition and the categorical variable about REDD+ designing and implementation for male than female category as shown by chi-square. This might be due to norms, traditional gender roles of cultural societies which positioning women for domestic affairs consequently undermining their position in public spaces. Moreover, discrimination by male leaders, lack of self-esteem, and low levels of education which weaken them in the implementation of the REDD+ project (Stern *et al.,* 2018). Focus Group discussion affirmed the stereotype nature of norms and culture regarding participation and decision making both at household and community level.

5.0 Conclusion

This paper shows that one of the climate justice component (procedural) by Okereke and Dooley (2010) can be fully expressed and modified with perceptional statement to compare gender participation, decision making and level of engagement both in climate adaptation plan and forest resources management at lower level e.g. gender disaggregated level. Based on climate justice concept, this study has developed a procedural statement to compare gender participating and making decision using gender constructed roles and responsibility to disaggregate data to reveal the most neglected and likewise easily identifiable gender with low voice in planning and implementation of climate adaptation plan such as REDD+.

The study affirms that indeed climate justice divided along gender line, and outcomes is in line with the general perspectives that female are more at the receiver end of climate justice to their male counterpart. The study showed that disparity in inclusion and voice of female being heard was obvious both at intra-household and community and it can pose a threat to any type of developmental project. This can be attributed to patriarchal setting in which African were built upon. However, the difference in level of engagement and inclusion in any project between male and female based on developed perceptional statements was less prominent than suggested by the available literature/scholarship which exaggerates the participation of female/women in forest resources management and REDD+. The difference in gap between engagements was obvious because REDD+ requires knowledge of adaptation which includes social networking, forest affinity and conservation in the area. UNFCCC observed and reported that in the last two decades, various studies estimate that land use change, including deforestation and forest degradation, accounts for 12-29% of global greenhouse gas emissions For this reason, the inclusion of reducing emissions from land use change is considered essential to achieve the objectives of the UNFCCC. (Fearnside, 2000). A gender-sensitive approach to REDD+ decision-making is required for REDD+ to efficiently,

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effectively and equitably contribute to poverty reduction efforts and biodiversity conservation. In spite of this, study has shown that women are more likely than men to be absent from decision-making, the literature provides many arguments (effectiveness and equity-based). It is concluded that gender balance and inclusion may be the best dimension along which climate change adaptation plan such as REDD+ can be assessed, evaluated, monitored and implemented. The unintentional results emanated from neglected gender from designing and implementation of climate change action plan is that it slow down and also make the report/outcome credibility's questionable in line with SDG goal (gender equality). If indeed there are cultural dispositions individually, intra-household or community in related to participation and decision making between male and female, they will be better addressed by REDD+. The study showed that bridging the gap between male and female in designing and implementation of project such as REDD+ requires more inclusion both in participation and decision making not at the level of "Tokenism", where the role is only heard and allowed to argue, but their views and opinions have not influenced policy. However, the study brings best of using perceptional statements in addressing climate justice among gender as it masks the synergies that exist between the constructed roles and responsibilities with strong knowledge of forest management and conservation. Furthermore, the efficacy and beauty of this study lies in the fact that the gender level was disaggregated to an individual level so as to bring out uniqueness that can be a determinant of any adaptation action plan project such as REDD+ compared to Hahn *et al.,* (2009) and Balikoowa *et al.,* (2019) where district and households-head were used. More attention of gender is recommended to assess the participation and decision making in other to bring the best out of either male or female so as to provide the necessary information in the context of monitoring and evaluation in the implementation of project activities, mainly relating to women and their participation to serve as a reflection for future program improvements.

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6.3 Declaration of interest

All authors declare that they have no conflict of interest. The authors, *Basiru A.O., Oladoye A.O, Adekoya O.O, Charity F, Oeba V.O and Awodutire, O.O* retain the copyright of this work. Ethics approval for the analysis was on 16th June 2021, reference number being

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7.0 Conflict of interest

The authors declare no conflict of interest.

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