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Article in *Journal of Peasant Studies* · September 2022

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To cite this article: Edwige Marty, Renee Bullock, Matthew Cashmore, Todd Crane & Siri Eriksen (2022): Adapting to climate change among transitioning Maasai pastoralists in southern Kenya: an intersectional analysis of differentiated abilities to benefit from diversification processes., The Journal of Peasant Studies, DOI: [10.1080/03066150.2022.2121918](https://doi.org/10.1080/03066150.2022.2121918)

To link to this article: <https://doi.org/10.1080/03066150.2022.2121918>



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## Adapting to climate change among transitioning Maasai pastoralists in southern Kenya: an intersectional analysis of differentiated abilities to benefit from diversification processes.

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### ABSTRACT

With increasingly fragmented rangelands, restricted mobility and climatic stress, diversification has accelerated among East African pastoralists. Diversification is also promoted as a climate change adaptation strategy to reduce climatic exposure. Through a study of a Maasai communal land in southern Kenya, we analyze how pastoralists navigate changing access to key productive resources that are linked to diversification processes, social differentiation, and the reshaping of livelihood practices. By integrating an intersectional approach in access theory, we unpack a deeper level of context specific patterns of inclusion and exclusion embedded within evolving production relations.

### KEYWORDS

Pastoralism; diversification; intersectionality; climate change adaptation; agrarian struggles

## Introduction

‘That time when the world started changing, people started looking for casual jobs, work they could do so that they could take care of their children because cows had finished.’

*Elder Maasai woman, Olkiramatian, 2021.*

In recent decades, pastoralists in East Africa have been diversifying their livelihoods at a scale and speed not previously observed (Lenaiyasa et al. 2020; Little 2021; McCabe, Leslie, and DeLuca 2010; Karmebäck et al. 2015; Caravani 2019). Diversification, now essential to many households’ livelihood strategies (Homewood, Kristjanson, and Chenevix Trench 2009; Pollini and Galaty 2021; Nkedianye et al. 2020), includes changing herd composition and livestock production patterns, often to be more intensive and commercially-oriented (Herrero et al. 2016; Rutten 1992). Diversification can also involve investing time and resources away from livestock keeping into ventures such as crop farming, business, or wage employment (Pollini and Galaty 2021). This trend has multiple drivers, both environmental and political economic.

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With changing climatic conditions, including increasingly unpredictable rainfall patterns and an increased likelihood of extreme events, diversification is increasingly framed as a cornerstone of climate resilient households, communities and systems in discourses and policies (Cochrane and Cafer 2017). In pastoral areas, the emphasis on diversification comes from recognition of the high vulnerability of the sector to climatic stressors (Herrero et al. 2016). Estimates of climate change's impacts on pastoral production systems predict higher livestock mortality rates and weaker reproductive capacities, with associated declines in milk and meat production (Herrero et al. 2016; Thornton et al. 2009). Climate change is also predicted to affect water availability as well as fodder composition and quality, which could increase competition for grazing grounds and water resources in pastoral areas (Herrero et al. 2016; Thornton et al. 2009).

Diversification, however, is a particularly contentious issue in the pastoralism literature because it also responds to political economic conditions – notably decades of sedentarization and privatization policies imposed on historically marginalized pastoral communities which have led to fragmented rangelands, creating impetus for diversification (Lenaiyasa et al. 2020; Little 2021; Scoones 2021; Nkedianye et al. 2020; Homewood, Kristjanson, and Chenevix Trench 2009). In the Kenyan context, pastoralists were often framed in policies as unproductive land users and pushed towards alternative activities that were more intensive and market-oriented (Nkedianye et al. 2020; Odhiambo 2014; Boles et al. 2019). Nevertheless, diversification is not always a forced response to hardship, but also occurs through important pull factors, such as changing cultural values and socio-economic aspirations (McCabe, Leslie, and DeLuca 2010; Lenaiyasa et al. 2020). Academic debates on pastoral diversification examine the conditions under which it might or might not be considered successful, emphasizing trade-offs between specialization and risk mitigation and hinting at on-going processes of wealth differentiation and class formation (Nkedianye et al. 2020; Little 2021; Crane 2010; Caravani 2019; Galaty and Bonte 2018). Regardless of its drivers, diversification is predicated on shifting the use and access to key productive resources in pastoral landscapes, reshaping long-standing adaptive strategies and cultural institutions (Pollini and Galaty 2021).

Applying Ribot and Peluso's (2003) theory of access to Maasai pastoralists in southern Kenya, we analyse socially differentiated access strategies to resources necessary to diversify production and how these shape people's abilities to benefit from diversification processes in a changing climate. Social differentiation within agrarian societies is (re)produced through differential resource access, labor roles and decision-making power among social groups sharing specific characteristics, such as their age or gender (Ripoll et al. 2017). While pastoralists are often misrepresented as a homogenous group, new production patterns are reshaping resource use, labor roles and means of social reproduction in pastoral areas (Caravani 2019; Rao 2019; Wangui 2008). Similarly, the critical adaptation scholarship has long stressed the need to consider how historical inequalities and social structures differentiate vulnerability to climate change, as well as differentiated abilities to adapt (Ribot 2014). Adaptive processes themselves can challenge or reinforce existing inequalities (Eriksen, Nightingale, and Eakin 2015; Brisebois, Eriksen, and Crane 2022). Our analysis focuses on the embedded mechanisms of social inclusion and exclusion through interrogating how intersectional social positions regulate people's ability to benefit from diversification in the face of climate change.

This article contributes to critical agrarian studies and adaptation literature through an intersectional analysis of how pastoralists navigate the combined pressures of climate change, accelerated capitalist expansion, and changing agrarian politics affecting resource use. The objective is to understand how changing resource access and production relations linked to diversification processes (re)shape pastoralists' resource use in the face of climate change, following three interrelated questions: 1. How do pastoralists access the resources necessary to diversify livelihoods? 2. Which embedded mechanisms of inclusion and exclusion are (re)produced through these strategies of access and changing production relations? and 3. How do these affect the ability of individuals to access potential benefits derived from diversification and community resilience in a changing climate? We start by elaborating a novel analytical framework which analyses how the intersection of power, through gender, age and education, shapes access in a transitioning pastoral area. Understanding access through an intersectional lens directs critical attention to the (re)production of power relations through differentiated access strategies and changing production relations employed by various pastoralists to navigate unfolding diversification processes.

Through an empirical study, we engage with some of the questions raised in the introductory essay of this Forum on the social differentiation dynamics that are associated with climate change adaptation processes in agrarian settings (Borras et al. 2022, 17). We propose a case – one that looks at adaptation through diversifying production practices among Maasai pastoralists – which allows us to reflect on how differentiated people and societies engage with and are affected by adaptation processes responding to both increasing climatic stressors and changing agrarian political economies. This analytical approach also responds to recent calls by scholars to go beyond the classic pastoralist literature readily framing change as a peril to pastoralists and to borrow from critical agrarian studies perspectives to analyse the actual ramifications of changing trajectories of production, accumulation, and agrarian politics on diverse local resource users in order to understand the dynamics changing pastoral practices and associated shifting socio-cultural relations (Scoones 2021, 30; Greiner 2021).

### **Theoretical framework: accessing, intersectionality and pastoral adaptation**

We approach diversification as 'an active social process' in which smallholders increasingly involve themselves with different activities (Ellis 1998, 5). Expected benefits from diversification are not only income-based (Ellis 1998). Instead, for pastoral adaptation, benefits can be understood in terms of resilience to increased climatic stressors through the spreading of risk and improving food security. Furthermore, we do not assume that diversification brings only benefits. Instead, we analyze people's abilities to access benefits from diversification as a way of understanding social differentiation in adaptation in a transitioning pastoral context. Changing resource access is an appropriate empirical entry point for studying diversification processes because pastoral livelihoods are closely linked to flexible and seasonal access to key socio-environmental resources to cope with high level of climatic uncertainty and variability while livelihood diversification implies new patterns of resource access as well as of social organization – both spatially and temporally which affects the resilience of the system (Scoones 2021).

Ribot and Peluso's *Theory of Access* (2003) construes access as the ability to reap benefit, building on earlier works that emphasized that access to resources needs to be considered as 'people's ability to control and use resources effectively' (Berry 1989, 41). The ability to benefit from resources is affected by rights-based, structural and relational mechanisms (Ribot and Peluso 2003). While legal rights are not irrelevant, they are not necessarily a straightforward indication of the ability to benefit. Instead, analysis of structural and relational mechanisms – such as access through authority, knowledge or social identity – serve to interrogate the disconnection between 'formal law and diverse practices' (Peluso and Ribot 2020, 302). Exploring the 'grey zone' between rights and access is particularly crucial in post-colonial contexts, where multiple co-existing institutions exercise normative and legal power (Sikor and Lund 2009, 2).

Recent contributions to access theory elaborate how power relations are embedded within and shape changing patterns of resource use. In particular, they explore authority relations between those controlling and those gaining or maintaining access (Milgroom and Ribot 2019). They also highlight conceptualizations of legitimacy and entanglement to show how changes in the power of customary institutions influence access for different social groups (Lau et al. 2020). Several scholars turn access theory around, to examine the mechanisms that exclude or prevent people from benefiting from resources (Pichler, Schmid, and Gingrich 2021; Hall, Hirsch, and Li 2011). We argue that the mechanisms that include or exclude people are intimately linked and should be further examined together. Another key contribution to access theory emphasizes the need to go beyond analyzing existing rules and norms of access to analyzing actual social practices of access, which the authors conceptualize as 'accessing' (Milgroom, Giller, and Leeuwis 2014). Analyzing practices of accessing resources highlights the relationality of people's agency and power in gaining access, and thus enables a clearer view of how accessing varies by social position. This aligns with the critical adaptation scholarship that understands vulnerability as socio-politically produced (Eriksen, Nightingale, and Eakin 2015; Taylor 2013), as well as with recent feminist works in the climate change field emphasizing the (re)production of social relations at different scales and at the intersection of inequalities (for example, Thompson-Hall, Carr, and Pascual 2016; Brisebois, Eriksen, and Crane 2022; Tavenner and Crane 2022).

Socially locating strategies for accessing resources shows how intersectional social positions differentially affect people's abilities to navigate change as well as the socio-political factors facilitating or hindering the ability to benefit from diversification. Within the domain of climate change adaptation, a previous focus on capacities to adapt was noted to be misleading by conceptualizing capacities as 'innate characteristics of those at risk' (Ribot 2014, 682). Critiquing techno-managerial approaches to climate risk reduction, recent literature emphasizes the (re)production of inequalities and the unintended effects of adaptive processes which can deepen the vulnerabilities of the most marginalized (Atteridge and Remling 2018; Eriksen et al. 2021). As an adaptation process, diversification brings new opportunities for some people, but can also displace risks and bring new exposures for others, acting as 'a socially stratifying capitalist fix providing new avenues for accumulation and market penetration', benefiting a small elite (Mikulewicz 2021, 424). Emphasizing adaptation as occurring within 'relational nature of power' situates individuals and social groups at the intersections of both 'power and

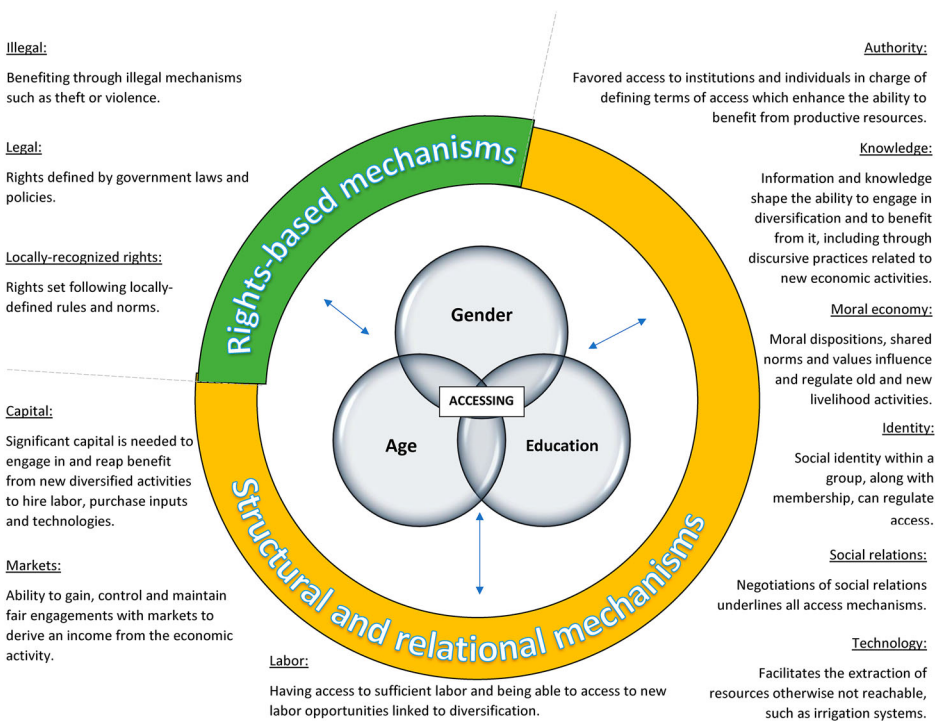
oppression', requiring deeper analysis of on-going processes between and within households (Djoudi et al. 2016, 249).

We use an intersectional approach to probe the interplay of different social positions as they shape resource access, ownership, labor roles and decision-making patterns in agrarian contexts (Djoudi et al. 2016; Thompson-Hall, Carr, and Pascual 2016). Intersectionality refers to the ways multiple identify factors, such as age and gender, combine to shape one's experience of the world (Crenshaw et al. 1991). Aligning with recent calls to 'demonstrate how power and agency operate in complex, place-specific, and sometimes contradictory ways to affect lived experiences with adaptation' (Garcia and Tschakert 2022, 2), we focus our analysis on how the interplay of three axes of social differences – age, gender and formal education levels<sup>1</sup> – shapes people's ability to benefit from diversification. While our research was designed to analyze gendered and generational dynamics, we had not initially focused on education as a variable but its importance as an additional marker of social differentiation emerged through the fieldwork and data analysis. Focusing on education as an additional characteristic that intersects with gender and age helped to refine our understanding of the power dynamics. Other salient axes of social differentiation, such as wealth, ethnicity, or location, also influence abilities to benefit from diversification and these are mentioned when relevant but not covered in depth. This approach is a useful part of an intersectional analysis, because it allows us to inductively capture relevant aspects (Kaijser and Kronsell 2014), and grounds our understanding of how inequalities are (re)produced through diversification processes, highlighting both readily considered dimensions of inequality, such as gender, but also context-specific dimensions often not considered in adaptation research, such as education levels and language (Garcia and Tschakert 2022).

Figure 1 presents both rights-based and structural and relational mechanisms considered for our study. Similar to Milgroom, Giller, and Leeuwis (2014), we add another category as a distinct rights-based mechanism. They add 'institutions' to refer to rights secured through informal rules as opposed to rights attributed by law (2014, 201). However, we prefer to use the term 'locally-recognized' to refer to the rights operationalized locally through various forms of informal and formal governance processes, as we find a strict distinction between formal and informal rules difficult to maintain. Several land policies changes, as well as new cross-scale hybrid governance arrangements, have led to an assemblage of institutions coexisting and regulating resource use and management in the southern Kenyan pastoral rangelands (Brehony 2020). Moreover, we add moral economy (Agyei, Hansen, and Acheampong 2020) to the structural and relational mechanisms because it captures the strong cultural norms and values shaping resource governance among Maasai (Pollini and Galaty 2021; Archambault 2016). Agyei, Hansen, and Acheampong (2020, 239) define moral economy following Thompson (1971) as the ways 'economic activities are influenced and structured by moral dispositions, values and norms – a normative behavior that emerges from lived experience and people's intuitive sense of justice'.

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<sup>1</sup>References to education in this manuscript imply having attended formal education. However, this does not mean we do not recognize Maasai's own customary educational systems and the transmission of indigenous knowledge which is often unacknowledged and undervalued.



**Figure 1.** Intersectional approach to analyze access linked to diversification processes – access mechanisms’ definitions drawn from Ribot and Peluso (2003); Milgroom, Giller, and Leeuwis (2014, 210); Agyei, Hansen, and Acheampong (2020, 239).

## Research design

### The setting<sup>2</sup>

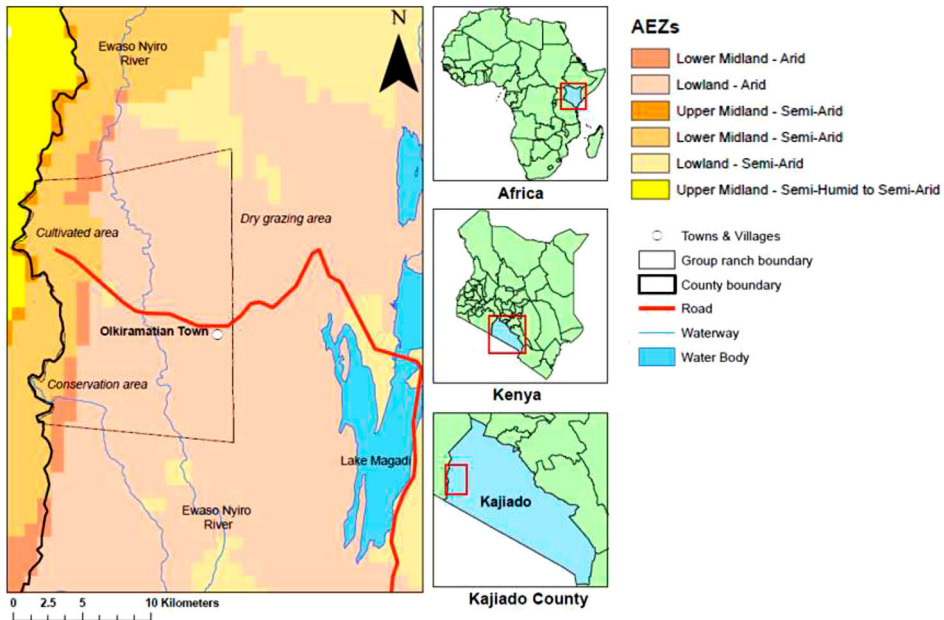
#### The case of Olkiramatian

This study was conducted in the communally owned and managed land of Olkiramatian, Kajiado County, southern Kenya (Figure 2). This is an arid environment with bi-modal rainy seasons, receiving an average annual rainfall of less than <500 mm (Bobadoye et al. 2014). In recent years, higher rainfall variability and unpredictability have been noted within Kajiado County and this variability is predicted to increase with climate change, along with temperatures (Matsaba et al. 2021). These patterns, notably temperatures increases, fit with the observed historical climatic changes and with future climate change predictions for Kenya, but actual changes in rainfall remain hard to pinpoint, as they will vary greatly by location due to the complex topography (Gebrechorkos, Hülsmann, and Bernhofer 2018). While droughts remain the main concern, flooding events have increasingly affected Olkiramatian, as the wetter areas used for dry season grazing have recently experienced floods that destroyed crops, herds, and habitations.

Prior to independence, the British colonial government pushed Maasai into ‘reserves’, established through the 1904 and 1911 Maasai agreements, with the final southern

<sup>2</sup>While this section references recent research conducted in the area, the background of the study area explained here is also based on the collected research data.





**Figure 2.** Olkiramatian. Scale: 1:210,537. Nairobi, Kenya: M. W. Graham, 5 April, 2022. ArcMap v. 10.6. ESRI Software, USA, 1995–2022.

reserve's borders mirroring today's Narok and Kajiado Counties (Hughes 2002). For Olkiramatian, the 1911 agreement is contentious for permitting the Crown to regulate mining and lease part of the land to the Magadi Ash Soda Company (Hughes 2008).<sup>3</sup> Following independence and the 1968 Land Adjudication Act (Republic of Kenya 1968), communally owned and managed pastoral areas in Kenya were administered as 'group ranches'. This legal status was applied at different times across Kajiado County, giving locally-elected management committees powers to regulate land uses (Mwangi 2003). This form of communal land title was thought a good compromise to reduce mobility and increase productivity, while conserving customary resource governance arrangements (German et al. 2017). Olkiramatian, with 24,000 hectares of land, became a group ranch in 1978, successfully appointing, and later electing, several management committees to govern alongside an assemblage of customary Maasai institutions, notably age sets, clan, and location-based leaders. Across Kajiado, most communal group ranches established in the 1970s were subdivided into privatized plots in the following decades, stimulating complaints about unfair subdivision and sales of land, as well as general lack of accountability of elected leaders (Kimani and Pickard 1998; German et al. 2017; Rutten 1992; Mwangi 2003).

Olkiramatian is one of the few group ranches within Kajiado County that remained mostly undivided. Yet, significant land use decisions were made in the following decades by the group ranch management committees. The boundaries of the group

<sup>3</sup>The Magadi concession is now run by Tata Chemicals which still legally controls half of Olkiramatian's land through a lease agreement debated in court – this broadly corresponds to the dry grazing area on Figure 2. Producing a map with clear boundaries for Olkiramatian is challenged by the on-going land disputes, not only with Tata Chemicals, but also around the Musenge area, and around the border area with Narok County.

ranch were redefined in 1993, with the subdivision and sale of land north of the group ranch, known as Musenge, to several influential leaders in an attempt to formally exclude the Ilpurko Maasai section, viewed as outsiders by the Illoodokilani majority since their displacement from Laikipia, and counter their settling within Olkiramatian (Brehony 2020). Starting from the 1990s, a partition of the group ranch into two areas was decided upon, with the wetter area of Olkiramatian – referred to as Phase 1, reserved for crop agriculture. Only registered group ranch members are eligible to be allocated a plot for farming. The delimited agricultural area, Nkuruman, is suitable for crop farming due to two rivers, Oloibortoto and Entasopia, coming down the escarpment and providing water for irrigation. Batemi agriculturists from the nearby Kenya/Tanzania border area, as well as Kikuyus and Kambas from the Kenyan highlands, have migrated to farms in Olkiramatian, seeking plot rental agreements with the registered members. Phase 2, the drier area, remained for communal use and pastoral livestock keeping. In 2003, the group ranch committee also delineated a conservation area which serves as a communal dry season reserve grass bank and a site for wildlife tourism (Brehony 2020).

Diversification processes and some of the opportunities that are present in Olkiramatian, notably for cash crop farming in Phase 1, are linked to the unique agro-ecology of the land but also to the better relative road connectivity compared to neighboring group ranches. This context makes Olkiramatian a unique case for analyzing social differentiation dynamics linked to diversification processes in a ‘transitioning’ pastoral system, one that is still communal but experiencing accelerated land use and production shifts.

### *Land reforms in the Kenyan drylands*

In 2016, the Community Land Act (CLA) was introduced in Kenya with new regulations affecting the few remaining unsubdivided group ranches in Kajiado County, which had to transition towards being legally registered as community lands (Government of Kenya 2016). The status change was envisioned to increase inclusivity and accountability in governance by requiring the registration of all inhabitants of the former group ranches as community land members<sup>4</sup>, while asserting indigenous communal land rights. Membership registration patterns within group ranches were key recurring nodes of tension across Kajiado and other Kenyan drylands (Mwangi 2003; Rutten 1992; German et al. 2017). There remains considerable ambiguity under the CLA as to who is and can be recognized as a member within a given community land, thus creating ambiguity about who can claim resource access (Muok et al. 2021). The transition occurs in the context of devolution following the 2010 constitution, with tensions across different scales of governance (Cheeseman, Lynch, and Willis 2016; Lind 2018). Notably, both county and national governmental bodies have land offices and the definition of the powers accorded to different land governance institutions is a very contested issue (Di Matteo 2022; Achiba and Lengoiboni 2020). The imposed transition initiated significant changes within Kajiado County, precipitating renewed pushes for subdivision among some of the unsubdivided group ranches. In Olkiramatian, lingering discussions around the subdivision of the agricultural area into individual land titles create significant

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<sup>4</sup>The Community Land Act defines a community vaguely as “a consciously distinct and organized group of users of community land who are citizens of Kenya and share any of the following attributes— (a) common ancestry; (b) similar culture or unique mode of livelihood; (c) socio-economic or other similar common interest; (d) geographical space; (e) ecological space; or (f) ethnicity” (Government of Kenya 2016, 5).

**Table 1.** Overview of interview participants in the study.

Interview types	Men	Women
Focus group discussions (# of participants in each)		
<i>Adults – wet area</i>	1 (6)	1 (6)
<i>Youth &lt;35 years old<sup>6</sup> – wet area</i>	1 (6)	1 (6)
<i>Adults – dry area</i>	1 (6)	1 (6)
<i>Youth &lt;35 years old – drier area</i>	1 (7)	1 (6)
<i>Total number of FGDs (# of participants)</i>	= 4 (25)	= 4 (24)
Local leaders in resource management committees	7	3
Local resource users		
<i>Adults</i>	12	17
<i>Youth &lt;35 years old</i>	7	7
County government employees		
<i>Individual interview</i>	3	1
<i>Group interview (# of participants)</i>	1 (1)	(1)
Extension officers for Magadi ward		
<i>Group interview (# of participants)</i>	1 (2)	(1)
NGOs /CBOs employees	4	1
<i>Total number of individual interviews (# of participants)</i>		63(67)

socio-political turmoil that is still ongoing. At the time of writing, Olkiramatian has started to transition into a registered community land but with reservations to subdivide Phase 1 following the pre-existing membership list.

## Methodology

This research followed a qualitative case study approach which centered on a small land area as it allows us to analyze in depth the context-specific inclusion and exclusion dynamics associated with changing resource access among diversifying pastoralists. Our aim was to explore processes of social differentiation associated with diversification processes. Our research design did not aim to generate representative data but to delve deeper into the complexities of differentiated strategies of access. We sampled from different demographic groups to gather differentiated individual and group perspectives on resource changes and access patterns (Table 1). Going beyond taking households as the unit of analysis is critical in a Maasai pastoral context, where production is negotiated through several social units with differentiated labor roles and responsibilities (McCabe, Leslie, and DeLuca 2010). The *enkaji* is the unit made of a wife and her children while the *olmarei* consists of the husband, his wives, and children, finally, the *enkang* is made of several *olmarei* living together managing the livestock (Coast 2001).

Data were collected through focus group discussions (FGDs) and semi-structured interviews. Eight FGDs were held with small groups disaggregated by sex, age and location/livelihood to provide insights into the resources most valued and used, as well as perceived changes over time. The FGDs also included a participatory ranking activity that was used to develop an understanding of changing normative ideals. Participants were asked to discuss the factors that made someone best-off or worst-off in the past 10

<sup>6</sup>This demarcation follows the Government of Kenya's definition of youth (Government of Kenya 2019).

years as compared to present. The FGDs broadly followed the GENNOVATE methodology (Petesch and Prain 2018) by adapting the Ladder of Life activity.

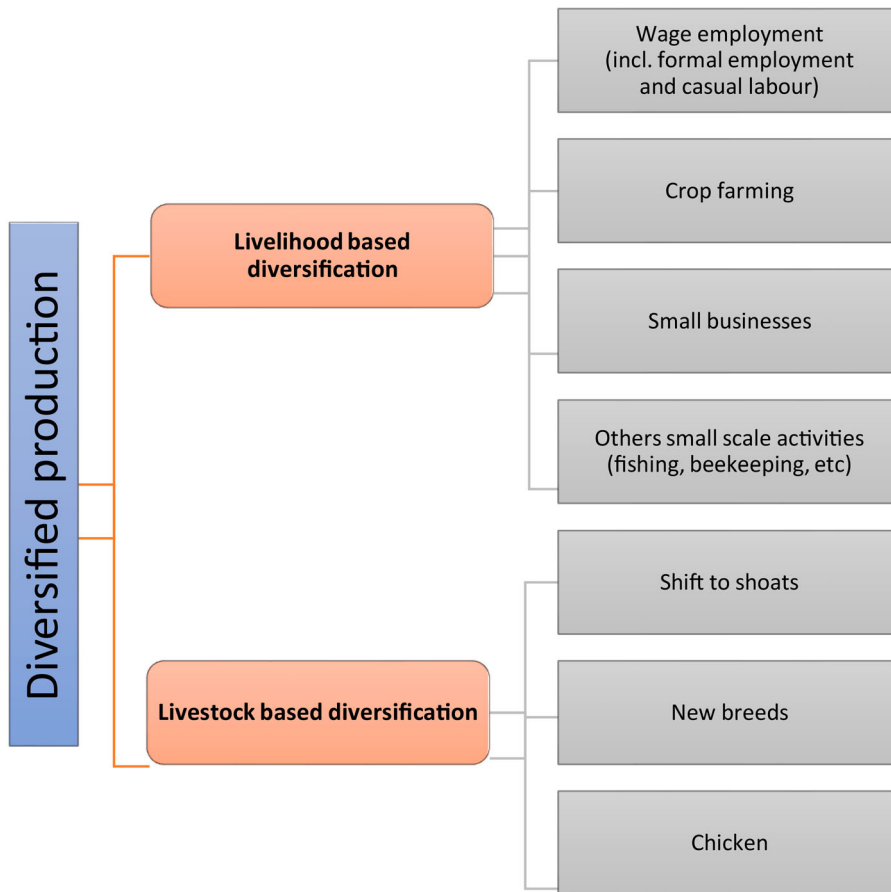
Following the FGDs, individual interviews were conducted through a dual sampling approach. First, local leaders active in resource management committees were interviewed. Additionally, a snowball sampling approach was used to select less visible local resource users, often including those less involved in decision-making. Most respondents were Olkiramatian residents, but several residents from the Musenge area were also interviewed, as this was instrumental in questioning further differences between rights based, structural and relational access. The interview guides focused on key resources for the community in different locations and associated access, control and management rules and probed livelihood activities and seasonal changes. Interviews were mainly held at the participants' homesteads, providing an opportunity for direct observation of main livelihood activities and accessed resources. Further interviews with county government officials focused on climate change plans for Kajiado County, as well as natural resources governance arrangements and cross-scales linkages.

Data were collected in several stages between November 2020 and October 2021, with the COVID19 pandemic occasionally disrupting fieldwork activities. The first author conducted the interviews together with research assistants translating the discussion simultaneously in Maa. Notes were taken during interviews, and they were recorded, except in 3 cases where respondents asked for the interview not to be recorded. Transcripts were then translated in English.

The transcripts were analyzed using the qualitative data analysis software NVivo12. Data analysis entailed four steps and was guided by the research questions and the operationalization of our theoretical framework. First, five overarching domain summaries were used to categorize the data, namely resource governance rules and regulations, livelihood-based diversification, livestock-based diversification, pastoral livestock keeping practices, and perceptions of changing livelihoods. Second, we used the mechanisms of access shown in [Figure 1](#) to guide the analysis. Rights-based mechanisms to key productive resources were coded under the governance category as we operationalize it to refer to all locally-defined access rules. The structural and relational mechanisms of access were used as coding markers under each of the livelihood and livestock-based diversification types identified in Olkiramatian ([Figure 3](#)). The process also involved inductive coding to capture key themes and sub-themes relevant to our research objectives. Third, we compared different mechanisms of access against what they were used to access, such as productive resources or to the ability to use resources over time to diversify, across the diversification activities. The fourth and final step involved interrogating the access references from an intersectional point of view, by both looking at the social position of the respondents mentioning differentiated strategies of access and the social differences mentioned in the interviews' contents.

## Results

The results are presented in four subsections which together examine differential abilities to realize benefits from diversification in the face of a changing climate and at the intersection of age, gender, and education levels. We start by analyzing the changing rights-based access mechanisms to key productive resources linked to diversification, and their



**Figure 3.** Types of diversification in Olkiramatian – developed from the initial data analysis.

implications for inclusion and exclusion. The second section presents the intersectional analysis of accessing by analyzing access strategies based on changing authority and knowledge relations, as well as the moral economy. The third section focuses on people who are often side-lined from direct access and examines how they negotiate access to key resources through their social networks. Finally, we analyze differential abilities to maintain access to realize long-term climate change adaptation benefits from diversification.

### 1. Changing rules and norms of access

This section highlights how increased diversification of production activities has led to a reorganization of the landscape to accommodate different resource uses, notably through formalizing access to farmlands, irrigation water, and urban plots. However, these newly defined rights-based mechanisms are negotiated through multiple institutions, with patriarchal customary authority patterns adapting from pastoralism to increased cash cropping and other commercial activities, and with a push towards the individualization of resource rights.

From its onset, membership registration for Olkiramatian group ranch was administered by successive elected management committees, who were also responsible for allocation of farmlands and urban plots. However, registration followed customary patriarchal authority patterns, registering household heads, primarily elder Maasai men. In Olkiramatian, this included male elders from the Illoodokilani section and a few non-Maasai household heads who had settled in Phase 1. Non-members' inclusion was necessary to reach the minimum number for group ranch registration (Ontiri and Robinson 2017). At the time, some Maasai household heads preferred not to register, viewing group ranches as externally-imposed westernized governance that they did not want to legitimize. Maasai women from Illoodokilani section were not generally included in the register, but exceptions were made for widows with no-cowives and some younger unmarried women recognized as household heads. The decision to register new members thereafter fell to the group ranch management committee, which initially allowed for registration of members' children, primarily eldest sons, once transitioned to adulthood.

With crop farming mostly viewed negatively among Maasai in the area, most Maasai residents initially used Phase 1 for late dry season grazing. However, cultivation was progressively perceived as lucrative, leading to more permanent settlements. The government's financial and technical support for farming through extension officers also played a role with the introduction in the 1990s of a cash crop market for export of Asian vegetables and seed distribution. Following the register, and seemingly at a time when Maasai's uptake of crop farming first increased, a first allocation of farmlands into equal size plots took place to formalize and equalize individual farming plots:

*'The men said in 1993, we want Phase 1 to be subdivided and issued with title deeds. So, we then subdivided Phase 1 into equal portions. But before that, people used to book [to claim possession of] land in different sizes according to their wish.'* Elder man in Phase 1.

As more Maasai asked to be allocated plots in Nkuruman, the group ranch committee decided to close the membership register and forbid new registrations from 2003 onwards. This decision was ostensibly based on the wish to prevent further partition of the farmlands into smaller areas. Young men who came of age after this date could not formally be registered as members and thus could not be allocated a share of land in Phase 1. Less than one third of the current Olkiramatian population can claim direct access to farmlands through being a registered member.

Crop farming was also supported by development of irrigation systems in Nkuruman, namely irrigation pipes and dug canals. However water availability remained limited, notably during dry seasons, and as more farms emerged, irrigation access was also formalized with water being allocated to each farm in rotation. Water governance rules are now decided on by the group ranch committee and subcommittees. Local water committees, composed of appointed village elders, usually settle local resource users' conflicts. Complaints can also be lodged locally through governmental channels – independent of group ranch governance structures – but the costs are higher. Since 2018, another cash crop market for fruits to be sold to Nairobi, mainly papayas, is further incentivizing crop farming, including the clearing of more land for cultivation and investments in water pumping systems to irrigate larger areas.

Similar dynamics towards increased interests in town plots and formalization of access rights are notable around emerging towns. Most of the Maasai were initially uninterested

in permanent settlements in towns. However, many non-Maasai settled, notably in Entasopia in Phase 1, which grew exponentially following crop farming. With some villages now in the process of being registered as towns, plot access is formalizing because the county government is responsible for issuing title deeds and receiving payments. This also applies to Olkiramatian town in Phase 2, location of the weekly livestock market. Shifting from group ranch administration to public administration means that non-members of Olkiramatian can purchase town plots. However, in most emerging towns, such as Olkiramatian town, a local committee for plot allocation was also appointed by the elected county ward official to further define rules of access.

The above changing rules and norms of access in Olkiramatian affect patterns of access at the intersection of one's social position. We now turn towards how accessing takes place in practice and shapes the ability of individuals to access benefits from diversification.

## 2. Accessing through authority and knowledge

Intersecting education, gender and age relations are (re)shaping authority over land, with land registration processes exacerbating intersectional differentiation due to the increased importance of education to navigate complex land policy changes but with the continued gendered patterns of exclusion. Educated younger Maasai men – notably those from age sets more widely formally educated and thus literate – are now leading most governance processes in Olkiramatian. Across Kajiado, the group ranch set-up solidified a shift towards a smaller elected group of educated younger men leading and making decisions for the wider community (Rutten 1992). Accordingly, Olkiramatian elders noted that recognition of who is seen as knowledgeable has shifted towards those with formal education level, which is instrumental to accessing leadership positions and desirable jobs in governmental and non-governmental organizations. In the past, younger people were not recognized as knowledgeable due to their lack of life experience relative to elders.

This shift has important implications for accessing resources for diversification. Some respondents explained the importance of education for communicating with outsiders, such as government agents and even researchers. Most importantly, educated younger men can better understand national and local development processes and secure land for the community and/or for themselves. Even the membership list used for allocation is now digitalized and edited on laptops. Furthermore, the language of policymaking is English, or occasionally Kiswahili, which marginalizes non-speakers. During fieldwork, respondents sometimes asked us for translations of land policies changes, which are written in English, underscoring linguistic barriers as mechanisms of exclusion felt by many Maasai.

Educated Maasai in positions of authority are also better able to influence and redefine patterns of resource access for elite capture (Rutten 1992). In Olkiramatian, while communal rules specify that equal allocation of farmlands shares is a right for all registered members, the actual allocation of farmlands has become skewed with claims that well-connected individuals, often in positions of leadership, used their authority to allocate additional farmlands shares to themselves and others. Some land size differences can be explained by the time of their allocation – people who had settled earlier in Phase 1

have bigger farmlands than latecomers. Yet, some respondents indicated that well-positioned individuals within the group ranch leadership committees have also acquired extra shares of farmlands through different means, for instance through registering additional family members or wealthy outsiders in the group ranch register, in contradiction to locally-defined rights. There were also complaints that the placement of an irrigation project – funded by government through a grant from a multilateral development institution – was heavily influenced by individuals in leadership positions, who decided in advance that part of the irrigation pipe would come closer to their own newly allocated farms.

Structural power dynamics surrounding allocation of farmlands and other agricultural resources are also at the heart of current tensions regarding subdivision and transition to community land. Some interviewees, notably young men seeking land allocation, stressed outsiders' influence on the process, with the illegal registration of non-residents with significant political or financial weight at higher scales of governance or from parts of Kajiado without access to farmland. The registration of outsiders is facilitated by well-positioned individuals in order to secure political back-up for a favorable subdivision of Phase 1, while also responding to a patronage system, common to land allocation processes (Boone 2012). Longtime residents who are unregistered, including non-Maasai, are also seeking to secure farmlands, with some buying or being promised shares ahead of subdivision. One young Maasai man reflected that powerful individuals were spreading misleading information on changing land policies, thus feeding into historical fears of further land losses, and pushing people to seek to secure their rights quickly through official land titles. An employee of a locally active NGO noted that a significant part of their work had shifted towards hiring a lawyer and informing people on land policies.

Yet, the moral economy continues to shape structural access by counterbalancing recent developments towards individual elite accumulations of resources linked to diversification. Maasai governance norms about resource sharing and adaptive decision-making – which should include different clans, age sets, and location representatives – nonetheless continue to be practiced and guide perceptions of what is socially acceptable. Skewed allocation patterns linked to new economic activities are also not acceptable to the wider community and are actively protested, notably by excluded young men. Debates on subdivision have led to the organization of *barazas*, community-wide consultations, in contrast to a small political elite trying to settle matters in closed spaces with different political actors.

The moral economy also deepens exclusionary access patterns along other axes, notably along gendered and ethnic lines. Maasai from the Illoodokilani section often frame longtime non-Maasai residents as outsiders who do not have legitimate claims on membership and ownership, citing their not respecting Maasai rules and norms and being quick to fence and punish livestock harshly for trespassing in Phase 1. Maasai from the IlPurko section are likewise not considered as community members and were never registered. The continued exclusion of most Maasai women from membership and wider community decision making processes – such as consultations to discuss subdivision of Phase 1, as well as from formal land ownership and inheritance through the group ranch constitution – is still widely regarded as acceptable and infrequently contested. This is due to gendered norms relegating women to decision-making at the *enkaji's* level and, when it comes to resources falling within their management



responsibilities such as water for human consumption or milk. Land use issues are perceived as elder men's responsibility which should not be discussed by women (Mwangi 2003).

Women, generally discouraged from engaging in wider consultations, have thus been excluded from land discussions and are mostly unaware of broader land policy changes or notable developments. One middle-aged Maasai woman in Nkuruman reported discovering the new irrigation pipe the day it was installed on her husband's allocated farm. Women's ability to engage in wage employment or casual labor opportunities is also constrained by patriarchal patterns of authority, with important age and gender dynamics:

'Women are usually never involved and not recommended for casual jobs. For instance, there was work to build the roads, but the men do not want [*women*] doing it. They would say they are the head of household, and you should just stay home and take care of the livestock. [...] Younger women are not allowed to take part into such ventures, because their husbands do not want them out, to be seen. If you are older as a woman, you can take part if you get the permission from your husband.' *Middle-aged woman, Phase 2.*

Accordingly, the Community Land Act's rule to register everyone as members, as well as the clause to have women representatives in management committees, is generally seen as a top-down bureaucratic imposition. Stakeholders at other governance scales also seem reluctant to address entrenched inequalities, emphasizing their respect for local governance institutions even when they contradict national laws, including the 2010 constitution. County government actors noted that communal lands were easier places to implement projects, including irrigation, as community representatives often willingly give a parcel of land for the proposed project, whereas planning must involve multiple landowners in the subdivided areas across Kajiado County. As such, customary patriarchal authority structures which benefit household heads are being carried over into emerging formal authority structures that shape access to key productive resources linked to new livelihoods and livestock production patterns, even as the new legal structures and recognized forms of knowledge, such as formal education, increasingly benefit younger men. While customary institutions through elders can be key in safeguarding collective user rights, there are inherent exclusions embedded within these decision-making processes, notably on the basis of gender, which can be exacerbated under conditions of increased land stress and declining customary authority (Greiner 2017). Those constrained by limited education and insufficient financial and political capital thus see their access to key productive resources become increasingly restricted.

### 3. Accessing through old and new social relations

With direct access to key productive resources limited, accessing diversification opportunities is often enacted through social networks and built upon intersecting social relations that have long been crucial to pastoral livestock keeping. However, engagement in increasingly commercialized activities is also leading to renegotiations of some production relations and intra-household patterns of benefit sharing.

Most women and young men, as well as non-members, negotiate access to key productive resources through their social relations, thus reproducing customary Maasai reciprocity and care relations among extended family members, clanmates, friends, and

neighbors. Most Maasai women engaging in crop farming reported accessing land through a male relative, often working on the farm of their husband or eldest son. It is also not unusual for women and young men to shift between working on different farmlands, depending on agreements made with family members or other social relations. Young women, once married, are expected to contribute to their husbands' households, and access land and other resources through their husbands. Women nonetheless cited sons and brothers as important for accessing capital to start small business ventures; for instance, through purchasing chickens or improved small-stock breeds. Some respondents in the dry side reported accessing newer animal breeds through social connections, such as borrowing a bull from a neighbor to crossbreed their own herd. Yet, women's accessing new breeds also appears to be negotiated through male relations, as a middle-aged woman indicated that the request for the bull was made by her son to his friend's father. Similarly, with irrigation schedules being quite restrictive, a male crop farmer from Nkuruman reported making arrangements to share irrigation times with his neighbor, lending his four hours of irrigation on his allocated day, while the neighbor shares four hours of irrigation water on his allocated day. This provided both parties with steadier access to water throughout the week. Women's self-help groups were noted as important for saving money to access necessary capital and goods.

Other negotiated accessing strategies are centered around rental arrangements between officially allocated plot owners and renters, both for farmlands and for town plots. Rental agreements are often verbal and can be negotiated for several years or on a seasonal basis. They are seen as a remunerative investment for landlords, providing a buffer against livelihood shocks. Plot owners often choose to rent out because their household members' time is occupied by livestock keeping in the drier part of the landscape or by education. Tenancy relations are nonetheless complex and the ability to benefit is not straightforward. For farmland rental, plot owners often look for skilled farmers, such non-Maasai agriculturalists or Maasai with agricultural experience. Rental plot payment is mostly in kind – for instance through giving the landlord a proportion of the produce – but can also be based on labor agreements. One middle aged Maasai man experienced in farming explained that he was both paying the owner for access to the farmland and hiring him as a casual laborer. Several Maasai respondents reflected that because the potential land productivity is not always evident to Maasai, who are unused to farming, they may be easily misled. This leads to many feeling that those who have the knowledge and skills to farm themselves benefit more from land rentals, especially for cash crops.

'They might agree that the owner takes Ksh 20,000 in a year, but when you look at the person who rents, they will get this Ksh 20,000 from papaya every week. [...] But Maasai acquired that knowledge. They came to realize that it was a great decision because it was greater than an agreement of renting; [...] at the end of it the person who rents it will benefit from this produce and you found yourself having nothing.' *Elder woman, Phase 1.*

Yet, these access strategies are often negotiated on short-term bases, meaning they are unstable. Several respondents reflected that this constrains decision-making and future investments:

'The farms that we are cultivating don't belong to us. They're for our parents. So, when you're given a small portion of land you won't complain. You just take the little that was given to

you. Some fail to get it. For instance, in a case where your father has 10 sons, it is difficult for the father to start subdividing among his sons, so some end up borrowing elsewhere.' *Young man, Phase 1*.

'You have to borrow from relatives to farm or rent from someone and agree on terms. You cannot be allocated.' *Young woman, Phase 1*.

Moreover, engagement in new livelihood activities is reshaping intra-household labor roles and patterns of benefits sharing, which adapt to new activities, with the household head typically deciding on labor allocation. Some household heads with multiple wives establish one *enkaji* in Phase 1 to farm, while the rest of the *olmarei* can attend to livestock keeping in the drier side. Alternatively, the *olmarei* is sometimes split across several locations, depending on children's enrollment in schools. In contrast to livestock sales, which are controlled by household heads, some women respondents in Phase 1 reported dividing the allocated farmland into smaller shares between co-wives and often helping on all in addition to the one belonging to the husband, but being able to freely sell produce from their own share. Chickens, which Maasai do not view as livestock, are typically owned and sold by both older and younger women, but also by young men. In some instances, higher education levels among younger women also create new opportunities linked to diversification. Being conversant in English and/or Kiswahili enables younger women residing near town centers to engage in business, such as sourcing household goods from Nairobi to sell to other women in the area. In these changing production environments, pastoralist women's resilience thus needs to be understood in light of continued reliance on social ties and increased labor participation taking diverse shapes (Archambault 2016; Wangui 2008).

#### 4. Realizing long-term benefits from diversification for pastoral adaptation

The analysis above has shown that increased diversification leads to changing patterns of resource access and renegotiated social relations of production, redistributing risks and benefits in the face of climate change. In this section, we note some of the long-term implications for differentiated abilities to realize any benefits for pastoral adaptation, for instance through improved drought resilience, income diversification and/or food security. Such social differentiation also indicate how diversification processes may contribute to emerging class formation processes. The ability to realize benefits from diversification and to strengthen one's livelihood and socio-political position is affected by differentiated abilities to mobilize sufficient labor and capital to engage in diverse livelihood activities across seasons. The increased labor burdens associated with diversification suggest that it can make some households' position more precarious in the long term. Most respondents described difficulties to mobilize sufficient labor to sustain a diversified production over time and to find capital to hire help, especially during dry seasons. Women particularly emphasized the increased labor burden emanating from the need to balance childcare and other household reproduction duties with other livelihood activities. Elder men and women respondents also noted that educated young men are sometimes reluctant to engage in pastoral livestock keeping or are engaged in other activities, reducing the available workforce. Many herdsmen are either children of poorer households who cannot afford school fees or Maasai who have migrated from

parts of Tanzania with lower school enrollment rates. During intense droughts, hired herdsmen sometimes leave to help their own household, which necessitates that family members take up herding practices such as traveling with herds to suitable pastures, seeking distant water points, or going to collect acacia pods and cut tree branches. Younger Maasai men increasingly express a desire to keep their herd smaller than their fathers', emphasizing the high financial and labor costs of maintaining it during dry seasons. Household heads decide on labor allocation and prioritize the available capital for maintaining herds which makes it difficult to support other economic activities.

'During the drought season, you would try to do your best to protect your cows from dying. So, you would spend most of the time looking after them and finding pastures for them. The men would end up getting stressed out, especially during extreme droughts<sup>5</sup> and we the Maasai are depending on that livestock.' *Elder man, Phase 1.*

'It changes because during the drought season, I have to always move and follow the livestock. This slowed down my business. My husband used to tell me to stay and look after the livestock because it was a drought season and for the Maasai women you're not supposed to go against your husband, so I stayed behind.' *Middle-aged woman, Phase 2.*

Several women in Phase 1, both old and young, also reported the high labor burden of watching the livestock as well as taking care of newer breeds that are sometimes less heat resistant, and unable to go far from the homestead. This makes it women's responsibility to cut grass and bring it back to the homestead.

'When there is a drought, the children go to school. [...] We take our cows to graze in the people's farms and there are a lot of planted farms around them, and the cows would be scattered all over the place. We have to be there to watch them grazing so that they will not get into people's farms.' *Young woman, Phase 1.*

While increased market engagement, such as through the sales of livestock or crop products, can generate valuable revenues in the short term, the ability to strengthen livelihoods is highly differentiated as the dependency upon unstable market dynamics places people in precarious positions. Cash crop cultivation, for example, is associated with the growth of local brokers linking producers with buyers and transporters from Nairobi. These arrangements reduce farmers' ability to set prices while providing precarious opportunities for unemployed young men and boys, sometimes attracted by quick money, and seeking greater financial independence.

'There are young men in this village who are broking paw-paws and getting Ksh10 per kilogram. Every week they can manage to sell over six tons of paw-paws and are able to make Ksh60,000 (USD600).' *Elder men during a focus group discussion, Phase 1.*

Growing cash crops reduces staple crops cultivation, namely maize used for household consumption. Purchasing staple crops, rather than growing them, increases financial pressures on households, and especially on women, whose gendered responsibilities include sourcing household food. A few women respondents noted that while women can sometimes control profits from farming and small business, it can also mean that husbands are no longer expected to provide money for food, resulting in increased financial

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<sup>5</sup>In Maa, a dry season is referred to as *Olamayu* while a drought is often referred to *Olamayu sapuk oleng*, namely a very bad / intense dry season, which explains why the terms are sometimes used interchangeably in English transcriptions.

pressure on women. Markets are also often affected by seasonality and extreme events, with droughts reducing livestock prices progressively across intense dry seasons leading to losses for traders. Women who sell milk often do not have enough milk to sell during droughts. The dry season leads to vegetables and flour being sold at higher prices, which can provide some benefits for more established women food sellers in town centers, but creates difficulties for households that purchase.

*'In farming, it is not profitable at the moment because it is a low season, and we are not planting different varieties of crops. We are growing bananas and papayas. We see it as a good farming activity, but we can't cook the papayas. We sell them and get money to buy food.'*  
*Elder woman, Phase 1.*

Finally, diversification also affects long term collective resilience in diverse and contradictory ways. The increased clearing of land for cultivation, settlements, and other activities reduces access to communal late dry season grazing space and water points, leading to a loss of key dry grazing refuge areas and the associated collective loss of flexibility for pastoralists (Nyangena 2018). Yet, in Olkiramatian, it seems that some pastoralists are able to respond to reduced grazing areas in Phase 1 through market-based exchanges. Maize stalks in Phase 1 can for instance be used to feed livestock and are used by farmland owners or sold. Farm owners with few livestock can also rent out their parcel for grazing. Fees vary depending on the size and demand: reported prices ranged from Ksh3000ksh (USD30) for an acre to rising steeply to Ksh8000 (USD80) for a quarter of an acre during a bad drought. The agreement is often valid until there is no more stubble on the rented field which means that people with larger herds rent grazing access from several farms. Respondents in dry areas sometime reported making early arrangements to secure a farm when seeing people planting maize or through their own social network. These changing patterns show that the overall long-term adaptation may be further differentiated by individuals' abilities to mobilize sufficient capital to maintain the herd or to negotiate access to private land. The above highlights how diversification is linked to more individualized and market-based adaptation strategies. These increase the importance of capital relations, thus resulting in benefits and risks being unevenly distributed at the intersections of different social positions. However, it is also affecting long-term collective resilience. Because uneven land access encourages class formation (Galaty and Bonte 2018), current subdivision plans facilitate a landowning agro-pastoral elite as well as an educated urban business class while some pastoralists' socio-economic resilience is likely to worsen with poorer members selling their land shares to support short term needs as has happened across Kajiado. Non-members with sufficient capital can buy lands but those financially constrained are likely to see their possibilities for adaptation drastically reduce and be further obligated to engage in casual labor as communal resources access reduces.

## Concluding discussion

Using an original analytical framework that foregrounds an intersectional approach in access theory, this research provides new insights into the relationships between diversification processes, access to resources and the (re)production of social inequalities in adaptation processes in transitioning pastoral areas. Our analysis illustrates that current

struggles within the group ranch should be understood not only in the context of Maasai pastoralists' efforts to continue accessing grazing pastures and water; they are also connected to ongoing processes of diversification of pastoral livelihoods wherein accessing a different array of socio-environmental resources is gaining importance in light of climate change. Our intersectional approach to analyzing mechanisms of accessing deepens our understanding of the ways in which gender, age and education influence resource access as a 'dynamic and constantly re-negotiated process' (Milgroom, Giller, and Leeuwis 2014, 201), allowing us to draw some inferences on the ramifications of these changes for both individuals and the pastoral community.

As diversification increases in Olkiramatian, the rules and norms of access to key productive resources are renegotiated while some patterns of exclusion persist, with consequences for social distribution of positive and negative effects of diversification. Complex patterns of social differentiation are emerging in the context of new national land use policies, competing institutions, and rapidly changing commercial environment. Intersectional characteristics differentiate people's accessing of key productive resources for diversification, in part, through the dynamics of (re)negotiating authority and knowledge relations. Younger educated Maasai men are better placed to access information on and navigate changing rights-based access mechanisms as well as to secure desirable wage employment opportunities. This is illustrative of an important socio-cultural shift away from customary governance practices, which favored elder men, to one in which formal education and knowledge (and the resultant authority) take precedence. Nevertheless, the local moral economy continues to play a strong normative role in defining who should be included or not in governance processes based on their social identity, which advantages a local 'patriarchal elite' (Caravani 2019; Scoones 2021). Notably, the prevalent moral economy can help to legitimize Illoodokilani Maasai young men's claims to land allocation, while normalizing the exclusion of most women and others not belonging to the majority group. Excluded women, young men not yet registered in the group ranch register and other non-members often then pursue access to resources linked to diversification by (re)negotiating access through social networks. As Berry (1989) highlighted, access via social identity fosters more involvement in institutions to access – in this research, in order to secure long term access to resources – even as knowledge of 'how to work the system' becomes primordial (Jeppesen and Hassan 2022, 102). Our results also align with recent research evidencing the increased importance of capital relations for grazing access in the context of changing land use across Kajiado (Jeppesen and Hassan 2022), which is likely to further accentuate processes of social differentiation and associated class formation dynamics.

Moreover, our approach to analysing accessing as a strategy shaped by the intersection of multiple axes of social differences provides valuable insights on the differentiated abilities to realize benefits from diversification processes in transitioning systems and the associated implications for pastoral adaptation strategies. The adoption of new livelihood activities in response to both climate and socio-economic changes engenders complex intra-household renegotiation of labor arrangements and benefits sharing. Previous studies across Kajiado have looked primarily at young Maasai men (Mwangi 2003), but analyzing the interplays of age, gender and education shows that young Maasai women are also part of a generational shift in practices and are pursuing their own forms of diversification. Both young and older women engage in forms of diversification that have less potential to yield stable long-term benefits because their involvement is contingent on

patriarchal intra-household agreements to access resources and on (re)negotiated household responsibilities. Women, especially, emphasized labor constraints, especially during the dry season, mirroring concerns with trade-offs between diversification and specialization in the literature and the fragmentation of labor (Cochrane and Cafer 2017; Mikulewicz 2021).. These engagement patterns often result in indirect and short-term seasonal access without sufficient stability to deliver economically transformative results in most cases. Similarly, younger landless men who are unable to find off-farm employment face weak long-term diversification prospects because they engage in activities such as day laboring and brokering which are dependent on unstable market dynamics.

Through focusing first on changing rights-based mechanisms of access and then on analyzing accessing in practice, this research foregrounds how the (re)production of power relations is linked to livelihood diversification processes, with tangible consequences for the well-being of individuals and communities. Many applications of access theory have omitted an in-depth analysis of power relations (Myers and Hansen 2019). Our theoretical framing integrates the ways that both power and agency – enacted through access strategies pursued at the intersection of different social positions – shape differentiated engagements with and patterns of benefits from diversification processes. As agrarian transformations in pastoral areas are spatially and temporally complex and play out in very context-specific ways (Scoones 2021), our study illustrates the continued relevance of small-scale case studies and the benefits of extending beyond households as a unit of analysis within adaptation research and existing policies on diversification. By pointing out changing accumulation trajectories in a pastoral context characterized by polygamous relations, extended kinship ties, and shifting communal resource management arrangements, we underscore the importance of social differentiated analysis of livelihood change in transitioning pastoral systems. Taking such an approach underlines the importance of understanding resilience as a multidimensional and relationally negotiated condition. It also raises critical questions about how resilience is locally understood and enacted, as well as what this means for interventions seeking to support such systems, including ones targeting ‘gender equity’ (Tavenner and Crane 2019, 2022).

Finally, our analysis contributes to building evidence on the diverse ways that adaptation processes are part and parcel of agrarian struggles by highlighting the need to understand diversification processes in pastoral areas both in terms of, firstly, the effects of shifting patterns of production and consequences for accumulation and social differentiation and, secondly, the trade-offs linked to short term benefits versus longer term strengthening of livelihoods and socio-political position. Our findings suggest that diversification tends to promote more individualized and market-based adaptation strategies, but that the drivers and ramifications of increased integration into capitalist production systems and renegotiation of production relations are complex and dynamic. Differentiated engagements with diversification in pastoral areas are not only related to changing material conditions, but also linked to ‘intangible’ dimensions, such as changing norms and values. New social differentiations emerge through the increased emphasis placed on formal education and how knowledge influences one’s position within the community and beyond (e.g. the relation to state or non-governmental actors). At the same time, other entrenched markers of differentiation persist and are crystalized through exclusionary decision-making processes and established roles, perhaps most notably gendered discriminations. The research findings

thus underscore the need for climate change adaptation planning in agrarian environments to extend beyond the dominant technical focus (Eriksen, Nightingale, and Eakin 2015), by showing how adaptation processes in pastoral environments are closely intertwined within rapidly evolving socio-political and economic transformations. This requires research and policy initiatives to give greater attention to the ways that in the midst of agrarian change, complex material and immaterial shifts alter the socio-political positions of pastoralists and the resilience of differentiated individuals and the communities they comprise. Future studies on agrarian struggles and climate change should further integrate into intersectional approaches the emerging class dynamics in transitioning pastoral systems as well as investigate more the impacts of diversification processes on the ecological resilience in historically pastoral systems.

## Acknowledgements

The work of Edwige Marty, Renee Bullock and Todd Crane is funded through the Program for Climate Smart Livestock (PCSL) which has received financial support from the German Federal Ministry for Economic Cooperation and Development (BMZ) issued through the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), grant number: 81231239. We thank Peadar Brehony for his insightful feedback and comments on an earlier draft of this manuscript as well as Lucy Njuguna and Laura Cramer for helping to think through the presentation of the figures. Thank you as well to the South Rift Association of Land Owners (SORALO) and Olkiramatian leadership for their support during the data collection as well as Winnie Lipina Koinet, Agnes Kamanga and Wilson Rianto for excellent research assistance. The views and perspectives presented in this publication, however, remain solely the responsibility of the authors.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

## Funding

This work was supported within the framework of a project financed by the GIZ commissioned by the Government of the Federal Republic of Germany.

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