Women in Climate Change Adaptation

Insights from an Indigenous Pastoralist Community in the North West Region, Cameroon

Moye Eric Kongnso
Lecturer, Department of Geography,
Environment and Planning Dschang University, Cameroon
moyeeric@yahoo.com

How to cite this paper:
Kongnso, M. E. (2025). Women in Climate Change Adaptation: Insights from an Indigenous Pastoralist Community in the North West Region, Cameroon. *Global Africa*, (9), pp. 84-96.
https://doi.org/10.57832/7082-tf35

Received: August 16, 2024
Accepted: February 04, 2025
Published: March 20, 2025

© 2025 by author(s). This work is openly licensed via CC BY-NC 4.0

Abstract

The indigenous Mbororo pastoralists are hardest hit by climate variability and change due to their inextricable link with the natural environment and their limited coping options. With the guiding premise that Mbororo women are highly vulnerable to the vagaries of weather, this study set out to examine their role in enhancing adaptation to climate variability and change. With a qualitative approach, data was collected from Mbororo pastoralists (9), crop farmers (6), traditional authorities (3), heads of Mbororo women groups (3) and members of MBOSCUDA (4) purposively selected from Mbororo communities in the region. Secondary data was obtained from online publications, reports and archives. Data collected was coded and treated in Atlas.Ti. Content and thematic analyses were made under the lens of eco-feminist theory. Results revealed that women have valuable knowledge systems and are always at the forefront of adaptation, especially in cases of men's out-migration. Women have been actively involved in livelihood diversification such as cattle milking and crop farming thereby strengthening their resilience and reducing weather shocks. Unlike before, more than 60% of Mbororo women now rear smaller animals such as goats and sheep which are more adaptable than cattle. Nonetheless, the role of women in the implementation of these indigenous knowledge systems has been undermined. Gender discrimination on land ownership, low level of education, inadequate financial resources and low participation of women in decision-making are some of the factors hindering adaptation. Hence, policies on climate change adaptation must be gender-responsive and take into consideration indigenous people and their local knowledge systems.

Keywords

Mbororo women, Pastoralists' indigenous knowledge, Climate change, Adaptation, Gender, Feminism, Eco-feminism

Introduction

Context and Justification

Climate variability and change is one of the most challenging problems in the world today. Addressing adaptation and mitigation issues has become a global priority. The impacts of climate change are gender inclined because men and women face different vulnerabilities due to inequalities such as access to resources and participation in decision-making. These inequalities and discriminations reduce women's ability to adapt and mitigate the effects of climate change (Carvarjal Escobar et al., 2008, p. 278; Chingarande et al., 2020, p. 34; Nwamaka et al., 2020, p. 4). Studies have equally revealed that indigenous women are highly exposed to the vagaries of weather due to their inextricable link with nature and limited adaptation strategies (Tantoh et al., 2022). According to IPCC,(2014, p.5), the poorest segments of society are the most vulnerable to climate change, with poverty being a key determinant of vulnerability for several reasons, principally access to resources to allow coping with extreme weather events and marginalization from decision-making and social security. In Sub-Saharan Africa, inequalities in ownership, access, and control over natural resources have exposed women to climatic shocks (Women Watch, 2009; Awiti, 2022, p. 9).

Women in Sub-Saharan Africa encounter gender-based discrimination about the control and ownership of land (Njieassam, 2019, p. 8), but indigenous women face triple discrimination based on their gender (as women), their ethnicity and their economic class. Women provide more than 80% of farm and domestic labor in Africa yet control less land than men; moreover, the land they control tends to be of poorer quality, and women's land tenure is insecure (Njieassam, 2019, p. 15). However, within these critical roles, women have valuable knowledge, skills and agency in managing natural resources and are often at the front-line of adaptation to climate change in the context of high rates of men's out-migration (Nellemann et al., 2011). Gender-responsive climate policy requires further strengthening in all activities concerning adaptation, mitigation and related means of implementation (finance, technology development and transfer, and capacity-building) as well as decision-making on the implementation of climate policies (Chingarande et al., 2020, p.19).

In Cameroon, agriculture is the backbone of the economy; employing close to 70% of the population and contributing to about 35% of the Country's gross national product (Molua, 2011, p. 21). Female producers in Cameroon are an important group that is involved mostly in food crop production but gradually, the rearing of small animals and ruminants is being embraced as a secondary activity (Molua, 2011, p. 29). With different ecological zones, the North West region of Cameroon has an agroecology that favors crop farming and animal rearing. Within a mainly traditional setup, women are mostly involved in crop farming, which is very sensitive to slight changes in weather patterns and most farmers hardly cope with such changes.

Equally, the North West region has more than 8000 indigenous pastoralists and more than 2/3 are women and children (Jabiru, 2017, p.38). These indigenous people migrated into the region from neighboring Nigeria around 1905 as pastoral nomads and met already-settled native tribes who treated them as strangers without legitimate rights to own land and land resources (Jabiru, 2006, p. 11).

In a situation of marginalization and under representation, in what A. Jibaru, (2017, p. 38) termed the "Mbororo problem"[1], Mbororo pastoralists in the North West region have been facing serious challenges in ensuring sustainable livelihoods and their vulnerabilities to the vagaries of weather are exacerbated by gender inequalities and discrimination. In countries such as India, Nepal and Bangladesh in Asia and Kenya and Tanzania in Africa, the role of indigenous women in climate change adaptation has been sufficiently explored. However, in Cameroon, there is still insufficient

1 Mbororo problem, refers to the problem of marginalization, the problem of under representation or non-representation, the problem of becoming permanently settled, the problem of free movement and free interaction with the early settlers, the problem of stigmatization by non-Mbororos. The Mbororos (because of their nomadic, pastoralist and sedentary life style) in the Northwest Region were victims of exploitation, oppression, harassment and humiliation by their farming neighbors, administration and some rich and power hungry Mbororo elites. This problem can also be due to Mbororos way of life, illiteracy, ignorance and lack of guidance and cooperation.

knowledge on the role of Mbororo women in climate change adaptation and policies. To bridge this gap, this work seeks to demonstrate that despite their vulnerabilities, indigenous Mbororo women have traditional knowledge systems that are very useful in curbing climate related shocks and ensuring livelihoods sustainability.

Theoretical Framework: Eco-feminist Perspective in Climate Change Adaptation

Eco-feminism is an interdisciplinary theoretical framework that was introduced by Françoise D'Eaubonne, a French feminist in 1974. This approach connects climate change and gender, as well as other related factors such as deforestation, conservation, capitalism and inequalities (Johnson, 2022, p.18). Feminist theories hold that the challenges facing women today are the result of a male-dominated value systems that govern everyday social realities and therefore conceive gender as socially generated and perpetuated by culture (Gaard, 2015, p.23; Oyosi, 2016, p.12). Inequalities in the ownership, access, and control over natural resources as well as dynamics by which gender inequalities shape, and are shaped by, priorities, experiences, and adaptive capacity in the wake of system shocks are of paramount importance in enhancing adaptation (Awiti, 2022, p.9). In 2005, during the Paris Agreement of the UN, parties acknowledged that adaptation actions should follow a country-driven, gender-responsive, participatory and fully transparent approach, taking into consideration vulnerable groups, communities and ecosystems, and should be based on and guided by the best available science and, as appropriate, traditional knowledge, knowledge of indigenous people and local knowledge systems, to integrate adaptation into relevant socioeconomic and environmental policies and actions, where appropriate (UNO, 2015, p.11).

Nevertheless, indigenous African societies have a different perspective that goes beyond Western gender norms. According to N. Wane and D. Chandler, (2002, p. 88), patriarchy, colonialism and capitalism which are enshrined in eco-feminism have annihilated women's role in the construction of environmental knowledge and distorted the notion of scientific knowledge. African eco-feminist scholars have put women at the front line of adaptation to climate change especially in the context of men's out-migration due to their rich traditional knowledge systems that permit them to deal with weather shocks (Nellemann et al, 2011, p. 53). African traditional knowledge involves "an understanding of wild ancestors of food, medicinal plants and domestic animals; symbiotic relations with ecosystems; an awareness of the structure of ecosystems and the functionality of specific species; as well as the geographic ranges of said species". It is particularly emphasized about indigenous women who play a vital role as stewards of natural resources (Women Watch, 2009, pp. 2-3). In the context of climate change, indigenous women play a key role in livelihood transformation and the transmission of knowledge to the young generation. Mbororo women are involved in the rearing of small ruminants, milking of cattle, pasture cultivation and treatment of cattle diseases using traditional medicines. These practices that were formerly male-dominated have witnessed a high rate of women's engagement (Forbang et al., 2020, p. 669). Though the contributions of indigenous women have not been sufficiently documented, extant literature has shown that such practices can likely reduce vulnerabilities and build resilience (Carvarjal Escobar et al., 2008, p. 279). As such, in studying the role of indigenous women in adaptation, the eco-feminism theory fits well into this study as it portrays the plight of indigenous Mbororo women in climate change which is mostly attributed to discrimination by a male-dominated traditional set-up. Based on this theoretical backdrop, this article acknowledges the perception of women as being highly vulnerable to the impacts of climate change but argues that indigenous women have a plethora of traditional practices that enable them to adapt and mitigate climate change despite their challenges.

Materials and Methods

The Study Area

The North West Region of Cameroon is located between latitudes 50 40' and 70 North of the equator and between longitudes 90 45' and 110 10' East of the Greenwich Meridian. It falls within the Western Highlands of Cameroon with a total land surface area of 17300 km2 and an average altitude of about 900m above sea level (Ngalim, 2015, p. 177). It shares international boundaries with the Federal Republic of Nigeria to the North and was the entry point of Fulani herders into Cameroon (Jabiru, 2006, p.11). The region has a tropical climate characterized by two distinct seasons. A long wet season that runs from mid-March to November and a short dry season of three months. Annual average rainfall amounts range between 1500 to 2000mm while mean annual temperatures are about 21 to 24^{o}c (Ngalim, 2015, p. 177). These conditions have made the agroecological zone favorable for crop cultivation and livestock herding.

The Mbororo herders migrated into the North West region of Cameroon around 1905 and were given land by traditional rulers to graze their cattle and the nature of their activity made them live on hills and isolated lands (Fon & Ndamba, 2008, p. 3). Their customs and tradition are discriminatory against women and the girl child and as prescribed in their cultural code of conduct called the Polaako, women are expected to stay at home and take care of children and household chores. In recent times, they adopted a sedentary lifestyle and an increase in population of the host communities, competition over access to natural resources has increase vulnerabilities. This has led to new dynamics around women representation and participation in livelihood activities.

Data Collection and Treatment

The study adopts mainly documentary and qualitative approaches in data collection. The role of Mbororo women in their communities has started being documented especially with the putting in place of the Mbororo Cultural and Development Association (MBOSCUDA) that fights against gender inequality and discrimination. MBOSCUDA Reports were consulted as well as archives in the Divisional Delegations of Agriculture and Rural Development and from the Delegations of Livestock and Animal Husbandry for Boyo, Mexam, Bui and Ngoketunjia Divisions. Online sources were equally consulted. Interviews were conducted with key informants purposively selected from Mbororo communities in the region. A total number of 25 interviews were conducted with Mbororo pastoralists (9), crop farmers (6), traditional authorities (3), heads of Mbororo women groups (3) and members of MBOSCUDA (4). Most of these persons were displaced by the socio-political unrest in the region and now reside in Bamenda town and the West region. Some interviews were conducted via the telephone and voice notes were recorded.

Both documentary and primary data collected were treated in Atlas. Ti. and analyzed using content and thematic analysis. Voice notes from interviews were transcribed word verbatim and coded according to selected themes. The thematic analysis consisted of exploring the links existing between statements and meanings in the respondents' discourse. Excerpts were extracted to support the established argument.

Results

Vulnerabilities of Mbororo Pastoralists to the Effects of Climate Variability and Change

The indigenous Mbororo pastoralists strongly believe that cattle herding is their only proper way of life. Given that other means out of the traditional norms of a pure Fulani were not encouraged, their purchasing power remained considerably low. This negatively affected the present Mbororo society which had a lot of wealth in the form of cattle but did not think of another means of investment.

A Mbororo elite corroborated in the following excerpt "*….our people did not know these issues earlier…, at first sending a girl child to school was a taboo or even selling cattle for other investment. It has resulted to low family income and compromised the ability to invest in modern pastoral system, animals' healthcare infrastructure and social amenities thereby making us more vulnerable….*"[2]

The wealth and social prestige of a Mbororo man depended on the number of cattle he had and this made it difficult for them to sell their animals for other motives. Family income was controlled by the family head thereby making the dependency ratio very high because women and children did not have specific sources of income. Findings revealed that gendered vulnerabilities are exacerbated by climate variability and change. For instance, water shortages during prolonged dry spells expose women to sexual abuses when they move for long distances to fetch water. In situations of extreme conditions, the out migration of men for greener pastures exposes women and children to insecurities especially in areas where agro-pastoral conflicts are frequent. Also, the rate of school dropout amongst young girls increases as they stay home and assist their parents in ensuring food and water availability. .

The change from a nomadic to a sedentary lifestyle has reshaped existing pastoral practices and brought in new actors into the livestock sector. Agro-pastoral systems in the North West region of Cameroon were majorly nature-dependent and cattle herders occupied mostly mountain slopes and marginal lands that increased their vulnerability to weather fluctuations. The availability of agro-pastoral resources such as water, pasture and arable land are conditioned by climatic variables. The analysis of interviews revealed that the reduction in agro-pastoral resources over the recent years has been exacerbated by the vagaries of weather (Table 1)

Effects of climate variability	**Groundedness**	**Density**
Pasture degradation along slopes and uplands	16	10
Drying up of water sources	13	8
Changes in the transhumance calendar	12	6
Increasing frequency of animal diseases and pest	5	5
Delays in crop maturity due to late onset of rains	7	4
Increased soil erosion and fall in soil fertility	5	3
Fall in crop productivity	4	5
Increasing distances to transhumance zones	1	2

Table 1: Effects of Climate Variability on Agro-pastoral Activities

Source: Fieldwork (2024)

2 Interview with a Mbororo elite along the slopes of Sabga hill, conducted in march, 2023

The intensity of these impacts was measured based on the groundedness and intensity of the various codes and quotations generated from interviews. Code frequency or groundedness refers to the number of times a quotation or an idea is expressed by different individuals while density refers to the number of links to other quotations. Table 1 shows that pasture degradation was identified as the most important impact of climate variability with 16 quotations. The scorching effects of sunshine and frequent dry spells registered on uplands where cattle herding dominates, account for this pasture degradation. A herder along the slopes of Sabga said "*at first, we use to keep older, young and sick animals to feed on patches of pasture upland while the others go on transhumance. This is becoming almost impossible today because the dry season has become intense and pasture lands are completely bare*"[3]. This has equally to the shrinking and drying up of water sources. This situation reported in nearly all grazing lands has made pastoralists to compete for the same water use with agriculture and at times households. This has been the cause of farmer-herder conflicts with repercussions on women and children (Photo 1).

Photo 1: Mbororo Women and Children Displaced by Agro-pastoral Conflicts in Bui Division

Source: Moye, 2021.

Photo 1 shows a Mbororo pastoralist community displaced by resource driven conflicts. Those in the photo are women and children with no single adult man. This is because must men had gone on transhumance and women left behind to take of the households. Nevertheless, these women and children that make up more than 60% of the Mbororo population (Jabiru, 2006, p.6) have developed coping options to lessen the damages resulting from weather shocks.

Contribution of Mbororo Women to Climate Change Adaptation

- **Using Ecological Knowledge to Detect Environmental Changes**

Findings have revealed that Mbororo pastoralists have a huge knowledge base which they accumulated over the years due to their interaction with nature. They elderly have the capacity to read changes in the environment and predict climatic changes such as the arrival and departure of

3 Interview with a cattle herder along the slopes of Sabga in 2020

rains, the advent of storms and dry spells. In communities along the slopes of Sabga, there are "climate seers" who interpret the size and shape of the moon to forecast changes in seasons or determine the beginning of pastoral activities such as the start of transhumance. More so, the behavior of plants and animals have been used to predict climatic changes. For instance, the appearance of dragon flies indicates the severity of the dry season. This activity, though not gender based, is effectively carried out by elderly women. Interviews revealed that women are effective in the use of these knowledge systems than men because they spend more than 70% of their time in the fields. This knowledge that is largely accumulated by the elderly must be transmitted from generation to generation to enhance continuous use. For instance, the use of local herbs and traditional medicines to treat cattle diseases is a task handled mostly by women as sick and young cattle are kept behind during transhumance. As such, identifying those medicinal plants and knowing how to use them forms part of the ecological knowledge.

- **Mbororo Women as Educators and Transmitters of Indigenous Knowledge**

Mbororo women play an important role as educators in Mbororo communities. Not only as a mother to their children, particularly during their early years of life, but also women have great knowledge on different areas of livestock management, the environment and businesses especially those related to their everyday activities and responsibilities. However, rarely are women asked for their opinion but their knowledge systems to the younger generation due to their closeness and constant interactions. In relation to this, a Mbororo women group leader said

"….During climatic extremes such as drought, men carry their animals to valleys and lowlands in search for fresh pasture and water, leaving women and children behind to cope with harsh conditions in the hills. This has helped us develop coping options specific to our contexts."[4]

These knowledge systems are shared between women in their various groups and between neighbors. The transmission between generations is ensured by women. The child girl is gradually occupying a central position in knowledge acquisition more than the boys due to the closeness with their mothers. Boys attend school and learn other skills but girls stay at home and assist their parents in their daily activities. For example, during periods of dry spells and water scarcity, girls move for long distances to get water because a mere observation of the landscape helps them detect areas with water. Field surveys revealed that women identified with specific knowledge systems or practices have been empowered by NGOs such as MBOSCUDA and they are at the forefront of adaptation. They have used their knowledge to improve on practices in several aspects of livestock rearing.

- **Pasture Improvements and Collection of Fodder**

One of the challenges of climate change faced by the Mbororo pastoralists is the rapid degradation of pastures. As such, efforts are geared at improving the quality of pastures for their livestock. The involvement of women has been galvanized and encouraged by institutions and NGOs such as MIDENO, ACEFA and MBOSCUDA. The Regional Delegation of Livestock and Animal Husbandry (MINEPIA) through its sensitization programs in the various Ardorates (pastoralist communities) as well as the distribution of new pasture species to the grazers in the various communities has improved significantly on pasture production. This has helped to reduce the rate of transhumance, and farmer-herder conflicts, and reduce the risk of disease contraction by animals. The improved grazing lands have a high carrying capacity as many animals can be fed over a small surface area of grazing land (Plate 1). The advantage of these grazing land is that they are used during periods of pasture shortages and also, during transhumance. The young cattle or the ones that are not able to move over long distances are grazed on these planted pasture fields. The animals can stay and feed here for over two months. This has been a very useful coping option during periods of prolonged drought.

4 Interview with a Mbororo women group leader and member of MBOSCUDA in Mezam, Bamenda.

Photo A : Cultivated Pasture

Photo B : Cattle Feeding Facility

Plate 1: Improved pasture cultivation and fodder collection facility along the slopes of Kilum Ijim Mountain

Source: Moye, 2023

Photo A is a farm cultivated with a pasture species called barcaria and is used to feed animals during periods of scarcity. On the other hand, Photo B shows a facility where cattle are fed with harvested pasture. Women and children harvest pasture during periods of abundance, dry it, mix it with salt and use it to feed animals when conditions are dry. Equally, women tend to be responsible for the collection of fodder to supplement the feed of the livestock kept close to the homestead. For example, along the Sabga hills, married women traditionally supplement the calf diet with cut-and-carried native grasses and water from springs. In the Kom highlands, women equally play this role but also give cattle salt and treat sick animals using traditional medicines.

- **Diversification of Livelihood Sources**

Mbororo women have played a great role in the diversification of income sources which has permitted many families to cope with climate-related stresses such as food insecurity. Food crop cultivation for instance is carried out by women around grazing lands and the homesteads. Many NGOs and GOs have focused their support on mobilizing Mbororo women, training them and providing grants for business development. It was revealed that many women would prefer to cultivate crops and keep livestock rather than continue with a nomadic lifestyle practiced by the male pastoralists (Interview, 2023). It was reported that women played a great role in the sedentarization process and this has opened up opportunities for increased livelihood diversification and new income generation activities, more easily accessing markets. Women in particular are keen to take up and benefit from small transactions and petty trading opportunities taken up in local markets or peri-urban areas. New job and labor opportunities mean a shift in gender relations that are negotiated between husband and wife. It has also increased the opportunities for women to mobilize themselves into groups and take part in decision-making processes. It has made it easier for NGOs to highlight the concerns of women and fight for a greater degree of gender equity and women's rights. Such Organizations may be highly important in re-establishing communal relations and vital (agro-) pastoral support networks that are useful in times of climatic hazards.

In 2019 a project in which indigenous Mbororo women of Sabga, Akum and Ntabang Communities were sensitized and trained on how to cultivate nurseries for onion, vegetable (huckleberry) and leek seeds was launched. This is an activity of the project currently under implementation by MBOSCUDA with funds from Foro International de Mujeres Indigena FIMI titled ''Building Indigenous Mbororo Women's Resilience to Climate Change through Climate Smart Agriculture and Efficient Fireplaces (Plate 2)''.

Plate 2: Smart Farming Practices by Mbororo Women Organized by MBOSCUDA in Sabga

Source: MBOSCUDA, 2020

These women are expected to pass on the seeds to other women within their communities after their first harvest. This is for the purpose of sustainability. Gardening is not something that is common amongst Mbororo women which accounts for why this initiative has been highly welcomed by them.

- **Small Scale Ranching and Dairy Farming**

Mbororo pastoralists are involved in extension cattle rearing which is dependent on natural pasture and water. Given that this activity is highly vulnerable to the effects of climatic aberrations, ranching and dairy farming have been introduced and adopted as a coping option. Interviews revealed that this modern method of rearing was highly embraced by women while men embarked on transhumance. Ranching is a method of open-air livestock rearing, relying on the exclusive exploitation of pastures, which are usually natural and artificial, in a system calling upon the minimum use of manpower. Guarding of the herd is replaced by the use of enclosures and feeding the animals is done mostly by women and children. A Mbororo women group leader said "*....Nowadays, there is change in attitude among women and this has pushed many nomadic families to sedentary and more sustainable lifestyle through their engagement in livestock rearing ...*"[5].

Mbororo women play a greater role in the management of livestock kept around the homestead or camps. In the Fundong area, Mbororo women have been empowered to take care of animals such as sheep and goats. Even as far as cattle are concerned, Mbororo women care for new-born and young animals, which are not old enough to go to the fields with the herd and equally take care of sick animals and equally participate in milking (Plate 3)

Photo A : Sheep Rearing

Photo B : Women and Girl Children Milking a Cow

Plate 3: Participation of Women in Small Scale Rearing and Ranching in Fundong

Source: Moye, 2023

5 Interview with a Mbororo women group leader and member of MBOSCUDA in Mezam, Bamenda

In plate 3, photo A shows sheep herded by girl children while Photo B shows a women extracting milk from a cow within a ranch. An interview conducted at the regional Delegation of Livestock and Animal husbandry (MINEPIA) revealed that livestock like sheep and goat are more resistant to the effects of climate change. As captured in this excerpt "*…sheep rearing is gaining importance in many grazing zones and it is controlled by women and children. I think this type of livestock is more resistant to extreme events such as drought because it requires fewer resources than cattle…*"[6].

Milking is one of the traditional occupations of the Mbororos but nowadays, it is done mostly by women and children. The involvement of women has made it an important livelihood activity as milk gotten from the cattle is consumed on daily basis and it is also sold to get money for the acquisition of basic needs. The milk is equally transformed to butter which is a major source of food to the people of the area. Interviews revealed that;

"..milk is extracted from all the species of cows such as the Mbororo red cow (Mbororoji), the Aku white cattle, the Gudali, the Bouran and the dairy. The most important species in milk production is the dairy cows which can produce about 10-litres of milk daily.."[7]

This is an important income generating activity among the Mbororo women which has helped them to support their husbands in the running of their households.

Constraints Faced by Mbororo Women in Implementing Adaptation

Indigenous Mbororo women have rich knowledge systems that can curb the negative consequences of climate change but they have not been mainstreamed into adaptation policies due to a set of drawbacks. These drawbacks were coded from interviews and the code frequency was expressed in percentages (Figure 1). The code frequency or groundedness refers to the number of times a quotation or an idea is expressed by different individuals during interviews.

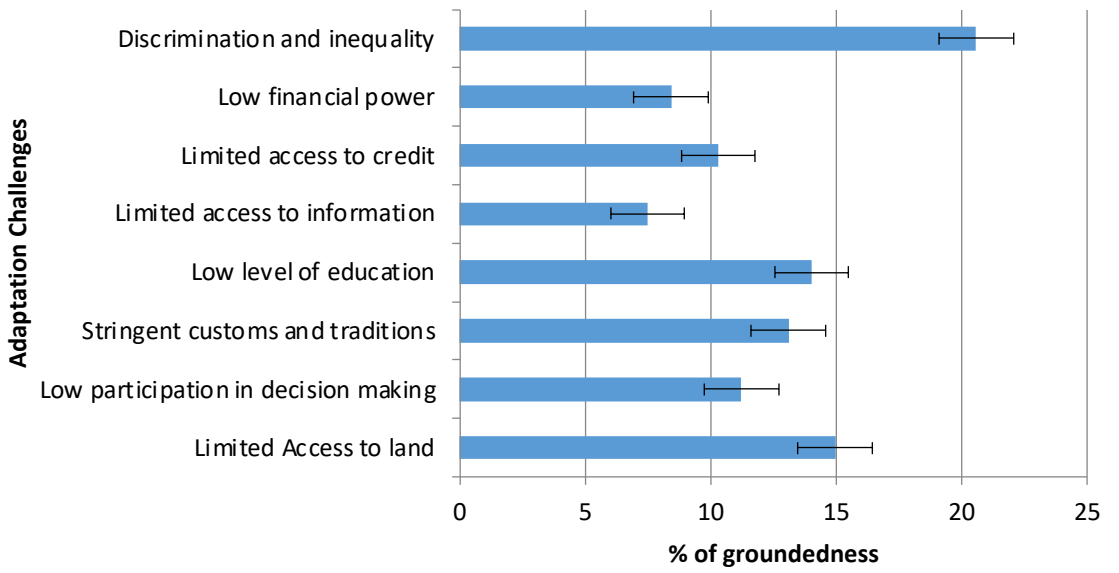

Figure 1: Challenges of Mbororo Women in Adapting to Climate Change

Source: Fieldwork, 2024

6 Interview conducted at the Regional Delegation of Livestock and Animal husbandry (MINEPIA) for the North West Region in 2023.

7 Interview with a Mbororo woman involved in cow milking in Funding in 2023.

As shown in Figure 1, indigenous women suffer from discrimination and inequality against their male counterparts as indicated by 20.5% of respondents. Also, limited access to land and landed property (15%), low level of education (14%), limited access to climate change information (7.5%), inadequate credit facilities (10.3%) and low purchasing power (8.4%) have reduced adaptive capacity. These challenges are exacerbated by stringent customs and traditional values (13.1%) of the Mbororos which hinder women from participating in knowledge-sharing platforms and decision-making in the management of natural resources (11.2%). These challenges have made women highly vulnerable to weather shocks. Besides being discriminated against by the native population due to their statues, the greatest challenges are within the Mbororo community as revealed by a female Mbororo elite;

"*….Mbororo women face difficulties due to their own cultural norms, such as "Polaako," which hinder their development and education. These norms keep Mbororo women in the background and prevent them from getting formal education, leading to their underrepresentation in decision-making…*"[8]

Although the National Laws of Cameroon give equitable access to natural resources and productive assets. Cameroon also adopted the UN Declaration on the Rights of Indigenous Peoples in 2007 but indigenous women are not aware of their rights and obligations.

Discussions

Climate change and related environmental stressors are compromising the livelihoods sources in Sub-Saharan Africa but the impacts are felt differently across sectors, communities and social groups. Mbororos of the North West region of Cameroon are pastoralists with stringent customs and traditional values that tend to discriminate against women in terms of access to resources and development as a whole. As such, their vulnerabilities to the vagaries of weather are high, leading to negative socio-economic outcomes (Nellemann et al, 2011; Amhair, 2021; Moye et al., 2021; Awiti, 2022). Understanding the role of indigenous women requires an in-depth analysis that under look their vulnerabilities to uncover their knowledge systems and abilities in coping with climatic shocks. The eco-feminist approach has helped in identifying the existing knowledge systems, transmission methods and evolution in agro-pastoral practices enhanced by women. However, there are challenges in the effective implementation of these knowledge systems. This corroborates with Feminists who attributed women's challenges to a male-dominated value system that governs everyday social realities and inequalities generated and perpetuated by culture (Carvarjal Escobar et al., 2008, p. 279; McGaughey, 2021, p. 14)

However, studying indigenous women in Africa and their role in adaptation goes beyond the gender norms developed by eco-feminists in the Western world. Though the capitalist dimension distorts the notion of scientific knowledge as opined by N. Wane and D. Chandler, (2002, p. 88), this work showcases the importance of traditional knowledge systems in adaptation. Findings have shown that Mbororo women have a plethora of sustainable practices such as pasture cultivation and fodder collection, rearing of small ruminants, dairy farming and milking of cows as well as the diversification of livelihoods. These livelihood options that are often employed during periods of climatic stress have improved their resilience to the effects of climate change. Their efforts have proven to be very useful during transhumance periods, as men travel with their herds in search for pasture and water .Extant scholarly works have sufficiently demonstrated the contributions of indigenous women in climate change adaptation in East Africa and Asia. In Kenya for instance, the Maasai and the Turkana are indigenous pastoralist communities that live in arid and semi-arid areas prone to the adverse effects of climate change. Despite their vulnerabilities, their women have been actively involved in mobility, alternative livestock feeding options, fodder cultivation and livelihoods diversification to reduce climate related shocks (World Bank, 2012). The relationship between gender and climate in East Africa and Asia have been given some considerable attention (Carvarjal Escobar et al, 2008; Zoia et al, 2021; Deininger et al, 2023) but the adaptation abilities of indigenous Mbororo women in Cameroon are yet to be fully explored. Policies and research have focused on the pygmies of the forest zones due to the rich forest resources that are under exploitation.

8 Interview with a female Mbororo elite and human rights activist in 2023

On the other hand, pastoralists occupy marginal lands and steep slopes which are often regarded as unproductive. It was therefore important to examine the capacity of Mbororo women in enhancing sustainable practices despite the challenges faced. This study therefore bridges this knowledge gap and calls for an eco-feminist perspective that does not only consider women as victims but seeks to exploit their knowledge systems.

Conclusion and Perspectives

This work on the role of indigenous Mbororo women in climate change adaptation in the North West region of Cameroon had as its objective to examine the contributions of women and their constraints in coping with increasing weather shocks and related stressors. Using a qualitative approach, data was collected and x-rayed using the lens of the eco-feminism theory. Findings revealed that climate change has led to a reduction in agro-pastoral resources with negative consequences on the livelihoods of Mbororo communities. Gendered differences resulting from discrimination, inequalities, low participation in decision making and limited access to land and other natural resources have exacerbated the level of vulnerability among women. However, this work revealed that indigenous Mbororo women have a rich knowledge system that reduces the impacts of climate change. Their ecological knowledge systems permit them to predict changes in climatic events such as the occurrence of dry spells. It was revealed that "climate seers" read changes in the moon, plant and animal behaviors to forecast climate changes. This has been very useful in the plannification of agro-pastoral activities. Equally, women involvement in livestock rearing and the diversification of livelihoods are practices that have increased their resilience. Hence, proper adaptations in the Mbororo communities require a gender–responsive approach that considers the views of the local population.

Bibliography

Amhair, L. (2021). A gender approach to climate change resilience. *Arribat – International Journal of Human Rights, 1*(2), 8.

Arshad, Z., Akhtar, K., Khan, L. A., & Ullah, A. (2021). Women's participation and their constraints in livestock management activities: A case study of district Bahawalpur in Punjab, Pakistan. *International Journal of Veterinary Science & Research*, *7*(2), 83–87. https://dx.doi.org/10.17352/ijvsr.000085

Awiti, A. (2022). Climate change and gender in Africa: A review of impact and gender-responsive solutions. *Frontiers in Climate, Security & Climate Services*, 14. https://doi.org/10.3389/fclim.2022.895950

Babugura, A. (2010). *Gender and climate change: South Africa case study.* Heinrich Böll Foundation Southern Africa. https://www.boell.org.za

Brody, A., Demetriades, J., & Esplen, E. (2008). *Gender and climate change: Mapping the linkages, a scoping study on knowledge and gaps.* Institute of Development Studies (IDS). http://www.bridge.ids.ac.uk/

Carvajal-Escobar, Y., Quintero-Angel, M., & Vargas, G. (2008). Women's role in adapting to climate change and variability. *Advances in Geosciences*, *14*, 277–280.

Chingarande, D., Huyer, S., Lanzarini, S., Makokha, J., Masiko, W., Mungai, C., Njuki, J., Adera, E. O., & Omolo, N. W. G. (2020). *Mainstreaming gender into national adaptation planning and implementation in Sub-Saharan Africa.* CCAFS Working Paper No. 323. CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). https://hdl.handle.net/10568/110699

Deininger, F., Woodhouse, A., Kuriakose, A., Gren, A., & Liaqat, S. (2023). *Placing gender equality at the center of climate action.* World Bank Group Gender Thematic Policy Notes Series. World Bank. http://hdl.handle.net/10986/39436

Fon, R., & Ndamba, M. (2008). *Mboscuda's access to justice and promotion of land rights for the Mbororos of the North West of Cameroon*. MBOSCUDA North West Province, Bamenda-Cameroon.

Forbang, E., Lengha, T. N., & Amungwa, A. (2020). The impact of livestock extension on the livelihood of Mbororo Fulani women in the North West Region of Cameroon. *Journal of Agricultural Studies, 8*(2), 666–677. https://doi.org/10.5296/jas.v8i2.17076

Gaard, G. (2015). Ecofeminism and climate change. *Women's Studies International Forum, 49*, 20–33. https://doi.org/10.1016/j.wsif.2015.02.004

Ginbo, T., & Hansson, H. (2023). Intra-household risk perceptions and climate change adaptation in sub-Saharan Africa. *European Review of Agricultural Economics, 50*(3), 1039–1063. https://doi.org/10.1093/erae/jbad0

Harris-Coble, L., Balehegn, M., Adesogan, A., & Colverson, K. (2021). Gender and livestock feed research in developing countries: A review. *Agronomy Journal*, 259–276. https://doi.org/10.1002/agj2.20875

Intergovernmental Panel on Climate Change (IPCC). (2014). *Climate change 2014: Synthesis report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (R. K. Pachauri & L. A. Meyer, Eds.). IPCC.

Jabiru, A. (2006). From nomads to nationals, from nationals to undesirable elements: The case of the Mbororo/Fulani in North West Cameroon 1916–2008, a historical investigation. *International Journal of Latest Engineering and Management Research (IJLEMR)*, 10–19.

Jabiru, A. (2017). The Mbororo problem in North West Cameroon: A historical investigation. *American Scientific Research Journal for Engineering, Technology, and Sciences (ASRJETS)*, 37–48. http://asrjetsjournal.org/

Johnson, O. (2022). A woman's place is in the resistance: An ecofeminist response to climate change. *Student Theses*, 71. https://research.library.fordham.edu/environ_2015/128

Mekuyie, M., Jordaan, A., & Melka, Y. (2018). Understanding resilience of pastoralists to climate change and variability in the Southern Afar Region, Ethiopia. *Climate Risk Management*, *20*, 1–10. https://doi.org/10.1016/j.crm.2018.02.004

McGaughey, C. (2021). *Girls' education and climate resilience in Sub-Saharan Africa's agricultural sector. International Human Rights Internship Program Working Paper Series*, 10(1), 46.

Molua, E. (2011). Farm income, gender differentials, and climate risk in Cameroon: Typology of male and female adaptation options across agroecologies. *Sustainability Science, 6*(1), 21–35. https://doi.org/10.1007/s11625-010-0123-z

Molua, E. (2007). The economic impact of climate change on agriculture in Cameroon. *World Bank Policy Research Working Paper Series, 4.*

Moye, E., Hassan, U., & Nfor, J. T. (2021). Implications of climatic stressors on agro-pastoral resources among Mbororo communities along the slopes of Kilum-Ijim Mountain, North West Region, Cameroon. *Frontiers in Sustainable Food Systems, Land, Livelihoods and Food Security.* https://doi.org/10.3389/fsufs.2021.685071

Nellemann, C., Verma, R., & Hislop, L. (Eds.). (2011). *Women at the frontline of climate change: Gender risks and hopes.* United Nations Environment Programme, GRID-Arendal.

Ngalim, A. (2015). Cattle rearing systems in the North West Region of Cameroon: Historical trends on changing techniques and strategies. *Journal of Educational Policy and Entrepreneurial Research (JEPER)*, *2*(10), 175–189.

Njieassam, E. (2019). Gender inequality and land rights: The situation of indigenous women in Cameroon. *Pioneer in Peer-Reviewed, Open Access Online Law Publications*, 33. https://doi.org/10.17159/1727-3781/2019/v22i0a4907

Ogbeide-Osaretin, N., & Efe, O. (2022). Climate change mitigation and gender inequality nexus: Evidence from Sub-Saharan Africa. *Journal of Economics and Allied Research, 7*(1), 12.

Okali, C., & Naess, L. O. (2013). *Making sense of gender, climate change and agriculture in sub-Saharan Africa: Creating gender responsive climate adaptation policy* (Working Paper No. 057). Future Agricultures. http://www.future-agricultures.org

Oyosi, S. (2016). *Gender resilience to climate change adaptation in Africa: A case study of women in Eastern Kenya* (Master's thesis). University of Nairobi.

Santino, O. A. (2020). *Climate change and women's rights in Sub-Saharan Africa: A literature review* (Master's thesis). Diaconia University of Applied Sciences.

Senja, O. (2021). Gender and climate change: Challenges and opportunities. *HAPSc Policy Briefs Series*, *2*(2), 85–93. https://doi.org/10.12681/hapscpbs.29494

Shafiq, M. (2008). Analysis of the role of women in livestock production in Balochistan, Pakistan. *Journal of Agriculture & Social Sciences*, *4*(1), 18–22. http://www.fspublishers.org

Sutz, P., Beauchamp, E., & Bolin, A. (2021). *Routes to change: Rural women's voices in land, climate, and market governance in sub-Saharan Africa.* International Institute for Environment and Development (IIED). https://www.iied.org/20331iied

Tantoh, H. B., McKay, T., Donkor, F. E., & Simatele, M. D. (2021). Gender roles, implications for water, land, and food security in a changing climate: A systematic review. *Frontiers in Sustainable Food Systems, Land, Livelihoods and Food Security.* https://doi.org/10.3389/fsufs.2021.707835

Tantoh, H., Ebhuoma, E., & Leonard, L. (2022). Indigenous women's vulnerability to climate change and adaptation strategies in Central Africa: A systematic review. In *Indigenous knowledge and climate governance* (pp. 42–56). Springer. https://doi.org/10.1007/978-3-030-99411-2_5

UN Women Watch. (2009). *Women, gender equality and climate change*. The UN Internet Gateway on Gender Equality and Empowerment of Women. www.un.org/womenwatch

United Nations. (2015). *The Paris Agreement regarding the United Nations Framework Convention on Climate Change*. Paris, December 12.

United Nations. (2020). *Gender equality in climate change: Analysis report on gender in climate change policies, programs and NDC processes*.

Wane, M., & Chandler, D. (2002). African women, cultural knowledge, and environmental education with a focus on Kenya's Indigenous women. *Canadian Journal of Environmental Education*, *7*(1), 86–98.

World Bank. (2012). *Indigenous peoples and climate change in Africa: Traditional knowledge and adaptation strategies* (Draft report).