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A Gender-Responsive Toolkit for Climate Adaptation in Pastoralist Communities: The Climate Adaptation Toolkit for Pastoralist Communities (CAT-PC)

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Abstract

The Climate Adaptation Toolkit for Pastoralist Communities (CAT-PC) is a mobile application under development aimed at enhancing pastoralist communities in Kenya and the Horn of Africa better respond to climate change, with a special emphasis on the unique difficulties faced by women. Through integrating Participatory Action Research (PAR) and the Social Tenure Domain Model (STDM), the toolkit facilitates the creation of gender-responsive and community-driven climate adaptation strategies. The CAT-PC addresses critical challenges such as limited access to land rights, resource management, and the exclusion of women from decision-making processes that are often compounded by climate change. Through community-led data collection, GIS mapping, and intersectional analysis, the toolkit ensures adaptation plans are culturally relevant, inclusive, and sustainable. An upcoming pilot implementation in Kajiado will provide insights into the toolkit's potential scalability and relevance for other pastoralist regions. This paper emphasises the integration of local knowledge, social equity, and resilience-building in pastoralist communities. The findings contribute to broader climate adaptation discourses by demonstrating tailored interventions that effectively address the vulnerabilities of marginalised groups, particularly women.

Keywords: Climate Adaptation, Gender Responsive Strategies, Participatory Action Research, Pastoralist Communities, Social Tenure Domain Model

1. Introduction

Pastoralist communities in Kenya and the Horn of Africa rely heavily on livestock as both a livelihood and a means of social and environmental risk management (Kirui et al., 2022; Ng'ang'a & Crane, 2020). Predominantly situated in arid and semi-arid regions, these communities are acutely vulnerable to climate change, which manifests as erratic rainfall, prolonged droughts, and environmental degradation (Ng'ang'a & Crane, 2020). Compounded by socio-economic pressures such as population growth and land tenure shifts, these impacts disrupt traditional adaptive strategies, heightening poverty, and resource competition (Archambault, 2016).

Pastoralist women face amplified vulnerabilities due to entrenched structural inequalities, including limited access to resources, land rights, and decision-making processes (Grillos, 2018; Hazel et al., 2021). Traditional gender roles confine women to managing household resources such as water, fuel, and food, while men typically oversee broader aspects of resource governance and land use (Rao et al., 2019; Wangui, 2014). Climate change exacerbates these disparities by intensifying resource scarcity, forcing women to travel longer distances for water and firewood, which reduces their opportunities for education, economic engagement, and community participation (Balehey et al., 2018). Addressing these systemic challenges is critical for equitable and sustainable adaptation.

Targeted interventions such as improved access to healthcare, gender quotas in schools, and capacity-building programs often aim to amplify women's voices in decision-making processes (Grillos, 2018; Walker, Bruyere, Zarestky, et al., 2022). Nevertheless, many climate response interventions remain top-down and insufficiently inclusive of pastoralist communities (Furusa & Furusa, 2014). These approaches often fail to incorporate local knowledge or address gender-specific challenges, resulting in unsustainable solutions that neglect the root causes of women's vulnerability (Wangui & Smucker, 2018). Therefore, sustained, and participatory efforts are key to addressing these systemic inequalities and enabling pastoralist communities to build resilience to climate change and associated socio-economic challenges (Hossen et al., 2021).

Consequently, to fill this gap, the Climate Adaptation Toolkit for Pastoralist Communities (CAT-PC) has been developed as a participatory and gender-responsive tool that seeks to support women and promote climate resilience in pastoralist communities. The CAT-PC integrates the principles of Participatory Action Research (PAR) and the Social Tenure Domain Model (STDM) to create a framework that supports community-led data collection, resource mapping, and climate adaptation planning. Application of STDM in this study is particularly relevant because it captures a wide range of human-land relationships especially in situations where formal land registration is rare or non-existent, as is often the case in many developing regions (Danilo, 2013). The methodologies of PAR and STDM enable community-led data collection and adaptation planning while addressing gender disparities in resource access and governance. The CAT-PC's design is informed by gaps in existing literature on participatory climate adaptation strategies (Omolo & Mafongoya, 2019; Venkatasubramanian & Ramnarain, 2018; Walker, Bruyere, Zarestky, et al., 2022).

This paper discusses the principles behind the CAT-PC, its conceptual and methodological framework, and its pilot implementation, with the goal of enhancing resilience and social equity in pastoralist communities. The specific research questions guiding this theoretical article are: How can Participatory Action Research (PAR) and the Social Tenure Domain Model (STDM) be effectively integrated into climate adaptation strategies to address the unique challenges faced by women in pastoralist communities in Kenya and the Horn of Africa? What role does integrating local knowledge and practices play in strengthening the resilience of pastoralist communities and how can interventions be tailored to the gender challenges faced by women in these communities?

2. Methodology

This methodology chapter outlines the research design, and methods employed to develop a comprehensive toolkit for climate change adaptation and risk reduction, specifically tailored to address the unique and gender-specific needs of women in pastoralist communities in Kenya and the Horn of Africa. The toolkit, which will be implemented as a mobile phone application, integrates the principles of Participatory Action Research (PAR) and the Social Tenure Domain Model (STDM). The methodology comprises a PRISMA literature review, expert consultations, and engagement with local women groups. The toolkit, referred to as the Climate

Adaptation Toolkit for Pastoralist Communities (CAT-PC), will be piloted in two locations in Kajiado, targeting a women's church group in Nkoroi and an adult literacy association in Ilbisil.

2.1 Research Design

The research design is a mixed-methods approach that combines qualitative and quantitative data collection and analysis. This approach ensures a comprehensive understanding of the local context, the unique challenges faced by women in pastoralist communities, and the effectiveness of the proposed toolkit. The systematic literature review will follow the PRISMA framework, focusing on climate adaptation strategies, gender roles in climate resilience, and the application of Participatory Action Research (PAR) and the Social Tenure Domain Model (STDM). Relevant studies will be identified, screened, and analysed to highlight gaps in existing literature. Expert consultations with professionals in climate adaptation, gender studies, and mobile application development will provide insights and validate findings, using semi-structured interviews and focus groups to gather qualitative data. Additionally, engagement with two local women's groups in Kajiado will ensure the toolkit suits to local needs, with participatory workshops and a pilot implementation of the CAT-PC toolkit to gather feedback on its usability and effectiveness.

2.2 Data Analysis

The applied section of the CAT-PC toolkit offers practical tools for community-led assessments, specifically designed to be user-friendly and accessible for the women participating in the pilot through the enumeration methodology. The enumeration methodology represents a sophisticated and multifaceted approach to data collection and community mapping, drawing inspiration from the proven practices established by Slum Dwellers International detailed in (Patel et al., 2012). It is also illustrated in case studies by (Beck & Purcell, 2013). This pilot is specifically tailored to enhance the capacities of women within pastoralist communities, recognising their unique challenges and roles. It incorporates three levels of intersectional qualitative analysis:

Individual Level: The toolkit uses PAR to collect and analyse personal narratives from women, understanding their individual experiences of climate resilience. This process ensures that the adaptation strategies developed are reflective of the diverse needs of women within the community, particularly those who are most vulnerable.

Community Level: Through PAR, the toolkit examines community-based practices and collective actions from a gendered perspective, identifying effective local strategies that empower women. STDM is integrated to formalise these strategies, ensuring that women's collective actions are recognised and supported by secure land tenure and resource access rights.

Institutional Level: The toolkit evaluates policies and programs from a gendered lens, understanding their impact on women's resilience and participation in community decision-making. STDM is leveraged to ensure that these evaluations lead to the formal recognition of women's contributions to climate adaptation, promoting gender equity at the institutional level.

2.3 Pilot Implementation in Kajiado

The CAT-PC will be piloted in two communities in Kajiado, engaging 160 women in total, eighty from a church-based group in Nkoroi and eighty from an adult literacy association in Ilbisil. Each community has a leadership team of ten women currently undergoing climate literacy training to enhance their understanding of climate change and build capacity to recognise localised challenges and solutions These teams are also being trained on the CAT-PC mobile application, enabling them to use the toolkit independently, troubleshoot issues, and

lead PAR initiatives with minimal researcher support. As trainers-of-trainers, they will disseminate knowledge on climate change, resilience-building, and program implementation.

This initiative will commence with workshops aimed at building capacity and familiarising participants with the CAT-PC toolkit, ensuring that all members understand its objectives and functionality. Following this, the process will include community mapping and data collection efforts, leveraging GIS tools and participatory surveys to gather comprehensive insights into land use patterns and resource management challenges faced by these communities. The collected data will then be integrated and analysed to inform the development of tailored climate action plans for each group. Iterative consultations will create feedback loops, allowing participants to refine and adapt the toolkit based on their specific needs and experiences.

This participatory approach is designed to enhance the usability and scalability of the CAT-PC, while also enabling women to take an active role in decision-making processes related to climate adaptation. Expected outcomes include more insights into Participatory Action Research for climate adaptation, enhanced community climate knowledge and the integration of indigenous practices. Anticipated challenges, such as limited digital literacy and device access, will be addressed through adaptive strategies to ensure inclusivity and sustainability.

3. Conceptual Framework

3.1 The Vulnerability of Pastoralist Communities to Climate Change

Pastoralist communities are especially vulnerable to climate change due to their reliance on natural resources and livestock. Prolonged droughts, erratic rainfall, and environmental degradation have significantly disrupted traditional livelihoods, threatening food security and economic stability (Catley, 2017). These environmental changes have significantly disrupted the traditional pastoralist way of life, threatening food security and economic stability. In response, many pastoralists have adopted alternative livelihoods or migrated, further straining limited resources (Galvin, 2021; Kirui et al., 2022).

For women in pastoralist communities, the impacts of climate change are worsened by socio-economic inequalities. Women often manage household resources such as water and fuel and care for dependents, roles intensified by resource scarcity (Anbacha & Kjosavik, 2019). As women travel longer distances in pursuit of critical resources, their opportunities for education, economic activities, and community participation diminish, deepening their marginalisation (Rao, Mishra, et al., 2019). This increased workload leaves women and girls with little time to participate in economic activities, education, or community governance, further entrenching their socio-economic marginalisation. Moreover, patriarchal systems often exclude women from land ownership and decision-making processes, limiting their ability to adapt and undermining community resilience (Glowacki, 2020). This exclusion not only limits women's ability to adapt to climate change but also undermines the overall resilience of the community, as it ignores the valuable knowledge and perspectives that women bring to climate adaptation efforts (Bhadwal et al., 2019).

The challenges faced by pastoralist women in adapting to climate change are further compounded by the lack of gender-sensitive policies and interventions. Existing climate adaptation interventions often take a top-down approach, focusing, often, on technological solutions that do not consider the specific needs and knowledge of pastoralist communities (Omolo and Mafongoya, 2019). These interventions are typically developed without sufficient community participation, resulting in solutions that are not context-specific and often unsustainable. Moreover, the gender-specific challenges that women face, such as limited public participation and insecure land tenure, are often overlooked leaving these issues unaddressed (Wangui and Smucker, 2018). As a result, there is a pressing need for targeted

interventions that address the root causes of gender inequality and promote the active participation of women in climate adaptation efforts.

3.2 Gendered Lens to Current Climate Adaptation Mechanisms

Despite the implementation of climate adaptation strategies and interventions in Kenya and the Horn of Africa, many fail to address the specific needs of women. These approaches frequently lack cultural sensitivity and fail to account for the social and cultural factors that shape resource access and control (Aregu et al., 2016). Nevertheless, Walker et al. (2022) further emphasise that these strategies often disregard the unique challenges faced by women in pastoralist communities. Women and other marginalised groups are typically excluded from top-down initiatives, resulting in insufficient cultural sensitivity and a lack of context-specific understanding, both of which are crucial for fostering long-term resilience (Omolo & Mafongoya, 2019).

To promote social learning and strengthen community resilience, therefore, an inclusive approach that accepts different viewpoints and knowledge systems is essential (Hossen et al., 2021). Without this type of inclusivity, adaptation initiatives risk perpetuating and increasing current inequalities women face, such as limited public participation and land rights, both of which are essential to their vulnerability (Carr & Thompson, 2014; Ngigi et al., 2017). Other marginalised groups must therefore be actively included in climate adaptation strategies to ensure that their needs are met, and their opinions are heard in a context- and culturally appropriate manner.

Thus, Community-Led Adaptation offers a promising alternative by enabling women and other local actors to take control of adaptation decisions. The community led approach enhances efficiency and equity by grounding strategies in the lived realities of those most affected by climate change, particularly women (Rao, Mishra, et al., 2019). The goal of the CAT-PC is to enhance the efficiency and equity of adaptation strategies by ensuring that they are informed by the realities of those most impacted by climate change, particularly women.

3.3 Key Concepts and Ideas Integrated into the CAT-PC

3.3.1 Environmental Assessment

The environmental component addresses challenges such as water scarcity and land degradation through participatory data collection. Through the STDM framework, the CAT-PC formalises resource utilisation and integrates women's ecological knowledge into sustainable resource management strategies.

3.3.2 Social Assessment

This component focuses on gender roles, social networks, and women's access to services. Participatory Action Research (PAR) allows women to analyse their roles and contributions, while STDM ensures their involvement in decision-making and strengthens community resilience is accounted for. Capacity-building initiatives further equip women with skills for leadership and environmental conservation development.

3.3.3 Economic assessment

Economic evaluations examine the financial impacts of climate change on women, identifying opportunities for sustainable practices. With the application of PAR and STDM, the toolkit strengthens women's roles in local economies, advocates for equitable resource distribution, and improves financial resilience.

3.3.4 Infrastructural assessment

The infrastructural component evaluates access to physical assets such as water systems and transportation networks. Women's participation in assessing and governing these resources is emphasised, ensuring their needs are prioritised in strategic development.

The integration of these assessments within the CAT-PC framework ensures that adaptation strategies are comprehensive, inclusive, and responsive to the unique challenges faced by pastoralist communities, particularly women.

4. Discussion

This chapter provides an analysis of the key themes emerging from the conceptual framework. The importance of implementing gender-sensitive strategies in climate change initiatives within pastoralist communities is emphasised. Through the combination of PAR and STDM, the discussion illustrates how collaborative frameworks can foster fair decision-making, combat gender imbalances, and synergise traditional knowledge with modern approaches.

4.1 Participatory Action Research (PAR) and the Social Tenure Domain Model (STDM)

This section focuses on the specific contributions of PAR and STDM to climate adaptation strategies. Communities can co-create solutions, strengthen women's leadership in resource management, and integrate diverse knowledge systems for long-term results by using these approaches.

4.1.1 Integrating Participatory Action Research (PAR)

The CAT-PC is designed to address the critical issues confronting pastoralist communities by providing customised climate change adaptation solutions. At the heart of this method is the incorporation of Participatory Action Research (PAR), which fosters collaborative inquiry and community empowerment (Mckay, 2011). PAR involves community members, especially women, in pinpointing vulnerabilities and jointly developing solutions, ensuring that the adaptation strategies are culturally and contextually relevant. This inclusive method not only bolsters community ownership but also secures the longevity of the adaptation efforts.

Furthermore, the toolkit comprises practical instruments for evaluations led by the community, enabling locals to gauge their own circumstances. In particular, the CAT-PC employs intersectional qualitative analysis at personal, communal, and institutional tiers. This approach examines climate resilience factors across distinct levels of social organisation, fostering a comprehensive grasp of the challenges pastoralist communities' encounter. Through the examination of resilience from an intersectional standpoint, the CAT-PC effectively addresses the unique vulnerabilities of diverse groups, with a particular emphasis on women.

The foundation of the CAT-PC approach is a thorough data collection and community mapping strategy. Initiatives for capacity development support the enumeration methodology, which consists of GIS mapping, systematic socioeconomic and demographic data collection, data analysis, and community engagement. Through empowering communities to gather information and create their own plans, the CAT-PC guarantees that the climate action plans generated are inclusive, sustainable, and customised to meet the unique requirements of the community. In addition to increasing local capacity, this approach strengthens the community's ability to withstand present and upcoming climate challenges.

Nevertheless, although PAR holds significant promise for community empowerment, the literature also points out obstacles like superficial involvement and power imbalances that may affect its success (Breton-Carbonneau et al., 2024; Mckay, 2011). To counter these issues, the CAT-PC framework integrates ongoing capacity-building measures and prioritises the

inclusion of marginalised groups, particularly women, in decision-making processes. This method minimises the chances of perfunctory participation and improves the toolkit's overall efficacy.

4.1.2 Leveraging the Social Tenure Domain Model (STDM)

The incorporation of the Social Tenure Domain Model (STDM) into the CAT-PC provides a basis for acknowledging and formalising land rights, which is crucial for pastoralist communities grappling with land tenure issues. Secure land tenure is essential for boosting pastoralists' resilience to climate change, as it aids in improved resource planning and management, leading to sustainable livelihoods. The CAT-PC enables community-driven data gathering to chart land use and ownership patterns, ensuring that these initiatives reflect the local context.

In pastoralist communities, women frequently encounter substantial obstacles in obtaining and maintaining land rights due to deep-seated patriarchal traditions. The CAT-PC integrates gender-responsive methods within the STDM framework to tackle these disparities. This includes recognising and documenting women's land use patterns and ensuring their active involvement in land governance. These measures not only support women's coping strategies but also fortify the community's collective resilience to climate change.

4.1.3 Intersectional Vulnerability Analysis and Strategic Planning

The Climate Adaptation Toolkit for Pastoralist Communities (CAT-PC) integrates intersectional vulnerability analysis to address the gender-specific challenges faced by pastoralist women. Vulnerabilities among pastoralists are shaped by a combination of factors, including gender, socioeconomic status, and age etc. Women in pastoralist settings, for instance, often face disproportionate barriers to resource access, decision-making, and land rights, which are further exacerbated by climate change (Carr, 2013; Walker, Bruyere, Solomon, et al., 2022). The CAT-PC uses participatory methods like community mapping and focus groups to ensure that these compounded vulnerabilities are recognised and factored into adaptation strategies (Rao, Mishra, et al., 2019).

Simultaneously, the toolkit emphasises strategic planning rooted in community values. It recognises that successful adaptation strategies must align with the cultural and social frameworks of pastoralist communities. The engagement of community members in discussions about land use, social cohesion, and resource management by the CAT-PC ensures that adaptation strategies reflect local priorities, such as the preservation of grazing lands and livestock (Omolo & Mafongoya, 2019). Thus, the toolkit fosters social equity by actively involving women in decision-making processes, thereby promoting more inclusive and sustainable adaptation efforts (Aregu et al., 2016; Furusa & Furusa, 2014).

Moreover, by guaranteeing that adaptation efforts are planned to be in line with both environmental and cultural objectives, this strategic planning strengthens their sustainability. The CAT-PC develops a framework for climate adaptation that is not only appropriate for the given context but also able to support long-term resilience to future climate shocks. The firm establishment of adaptation strategies in the values that pastoralist communities value most, such as social cohesion, land conservation, and community resilience is a core objective of the toolkit. As Ingram and Hamilton (2014) suggest, such an approach enhances community ownership, increasing the likelihood that these adaptation strategies will be maintained and evolve in response to future challenges.

4.2 Key Features of the CAT-PC Mobile Application

The CAT-PC mobile application is designed with user-friendliness and accessibility at its core. It features a simple interface with visual aids and intuitive navigation, catering to users with varying literacy levels. Offline functionality enables data collection and synchronisation in regions with limited connectivity, while customisable data entry options, such as flexible formats and multiple language support, enhance usability. The application integrates GIS mapping and weather applications for comprehensive insights, and robust privacy measures ensure data security and confidentiality. These features position the CAT-PC as a vital tool for enabling community-led data collection, analysis, and planning.

4.4 How to use the CAT-PC

The toolkit provides a streamlined, four-step framework for creating a Climate Action Plan. Action A involves conducting a thorough assessment of climate impacts and their effects on different community groups. In Action B, key challenges are identified, and actionable objectives are set based on community values. Action C focuses on developing and evaluating a list of feasible adaptation strategies. Finally, Action D emphasises implementing the action plan, tracking progress, and refining strategies as needed. This participatory process ensures inclusivity and fosters community ownership of adaptation efforts.

4.5 4.4 Benefits and Implications

The CAT-PC preserves indigenous knowledge by integrating traditional practices with modern data, creating adaptive and culturally relevant strategies. It strengthens local capacity by equipping communities with tools for ongoing climate resilience management and promotes gender equity by ensuring women's participation in decision-making, thereby improving social cohesion and equity. In terms of policy, the CAT-PC underscores the need for long-term, participatory policymaking that integrates community insights into climate adaptation strategies. Policymakers are encouraged to prioritise inclusive approaches that foster social learning and empower marginalised groups.

4.6 Research Gaps and Future Research Directions

Key areas for further research include the sustainability of integrating PAR and STDM into adaptation strategies and the scalability of the CAT-PC across diverse pastoralist contexts. Investigating the toolkit's impact on women's development and decision-making roles, as well as exploring barriers and facilitators of mobile application for participatory research use in remote pastoralist areas, are also critical.

5. Conclusion

The Climate Adaptation Toolkit for Pastoralist Communities (CAT-PC) is an innovative mobile application designed to empower pastoralist communities in Kenya and the Horn of Africa, with a particular focus on addressing the challenges faced by women. By integrating Participatory Action Research (PAR) and the Social Tenure Domain Model (STDM), the toolkit facilitates the creation of gender-responsive and community-driven climate adaptation strategies. The CAT-PC addresses the unique vulnerabilities of pastoralist communities, especially women, who face disproportionate challenges due to climate change and existing socio-economic inequalities. Through a comprehensive approach that includes community-led data collection, GIS mapping, and intersectional analysis, the toolkit ensures that adaptation plans are culturally relevant, inclusive, and sustainable. The CAT-PC's framework is structured around four key actions: assessing the current situation, identifying priorities, developing adaptation options, and implementing and monitoring strategies. Through preserving and integrating indigenous knowledge, strengthening local capabilities, and promoting gender

equity, the CAT-PC contributes to broader community resilience and sustainable development. The upcoming pilot implementation in Kajiado will provide valuable insights into the toolkit's potential for scalability, offering a model for adaptation in other pastoralist regions. Through the CAT-PC, pastoralist communities are better equipped to build a resilient and adaptive future in the face of climate change.

References

Anbacha, A. E., & Kjosavik, D. J. (2019). The Dynamics of Gender Relations under Recurrent Drought Conditions: a Study of Borana Pastoralists in Southern Ethiopia. *Human Ecology*, *47*(3), 435–447. https://doi.org/10.1007/s10745-019-00082-y

Aregu, L., Darnhofer, I., Tegegne, A., Hoekstra, D., & Wurzinger, M. (2016). The impact of gender-blindness on social-ecological resilience: The case of a communal pasture in the highlands of Ethiopia. *Ambio*, *45*, 287–296. https://doi.org/10.1007/s13280-016-0846-x

Balehey, S., Tesfay, G., & Balehegn, M. (2018). Traditional gender inequalities limit pastoral women's opportunities for adaptation to climate change: Evidence from the Afar pastoralists of Ethiopia. *Pastoralism*, *8*(1). https://doi.org/10.1186/s13570-018-0129-1

Beck, D., & Purcell, R. (2013). Slum Dwellers International and case studies. *International Community Organising*, 111–138. https://doi.org/10.46692/9781847429780.007

Bhadwal, S., Sharma, G., Gorti, G., & Sen, S. M. (2019). Livelihoods, gender and climate change in the Eastern himalayas. *Environmental Development*, *31*, 68–77. https://doi.org/10.1016/j.envdev.2019.04.008

Breton-Carbonneau, A. C., Anguelovski, I., O'Brien, K., Echevarría-Ramos, M., Fina, N., Genty, J., Seeder, A., Binet, A., Williams, P. C., Cole, H. V., & Triguero-Mas, M. (2024). Exploring ownership of change and health equity implications in neighborhood change processes: A community-led approach to enhancing just climate resilience in Everett, MA. *Health and Place*, *89*. https://doi.org/10.1016/j.healthplace.2024.103294

Carr, E. R. (2013). *Gender and Climate Change Adaptation in Agrarian Settings*. https://www.researchgate.net/publication/260987493

Carr, E. R., & Thompson, M. C. (2014). Gender and Climate Change Adaptation in Agrarian Settings: Current Thinking, New Directions, and Research Frontiers. *Geography Compass*, *8*(3), 182–197. https://doi.org/10.1111/gec3.12121

Catley, A. (2017). *Pathways to Resilience in Pastoralist Areas: A synthesis of Research in the Horn of Africa*. https://fic.tufts.edu/publication-item/pathways-to-resilience/

Danilo, A. (2013). The Social Tenure Domain Model: a Specialisation of LADM towards bridging the Information Divide. *Land Administration Domain Model Workshop*.

Furusa, Z., & Furusa, M. (2014). Women's coping and adaptation capacities in pastoralist communities in Africa: Dealing with climate variability and change. *Agenda*, *28*(3), 65–72. https://doi.org/10.1080/10130950.2014.951218

Galvin, K. A. (2021). Transformational adaptation in drylands. In *Current Opinion in Environmental Sustainability* (Vol. 50, pp. 64–71). Elsevier B.V. https://doi.org/10.1016/j.cosust.2021.03.003

Glowacki, L. (2020). The emergence of locally adaptive institutions: Insights from traditional social structures of East African pastoralists. *BioSystems*, *198*. https://doi.org/10.1016/j.biosystems.2020.104257

Grillos, T. (2018). Women's participation in environmental decision-making: Quasi-experimental evidence from northern Kenya. *World Development*, *108*, 115–130. https://doi.org/10.1016/j.worlddev.2018.03.017

Hazel, A., Meeks, G., Bharti, N., Jakurama, J., Matundu, J., & Jones, J. H. (2021). Opportunities and constraints in women's resource security amid climate change: A case study of arid-living Namibian agro-pastoralists. *American Journal of Human Biology*, *33*(4). https://doi.org/10.1002/ajhb.23633

Hossen, M. A., Benson, D., Hossain, S. Z., Sultana, Z., & Rahman, M. M. (2021). Gendered perspectives on climate change adaptation: A quest for social sustainability in badlagaree village, Bangladesh. *Water (Switzerland)*, *13*(14). https://doi.org/10.3390/W13141922

Ingram, J., & Hamilton, C. (2014). Planning for Climate Change. A Strategic, Values-based Approach for Urban Planners. In B. Barth, M. A. Cea, L. Fee, K. Koch, L. Nesbitt, & V. Quinlan (Eds.), © *United Nations Human Settlements Programme (UN-Habitat),*. United Nations Human Settlement Programme (UN-Habitat).

Kirui, L. K., Jensen, N. D., Obare, G. A., Kariuki, I. M., Chelanga, P. K., & Ikegami, M. (2022). Pastoral livelihood pathways transitions in northern Kenya: The process and impact of drought. *Pastoralism*, *12*(1). https://doi.org/10.1186/s13570-022-00240-w

Mckay, S. (2011). Participatory Action Research, Community-Based. In *The Encyclopedia of Peace Psychology*. Wiley. https://doi.org/10.1002/9780470672532.wbepp186

Ng'ang'a, T. W., & Crane, T. A. (2020). Social differentiation in climate change adaptation: One community, multiple pathways in transitioning Kenyan pastoralism. *Environmental Science and Policy*, *114*, 478–485. https://doi.org/10.1016/j.envsci.2020.08.010

Ngigi, M. W., Mueller, U., & Birner, R. (2017). Gender Differences in Climate Change Adaptation Strategies and Participation in Group-based Approaches: An Intra-household Analysis From Rural Kenya. *Ecological Economics*, *138*, 99–108. https://doi.org/10.1016/j.ecolecon.2017.03.019

Omolo, N., & Mafongoya, P. L. (2019). Gender, social capital and adaptive capacity to climate variability: A case of pastoralists in arid and semi-arid regions in Kenya. *International Journal of Climate Change Strategies and Management*, *11*(5), 744–758. https://doi.org/10.1108/IJCCSM-01-2018-0009

Patel, S., Baptist, C., & D'Cruz, C. (2012). Knowledge is power - informal communities assert their right to the city through SDI and community-led enumerations. *Environment and Urbanization*, *24*(1), 13–26. https://doi.org/10.1177/0956247812438366

Rao, N., Lawson, E. T., Raditloaneng, W. N., Solomon, D., & Angula, M. N. (2019). Gendered vulnerabilities to climate change: insights from the semi-arid regions of Africa and Asia. *Climate and Development*, *11*(1), 14–26. https://doi.org/10.1080/17565529.2017.1372266

Rao, N., Mishra, A., Prakash, A., Singh, C., Qaisrani, A., Poonacha, P., Vincent, K., & Bedelian, C. (2019). A qualitative comparative analysis of women's agency and adaptive capacity in climate change hotspots in Asia and Africa. *Nature Climate Change*, *9*(12), 964–971. https://doi.org/10.1038/s41558-019-0638-y

Venkatasubramanian, K., & Ramnarain, S. (2018). Gender and Adaptation to Climate Change: Perspectives from a Pastoral Community in Gujarat, India. *Development and Change*, *49*(6), 1580–1604. https://doi.org/10.1111/dech.12448

Walker, S. E., Bruyere, B. L., Solomon, J. N., Powlen, K. A., Yasin, A., Lenaiyasa, E., & Lolemu, A. (2022). Pastoral coping and adaptation climate change strategies: Implications for women's well-being. *Journal of Arid Environments*, *197*. https://doi.org/10.1016/j.jaridenv.2021.104656

Walker, S. E., Bruyere, B. L., Zarestky, J., Yasin, A., Lenaiyasa, E., Lolemu, A., & Pickering, T. (2022). Education and adaptive capacity: the influence of formal education on climate change adaptation of pastoral women. *Climate and Development*, *14*(5), 409–418. https://doi.org/10.1080/17565529.2021.1930508

Wangui, E. E. (2014). Livelihood Shifts and Gender Performances: Space and the Negotiation for Labor among East Africa's Pastoralists. *Annals of the Association of American Geographers*, *104*(5), 1068–1081. https://doi.org/10.1080/00045608.2014.924734

Wangui, E. E., & Smucker, T. A. (2018). Gendered opportunities and constraints to scaling up: a case study of spontaneous adaptation in a pastoralist community in Mwanga District, Tanzania. *Climate and Development*, *10*(4), 369–376. https://doi.org/10.1080/17565529.2017.1301867