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Management of Climate Changes in Turkana County, Kenya

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Abstract: This study dealt with management of climate changes in Turkana County, Kenya. The study used the descriptive design. The target population was 200 household-heads identified from Loima and Turkwel Wards. A sample of 60 household-heads was randomly drawn to participate in the study. A questionnaire was used to collect quantitative data while an interview collect the quantitative data. The study concluded that pastoralist communities relied on traditional interventions to cope with effects of climate change. Practiced traditional interventions include migration of people and livestock to other areas presumed to be having more supply of pasture and water and livelihood diversification. Inter-community conflicts over grazing right is the key factor that hindered the implementation of climate change interventions. Other hindering factors include migration of people and livestock, politicians' exploitation of the pastoralist communities and food insecurity. Experienced challenges include cultural values, illiteracy, lack of trust between facilitators and the community, wrong approach and interventions being done by strangers. The study recommends that development agencies need to work in collaboration with communities to develop and implement interventions against climate change. Pastoral communities need to access relevant information on climate change through attending seminars, workshops and public meetings. Relevant stakeholders should help the pastoralist communities to overcome their unique challenges through community-based seminars and workshops. Finally, the government and other development agencies should focus on the development of pastoralist communities in the country by investing in adult education to reduce illiteracy.

Keywords: Climate change; global warming; intervention; drought, adaptation; traditional knowledge; environmental degradation.

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Introduction

This study sought to establish the management of climate change effects in Turkana County, Kenya. The study was prompted by the fact that climate and environmental degradation have challenged the nomadic pastoral communities' lives across the world. For example, the communities have been forced to relocate to other regions beyond their national boundaries. Other effects include abandonment of development projects, and socio-economic and political marginalization (Lawrence, et al., 2023). Therefore, mainstreaming the mitigation against climate change needs no emphasis because currently it is one governments' topmost agendas globally (Greibe et al. 2023). In essence, both public and private sectors are involved in the planning, implementation and advocating for the inclusion of a relevant policy-framework in mainstreaming the climate change adaptation processes. According to (Oxfam, 2020), the concept of mainstreaming climate change denotes the systematic process of integrating the intervention practices and the whole adaptation considerations by the citizens into policy-making framework, notwithstanding the overall cost in the implementation processes at all the national levels.

Mainstreaming is not a single act; rather it points to the entire ecosystem of mainstreaming interventions. It entails integrating fundamental adaptation of climate change into development

activities for the enhancement of sustainable development (Hibbert et al., 2023). Mainstreaming adaptation in the sustainable development context and infrastructure is critical for the improvement of holistic human well-being through boosting their resilience, safeguarding ecosystems and development of relevant and real-time policies. Thus, well planned mainstreaming climate change adaptation initiatives may effectively and comprehensively decrease climate risks in all socio-economic dimensions. There is a need for boosting agricultural outputs, protection and improved monitoring and evaluation processes to achieve Sustainable Development Goals (UNDP, 2023).

Over the years, the nomadic pastoral communities have exhibited a highly adaptive way of life and remarkable resilience; however, more than ever before their suppleness hangs on a balance due to factors like accelerated climate change coupled with fluctuations in the global economy (Kapur, 2019). Additionally, considerable human-induced factors have tremendously undermined the livelihood of the pastoral communities because they are responsible for both resource and environmental degradation. For example, most communities are experiencing continuous unsustainable natural resource utilization such as land and water usage, urbanization and infrastructure development, extractive industries and deforestation (Tugjamba et al., 2023). In essence, the actualities of climate change and subsequent impacts have resulted into an unprecedented rate and environmental degradation. More than ever, the strained environment has resulted into severely disrupted livelihoods of the nomadic pastoral communities because of decreased accessibility of adequate pastures and water for the livestock and domestic use; hence the social tensions, inter-community conflicts and political instability in such regions.

As UNDP (2023) opines, climate change and environmental degradation cannot be separated. For instance, climate change brings environmental degradation and induces decrease in biodiversity; the loss may to a great measure exacerbate more climate change. Environmental stability is of great essence in conjunction with sustainable development. Therefore, SDG 15 is about the protection, restoration and promotion of sustainable utilization of natural resource ecosystems (Schilling & Werland). For instance the world must observe sustainable utilization and management of forests to reduce desertification and by thus control environmental degradation and loss of the biodiversity ecosystem (Berman, 2023).

According to Lukas et al., (2022), mainstreaming climate change mitigation is essential for augmenting economic benefits. For example, it helps to save money through the promotion of stewardship and more efficient utilization of scarce resources. Additionally, Lawrence et al., (2023) argue that mainstreaming climate change is critical in strengthening the existing policies by addressing policy gaps and malpractices in development strategies and practices. For instance, in order to promote more holistic and relevant policies, mainstreaming heightens the strengthening of gender parity in development projects and equitable distribution of resources. Other gaps that can be addressed include lack of equity, access and control especially among the vulnerable. Furthermore, communities can participate more in mainstreaming by removal of cultural barriers towards proper environmental utilization and care, and finally putting in place good policies that boost the promotion of community engagement, involvement in developing, and implementation of climate change mitigation. All hope for the pastoral communities is not lost; these sentiments are clearly stated by Tofu et al., 2023, p.3),

> Despite the increasing vulnerability factors and consequent pressures on pastoralist livelihoods, the potential remains high to maintain pastoral livelihoods and improve their resilience to climate change-induced disasters such as drought. This may include the development of water interventions in rangelands, especially the construction of wells and permanent water supply systems for human and livestock consumption, enhanced rangeland development and management. Livestock-based commercialization and improved market integration are pathways to transform the livestock industry in pastoral and agro-pastoral areas and sustain livelihoods.

The negative consequences resulting from the runaway climate impacts can be controlled through proper interventions. Interventions may include reduction of overdependence on rain-fed water sources and embarking on permanent water supplies. Moreover, farmers need to pay more attention to livestock maintenance through keeping

realistic number of animals and diversifying their livelihoods for more efficiency and productivity. Such small steps in the end will save their vulnerable livelihoods and boost the capacity to withstand climatic impacts (Nyambariga et al., 2023).

Climate change results to weather complexity and unpredictability. For example, temperatures and rainfall fluctuate wildly leading to human, environmental, economic and livestock crisis (Mutu, 2017). Additionally, due to climatic change, countries record changes in rainfall patterns. A good example is quantity of rains, intensity and distribution. Generally, most regions record higher temperatures besides heat waves (Manyonge et al., 2019). The weather variations affect livestock's health and productivity due to thermal stress and lack of access to water and adequate feed. Equally, crops either die or give meager productivity because of being subjected to intense and extreme weather events. Given the long-term effects of climate change, all the countries in the world need to remain upbeat in tackling the implications of the phenomenon.

FAO (2018) shows that integration of climate change interventions is critical for coping with risks and vulnerability emanating from environmental impacts. According to Sprain (2017) mainstreaming and integration of climate change in the community enables citizens to be actively involved in the strategic environmental assessment and development of incentives that promote climate resilience among diverse actors in both public and private sectors. The engagement of diverse stakeholders is critical in understanding the full implications of climate change and the implementation of the interventions. For example, according to Carcasson and Sprain (2016), engagement of diverse stakeholders in climate change enables more efficiency in the identification and implementation of priorities in adaptation and construction of a holistic framework for adoption by all stakeholders at all levels. Additionally, Hibbert et al. (2023) opines that sincere engagement results in relevant actions across the sectors: social, environmental and economic for the promotion of public and private sectors in the enhancement of adaptive capacity and climate resilience. Finally, UNDP (2023) adds that public engagement is essential for the development of relevant mechanisms for building the capacity to enable mainstreaming of climate change into community disaster, risk reduction and effective management programs (Lukas et al., 2022).

Methodology

In this section the researcher presents the methodology that guided the study. It elaborates the design, target population and sampling, data sources, validity and reliability, statistical treatment of data and ethical considerations.

Design

This study adopted the descriptive research design. The design enabled the researcher to collect data from the extensive number of participants and to explore different aspects of the research topic. The researcher managed use both the qualitative and quantitative approaches to accurately address the problem.

Population and Sampling

The target population was 200 household-heads from a pastoralist community in Loima and Turkwel Wards through the help of the village administrators and local sub-Chiefs. A sample of 60 households was randomly drawn from the target population. Furthermore, the researcher randomly selected 14 household-heads for Focus Group Discussions. The researcher used a standardized questionnaire and Focus Group Discussions as sources of data.

Validity and Reliability

Prior to data collection, the researcher conducted a pilot study which ensured the ability of the instruments to measure that was intended to be measured. The use of a questionnaire and Focus Group Discussions increased the data triangulation which is necessary for reliable results.

Treatment of Data

Quantitative results were presented in tables through frequencies and percentages. Qualitative data was processed through the thematic approach in the sense that similar themes that emerged supported the quantitative data.

Ethical Considerations

The researcher demanded informed consent from participants who showed their willingness to participate in the study before the process of data collection started. Respondents were free from any coercion. Their rights and dignity were safeguarded and finally their identity was not disclosed.

Findings and Discussions

This section presents the findings in accordance to what the researcher found after data analysis in attempt to answer the research questions. In essence, the findings are presented logically in summaries according to research questions.

Research Question 1: What interventions are adopted by pastoral communities against climate change in Turkana County?

This research question sought to establish interventions adopted by pastoral communities against climate change in Turkana County. Through questionnaire, sixty respondents had an opportunity to report the interventions they used to cope with climate change issues.

As seen in table 2, migration of people and livestock was the most popular intervention strategy used with the frequency of 33 (55%). This strategy is not appropriate in the contemporary time where community-owned land does not exist because most of the land has been demarcated and people have title deeds to own a particular piece of land. According to Hibbert et al. 2023), migration strategy is likely to cause conflicts due to land limitation. Furthermore, Nyambariga (2023) argues that migration results in destabilization due to intercommunity conflicts as members compete for a scarce land resource.

Table 1: Pastoral Community's Traditional Interventions against Climate Change Effects

Traditional coping mechanism	Number of households	Percentage
Traditional Coping Mechanisms	8	13.4
Migration to Other Places	33	55.0
Livelihood Diversification	15	25.0
Seeking help from rainmakers	4	6.6
Total	60	100

Table 2: Factors that Hinder the Implementation of Climate Change Interventions

Factors	**Households**	**Percent**
Inter-community conflicts over grazing rights	30	50
Migration of human and livestock	20	33
Politicians' exploitation of the pastoralist communities' conflicts	6	10
Food insecurity	4	7
Total	60	100

The second popular intervention against climate changes is livelihood diversification with the frequency of 15 (25%). According to UNDP (2023), livelihood is defined as the community's capabilities, assets and activities required as means of living; for example food, shelter clothing and water. This strategy may not have been effective due to prevailing draught in the area under investigation. During the Focus Group Discussions, respondents indicated that traditional interventions were not effective. One of the respondents, for instance, revealed that

> Over the years, climate change problems have worsened. Therefore we need to go beyond traditional coping mechanisms. For example, even if we migrate from here, we have not solved any problem. Instead we will have transferred our problems to the other regions. This is because the challenges of water and pasture scarcity is spread far and wide. Therefore, it is better to integrate modern strategies with indigenous ones (MT04).

While the world has experienced cyclic dry periods affecting 55 million people world over by threatening livelihoods and causing mass migration and death to both livestock and people (World Bank Group, 2023), traditional coping mechanism and seeking help from rainmakers were the least used strategies with the frequencies of eight 13.3% and four (6.6), respectively. Practically, the attempt of rainmakers ending droughts by bringing rains is not possible.

Research Question 2: What are factors that hinder the implementation of climate change interventions among the pastoralist community in Turkana County?

This research question sought to establish factors that hindered the implementation of climate change interventions among the pastoralist community members as seen in table 2.

The table shows that 50% of respondents considered inter-community conflicts over grazing right as the key factor that hindered the implementation of climate change interventions. During the Focus Group Discussions, one respondent added, "There are inter-communal conflicts over grazing right. Some politician divided people by leaning towards their ethnic communities." Therefore, there is a missing combined effort to deal with climate change issues.

Another key factor that hindered the intervention strategies was migration of people and livestock with the frequency of 20 (33%) in the sense that people moved from one place to another instead of dealing with prevailing challenges. The pastoral communities bring their animals to cities in search of pasture and water. They even invade public institutions like universities. According to Hibbert et al. 2023), migration destabilizes community members since when all people move to promising areas, overgrazing is likely to take place, thus unending conflicts will prevail.

Politicians exploitation of the pastoralist communities with the frequency of 6 (10%) has been a great hindrance to implementation of climate change interventions. Political exploitation is where the politicians use their economic and political power to strengthen a particular ethnic community over the other communities (Omolo et al., 2017). The last hindrance is food insecurity with a frequency of four (7%). Food insecurity refers to a situation where all the people, at any given time have adequate access to sufficient, safe and nutritious food (UNDP, 2023). Lack of food security leads to serious vulnerabilities.

Research Question 3: What are prevailing challenges in implementing climate change interventions among the pastoral communities in the Turkana County?

This research question sought to establish prevailing challenges in implementing climate change interventions among the pastoral communities in the Turkana County. The obtained challenges appear in table 3. The table lists existing challenges in order of frequency and subsequent percent.

Table 3: Challenges in Mainstreaming Climate Change

Challenges	Households	%
Cultural values	18	30
Illiteracy	17	28.3
Lack of trust between facilitators and the community	10	16.6
Wrong approach	9	15
Interventions done by strangers	6	10
Total	60	100

The most common challenge was cultural values with the frequency of 18 (30%). Cultural values entail rigidity in learning new ways of addressing existing problems. Effective response to climate change issues depends on community members' readiness to accept new ways. Rigidity was one of key challenges that existed in attempt to addressing climate change issues. A good example is the tradition of keeping large herds of livestock as a sign of wealth even where the livestock experience scarcity of natural resources like pasture and water. In such circumstances, pastoral communities fail to implement the interventions against climate change. Another example is a belief in the rain makers' capability to bring rains during times of droughts. Such beliefs make the people to ignore scientific interventions against climate changes (Lukas, et al., 2023).

The next common challenge with the frequency of 17 (28.3%) was illiteracy. Literacy refers to a person's ability to read, carryout mathematical calculations and use modern technology to fulfil daily demand (Kapur, 2019). As a matter of fact, climate change is tougher for the illiterate people or those with limited education because it is hard for them to change their traditional practices; therefore, as far as climate change effects are concerned, the illiterate people stick to their traditional ways. The ability for illiterate people to access relevant information is limited because they cannot benefit from printed matter or even ICT. Therefore, making informed decisions among the illiterate is very hard (Jones, 2017.

The next challenge is lack of trust between facilitators and the community with the frequency of 10 (16.6%). In essence, trust is the belief on others built through personal experiences and

trustworthiness. Trust is enhanced when the parties work together in partnership, mutual accountability and transparency in the process of developing and implementing climate change interventions (Berman, 2023). Participatory approaches in the implementation of climate change interventions promotes trustworthy among the parties: the community and the development agencies like NGOs. For example when the community members and NGOs and government agencies work together, there is enhancement of mutual learning, feedback, sharing of experiences and information. Therefore, without trust between the community and facilitators, climate change interventions will be hindered (Ahmed et al., 2023).

The next challenge was wrong approach with the frequency of 9 (15%). According to Butler (2021), the ideal approach in community change is bottom up, where stakeholders have access to adequate information, have control in determining the direction things should go, are involved in making choices and are part in the decision-making process. On the contrary, respondents felt that decisions were imposed on them, they were only told what to do by the facilitators. For instance, one respondent reported,

> Facilitators often tell us what to do but they do not involve us in making choices or decisions. Therefore, at the end of the process you only remember what you did but you may not know why you had to do that way. If we are expected to be responsible, it is important to work together from the beginning to the end in order to learn and be able to make good decisions.

The last challenge in order of importance is interventions being done by strangers with the frequency of 6 (10%). In community development, strangers are experts and development agencies who do not deeply understand local problems, beliefs and culture; they are biased and do not understand the indigenous technologies (Tofu et al., 2023). Without a strong collaboration, facilitators may be seen as outsiders and strangers. Full participation makes citizens own the processes and activities for climate change interventions.

Conclusions and Recommendations

The pastoralist communities relied on traditional interventions to cope with effects of climate change. Practiced traditional interventions include migration of people and livestock to other areas presumed to be having more supply of pasture and water and livelihood diversification. However, the traditional interventions have not been effective in addressing climate change problems. Instead, they have resulted into more problems like inter-community conflicts, spread of human and livestock diseases and regional destabilization. Inter-community conflicts over grazing right is the key factor that hindered the implementation of climate change interventions. Other hindering factors include migration of people and livestock, politicians' exploitation of the pastoralist communities and food insecurity. Experienced challenges include cultural values, illiteracy, lack of trust between facilitators and the community, wrong approach and interventions being done by strangers.

While participatory approaches may enable pastoralist communities becomes more proactive and responsible in the implementation of interventions, development agencies need to work in collaboration and partnerships with communities to develop and implement interventions against climate change. Pastoral communities should access relevant information on climate change through attending seminars, workshops and public meetings to supplement and even replace traditional interventions. Relevant stakeholders like experts, community workers and NGOs should help the pastoralist communities to overcome their unique challenges through community-based seminars and workshops. Finally, the government and other development agencies should focus on the development of pastoralist communities in the country by investing in adult education to reduce illiteracy.

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