



Intersections between climate change and female genital mutilation among the Maasai of Kajiado County, Kenya

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Abstract

Background

Female Genital Mutilation (FGM) is recognized internationally as an issue of global health concern and a violation of human rights. Changing climactic conditions are argued to put a strain on Maasai livelihoods making women and girls more susceptible to harmful practices. Therefore, this study sought to elucidate the effect of climate change on changing social, gender norms and FGM practice among the Maasai of Kajiado County.

Methods

The study employed a descriptive cross-sectional study design, employing qualitative methodologies. The study purposively selected 12 key-informants and 8 participants for a focus group discussion. A thematic framework analysis was utilized to examine and interpret data and findings were presented in narrative form.

Results

The study revealed that climate change eroded the Maasai social and economic fabric and in particular, the dwindling of their livelihoods whose mainstay has been livestock thereby sunk these communities into abject poverty. These changes have resulted in widening of gender inequalities and further disempowerment of women and girls, through the loss of education, perpetuation of FGM, and increasing child marriages. These practices are an adaptive strategy to survive climactic changes but detrimental to girls and women.

Conclusions

In conclusion, the study points to the intersecting axes of climate change on gender norms and FGM. The study portends that broader socio-ecological factors pose as barriers to social norms change among the Maasai of Kajiado. Therefore, there is need to adopt a multilevel intersectional approach when designing programmes to end FGM.

The contextual social, economic and environmental factors should not be overlooked when tailoring FGM intervention programs.

There is a recognized need for a global response and a need to assist developing countries to combat climate change. The Paris Agreement charts a new course by providing important building blocks for a coordinated global response to combat climate change with enhanced support system to low income countries [1]. However, the climate story that rarely gets told is the tale of how climate change impacts the health of women and girls in marginalized communities in developing countries. The Parties to the United Nations Framework Convention on Climate Change (UNFCCC) must continue to cooperate effectively to unpack and clarify the key tasks and activities outlined in the Agreement in order to provide a well-defined pathway to implementation [1,2]. In this paper we argue that the worsening climactic changes are having a negative impact on gender inequalities, widening the gender gap. This phenomenon is disproportionately negatively affecting women and girls, making them the hardest hit by extreme weather conditions. The WHO fact sheet posits that poor and other marginalized segments of society are especially vulnerable to climate change since their livelihoods are often highly dependent on natural resources that are sensitive to climate variability [3]. Climate change impacts food security, water and other resources shortages and even health of individuals. It additionally exacerbates gender disparities by increasing women and girls' vulnerabilities to sexual violence, harmful practices among others.

Female Genital Mutilation (FGM) is recognized internationally as an issue of global health concern and a violation of the human rights. FGM entails the cutting of parts of the female external genitalia for non-medical reasons, is internationally recognized as a violation of the human rights of girls and women [4]. It reflects deep-rooted inequality between the sexes and constitutes an extreme form of discrimination against women. Globally over 200 million girls and women spread across Africa, the Middle East, Asia, parts of Latin America, and throughout the African diaspora are living with FGM. In addition, thirty million girls are at risk of being cut over the next decade [5,6]. In Kenya, according to the Kenya Demographic Health Survey (KDHS), the estimated prevalence of FGM in girls and women aged between 15 and 49 years is 21%. The prevalence is particularly high among marginalized groups such as ethnic Somalis, (96%) Kisii (93%), and Maasai (77%) [7]. The high prevalence in such communities is against a backdrop of a steady decline of FGM that has been registered in East Africa [8].

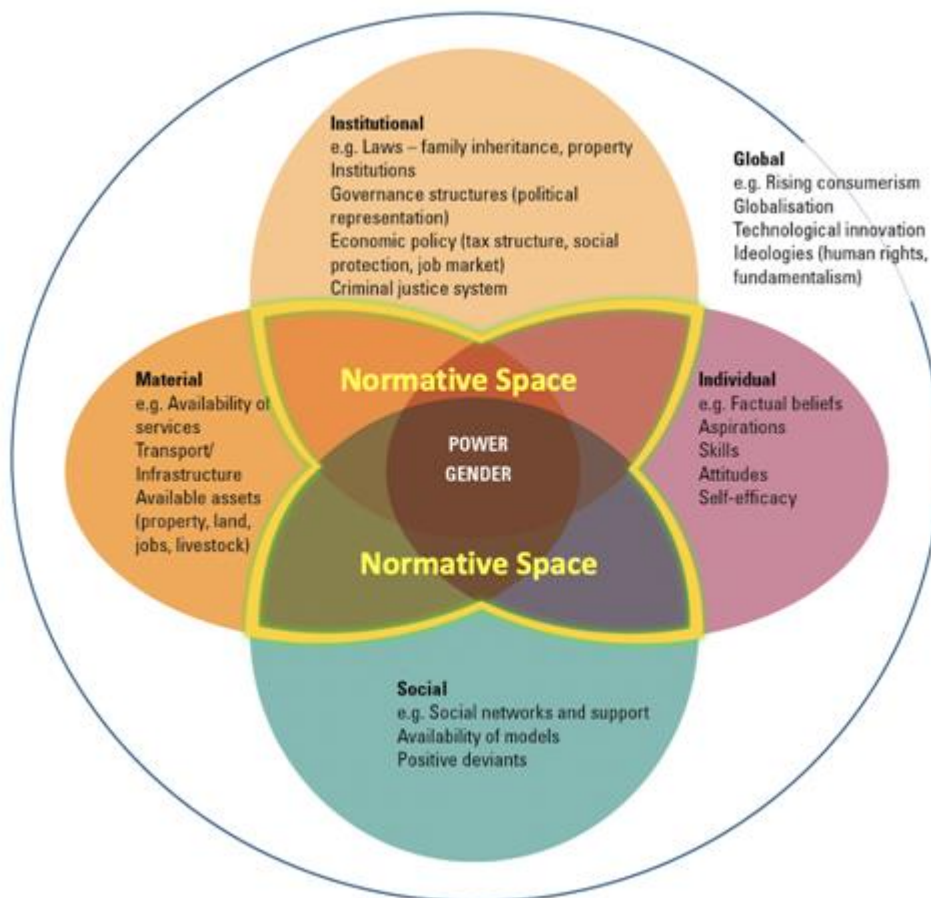
There have been decades of campaigns against FGM worldwide. While there has been some decline in prevalence of FGM in various countries, an increasing population means that more and more young girls are at risk of FGM. The changing climactic conditions is argued to put a strain on Maasai livelihoods hence increasing the risks and vulnerabilities of women and girls to harmful traditional practices. The United Nations Development Programme (UNDP) working draft paper portends that climate change impacts men and women differently as a result of their different gender roles and responsibilities at the household and community levels [9]. The susceptibility of girls and women is worsened by the fact that they are often poorer, receive less education, they are usually excluded from political and also household decision-making processes that affect their lives [9]. Subsequently, the UNDP argues that sociocultural barriers that are manifested in gendered roles and social status also inhibit women from effectively responding to climatic risks. This study therefore investigates the intersection between climate change, gender inequalities and harmful practices such as Female Genital Mutilation (FGM), using Kajiado County in Kenya as a case. We argue that the widely adopted social norms approach for ending FGM has, in many instances, failed to additionally examine broader socio-

ecological factors, including socio-economic-political and environmental changes that can impact the perpetuation of the practice. With this in mind, this article portends that future anti-FGM campaigns should broaden to address socio-ecological factors, including those worsened by climate change.

There has been a lot of focus on interventions geared at changing social norms as it relates to the perpetuation of FGM among FGM practicing communities. Social norms have been described as interdependent expectations between members of a community or reference group [10,11]. In most practicing communities, FGM is viewed as a necessary cultural practice that is not viewed as infringing on their health and rights but rather it provides them a basis of self-actualization, identity, femininity, and increases marriageability prospects [12]. Interestingly, the concept of social and gender norms is fluid and dynamic. These norms are constructed and maintained by the interactions of social, organizational, historical, political, and cultural influences [12]. Those interactions cannot be relegated to the background variables as they influence beliefs, attitudes, behavior and social expectations. In a community, both males and females play a significant role in the invention and reinvention of social norms. Among the Maasai, FGM is perceived as a rite of passage, which offers women a body and mind transformational process which is also recognized and appreciated socially [13]. The role of women among the Maasai may be missed out in consideration of the fact that the Maasai are highly patriarchal and the role of women may seem invisible [14]. An aspect of female agency is associated with the construction of social and gender norms. In fact, among the Maasai, the practice of FGM is not considered a form of patriarchal oppression, but rather a crucial part of gender formation and gender identity [14]. A study focusing on FGM among the Sudanese found out that the practice has far less to do with how men oppress women than with how a system of gender-asymmetric values and constraints is internalized by both, with the women actively participating in the perpetuation of the tradition hence becoming self-sustaining, naturalized, indeed unselfconsciously 'real' [15]. It is therefore, crucial to examine the wider and deeper meaningful aspects for the practice while at the same time examining the broader environmental, socio-economic and political factors that influence gender norms and practices such as FGM is crucial among such communities like the Maasai.

It is in the light of such contextual complexities within FGM practicing communities, focusing on social norms alone for behavior change may not suffice, and instead require multipronged approaches targeting a broader range of factors. Burke et al [12] argues for incorporating a socio-ecological model that considers environmental, historical, political, legal structures and processes, which are co-constitutive, meaning they are formed in relation to and by each other while addressing social and behavior change. Cislighi and Heise [16] describe a "flower model" which postulate that integrated interventions seem particularly promising as they address social norms in their interplay with other factors affecting people's health and well-being. Extending earlier multi-level models of behavior change, the Flower Framework posits four domains of influence – institutional, material, social and individual – that overlap, generating intersecting axes of influence (Figure 1) [16].

Figure 1. A dynamic framework for social change model. Reprinted with permission from the authors [16].



It is these intersecting axes of influence that should be brought to the fore while addressing factors that influence the perpetuation of FGM within practicing communities. Effective change of norms and behavior requires understanding of how they are embedded within an integrated framework of influence [17].

This paper argues that when examining the broader socio-ecological factors that may influence the risk of FGM, the potential impact of climate change should not be overlooked. This investigation was necessitated by an inquiry triggered by a concluded inquiry by the Kajiado Technical Vocational and Education Training (TVET) program in 2017. The program was meant to provide young women and girls empowerment training, but it failed to attract the numbers of girls and young women it set out to recruit into the program. The program was forced to lower the entry qualifications gradually until they actually just looked for any interested girls and women, with not much success. It was from the inquiry by the education county officers, that begun to reveal the association of impact of drought on the Maasai and how these resulted in girls dropping out of school (personal communication). This was also a period marked by an intense drought in many parts of Kenya including Kajiado County.

Due to climate change there is a projected trend of increasing temperatures and less reliable rainfall increases the likelihood of floods and droughts in Kenya. Global Climate Modelling

(GCM) data indicates that the mean annual temperature is projected to increase by between 0.8 and 1.5°C by the 2030s and 1.6°C to 2.7°C by the 2060s [18]. According to Ogola et al [19], variability of rainfall is expected to increase and warmer temperatures are likely to increase the intensity and frequency of extreme weather events in the region, meaning that many areas in Africa and Kenya specifically will be faced with an increased risk of longer dry spells. Kajiado District has been experiencing droughts that are adversely affecting the livelihood sustainability of the Maasai people through the decimation of livestock and crops failure [20]. The issue of child marriage seems to be a big problem in Kajiado. A study by UNICEF revealed that 47% of girls in Kajiado are married before reaching the age of 18 [21]. This paper thus argues that there is a link between dwindling Maasai livelihoods that could lead to the perpetuation of harmful practices such as FGM and child marriage. This is one of the first studies that highlight this interconnection between climate change, gender inequality and the harmful practice of FGM among the Maasai community.

The main objective of this study was to elucidate the impact of climate change on gender inequalities and the harmful practice of FGM among the Maasai of Kajiado County in Kenya.

METHODS

The scoping study employed a descriptive cross-sectional study design that used qualitative study methods with data being collected at one point in time. The study design adopted enabled the gathering of adequate data that would allow the researchers to comprehensively describe the variables of interest and their relationship.

Kajiado County neighbors Nairobi on the Northern side and extends all the way to the border between Kenya and Tanzania. It is made up of five sub-counties; Central, North, South, East and West and has a population of slightly over 680 000 inhabitants. The ethnic majority are Maasai, who subsist as nomadic pastoralists in a region perennially hit by droughts.

The study adopted a qualitative methodological approach that intended to bring forth the in-depth understanding and experiences of community members living in Kajiado County, Kenya. The field work was led by the first author and assisted by two research assistants, who conducted Key Informants Interviews (KIIs), and a Focus Group Discussion (FGD). Data collection was done using open ended interview guides with the interviewers moderating the direction of the discussions. The tools were pretested one week before the main data collection with appropriate improvements being made to the tools. Face to face data collection was led by the lead author supported by two research assistants. The research assistants were purposively selected who were university graduates with background in social science and had prior research experience in conducting qualitative interviews and trained for one day on FGM, research ethics and research methods. Data was collected over a period of 20 days between the January and March 2020 with the interviewers making use of audio recorders and field notes in the process. The focus group discussion took approximately 60 minutes while the key informant interviews took an average of 45 minutes. The individual interviews took place within the respondents' offices while the group discussion was held at the church compound.

The selection of study participants was purposively done as key informants who represented particular sectors in government and communities who are charged with providing support to women and girls. Participants were selected included the county executives and officers representing the various ministries of Kajiado County including lands, education and health; administrative chiefs from two wards within the county; community elders; and parents. The focus group discussion targeted young women beneficiaries of a TVET program implemented by the county government. The discussions sought to investigate the impact of climate change

on gender inequalities and the harmful practice of FGM among the Maasai of Kajiado County. Key informants discussed their lived and professional experiences regarding the girl child education, gender and FGM issues among the Maasai of Kajiado.

The study's field work data from KIIs and a FGD was transcribed verbatim into Microsoft Word (Microsoft Inc, Seattle, WA, USA), a process that was led by the principle investigator with the support of two research assistants. This data was analyzed using a framework analysis approach on MS Excel (Microsoft Inc, Seattle, WA, USA) with themes being allowed to naturally develop from the data. This approach facilitated the researchers in the understanding of lived and professional experiences of key informants, their beliefs, attitudes and practices as associated with the impact of climate change among the Maasai in Kajiado.

Ethics statement

The study sought ethical approval from the National Commission of Science Technology and Innovation, Kenya (Ref; 644771). Anonymity and confidentiality were assured to all respondents and informed consent forms were read and signed by all respondents since there was no issue of illiteracy. Data was managed from a centralized data file, only accessible by the main researchers and data manager stored in password protected document folder and only used for the purpose of this research study.

One of the limitations of this study is that it is a rapid qualitative scoping study that was meant to investigate the effect of climate change on gender inequalities and the harmful practice of FGM among the Maasai of Kajiado County. The findings of this study should therefore be considered in the light its limited geographical coverage of Kajiado West and South leaving out the East regions. The study's sample was composed of literate respondents and hence could provide an informed consent. It is therefore necessary that a more representative sample, inclusive of even illiterate participants from the community who could shed some light through their lens, a mixed methodology study or longitudinal study would very well provide more evidence about the environmental aspects of climate change and its impact on women and girls.

RESULTS

Key informant interviews were conducted among 12 respondents living and working within Kajiado County. The researchers also conducted a focus group discussion with 8 young women aged 18-25 years old living within the county and beneficiaries of the earlier mentioned TVET education program. Study findings are summarized in the sections below.

The changes in climactic conditions on Maasai livelihoods

Several key informants in this study mentioned that the area had experienced unpredictable rains and periodic drought, which leads to crop failures and lack of pasture and water for their cattle. A community elder said:

"Many Maasai cattle keepers are forced to travel further and further distances in search of forage and water, with some even traveling to the capital city Nairobi to find grass" (Maasai elder).

Additionally, once reliable sources of drinking water, such as water purified by the Lake Magadi Salt Company, have now disappeared. The Maasai elder added the following:

"...it is a huge tragedy that lake Magadi is rapidly evaporating" (*Maasai elder*).

The tragedy he is referring to is that fact that the Maasai lost a lot of their cattle during that time of drought.

A woman in the Saitamurt, reiterated that increasingly they do not have water points in the area due to the drying up of rivers and lakes. She said: "...*Our water points have dried up...*" (A mother in-law to a new bride). She added: "...*my son has taken the cattle very far to find grass, otherwise they will all die here in the drought...*"

Perpetuation of child marriage which links with FGM

One mother in law to a new child bride in Saitamurt area said the following:

"...I am old and unwell, I cannot milk animals, cook and look for water anymore. My son had to marry so that I can get help".

She further adds:

"...We don't have firewood nearby and she [*the new bride*] helps with that." (*A mother in-law to a new bride*).

The mother explained that her son had travelled far in search of greener pastures for their cattle, and because she is old, the son had to marry a young woman, in order for her to be left with help around the home.

She was further asked whether the new child bride had been cut to which she said:

"...In this community uncut girls cannot be accepted" (*A mother in-law to a new bride*).

This means that for this girl to be married off, she will require to undergo FGM in preparation to the marriage, hence exposing the girls to the harmful practice.

A community elder from the Olitinka area said the following:

"...with little education girls are less likely to access formal employment and other related opportunities and this increases chances of being married off, and if one finds herself in a family that still believes in FGM chances of being cut are always high" (*Community Elder*).

The increased labor demands from climate change are also contributing to child marriage. One of the administrative chiefs of the area explained that:

"...families with elderly parents pay dowry for girls to be married in order to help with house work which includes walking longer distances in search of water and to take care of the older parents" (*Administrative Chief, Saitamurt*).

The above excerpts indicate that FGM and child marriage is one of the ways devised by the Maasai families to cushion them from the effects of drought as a means of survival for the girl and for her family.

Increasing risk of child marriages across the Kenya-Tanzania border

The administrative chief of Saitamurt explained that:

“...while searching for water and food some of the girls find themselves crossing the border into communities that still practice FGM where they are likely to get married [off]” (*Administrative Chief, Saitamurt*).

He added:

“Some like those who get married in remote regions like Saitamurt risk being cut because of low awareness levels and poor enforcement in such regions. Saitamurt for example is so remote with very poor infrastructure and lacks amenities such as schools and hospitals and its quite challenging. They [the Maasai there] are still very traditional you will be lucky to even find someone who speaks Swahili let alone English”, *he added as if to emphasize: “...and it is a very very dry region” (Administrative Chief, Saitamurt).*

This statement suggests the kind of marginalized girls that may be married to across the border in Tanzania. This indicates these Maasai families may even be more traditional and possibly uphold their cultural traditions more than even Maasai in Kenya increasing the risks to the girls and women.

Another administrative chief who participated in this inquiry was from an area known as Musenke. The chief said:

“The FGM prevalence has gone down but we are experiencing a new threat...that the extended period of drought, where families lose cattle and this jeopardizes livelihoods at household level. In order to restock families have resorted to secretly cutting and marrying off girls including across the border. It has become a survival mechanism” (*Administrative Chief, Musenke*).

The Maasai girls are being married off to families in Tanzania across the border. He added:

“The only way to avert this new trend is to ensure that we have a comprehensive way of mitigating the effects of climate change. The Maa community values livestock since it is the main source of wealth, livelihood and status”.

Loss of girl child education opportunities

During the time of this inquiry, the county government of Kajiado had concluded the TVET training of girls, young women and men. It was very shocking for the Ministry of Education to realize that it was unable to find the targeted group of girls and young women to enroll. One officer of education said:

“...we even had to lower the entry qualification points in order to get the girls but even that did not help... (*Education Officer*).

Some of the reasons mentioned as challenging for girls and women were mentioned in the FGD. A participant from the group discussion explained the following:

“it is very difficult for girls to remain in school because we are now expected to go very far to fetch water and look for food...” (Young woman, 22 years FGD).

An officer from the Ministry of Education who participated in this study also reiterated that “...circumcised girls are more likely to have little to no education compared to their uncircumcised counterparts” (Education Officer). The Education Officer also added that, the situation is so bad that “...in 2017 when the Kajiado County Government attempted an affirmative action program targeted at enrolling more girls in technical vocational education training courses, it was unable to realize interest of enough female trainees”.

One of the community elder who was very instrumental in assisting to mobilize young girls and women to enroll for the training program mentioned above, had the following to say about the strategy he implemented: “...we had to convince husbands to allow the girls to attend the trainings” (Community elder, Olitinka). This indicates that many of the young girls who were expected to enroll for the TVET program, were married and some with children. It is therefore the husbands who gave permission for the girls to attend the training.

He also reiterated the following:

“...the County should come up with a robust programme to help supply water and hay to the community and food as well to help keep the girls in school, the main river that drains into lake Magadi had since dried up, and this forces girls to stay out of school and help the mothers in search for water and food” (Community elder, Olitinka).

Another conversation with an officer from the Ministry of Education, indicated that the girls were at a higher risk as compared to boys for dropping out of school as they engage in household chores. He said the following:

“Girls are at a high risk of dropping out of school as a result of taking part in searching for water, herding cattle to support their families...” (Education Officer).

DISCUSSION

The transformation of Maasai livelihoods and the feminization of poverty

The Maasai have been predominantly living a pastoralist lifestyle. In addition, the entire community’s livestock production activities were organized along an elaborate framework of socio-spatial organization that divided the community and territory into various segments [22]. However, due to climate change, the mobility of pastoralists, which allows them to adapt effectively to variability in pasture and water resources, is increasingly under threat. As a result of these climactic changes, many pastoralists in Kenya have had to modify their mode of livelihood, by getting rid of their cattle by selling them especially after they have been hard hit by drought. The growing intensity and frequency of extreme weather events, especially droughts, compromises their ability to cope with – and recover from – shocks, and this could lead to an increase in poverty and vulnerability [22]. Other external pressures including the privatization of resources and the fragmentation of grazing lands, further compromises the traditional pastoral livelihood and adaptation strategies. Critics have charged that these efforts were often ill-planned and served the interests of the state rather than needs and priorities of this minority ethnic group [23,24]. The Maasai have gradually lost control over communal resources, residence patterns have shifted to permanent individual family homes, and the size

quality of land and livestock holdings have reduced drastically [23-25]. The individualization of family production and a shift from subsistence pastoralism to commercial cattle production has been accompanied by a dramatic rise in poverty. It has also had a profound effect on gender relations and the economic status of women [23,26].

As a result of their pastoralist lifestyles, the Maasai have in general been marginalized for decades from mainstream development with limited access to water and basic social amenities such as health care and schools [27]. This has further confounded their livelihood situations with increasing dry spells exacerbating their lack of access to sources of water and pasture.

While Maasai society, like other pastoralist societies, is recognized as being patriarchal in structure and male-dominated in ideology, women enjoyed a great deal of autonomy in the management of domestic affairs [23]. Each married woman was assigned an allotment of the family's herds, and was responsible for managing the subsistence of herself and her children. Livestock were the mainstay of subsistence, with diets comprised largely of milk, blood and meat, along with store-bought goods such as maize meal, sugar and tea purchased from the sale of livestock or livestock products (milk, ghee, skins, etc.) [28]. As men's prestige and wealth was measured by the number of cattle and children he accumulated, the productive and reproductive capacity of women was crucial for the attainment of full male adult status. Gender roles for men and women were thus complementary. Yet Maasai society is hierarchical in nature, with younger men expected to display respect and deference to older men, younger women to older women, and women to men [13].

As a result of the negative impact of climate change, however, these traditional structures that held together the social and economic fabric of the Maasai people is being eroded. In particular, the negative impact of these on the Maasai livelihoods whose mainstay has been livestock, hence sinking these communities into poverty. The biggest threat is on women and girls who seem to carry the heaviest burden of gender and social changes resulting from climatic changes. These findings thus reveal that this subsequently is an emerging threat to the achievement of gender equality through the female socio-economic disempowerment and the persistence of harmful practices detrimental to girls and women. A key point emerging from the study suggest that the culturally mediated changes in the environment and changes in societies in response and adaption to climate-related risks resulting in factors that compound the fight against HTPs such as FGM.

Climate change has resulted in unseasonal rains and subsequent drought which leads to crop failures and lack of green pastures for their cattle, the Maasai are forced to travel further and further away in search for water, food and greener pastures for their cattle. These climatic changes have resulted in a change in gender norms and practices whereby families have to send girls to herd cattle and other farm animals which was initially a male domain. This has an effect of keeping girls out of schools hence they experience a lack of access to formal education. According the 2015 Kajiado National youth survey, the relatively low school enrolment in the county is influenced by many factors which include harmful practices [29]. Additionally, the report continues to reveal that cultural practices of FGM and early marriages were reported widely as factors that contribute to school dropouts and deny many girls and boys the chance of getting the education they need to improve their economic status.

Likewise, the poverty effects continuously lead to profound damage to girls and women resulting in inter-generational poverty and disadvantage. In this case the continued prevalence and toleration of early marriages informs a cycle of inter-generational poverty. The shift to commoditization and monetization of the pastoral economy has resulted in a gradual political and economic disempowerment of women. In shift to market-oriented production, men market

animals, monopolize the dwindling livestock trade, and control major cash transactions. Women's decision-making power vis-à-vis men has reduced as they have lost access to the products of their labor. Women as a group are thus increasingly estranged from the pastoral pursuit that was the basis of the economic role and social identity as Maasai women. In addition to increased poverty, including the feminization of poverty, Maasai in Kajiado County have experienced a range of social changes, both positive and negative.

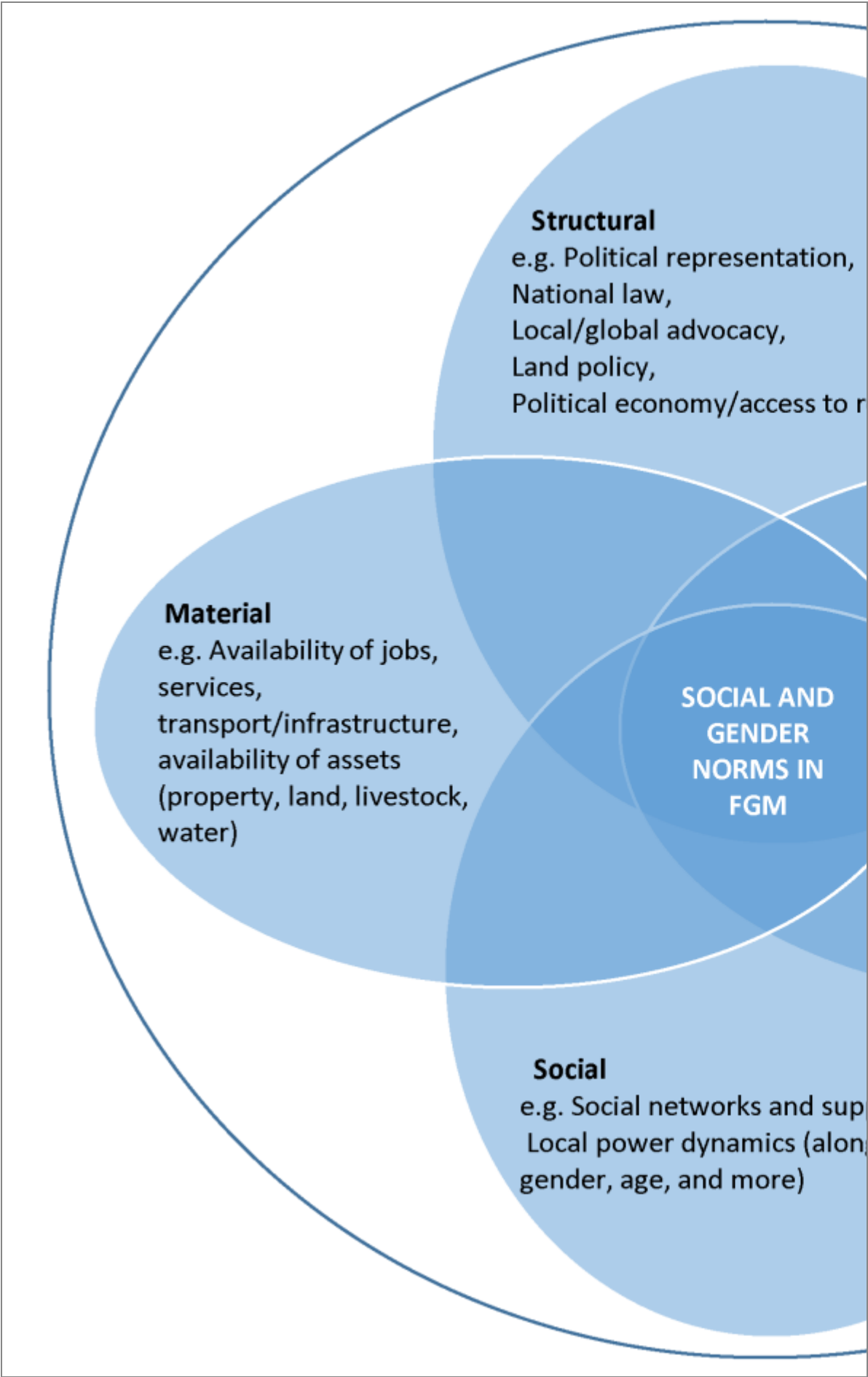
CONCLUSIONS

In conclusion, the collation of data from both the desk review and qualitative inquiry points to the impact of the intersecting axes of socio-economic and environmental factors on cultural and gender norms. In this case this study reveals an association between climate change and its effect on Maasai livelihoods, and subsequently on cultural practices that perpetuate gender inequalities resulting in the perpetuation of FGM among the Maasai of Kajiado county.

The findings reveal that girls and women are particularly vulnerable as a result of the changing climatic conditions. This study therefore indicates that the prevalence of FGM and child marriage among the Maasai of Kajiado county may be largely perpetuated by the poorly understood intersections between climate change and the widening gender inequalities, which render girls and women more vulnerable to harmful practices and socio-economic disempowerment due to a lack of education. The impact of climate change on gender norms and FGM requires more focus with a realization that women suffer the greatest health and socio-economic burden. Strategies that encourage keeping girls in school, delaying marriage, and abandoning FGM are, in light of these results, more crucial to adopt now more than ever in the face of climate change. Exacerbated poverty levels due to dwindling livelihoods and the subsequent marrying off of girls at a young age, is there-by one of the adaptive strategies by families which is perceived justified given their social and environmental circumstances.

The findings of this study thus portend that broader socio-ecological factors pose as barriers to social norms change among the Maasai of Kajiado. That taking cognizance of these contextual complexities within FGM practicing communities, rather than only focusing on social norms change may not suffice. The contextual social, economic and environmental factors should not be overlooked when tailoring FGM intervention programs. The ongoing social norms approach, although deemed appropriate for challenging and shifting norms and behavioral change within communities, may not suffice in accelerating FGM abandonment, as it doesn't integrate the broader four domains of influence namely; structural, material, social and individual, which are influenced by global factors – that overlap, generating intersecting axes of influence (Adapted from the “flower model” developed by Cislighi and Heise [16]) which act as drivers of the practice. These intersecting domains are further impacted by the global factors which include climate change among others. This study thus proposes that end FGM programs should adopt a multi-level approach in addressing FGM as demonstrated in the intersectional model ([Figure 2](#)).

Figure 2. An Intersectional Model. Extending earlier multi-level models of behavior change, this framework posits four domains of influence – structural, material, social and individual, which are influenced by global factors – that overlap, generating intersecting axes of influence. Adapted from the “flower model” developed by Cislighi and Heise (2018) [16].



Therefore, there is a need for integration of FGM into other development programs including strengthening climate change adaptation and mitigation strategies in the development agenda. FGM interventions thus should target the intersecting spheres of influence including structural, material, social and individual domains that overlap in a girls and woman's life especially in the face of climate change. These should also address cross-border programs and policy while collaborating with multiple sectors within government and community structures to have effective interventions.

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Notes

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REFERENCES

[1] Dagnet Y, Waskow D, Elliott C, Northrop E, Thwaites J, Mogelgaard K, et al. *Staying on Track from Paris: Advancing the Key Elements of the Paris Agreement*. 2016.

Available: https://www.transparency-partnership.net/sites/default/files/staying_on_track_from_paris_-_advancing_the_key_elements_of_the_paris_agreement.pdf. Accessed: 22 April 2021.

[2] UNFCCC. *Report of the Conference of the Parties on its twenty-first session, held in Paris from 30 November to 13 December 2015*. 2016.

Available: <https://unfccc.int/resource/docs/2015/cop21/eng/10.pdf>. Accessed: 22 April 2021.

[3] Women Watch UN. *"Fact Sheet: Women, Gender Equality & Climate Change*. 2009.

Available: https://www.un.org/womenwatch/feature/climate_change/downloads/Women_and_Climate_Change_Factsheet.pdf. Accessed: 22nd April 2021.

[4] World Health Organization. *Female genital mutilation*. 2020.

Available: <https://www.who.int/news-room/fact-sheets/detail/female-genital-mutilation>. Accessed: 1 December 2020.

[5] UNFPA-UNICEF. *Joint Programme on Female Genital Mutilation/Cutting Accelerating Change: By the Numbers*. 2017. Available: https://www.unfpa.org/sites/default/files/pub-pdf/UNFPA_UNICEF_FGM_16_Report_web.pdf. Accessed: 1 December 2020.

[6] UNICEF. *Female Genital Mutilation: A New Generation Calls for Ending an Old Practice*. New York: UNICEF; 2020.

[7] Kenya National Bureau of Statistics, Ministry of Health/Kenya, National AIDS Control Council/Kenya, Kenya Medical Research Institute, National Council for Population and Development/Kenya, and ICF International. 2015. *Kenya Demographic and Health Survey 2014*. Rockville, MD, USA: Kenya National Bureau of Statistics, Ministry of Health/Kenya, National AIDS Control Council/Kenya, Kenya Medical Research Institute, National Council for Population and Development/Kenya, and ICF International.

[8] NB Kandala, MC Ezejimofor, OA Uthman, and P Komba. Secular trends in the prevalence of female genital mutilation/cutting among girls: a systematic analysis. *BMJ Glob Health*. 2018;3:e000549. DOI: [10.1136/bmjgh-2017-000549](https://doi.org/10.1136/bmjgh-2017-000549). [PMID:[30483404](https://pubmed.ncbi.nlm.nih.gov/30483404/)]

[9] United Nations Development Programme. *Gender and Climate Change Africa Policy Brief 1—General Overview Working Draft*. 2011.

[10] Mackie G. *Social Dynamics of Abandonment of Harmful Practices: A New Look at the Theory*. 2009. (Innocenti Working Papers). Report No.: 2009–06. Florence, UNICEF Innocenti Research Centre; 2009.

[11] B Shell-Duncan, A Moreau, K Wander, and S Smith. The role of older women in contesting norms associated with female genital mutilation/cutting in Senegambia: A factorial focus group analysis. *PLoS One*. 2018;13:e0199217. DOI: [10.1371/journal.pone.0199217](https://doi.org/10.1371/journal.pone.0199217). [PMID:[30044770](https://pubmed.ncbi.nlm.nih.gov/30044770/)]

[12] NJ Burke, G Joseph, RJ Pasick, and JC Barker. *Theorizing Social Context: Rethinking Behavioral Theory*. *Health Educ Behav*. 2009;36:5-suppl55S-570. DOI: [10.1177/1090198109335338](https://doi.org/10.1177/1090198109335338). [PMID:[19805791](https://pubmed.ncbi.nlm.nih.gov/19805791/)]

[13] T Esho. An exploration of the psycho-sexual experiences of women who have undergone female genital cutting: a case of the Maasai in Kenya. *Facts Views Vis ObGyn*. 2012;4:121-32. [PMID:[24753899](https://pubmed.ncbi.nlm.nih.gov/24753899/)]

[14] Esho T, Van Wolputte S. *Borders of the present: Maasai tradition, modernity, and female identity*. In: Van Wolputte S, editor. *Borderlands and frontiers in Africa*. Munster: LIT Verlag; 2013.

[15] J Boddy. The normal and the aberrant in female genital cutting. *HAU J Ethnogr Theory*. 2016;6:41-69. DOI: [10.14318/hau6.2.008](https://doi.org/10.14318/hau6.2.008)

[16] B Cislighi and L Heise. Using social norms theory for health promotion in low-income countries. *Health Promot Int*. 2019;34:616-23. DOI: [10.1093/heapro/day017](https://doi.org/10.1093/heapro/day017). [PMID:[29579194](https://pubmed.ncbi.nlm.nih.gov/29579194/)]

[17] Institute for Reproductive Health. *Guiding Conceptual Framework. Learning Collaborative to Advance Research and Practice on Normative Change on Adolescent Sexual and Reproductive Health*; 2017. Institute for Reproductive Health, Georgetown University.

[18] Government of Kenya Adaptation Technical Analysis Report. 2012. LTS International and Acclimatise. Kenya.

[19] Ogola JS, Abira, MA, Awuor VO. Potential Impacts of Climate Change in Kenya. Nairobi: Climate Network Africa; 1997.

[20] Government of Kenya. National Climate Change Response Strategy 2010. Government of Kenya. Kenya.

[21] UNICEF. Kenya Baseline Study Report on FGM and Child Marriage among the Rendille, Maasai, Pokot, Samburu and Somali Communities in Kenya. New York: UNICEF; 2017.

[22] SNV. Story of Change: Including pastoralists' voices in formulating climate-related policies in Kenya. The Hague: SNV Netherlands Development Organisation; 2018.

[23] Talle TA. Women at a Loss: changes in Maasai pastoralism and their effects on gender relations. 1988. Stockholm Studies in Social Anthropology, Stockholm University, Stockholm.

[24] Galaty JG. The Land Is Yours": Social and Economic Factors in the Privatization, Sub-Division and Sale of Maasai Ranches. Cambridge: White Horse Press; 1992.

[25] CS Archambault. Ethnographic Empathy and the Social Context of Rights: "Rescuing" Maasai Girls from Early Marriage. *Am Anthropol.* 2011;113:632-43. DOI: [10.1111/j.1548-1433.2011.01375.x](https://doi.org/10.1111/j.1548-1433.2011.01375.x). [PMID:[22216426](https://pubmed.ncbi.nlm.nih.gov/22216426/)]

[26] DL Hodgson. Pastoralism, patriarchy and history: changing gender relations among Maasai in Tanganyika, 1890–1940. *J Afr Hist.* 1999;40:41-65. DOI: [10.1017/S0021853798007397](https://doi.org/10.1017/S0021853798007397). [PMID:[21977554](https://pubmed.ncbi.nlm.nih.gov/21977554/)]

[27] Hughes L. *Moving the Maasai: a colonial misadventure.* London: Palgrave Macmillan UK; 2003.

[28] G Towett, PG Oino, C Gatobu, and P Tarkwen. Socio-Cultural Factors Influencing the Practice of Female Genital Cut among the Maasai Community of Kajiado Central Sub-County, Kenya. *Int J Innov Sci Res.* 2015;13:186-92.

[29] National Council for Population and Development. Kenya National Adolescents and Youth Survey 2015. Nairobi, Kenya.

