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When the state arrived in Maasailand and the Maasai became citizens, farmers, and conservationists to remain pastoralists

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Despite the growing recognition of dryland transformation, insufficient attention has been paid to the ways national law creates challenges and opportunities for pastoralists. Here, we examine how the Maasai in Southern Kiteto, Tanzania, have adapted and contributed to agricultural expansion by using village governments' relatively new official authority to establish private and community property. Using biophysical and ethnographic data, we document and explain two decades of land use change (2000–2020) where agriculture has replaced large traditional grazing areas and Maasai pastoralists have reversed their seasonal grazing cycle. Fortunately, harvested farms are better dry-season pastures than uncultivated lands per area unit. Recognising this, Maasai pastoralists have strategically established private farms in Maasai-dominated villages, which they now use for post-harvest grazing during the dry season. In contrast, those in non-Maasai-dominated villages have struggled to do so, but they negotiate access to farmers' harvested fields in their own or distant villages. Reflecting the growing public authority of village governments, movements of livestock across the landscape increasingly require cash payments to farmers and host villages. Importantly, the Maasai, assisted by non-state actors and donor-supported projects, have also used recent national legislation to establish common property areas, including forests, where livestock grazing is allowed and agricultural expansion is prohibited. These have become vital wet-season pastures, when livestock would otherwise damage cropped farms, making grassland and forest conservation a priority for Maasai pastoralists. Thus, the Maasai have strategically become agrosilvopastoralists by applying new national legislation and engaging as citizens in village governments and associated common pool resource governance institutions to sustain their pastoral

livelihoods. This contributes to a state formation process that advances national objectives of nature conservation, reduces farmer-herder conflicts, and promotes economic development in rural areas.

KEYWORDS

pastoralism, agricultural expansion, conservation, Maasai, Tanzania, property, citizenship, public authority

Introduction

“Every new use of a resource effectively entails its recoding. The new use represents a change in the asset’s valences – the way it appears to the world – and new and old actors will attempt to relate to the new asset in new ways” (Lund, 2024, p.5).

“Just as the long-heralded disappearance of the peasantry has not occurred, nor has pastoralism been eliminated, despite economic challenges and political fracturing. Marginalised and transformed for sure, but persisting in new ways” (Scoones, 2020, p.21).

Pastoralism, an extensive, mobility-based livestock production system, has long shaped drylands¹, including the East African arid and semi-arid lands (ASALs). In Maasailand, a loosely defined geographical region spanning Southern Kenya and Northern Tanzania, Maa-speaking pastoralists have historically practised transhumance, moving their herds across diverse ecological zones in response to rainfall variability and pasture availability (Galaty, 1982; Homewood et al., 2009; McCabe et al., 2020). Traditionally, this seasonal mobility is governed by a customary system, reflecting a relationship between pastoralists, livestock, and their natural resources (Homewood and Rodgers, 1991; Nelson, 2012; Kronenburg García, 2015; Food and Agriculture Organization of the United Nations, 2022).

Recently, however, scholars have increasingly documented a rapid transformation of these landscapes, driven by a complex interplay of political, ecological, and socio-economic forces, including land and natural resource governance reforms and associated agricultural expansion (Lind et al., 2020; McCabe et al., 2020; Greiner et al., 2021; Robinson and Flintan, 2022; Hemingway et al., 2022; Unks, 2022). Other scholars have linked agricultural expansion and conservation with a wave of large-scale land acquisition (LSLA) across the Global South, justified by rising demands for food, fuel, and biodiversity conservation imperatives (Galaty, 2013; Bluwstein et al., 2018; Gargallo et al., 2023; Wolford et al., 2024). The latter is linked to the global territorial conservation agenda, such as The Half-Earth Project, initiated by the E.O. Wilson Biodiversity Foundation, which calls for the protection of 50% of the global surface as a

“solution” to the extinction of species by 2050 (Gargallo et al., 2023). Land acquisition, often mediated by state reforms and local elite capture, has reshaped pastoral landscapes, their governance, and access (Galaty, 2013; Bluwstein et al., 2018; Wachira et al., 2024). In Tanzania’s Maasailand, land acquisition, both internally and externally driven (Nelson et al., 2012; Askew et al., 2013; Galaty, 2013), has intersected with national legal framework reforms and the growing authority of village governments, producing opportunities and challenges for the long-term sustainability of pastoral transhumance practices and drylands livelihoods (Börjeson et al., 2008; Msoffe et al., 2011; Homewood et al., 2009; Reid et al., 2014; Kronenburg García et al., 2023; Oba, 2024).

Despite challenges such as enclosure of grazing commons, scholars argue that pastoralism is not simply being marginalised; rather, it endures, not as a relic of the past, but as a flexible and evolving system (Lind et al., 2020; Pollini and Galaty, 2021; Tsering, 2024; Oba, 2024). As Scoones (2020) observes, pastoralists are not merely victims of change, but also active agents who strategically adapt to the land use changes and evolving institutional and political landscapes. Depending on their agency and positionality (Ribot and Peluso, 2003; Hodgson, 2011; Cleaver, 2012) pastoralists, at particular conjunctures, may build on, and reshape sociocultural relations, including ecological, political, and economic opportunities and challenges (Moritz, 2009), to maintain access to critical pastoral resources under variant models of management (Kronenburg García, 2015; Tamou et al., 2018; Scoones, 2020; Unks, 2022; Perfect-Mrema, 2022; Robinson and Flintan, 2022; Pas et al., 2023). Such adaptability, however, occurs within a complex field of power, and assemblage of state and non-state actors; and in contexts where multiple, often conflicting land-based development opportunities intersect (Askew et al., 2013; Kronenburg García, 2015). This raises important, yet complex questions on how pastoralism may coexist with expanding agriculture and conservation interventions, and, potentially, how apparent farmer-herder-conservation dichotomies might be reconciled to support sustainable use of dry landscapes and pastoral livelihoods.

We argue that, in the context of agricultural expansion, which threatens dryland forests and woodlands, Community-Based Conservation (CBC)², understood as locally led

¹ Arid and semi-arid lands, with aridity indices of 0.05–0.2 and 0.2–0.5, respectively (Food and Agriculture Organization of the United Nations, 2019).

² Although this approach is often linked with wildlife-focused protection interventions, our use in this context reflects locally based forest and rangeland governance practices, aligned with national and international conservation rationales.

interventions that protect and manage forested landscapes through a legalised local governance of these as commons, including the right to frame local operational management rules that recognise *de facto* grazing as a legal activity, has emerged as a tool for their protection (Askew et al., 2013; Flintan, 2021). The Maasai pastoralists' engagement with CBC, including modalities such as Community-Based Forest Management and Participatory Rangeland Management (PRM), has enabled and legitimised their ability to use and protect forested landscapes, which are becoming critical for wet season grazing, when growing crops occupy expanding farmlands. Hence, CBC, which incorporates livestock grazing, helps to mitigate farmer-herder conflicts. Moreover, the Maasai adoption of farming to secure exclusive land rights (property) enhances their access to crop residues for dry-season grazing.

Previous studies in East Africa's ASALs have shown that agriculture and conservation have reconfigured pastoralists' access to key areas. Pastoralists have responded by negotiating alliances, institutional manoeuvring, and careful integration of land uses (Cleaver et al., 2013; Askew et al., 2013; Flintan et al., 2021; Unks et al., 2023).

Agricultural expansion influenced by market forces, an increasing demand for food and agricultural products, is a recent and often massive land use changer (Börjeson et al., 2008; Msoffe et al., 2011; Greiner et al., 2021). In this context, pastoralists across East Africa, including the Maasai, Borana, Samburu, and Karamoja, have increasingly adopted and integrated farming into their livelihood and grazing practices, driven by necessity and new opportunities (Fratkin, 2001; McCabe et al., 2010; Lind et al., 2020; Hemingway et al., 2022). Accordingly, pastoralists themselves and/or in partnership with other actors have privatised and individualised land to benefit from dry season pasture reserves, renting it out for extra household income, and securing it as property for future investment (Mwangi, 2007; Sachedina and Trench, 2009; Msoffe et al., 2011; Oba, 2024).

Along with agricultural expansion, conservation interventions have increasingly been implemented around forests, wildlife, and grazing commons, mostly through CBC (Chomba et al., 2015; Bollig and Lesorogol, 2016; Unks, 2022). Since the 1990s, political efforts have shifted towards engaging communities in dryland conservation to promote a viable balance between nature conservation and people's livelihoods. Community-Based Forest Management (CBFM) in Tanzania has been designed to protect forests by establishing Village Land Forest Reserves (VLFRs) and transferring forest rights to democratically elected village governments (Lund and Treue, 2008; Magessa et al., 2020). Such community-based interventions, now covering 5% of Tanzania's 48 million ha of forests (The United Republic of Tanzania, 2022a), have been found to incentivise conservation by staging platforms for legal recognition of forest claims (Sjöholm and Luono, 2002; Mabele and Müller-Böker, 2024). Further, Kajembe et al. (2005) conclude

that, under an appropriate legal framework and incentive structure, pastoralists are likely to become the most effective and efficient forest managers. Additionally, the development of CBC in drylands has compelled pastoralists to navigate conservation rules to maintain access to pastures within protected forest landscapes (Muok et al., 2021). By playing the "conservation card" (c.f., Robinson and Flintan, 2022), pastoralists mitigate the risk of exclusion at the expense of other interests (Tamou et al., 2018; Muok et al., 2021). At the same time, Cleaver et al. (2013) and Haller et al. (2016) show that CBC became useful through the constitutionality of rules of use and management, which are negotiated among actors with different interests.

Thus, our study contributes to the broader discussion on drylands, pastoralism, and nature conservation, including governance transformation. Building on existing scholarship on property variability (Galaty, 2016), farmer-herder relations (Turner et al., 2011; Saruni et al., 2018; Walwa, 2019; Benjaminsen and Ba, 2021), we highlight the opportunities for coexistence of the often-claimed dichotomies of agriculture, conservation of forested landscapes, and pastoralism intersect through agrosilvopastoralism (Food and Agriculture Organization of the United Nations, 2022; Hemingway et al., 2022). By combining biophysical and qualitative data, we demonstrate how land use changes and evolving tenure and governance arrangements characterised by private and collective property regimes continue to shape pastoralism (Unks, 2022; Tsering, 2024). In navigating dryland transformations, we argue that by becoming farmers and conservationists, Maasai have remained pastoralists, thereby theoretically and empirically demonstrating the underlying role of property and state formation.

In this paper, we focus on how adaptation to agricultural expansion and state conservation interventions under community-based governance of forests and grazing lands influenced the Maasai, who traditionally identify themselves as "people of cattle" (Galaty, 1982; Århem, 1985; Trench et al., 2009). Using the case of Southern Kiteto District, Tanzania, we ask: (i) How have land use patterns changed in the past two decades (2000–2020)? (ii) How and with what outcomes have the Maasai navigated the emerging institutional landscape, including new legislation, associated with and causing agricultural expansion?

In Southern Kiteto, framed as "isolated, remote, and poor" (Havnevik et al., 2000; Nelson et al., 2012), the old-age land use practice of pastoralism recently encountered agricultural expansion, mostly through an influx of non-Maasai farmers in search of lucrative land (Askew et al., 2013; Saruni et al., 2018; Sungusia et al., 2020). Amidst becoming an agricultural frontier, concerns about ecological sustainability and the future of pastoralism, donors and state partners directed conservation efforts to South Kiteto through community/participatory-based interventions, including CBFM and PRM (Askew et al.,

2013; Magessa et al., 2020; Sungusia et al., 2020; Flintan, 2021; Yanda et al., 2021). These emphasised formalising collective land tenure arrangements around miombo woodlands and bushlands historically used for dry and wet season grazing, respectively (Sjöholm and Luono, 2002; Mwakasendo, 2009; Askew et al., 2013). How these interventions, framed in a “rights language,” intersected with agricultural interests and reshaped pastoralists’ ability to benefit from land and other pastoral resources remains critical. Thus, we studied Maasai reactions “from below” (Hall et al., 2015) to understand how the land use shift through agriculture and associated land, and forest institutional dynamics influenced access, and property relations to sustain Maasai pastoral ways of life. Following Lund’s *coding possession* conceptual framework (Lund, 2024), we treat code as a land/natural resources governance script, enacted through coding (writing) of a constitutive recognition triad of property, rights-bearing subjects, and institutional authority. Through this triad, land is defined, claimed, and regulated. The elements of this triad, however, are not static. In Southern Kiteto, we argue that pastoralists continue to engage in defining and recoding claims to landed possession through tenure formalisation, strategic land use, and conservation alliance by sanctioning institutions of authority.

The next section outlines theoretical perspectives concerning pastoralism, agriculture, and conservation. Then, we describe the study area and data collection. The results present our findings on land use changes related to agricultural expansion and conservation interventions, including how pastoralists adapted to these changes through diverse mechanisms, including (in) formal rules and structures. Lastly, in the discussion and conclusion, we consider our findings’ theoretical implications and offer broad recommendations for the governance of land, forests, and pastoralism in drylands.

Theory and analytical approach

Claims to land remain central to pastoralists. In the context of Southern Kiteto, pastoralists’ responses to land-use changes must be understood within a broader context of shifting property regimes. We, therefore, draw on property theory to explore how pastoralists navigate new land uses through practices of (re) coding landed possession. Following von Benda-Beckmann et al. (2006), Sikor and Lund (2009), and Lund (2020), we understand property not as fixed rights but as a contractual social relation between a public authority able and willing to defend individual or collective claims to assets, i.e., concrete values or objects of value, particularly land. These relations constitute institutional orders (North, 1990), recognition, and political authority (Sikor and Lund, 2009). When new and diverse land uses, like farmland, forest reserves, or designated grazing blocks, emerge, they transform the landscape, influencing how they are perceived, transacted, and regulated under competing and collaborating

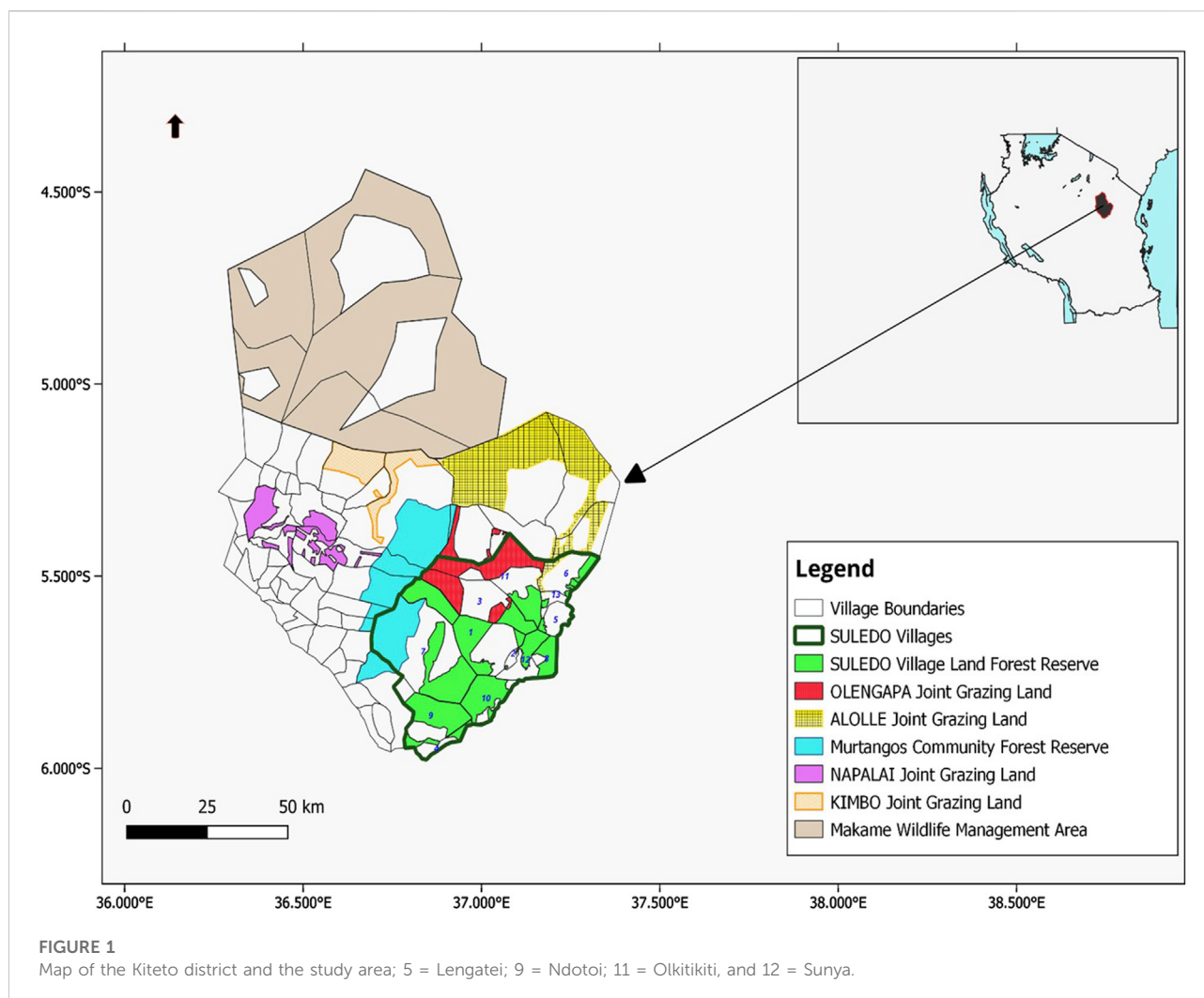
institutional jurisdictions. This convertibility, which Lund (2020) and Lund (2024) terms the recoding³ of property, is particularly helpful in analysing how regimes of land governance continuously evolve, turning legitimate claimants into rights and responsibilities-bearing subjects. The recognition and sanctioning of the latter require invoking institutions of public authority as rights authorisers and enforcers, such as the state (or a state-like institution) and its constituent institutions, including village governments, and non-constituent authorities like councils of elders.

The mounting pressure on land and natural resources in the ASALs has once again prompted state and non-state actors to intervene by recoding pastoralists’ traditional land elements and property relations through various laws, the state, and its allied institutions (Mwangi, 2007; Robinson and Flintan, 2022; Hassan et al., 2022). However, the recoding of public authority and associated recognition or elimination of rights are neither unidirectional nor monolithic. While various national laws, such as Tanzania’s Village Land Act of 1999 and the Forest Law of 2002 (see below), may recode customary rights in alignment with new governance objectives, including conservation and agricultural development, they also create spaces for negotiation, reinterpretation, and contestation (Cleaver, 2012; Muok et al., 2021; Unks, 2022; Perfect-Mrema, 2022; Rwelengera and Abdallah, 2024).

Furthermore, practices regarding natural resources in pastoral settings suggest that property regimes are not governed by statutory law alone (Sikor and Lund, 2009; Unks, 2022). Rather, they are shaped through hybrid governance arrangements that intersect formal and informal rules, customary institutions, and community practices (Cleaver, 2012; Cleaver and de Koning, 2015). In other words, pastoralists do not passively accept or observe changes in land use; instead, they strategically engage through practices of assemblage (Li, 2007; Li, 2014; Tsering, 2024) and interact with ever-evolving governance structures to sustain and control access to key resources, with or without formal rights (c.f. Ribot and Peluso, 2003).

The case of agricultural expansion in Southern Kiteto raises questions about who holds enforceable rights, including rights of exclusion and the right to establish operational rules, in which areas, and under what conditions. Likewise, decentralised conservation policies, particularly CBFM, constrain and enable pastoralists’ use and management of forests. Forests governed by village authorities (Village Land Forest Reserves (VLFR), a particular form of CBFM) offer an opportunity for pastoralists to influence the operational rules (who can do what, where,

³ Lund (2024), p.2 defines code as a script that tells us the nature of an asset, how it appears in the social world, how it can be held, used, and transacted, as well as how it falls within different jurisdictions of regulation.



when, and how) of forest management while aligning with the state's overall interest in forest conservation (Perfect-Mrema, 2022; Rwelengera and Abdallah, 2024). Designated grazing areas represent the most recent opportunity for pastoralists and their allies to have common-pool pastures coded as property (c.f. Lund, 2016; Lund, 2024). Like VLFRs, designated grazing areas are established through (joint) village land use planning, where village governments commit portions of their land to form a combined larger area legally reserved for livestock grazing, thus restricting agricultural expansion (Robinson and Flintan, 2022).

In a context where pastoralism, agriculture, and conservation intersect, we argue that land use transformation creates new values that redefine relations of property, authority, and belonging and *vice versa*. Through the recoding of landed possession, new socio-political subjectivities and property orders emerge, making land not just a site of resource use but a terrain of political negotiation, identity, and state formation (Lund, 2016). Accordingly, pastoralists' adaptability is not solely reactive but actively shaped through their "institutional literacy" and agency in

navigating the constraints and opportunities promoted through land privatisation (officially authorised by village governments) while including state-promoted but decentralised approaches to nature conservation, and protected grazing areas -also authorised by village governments. Hence, drawing on Lund (2024), our data collection and analysis were guided by paying attention to the processes and outcomes of the coding and recoding of (i) land as an asset, (ii) different people as rights subjects, and (iii) public authorities, i.e., institutions that people use to validate and enforce exclusive land claims vis-à-vis others. The process of recoding either of the three can happen through law and regulation, by cultural norms, social values, and by practices (Lund, 2024, p.4). Often, recoding primarily targets one element, but they are interdependent and *always* interact to produce a governance system. For example, recoding a piece of rangeland to somebody's private farm requires a public authority that can effectively recode a person's rights status to hold exclusive rights to a particular plot, e.g., vis-à-vis pastoralists' previous use of the area for pasture.

Materials and methods

Study area context

Our study focuses on the southern part of Kiteto District, in Manyara, Tanzania (Figure 1). Fieldwork was predominantly conducted in four of the thirteen villages (Table 1), constituting Suledo⁴ VLFR, which is characterised by dry miombo woodland, grassland, and shrubland. Suledo VLFR (96,213 ha) ecologically and socially connects with two recently designated joint grazing areas: Olengapa (31,798 ha), an acronym coined from the participating villages of Olkitikiti, Lerug, Engang'uengare, and Ngapapa; and Alolle (95,500 ha), derived from Amei, Lolera, Lesoit, and Lembapuli villages, located to the North and Northeast of Suledo. Additionally, it links to the Emborley Murtangos Community Based Forest Reserve⁵ (CBFR) (75,395 ha) to the Northwest (see Figure 1). These areas where agriculture is prohibited not only form an important network of seasonal grazing commons. They are also culturally important to the Maasai in Southern Kiteto (Yanda et al., 2021).

Situated within Tanzania's ASALs, Suledo VLFR and the surroundings experience low and erratic rainfall that generally follows a bimodal pattern. The short rains fall between November and January, and the long rains between February and May. According to Suledo's Forest Management Plan (2011), the area's annual rainfall varies between 500 and 650 mm, with an average temperature of 20 °C. This climate, ecologically and historically favoured pastoralism, particularly among the *Ilkisingo* Maasai, who inhabited the area by the 1870s (Fosbrooke, 1948; Galaty, 1993) and consider themselves natives. This status was consolidated through the Masai Reserve, a colonial territory South of the Arusha-Moshi-Mbugwe Road, created to constitute the Maasai as an ethnic group by alienating their productive land to white settlers during the German and British colonial rule (Fosbrooke, 1948; Hodgson, 2001). Today, however, the Suledo area is a multi-ethnic home to 71,961 people (The United Republic of Tanzania, 2022a), involved in livestock keeping (cattle, sheep, goats, and donkeys) and crop farming (maize, sunflower, pigeon peas, and beans), both for cash and subsistence.

Previous research documents that Suledo VLFR historically functioned as a key dry season grazing reserve for the Maasai pastoralists (Sjöholm and Luono, 2002; Mwakasendo, 2009; Makatta et al., 2015). Like other Maasai in Tanzania (Homewood and Rodgers, 1991; Nelson, 2012), those in the Southern Kiteto organised a transhumant grazing system by

classifying the landscape into wet and dry season commons, including special pasture reserves (*alalili*) for calves and weak livestock (Yanda et al., 2021). From the highlands of Suledo VLFR, herders moved to lowland plains (*Olpurkel*), including the present-day Olengapa, Alolle, and Emborley Murtangos, during the wet season to access pasture and rain-logged water sources. As water and pasture receded, herds returned to the highlands' dry season pastures (*Osupuko*), with more reliable water sources, including an artificial lake made by the British colonial administration.

Traditionally coded through Maasai social norms as an integrated network of seasonal grazing grounds, these lands, have recently been recoded (see below) through various national laws, including The United Republic of Tanzania (1999), The United Republic of Tanzania (1999), The United Republic of Tanzania (2002), The United Republic of Tanzania (2007), The United Republic of Tanzania (2010), and Guidelines for Village Land Use Planning, under various natural resources management initiatives, to support multiple uses, including conservation and livestock grazing (Mwakasendo, 2009; Askew et al., 2013; Flintan, 2021).

However, this extensive and mobile land-use system has come under growing pressure in recent decades, primarily due to agricultural expansion driven by Tanzania's liberalisation reforms, amongst others, implemented through the mentioned laws, which increased land demand across Tanzania, including Southern Kiteto. This attracted external interests and immigrant cultivators, who viewed the area as a lucrative agricultural frontier (Havnevik et al., 2000; Nelson et al., 2012; Askew et al., 2013; Saruni et al., 2018). The influx involved land privatisation, threatening pastoral land management, and intensified farmer-herder conflicts (Askew et al., 2013; Saruni et al., 2018; Yanda et al., 2021).

In the study villages (Table 1), agricultural expansion coincided with and was driven by the legal coding of land under the Village Land Act, 1999. The Act legalised existing customary rights (private and collective), and decentralised land management and administration to village governments, further disempowering Maasai traditional institutions. Since then, a mix of state and non-state actors have intervened in Southern Kiteto to secure pastoral commons, including forest and grazing lands, through CBFM and Sustainable/Participatory Rangeland Management (PRM). While these initiatives reflect a continuity of colonial and post-colonial rangeland interventions to enclose and modernise the Maasailand (Hodgson, 2000; Hodgson, 2011), they also present a legal opportunity for pastoralists to reclaim shared resources, an opportunity that was elusive under previous laws like the Range Management Act, 1964 (Hodgson, 2001).

A key formalisation is the gazettment of the Suledo VLFR in 2007, under the Forest Act, 2002, through the Swedish-supported Land Management Programme (LAMP). While originally aimed to promote timber harvesting and conservation (Makatta et al., 2015; Sungusia et al., 2020), its long-standing function as a dry season grazing reserve was also formalised through bylaws, the

4 Acronym of the three wards of Sunya, Lengatei, and Dongo, founders of the VLFR. The VLFR is jointly owned and managed by 13 villages—Asamatwa, Chang'ombe, Engang'uengare, Laiseri, Lengatei, Lesoit, Loltepesi, Mesera, Ndotoi, Olgira, Olkitikiti, Sunya, and Zambia.

5 A forest area managed by a self-identified group officially recognised by the Director of Forests or a village government under the Forest Act 2002, sections 41–48.

TABLE 1 Study villages socio-economic profiles.

Features	Lengatei	Ndotoi	Olkitikiti	Sunya
Origin/history	Named after a famous Maasai man, Ngate. Registered on 28.2.1978 (AR.KIJ.351), Lengatei remained independent after splitting into Lesoit in 1992 and Zambia in 2005	Maasai: Oltotoi, meaning a rock Registered as part of Laiseri village (AR.KIJ.395) on 28.2.1978, but split in 2015 to form an independent village	Maasai: e'nkitikiti, meaning armpit. Named after the Olkitikiti dam Registered on 28.8.1980 (AR.KIJ.452), and remained independent after splitting into Engang'uangare	Maasai: isinyai, meaning sand; named after the sands of the Kiseru River flowing from West to Southeast of the Sunya Village Registered on 1.4.1976 (AR.KIJ.8), and later split into Mesera, Olgira, and Chang'ombe
Village land area, including shares of Suledo and common grazing lands	Total area = 4,933 ha Suledo = 1,109 ha Grazing land area = unknown	Total area 21,882 ha Suledo = 13,522 ha Grazing area = 10,140 ha	Total area = 34,553 ha Suledo = 6,192 ha Grazing area = 17,126 ha	Total area = 10,133 ha Suledo = 4,743 ha Grazing area = unknown
Sub-villages	Malimogo, Kageze, Ilala, and Magomeni	Oltotoi, Konyeki and Mbaeki	Asapkupes, Kiponyi, Njakuleni, Olorosoto A, and Olorosoto B	Ibuti, Juhudi, Kichangani, Kiegea, Lendolu Majengo, and Mnadani
Dominant Ethnic Groups	Nguu and Maasai	Maasai	Maasai	Nguu, Kamba, Maasai, Kaguru
Human Population	4,415	4,821	6,217	10,003
Households	954	1,005	1,351	2,267
Number of livestock	Cattle = 1,612 Goats = 5,820 Sheep = 6,020 Donkey = 47	Cattle = 5,200 Goats = 2,800 Sheep = 2,858 Donkeys = 272	Cattle = 9,200 Goats = 2,594 Sheep = 2,238 Donkeys = 368	Cattle = 8,587 Goats = 3,435 Sheep = 1,534 Donkeys = 124

Source: National Bureau of Statistics; Livestock and Veterinary Services at the Kiteto District Council (KDC) Headquarters and ward-level offices. Additional data were compiled from various reports and qualitative data sources.

forest management plan, and environmental committees at the sub-village, village, and zonal level (Sjöholm and Luono, 2002; Magessa et al., 2020). Yet, with limited timber benefits and the growing demand for farmland (Sungusia et al., 2020), forest grazing remains a source of tension among Suledo communities VLFR (Marmo, 2024).

Following Suledo, adjoining pastoral commons, including Emborley Murtangos, Olengapa, and Alolle were established to counter agricultural encroachment. Emborley Murtangos was formed in 2002/2003 through LAMP to secure wet season grazing areas and protect a wildlife corridor, at the request of eight villages (Askew et al., 2013). More recently, Olengapa and Alolle grazing lands, initiated through the Sustainable Rangeland Management Project (SRMP), was recently recoded through various national laws, including the Land Act (The United Republic of Tanzania, 1999); Village Land Act (The United Republic of Tanzania, 1999; Forest Act (The United Republic of Tanzania, 2002; Land Use Planning Act (The United Republic of Tanzania, 2007); Grazing Land and Animal Feed Resources Act (The United Republic of Tanzania, 2010), and Guidelines for integrated and participatory village land use planning, management, and administration in Tanzania (The United Republic of Tanzania, 2020). These areas now form a legally recognised network of pastoral commons (Figure 1), covering 18% of Kiteto District's 1.67 million ha, excluding the joint grazing lands of Kimbo and Napalai. During fieldwork, a few

companies had shown interest in these areas' carbon offsetting project opportunities, implying a possible future layer of use and rules.

While Suledo and the surroundings have attracted a growing scholarly attention (Askew et al., 2013; Magessa et al., 2020; Sungusia et al., 2020; Yanda et al., 2021; Okick et al., 2025; Rwelengera and Abdallah, 2024), most have focused on land reforms and conflicts, conservation governance, politics, and biophysical implications of forest/livestock management. We draw on these studies to show how pastoralists have navigated the emerging biophysical and institutional landscape.

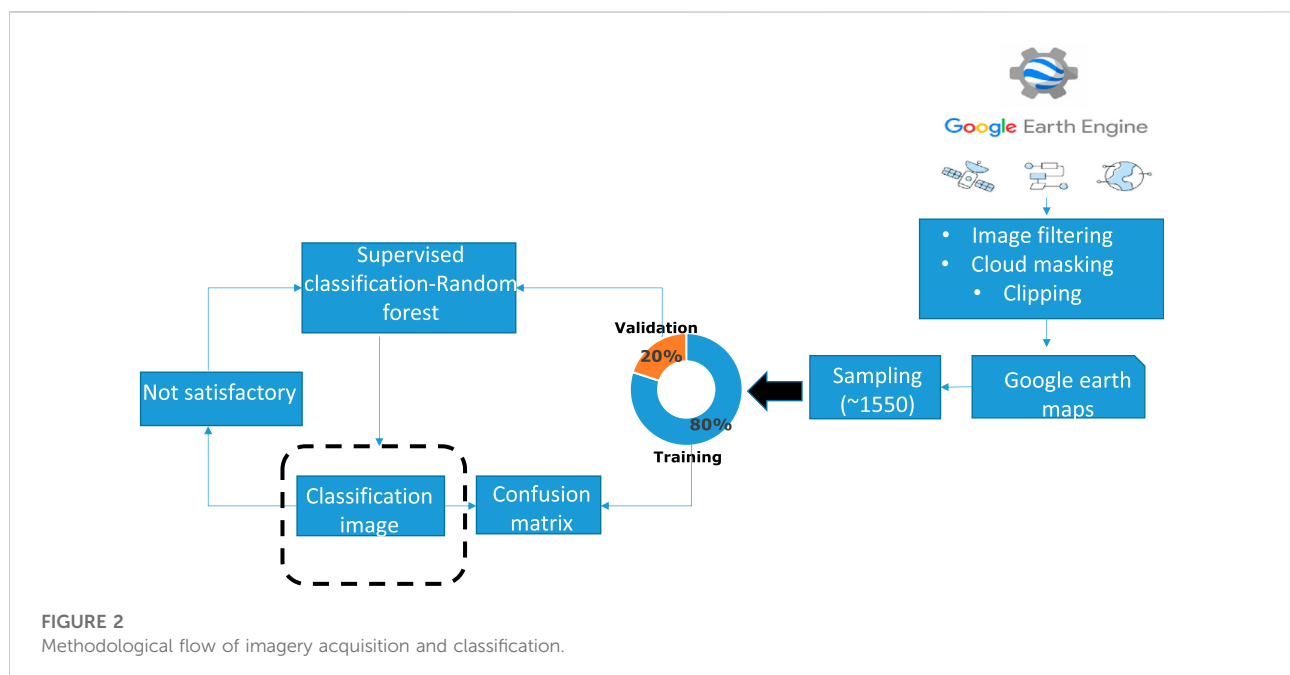
Data collection

Recognising the partiality and situated nature of data, we employed a mixed-method approach, integrating quantitative and qualitative data collected at multiple levels (c.f. Nightingale, 2015). To map out and quantify agricultural expansion and forest cover change, we used remote sensing, the Geographical Information System (GIS), and the World Resource Institute's Global Forest Watch (GFW) open-access platform⁶. Mapping agricultural

⁶ www.gbolbalforestwatch.org

TABLE 2 Imagery Acquisition Data and Source for Southern Kiteto Land Cover Classification (n = number of images).

2000			2015			2020		
Source	n	(dd-mm)	Source	n	(dd-mm)	Source	n	(dd-mm)
Landsat 7	4	21-Feb	Landsat 7	3	11-Mar	Landsat 8	16	14-Aug 30-Aug
Landsat 7	7	07-Jul	Landsat 7	18	06-Jun 15-Jun 22-Jun	Landsat 8	20	01-Oct 10-Oct
Landsat 7	18	16-Sep	Landsat 7	17	17-Jul			
			Landsat 7	18	26-Sep			
Total (n)	29			56			36	



expansion involved acquiring remotely sensed spatial land use and cover. Satellite imagery from 2000, 2015, and 2020 was collected via the United States Geological Survey (USGS) and processed in the Google Earth Engine (GEE) platform through a data catalogue (Table 2). The time points were purposely selected to align with significant periods of agricultural expansion and major forest conservation efforts in Southern Kiteto and the study villages, as highlighted in the qualitative data (see below).

Observations from these years provided a comprehensive framework for examining trends over time, with the 2015 observation/imagery to augment the trendline between 2000 and 2020. To minimise cloud interference, mostly dry season images were used and combined into a single composite image using the *median filter* function.

Composite imagery was obtained for each year; Landsat 7 imagery was spectrally harmonised with Landsat 8 series using a linear transformation. Furthermore, to improve the

image quality, the *fmask* was adopted to mask out clouds and cloud shadows. Visual image param was used to align the band of the obtained composite image in each respective year, and then clipping was done to the region of interest (c.f. Reith et al., 2021).

Ground truth data for land cover classification were gathered through visual interpretation from Google Earth, leveraging their accessibility and high-quality imagery (Loukika et al., 2021; Nguyen, 2020). Based on our knowledge of the study area, we divided land cover into four categories: forest (minimum 15% crown coverage), sparse vegetation (less than 15% crown coverage), agriculture, and water bodies. Generally, 388 reference data points for each year (2000, 2015, and 2020) were collected. Supervised classification was conducted using the Random Forest (RF) algorithm with 70 decision trees, 1 min leaf population, and 42 seeds. Of the ground truth data, 80% was used for training and 20% for validation. Classification accuracy was assessed via overall accuracy, producer's accuracy, and user's accuracy, using a

confusion matrix (Nguyen, 2020). The final classified images were exported to Google Drive for further analysis. The methodological flow of image classification is depicted in Figure 2.

Post-classification filtering and change detection were conducted using QGIS software version 3.32 to assess changes across the 2000, 2015, and 2020 land cover maps.

Additionally, we incorporated GFW's high-resolution satellite images and datasets from the University of Maryland. The GFW provided data on forest cover and loss, and apparent drivers of tree cover loss, allowing us to track forest cover changes from 2000 to 2020 (Hansen et al., 2013; Sims et al., 2025).

The spatial data from GEE and GFW were complemented by qualitative ethnographic data collected between January 2022 and September 2023. Qualitative data collection included focus group discussions (FGDs), interviews, observations, and reviews of relevant documents. Thirty (30) FGDs and 81 individual interviews were held with pastoralists, farmers, and various authorities, including representatives of the Suledo VLFR management, village/ward councils, Kiteto District Council (KDC), politicians, and traditional leaders. Reviewed documents, among others, included forest management plans, bylaws, agreements, maps, meeting minutes, and relevant reports.

The qualitative approach gave us a deeper understanding of the multifaceted dimensions of agricultural expansion, including how this land-use change has influenced and shaped pastoralists' access and claims to land. Furthermore, it highlighted how these land claims, in response to agricultural expansion, enabled pastoralists to adapt their transhumance grazing practices alongside forest management interventions.

The qualitative data were thematically analysed. Transcripts from FGDs and interviews were examined for recurring themes related to agricultural expansion, forest governance, pastoralists' adaptation, and evolving claims to land and forest resources. To make sense of these processes, we applied a multilayered analytical approach through Lund's (2024) intrinsically interdependent and constantly shifting elements of governance: *assets*, *rights subjects*, and *public authority* (Sikor and Lund, 2009; Lund, 2016; Lund, 2020; Lund, 2024). Supplementing this approach, we drew on

critical institutionalism and institutional bricolage (Cleaver, 2012; Cleaver and De Koning, 2015), assemblage (Li, 2007; Li, 2014; Tsering, 2024), and access theory (Ribot and Peluso, 2003).

Results

This section presents land use changes between 2000 and 2020, focusing on agricultural expansion and other land cover/use transformations. It also presents pastoralists' concurrent adaptation by acquiring land as private and common property through opportunities offered by national legislation.

Land use dynamics in Southern Kiteto (2000–2020)

Agricultural expansion

By 2020, 54.4% of the study area (802,416 ha) had been converted to agriculture. This land use/cover category increased more than fivefold, from 79,318 ha in 2000 to 436,541 ha in 2020 (Figure 3).

FGDs and reviewed documents indicated that while agriculture expanded rapidly from the early 2000s, a few Maasai had begun farming small plots of land in the 1970s and 1980s, primarily for subsistence. Accordingly, the Maasai hired non-Maasai ethnic groups to cultivate 0.5–1 acres of maize around their homestead (*boma*). However, the scale of this activity remained small, unlike the rapid increase experienced in the wake of 2000, where farming unfolded as an important livelihood strategy among the Maasai transhumants.

As Figure 4 further illustrates, the recent agricultural development (2000–2020) spatially began from the West and Southwest, gradually extending to other parts of the study area. This agricultural expansion, largely driven by an influx of farmers and crop booms (maize, sunflower, and pigeon peas), has had far-reaching implications for the natural vegetation, which served

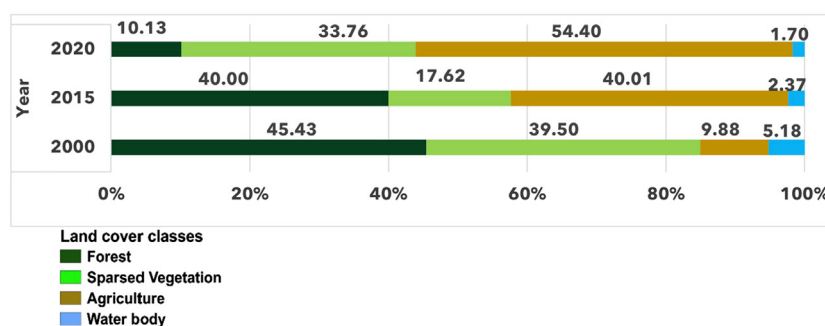


FIGURE 3

Land use and land cover change in the southern Kiteto from 2000 to 2020.

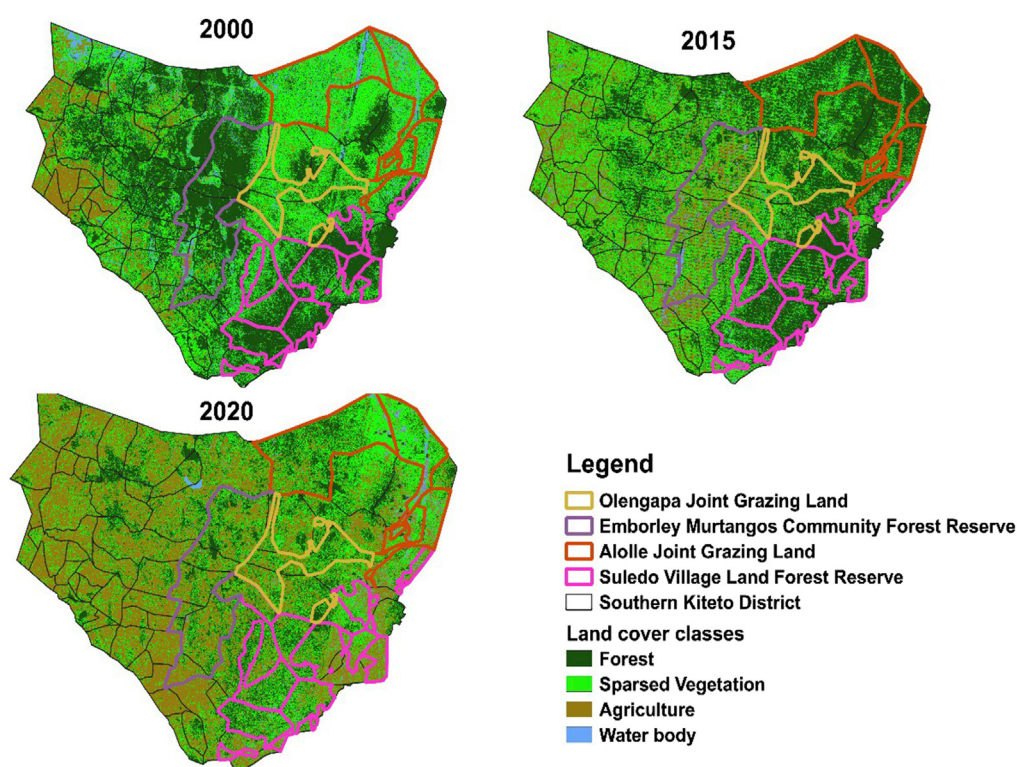


FIGURE 4
Land use and land cover maps for southern Kiteto between 2000 and 2020.

as traditional wet season grazing areas, such as the Emborley Murtangos CBFR.

Agricultural expansion and forest cover change

Figures 3, 4 show that between 2000 and 2020, agriculture rapidly emerged and expanded at the expense of forest and sparse vegetation (scattered bushland with shrubs). Between 2000 and 2015, agricultural land expanded at a rate of 16,116 ha/year, associated with the loss of 2,903 ha of forest, and 11,706 ha of bushland and shrubland per year. Similarly, between 2015 and 2020, the expansion of agricultural land accelerated to 23,095 ha/year, which coincided with a sharp decline of 47,943 ha of forest/year, while sparse vegetation increased by 25,913 ha/year. These trends document a dynamic shift in land use, where agricultural expansion contributed significantly to tree cover loss while bushland and shrubland partly rebounded during the latter period (Tables 3, 4).

To complement the above, GFW-based forest change data revealed that agricultural expansion was associated with a major loss in tree cover⁷. According to this source, Southern Kiteto

supported approximately 244,000 ha of tree cover in 2000 (Figure 5). However, between 2001 and 2020, Figures 6, 7 illustrate that tree cover loss varied across time and space.

Documents and interviews show that, between 2000 and 2011, the lowlands of Emborley Murtangos CBFR and its surroundings were invaded by non-village farmers, backed by political elites, civil servants, and businessmen from neighbouring and distant regions. In this area, legally designated as a Community Forest Reserve in 2002/3 under LAMP, large tracts of land, often 100 and 500 acres and above, were cleared for commercial maize cultivation. This development was enabled by unfaithful village leaders, district functionaries, and Maasai traditional leaders, in contravention of the Village Land Act No.5 of 1999 and the Forest Act of 2002, through which the CFR was legally established.

During this period, the KDC attempted to evict these farmers several times, but with minimal success. By November 2002, the District Natural Resources Committee reported⁸ only nine out of the twenty-three illegally established settlements were dismantled, partly indicating the financial and structural

⁷ All vegetation greater than 5 m in height and at least 15% canopy cover (Hansen et al., 2013).

⁸ Report on Operation of Vitongoji, reference number KT/MA/OV/01/1/65 of 21st of November 2002.

TABLE 3 Land cover changes (2000–2015).

	2000 (ha)	2015 (ha)	2015–2000		Relative size of 2015 to 2000
			(ha)	(ha/year)	
Forest	364,546.53	320,993.99	–43,552.54	–2,903.50	88%
Sparse vegetation	316,954.56	141,356.52	–175,598.04	–11,706.54	45%
Agriculture	79,317.70	321,063.50	24,1745.80	16,116.39	405%
Waterbody	41,596.87	19,001.71	–22,595.16	–1,506.34	46%

Source: Own analyses of satellite images as described above.

TABLE 4 Land cover changes (2015–2020).

	2015 (ha)	2020 (ha)	2020–2015		Relative size of 2020 to 2015
			(ha)	(ha/year)	
Forest	320,994	81,279	–239,714.99	–47,943.00	25%
sparse vegetation	141,356.5	270,925.7	129,569.18	25,913.84	192%
Agriculture	321,063.5	436,541	115,477.51	23,095.50	136%
Waterbody	19,001.71	13,669.95	–5,331.76	–1,066.35	72%

Source: Own analyses of satellite images as described above.

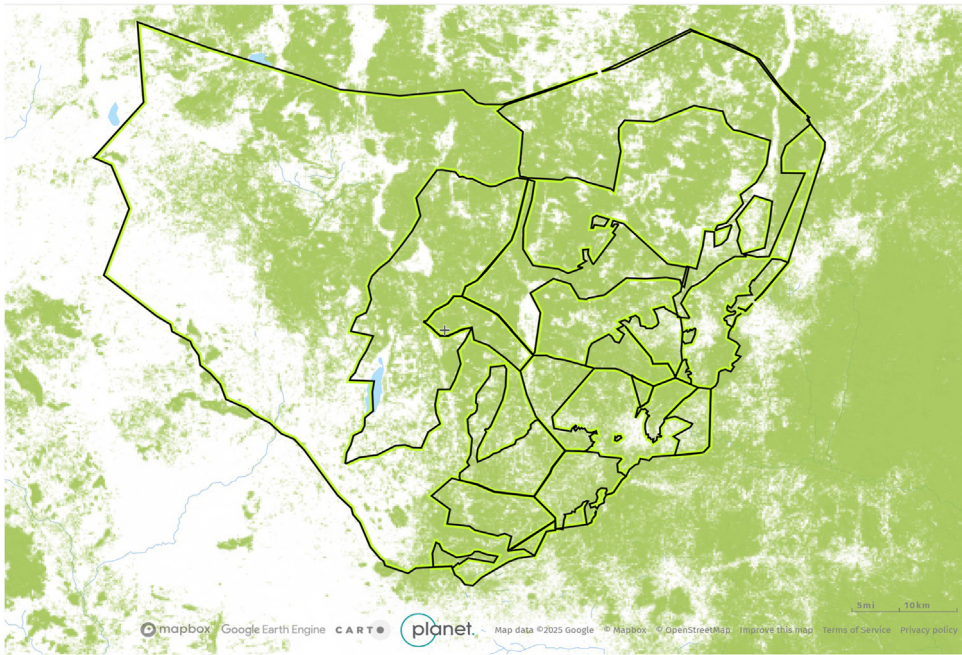


FIGURE 5
Tree cover (green) in the southern Kiteto in 2000. Source: GFW, 2025.

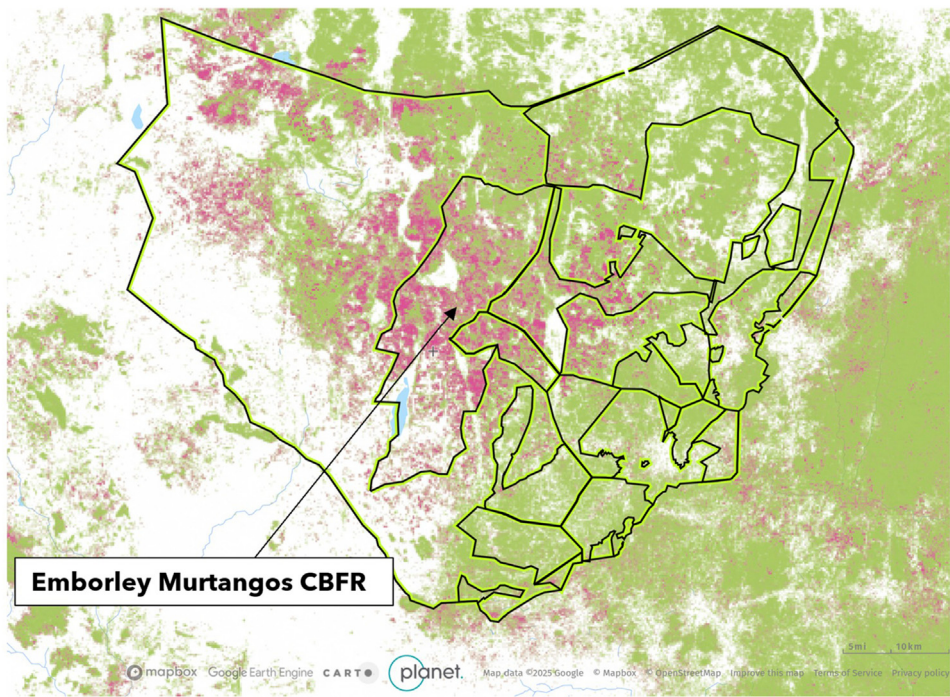


FIGURE 6
Tree cover (green) and loss (pink) in southern Kiteto between 2001 and 2015. Source: GFW, 2025.

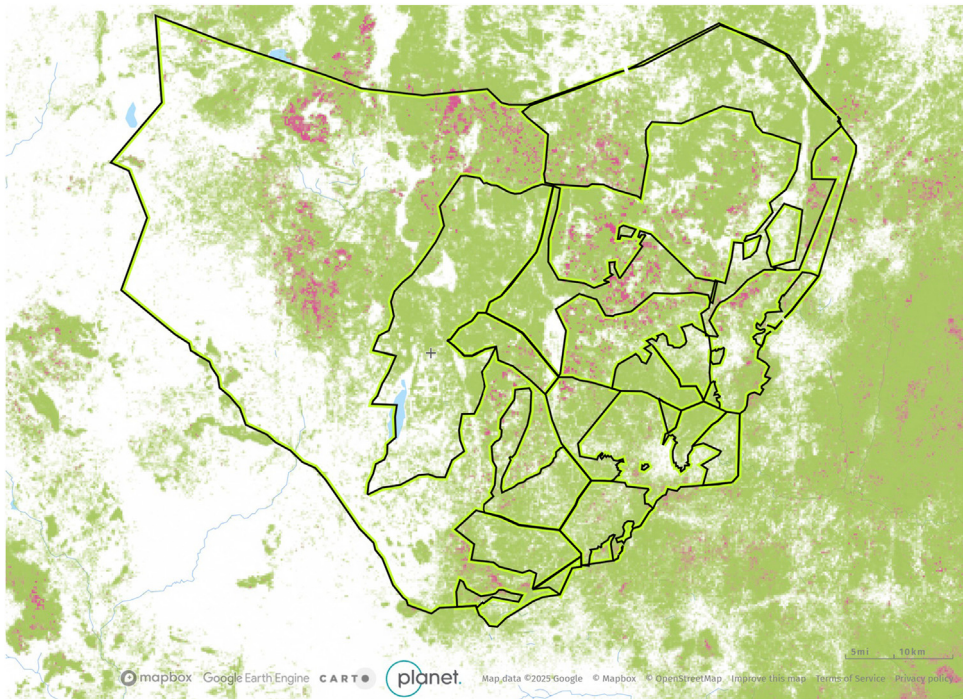


FIGURE 7
Tree cover (green) and loss (pink) in southern Kiteto between 2015 and 2020. Source: GFW, 2025.

powers behind the farmers' resistance. This led to violent conflicts between farmers and pastoralists (c.f. Askew et al., 2013; Saruni et al., 2018). In 2007, wealthy farmers successfully filed a lawsuit against the KDC in the High Court (Land Division). However, in 2011, the KDC appealed the case to Tanzania's Court of Appeal and ultimately won in 2012 [see Askew et al. (2013) for details].

Figure 7 shows the relative tree cover recovery in Emborley Murtangos CBFM, compared to the period before 2015 (Figure 6). According to the 2012 court order, most farmers were evicted from the Emborley Murtangos CBFM, and their settlements were destroyed. In 2015, the National Land Commission resurveyed the forest boundaries, demarcating 75,395 ha.

Agricultural expansion and farmland (Re)coding among the Maasai

While the Maasi traditionally relied on livestock, supplementing their diet with grains from exchange with their neighbouring farmers, the rapid agricultural expansion and village land tenure reforms brought new challenges and opportunities. During a focus group discussion in Ndotoi, the women shared stories on trips to Dongo in the 1990s, a ward bordering Dodoma to the South, where they bought maize from the Kamba and Gogo ethnic groups. However, a decade later, the women were happy that nearly every household in their village owned land and engaged in farming. Maize cultivation became a game changer, as a staple food and a cash crop for the Maasai.

Accessing the market was no longer a challenge in Southern Kiteto, especially with the official establishment of Kibaigwa Grain International Market (located in Kongwa, Dodoma; 90 km from Sunya) in 2005. This attracted buyers from Tanzania and from across East Africa. During fieldwork, we encountered several tractors and trucks on the Sunya—Pandambili Road transporting maize bags to Kibaigwa, throughout the grain harvesting season from June to September. Thus, market access attracted the Maasai into farming and linked Southern Kiteto to the rest of the country and beyond.

Data also indicated that farming became a strategy to rebuild livestock herds lost during prolonged droughts, like the one in 2009. As Olanana, from Ndotoi, metaphorically explained, he, like other Maasai, was compelled to “*use both hands*” to remain pastoralists in Southern Kiteto (KII #79, Ndotoi, December 2022). This meant engaging in farming and cattle herding, an adaptation confirmed during interviews and FDGs at village, ward, and district levels.

In another discussion, youths in Olkitikiti revealed that farming was inevitable due to socio-cultural and demographic dynamics. As one respondent expressed:

In the past, our ancestors lived on milk and meat. Now, we have [more] children; we are too many to drink milk alone. So, we decided to farm staple foods. We have also realised that owning a farm or a field is just like having a plot, where one settles and lives. Farmland is a lasting asset; it cannot be destroyed, as it is a permanent property.

FGD#07, Olkitikiti, March 2022.

As the quote highlights, population growth and the insufficient production of livestock products to support everyone in the households created a demand for agricultural products, particularly maize. The National Bureau of Statistics also records that Olkitikiti's population of 6,217 in 2022 had grown threefold since 2012 (The United Republic of Tanzania, 2022b).

Second, owning a farmland/field, *enkruma* in Maasai, as a “*permanent property*”, signified the importance of grounding permanent occupancy to land, which was also a concern among elders in Ndotoi, as expressed by Tobiko:

From 1999/2000, we started to claim what is ours (land). We engaged in farming by renting out our land as well as cultivating our crops because if we did not start farming, outsiders would steal all our land and claim it to be theirs. Now I have my farmland on which I can change land use as I wish.

KII # 88, Ndotoi Village, December 2022.

Accordingly, farming became a deliberate strategy for the Maasai to assert land occupancy vis-à-vis non-Maasai and non-villagers. This urgency coincided with the Village Land Act of 1999, which authorised village governments to allocate private land within their jurisdictions. Thus, at a critical time for the Maasai in Southern Kiteto, the village governments became key institutions (public authorities) in coding land as property.

The government arrival: coding and recoding of farmland

The process of acquiring land titles was clearly distinguished before and after the land formalisation programmes, such as LAMP and the enforcement of the Village Land Act of 1999, which the respondents described as “the government arrival.” Before the “government arrival,” people acquired land informally by clearing it to establish occupancy and boundaries. Guided by traditional rules, clearing for farming was prohibited in common grazing lands, such as Alarahiray, and the Endiasika forest (Ndotoi), *alalili*, dry season pasture reserves for calves, sick and elderly livestock, and what later became Suledo VLFR, and Olengapa grazing area (Olkitikiti). Agriculture was primarily established in areas formerly claimed for seasonal cattle camping, *ronjo*, abandoned homesteads, and traditionally unclaimed areas. Initial

land acquisition involved fencing of land, communicating ownership vis-à-vis others. While overlaps in claims were inevitable, they were settled among individuals or resolved by the Maasai traditional leaders, *ilaiguenak*. sing. *olaiguenak*.

The 1995 National Land Policy and the subsequent Village Land Act of 1999, which took effect in 2001, initiated a formalisation, i.e., recoding of property relations across Tanzania. The policy promoted recognition of customary land rights and decentralised land management authority to village governments, for them to undertake land use planning and promote private land titling in non-common areas. In the study villages, initial processes of land reform in 1996/97, partly executed through LAMP, enabled the villages to zone their land uses into six categories: forest reserve, grazing land, settlement, cattle tracks, permanent water sources, and farming. On top of this initiative, enforcement of the Village Land Act, 1999, further created an institutional opportunity for the Maasai to secure long-established claims as property rights under Sections 14 (3) and 57 (1). Simultaneously, village governments, established as institutional legal entities under the Local Government (District Authorities) Act. No. 25 of 1982, were mandated (coded as public authorities) to manage and allocate land to villagers, upon approval by the village assemblies, as stated in Sections 8 (1–3; 5–6) of the Village Land Act, 1999. This institutional moment enabled the Maasai as villagers (rights subjects) to elevate their traditional land rights to property through official land titles.

However, the transition was not without challenges. A 2009 follow-up study by the Legal and Human Rights Centre (LHRC) in the Suledo villages found a prevalence of boundary and (farm)land ownership disputes. For instance, in Olkitikiti Village, a boundary dispute between two Village Land Committee (VLC) members, Sikorei and Kinyaulo was reported to the Committee, which failed to establish legitimate vs. illegitimate claims through formal procedures, and thus resorted to a traditional oath, *Olmomai* in Maasai. Before taking the oath, Kinyaulo admitted his fault, resulting in an amicable settlement. A similar case between an *olaguienan* (traditional leader) in Olkitikiti, who also served as a ward councillor, and a regular person, was settled through physical verification of a buried mark in the ground.

Such cases highlight that while the “arrival of the government” redefined (recoded) land rights through a recoding that enhanced village governments’ authority, traditional authorities did not disappear altogether. In the first case, they supplement new formal authorities, while traditional and official status did not matter in the latter. Focus group discussions further revealed that institutional opportunities did not materialise evenly across villages or among the Maasai. In Olkitikiti and Ndotoi, the Olkarsis (wealthy Maasai households), comprising 10% and 5% of the households, respectively, own more than 50 acres each with some holding over 300 acres. Meanwhile, the Ilkarsis-peno (average-income households),

representing 70% of village households, own between 5 and 50 acres. The poor, *Ilaisinak*, and the poorest, *olkunjail/olmenati* (10% and 5%), own between 1 and 5 acres and less than 1 acre, respectively. Thus, in the complexity of agricultural pressure and state-driven land governance, a hybrid system emerged where villagers balanced new legal opportunities and obligations with longstanding social structures, including economic classes among the Maasai.

Consolidating land as property: everyday practices and (in)visible arrangements

Interviews and FGDs revealed that, while acquiring official land titles marked a significant step towards establishing property, annexing labour to land was also crucial. This was achieved by hiring non-Maasai farmers, primarily the Gogo and Kaguru from Dodoma and Morogoro, respectively, who are known for their expertise in manual land clearing and cultivation. Accordingly, the Maasai initially made verbal agreements with Gogo and Kaguru farmers, who would clear land in exchange for time-limited cultivation rights. In Olkitikiti, the first 2 years were meant to clear land, followed by 2 years of free cultivation. In Ndotoi, clearing and cultivation were to be completed within 3 years, after which use/cultivation rights would return to the landowner.

Foreseeing problems of uncontrolled land clearing, Section 6 (vi) in the LAMP-supported Olkitikiti Village Land and Environmental Bylaws of 1997 required any land clearing to be endorsed by sub-village land and environmental committees and authorised through a permit by the village government. This rule was, however, often violated, and those caught faced fines. Later, in 2022, during an open meeting in Olkitikiti, the District Commissioner (DC) mandated that any establishment of new farms must, from then onwards, go through the DC’s office, signifying the mounting pressure on remaining uncultivated land, protected grazing areas, and forests. Thus, the DC perceived a need to recode villages’, sub-villages’, and his public authority in matters of land property formation.

Renting and sharecropping were the most prominent practices in the study villages where property was established, and opportunities for claiming uncultivated land became increasingly limited. In many cases, land rental involved annual leasing to different people, mostly from outside the villages. While most preferred renting out their entire farm, some retained a part to grow crops for themselves. For example, during the 2021/22 farming season, Sipaiyu, a 50-year-old Maasai male from Ndotoi, leased 45 acres of land to Omary, a 46-year-old non-Maasai male from Kibagwa, at TZS 30,000 (USD 13)⁹ per acre, and used his remaining six acres to grow maize and sunflowers. Land rental was noted to be on the rise in real prices, and appeared to be uniform across villages,

⁹ Between Jan 2021 and Dec 2022, 1 USD averaged TZS 2,308 (Bank of Tanzania).

although negotiable among individuals. For instance, during the 2022/23 farming season, an acre of land was rented at TZS 40,000 (USD 17). Normally, payment must be made up front. Consolidating property also involved sharecropping, where the lessee generally pays one and a half bags of maize (150 Kg) per acre per season to the landowner.

Interviews revealed that land rental and sharecropping agreements were increasingly formalised. In Olkitikiti, such arrangements must nowadays be endorsed by the village government to prevent duplicate leases. Irrespective of the acreage, such endorsement involved a negotiable fee ranging from TZS 10,000 to 20,000, paid by either party or shared. By contrast, rental agreements in Ndotoi were independent of the village government, involving only the two parties directly concerned. Regardless of the contract (rental or sharecropping), post-harvest crop residuals belong to the landowner. Accordingly, landowners benefit from using or leasing post-harvested fields as dry-season pastureland. Hence, the convivial practice (coding) requiring cultivation of private land to remain somebody's property consolidates Maasai's land property (as opposed to "unused Maasailand") because it allows non-Maasai farmers to benefit from these areas too.

However, the Maasai transition to farming generated varied opinions. While the Maasai use it strategically to consolidate their land claims vis-à-vis outsiders, the non-Maasai, especially in Lengatei and Sunya villages, who face land scarcity, consider this an attempt at hegemonic control, akin to feudal models of production. This sentiment is also shared by some KDC high-profile decision makers, one of whom remarked:

They (the Maasai) are now like feudal lords. They do not even cultivate. They lease the area and just say that whoever farms here should bring me a sack of maize.

KII#5, Kiteto District council, January 2022.

KDC decision-makers' opinions appear to have influenced a recently introduced (but not yet implemented) land taxation system. In Ndotoi, a letter from the KDC titled "Tax Collection for Large Scale Farms" was found in one of the shops (HMW/KT/M/01/VOL/X66). This letter instructs all Ward Executive Officers (WEOs) to collect land tax from people owning more than 50 acres of farmland, effectively targeting Maasai elites, *Olkarsis*. *pl. Ilkasisi*, traditionally distinguished by large cattle herds, multiple wives, and many children,¹⁰ while exempting most poor and average income villagers (Table 5). However, landholding size and harvested yields

TABLE 5 Kiteto district land rent pricelist.

Farm size (acre/season)	Annual tax in TZS (TZS 10,000 = USD 2,298)
<50	exempted
50	100,000
51–100	150,000
101–200	200,000
201–500	2,500,000
Tractor	50,000

Source: KDC, 2021.

are emerging as important wealth metrics, marking a significant departure from earlier norms (see above).

The KDC land tax directive originated from a District Finance and Planning Committee meeting held on March 11, 2021. The meeting approved a pricing structure for large-scale farms, as summarised in Table 5.

The economy of Kiteto District is profoundly agrarian, and the KDC considers the land (and tractor) tax an innovative source of revenue to supplement the annual agricultural produce and livestock transaction taxes, which dominate the council's income. Between July 2016 and June 2023, 43% of KDC's total revenue (TZS 11,068,124,641.45) was collected from agricultural produce tax (crop cess), while the livestock transaction tax collected at all markets within its jurisdiction accounted for 25%–36% (averaging 29%) during the six fiscal years from 2017/18 to 2022/23 (see *Rwelengera and Abdallah, 2024*). While new, the imposed land service tax/fee suggests further recognition of landholdings, and a way to stimulate production while disincentivising low-return production and holding of farmland beyond 50 acres.

Our fieldwork further revealed contrasting patterns of land issues. While the Maasai in Olkitikiti and Ndotoi successfully acquired private land, those in Lengatei and Sunya faced significant constraints shaped by the complex social, political, and environmental milieu. Located near Suledo VLFR, the Maasai in Malimogo, a sub-village of Lengatei, and Kichangani, a sub-village of Sunya, comprise only 25% and 13% of the households in Lengatei and Sunya villages, respectively (Table 1). Since their establishment as Ujamaa villages¹¹ in the 1970s, both Lengatei and Sunya have received farming immigrants, thus shaping their identities as agricultural rather than pastoral villages. As a retired political leader clarified, such changes

10 In Olkitikiti, wealth ranged from cattle-less men (*olmenati*) with one/no wife, and a few children, to *Olkasis*, with more than 500 cattle, six wives, and over thirty children.

11 See for example, Chapter 7 in James Scott's *Seeing Like a State* (Scott, 1998, pp. 223–261).

were rooted in a longstanding political history of immigration and land use shifts:

“... you had a small population of farming people. And this was the accusation put against me -how come the pastoralists have bigger areas while the farming communities have very small areas? But I told them you need to study the historical land uses in Kiteto, because farming communities, especially in Kijungu, Lengatei, Sunya have move in ..., unlike the Kamba who had been there since the time of the slave trade”.

KII 14, February 2022.

These dynamics have restricted grazing areas for the Maasai and constrained their ability to expand into farming. Their influence in village decision-making had also weakened, as farming interests increasingly structured land use within their villages. In 2005, the splitting of Lengatei, forming Zambia, further exacerbated their situation, as grazing land remained with Zambia, a farmer-dominated village, leaving the Lengatei Maasai without adequate wet-season pastures. Like in Lengatei, the Maasai residents in Sunya reported continued tensions with farmers, seeking to expand their fields closer to the Maasai homesteads and the Suledo VLFR.

A 74-year-old Maasai (Babu) at Kichangani explained that the Maasai were no longer wanted in Sunya, as most villagers focused on expanding farms throughout Sunya to Mesera¹². Squeezed between the Suledo VLFR and expanding farmland in their sub-villages, some Maasai, like Babu, considered moving part of their family members to Maasai-dominated villages such as Lembapuli, where kinship ties and leadership could facilitate land access. On the other hand, they have attempted to buy or rent land from the local farmers. Babu, for example, combined several strategies. Among others, he planned to buy ten acres from a local farmer in Sunya while negotiating with the village government to register a grazing area around his homestead and mark its boundaries to signal private property rights, although the land is not cultivated (see above). By doing this, he hoped to protect (recode) his uncultivated area from the growing land pressure and encroachment. Amid these challenges, however, Babu considered Sunya's year-round water availability ideal and key during the dry season, unlike Lembapuli, a part of the Alolle joint grazing area (Figure 1) where he was going to send his son's wives as this would count as a settlement (in the Maasai tradition) and thus establish rights to use the common grazing area. As Lembapuli has water only during the rainy season, it is ideal for wet-season grazing, so Babu planned to

rotate his herds by grazing in Lembapuli when water an pasture were abundant there from February to May/June, then returning to Sunya for post-harvest grazing on his farm, and on additional areas rented from local farmers during the dry season (June-October/November), while using Suledo VLFR during the short rains from October/November to February.

Adapting transhumance to agricultural expansion: the emergence of post-harvest grazing

Interviews and FGDs revealed that land coding and agricultural expansion in Southern Kiteto also generated new grazing arrangements. Pastoralists did not abandon transhumance, but strategically adjusted grazing calendars, negotiated their socio-economic relations with non-pastoralists, and interacted with village governments. In the four villages, all respondents noted that, since the early 2000s, the traditional annual pattern (see Section *Materials and methods*) had gradually been reversed such that harvested fields have become dry season pasture and common grazing areas are used during the wet seasons (Table 6).

Post-harvest grazing is widely practised across the four study villages (and the entire district), but access to crop residuals differs between the Maasai and non-Maasai-dominated villages, and mobility has remained crucial. In the Maasai-dominated villages of Olkitikiti and Ndotoi, where the Maasai got farmland coded as their private property, they also gained control over maize, pigeon pea, and sunflower post-harvest pasture, which they preferred over natural vegetation, from early June to late October (Table 6). When needed, they purchased access to nearby post-harvested fields, thus minimising costs and reducing dependence on grazing beyond their villages.

From the early 2000s, post-harvest grazing emerged as a new normal and increasingly a necessity for pastoralists. As one of the interviewees from Olkitikiti emphasised:

If there were no post-harvest grazing during this season (olameyu), the Maasai would suffer a great loss of their cattle.

KII#84, Olkitikiti, December 2022.

The integration of crop residues into livestock grazing has become a district-wide norm, (in)formally supported by the KDC. At the district level, two reasons underscore its significance. First, it provides essential dry-season pasture. As one of the KDC high-profile decision-makers¹³ emphasised, “No

¹² A neighbouring village occupied by farms. Recently, people from Arusha immigrated to this area and bought land for farming and private grazing areas.

¹³ KII#5, Kiteto District Council, January 2022.

TABLE 6 Current annual grazing cycle in the suledo villages.

Grazing Areas	Short Rains			Long Rains			Cold Season		Dry Season			
	Olkisirata			Elong'on			Kurumari		Olameyu/Alameyu			
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Suledo VLFR												
Emborley Murtangos CBFR												
Unreserved forest area (Matajawazi)												
Joint grazing lands (Olongapa, Alolle) and other village-grazing land												
Pasture around homesteads (ngaulele)												
Harvested Fields (nearby and distant villages)												
Reserved pasture for calves and weak animals (alalili)												
Others- e.g Maize husks												

Source: Authors, based on Fieldwork Data.

harvested field in Kiteto is left ungrazed during the dry season". It has become a district-widely accepted norm, reflecting the district's land-use development. Resisting this practice will be seen as being out of touch with local realities, he insisted. His observation from previous droughts suggested that areas where farming and livestock coexisted reported significantly lower livestock losses than areas without farms. Second, KDC livestock and veterinary officers also noted the nutritional benefits endorsed by the pastoralists. Accordingly, consumption of the post-harvest dry matter compensates for the nutritional deficiencies from the wet season, when green pastures have relatively lower protein content. They claimed that this seasonal feeding, supplemented with legume pastures from pigeon pea, provides essential protein and energy, improving vitality and making livestock more productive. This timing, intended or not, is synchronised to ensure calving coincides with the rainy season, when pasture is most abundant.

In the non-Maasai-dominated villages of Lengatei and Sunya, a few Maasai grazed their livestock on their small, harvested fields, with a portion reserved as *alalili*. Most, however, had to negotiate or pay to access post-harvest pasture from resident farmers, mostly in the neighbouring Kilindi District. During our fieldwork, these arrangements, shaped by local norms and negotiations, involved a payment of TZS 0 to 10,000 (around USD 4) per acre, with some paying a flat fee for the entire farm. Another payment-free arrangement, practised by Saitoti, a 58-year-old Maasai from Sunya, involved grazing in exchange for manure. Based on a lasting relationship built with Mohamedi, a farmer from Kilindi District, it allowed him to graze his livestock over Mohamedi's 100 acres after harvest in return for cattle drops. Such negotiations and payment for crop residues were commonly described in Swahili as "*kupozana*," a way of

comforting, reflecting both acknowledgement of the farmer's effort in producing pasture and a reciprocal compensation for using the land.

Further, interviews and FGDs revealed that post-harvest grazing gradually coevolved with a permits system, requiring non-resident pastoralists to obtain authorisation from the host village governments. Mandated to administer and manage village lands under Sections 7 and 8 of the Village Land Act, 1999, fees to village governments varied. While some paid nothing, others paid TZS 50,000 to 100,000 (USD 22–43). Additionally, non-residents were required to present an introductory letter from their home village government, addressed to the host villages. The permits specified the number of cattle and the duration of stay in the host village. Under the KDC Environmental Protection By-laws of 2008, Section 5(c), such movement of livestock to the neighbouring area also requires a permit from the district. However, the Maasai found this rule impractical and ignored it.

In sum, post-harvested farmlands have become critical and valuable grazing areas during the dry season. Maasai pastoralists secure access to these spaces through the formal institutions of village governments, which establish farmland as private property for citizens within their jurisdiction and regulate other villages' citizens' access to graze livestock on post-harvested farms. In turn, private landowners capitalise on their property through individual deals with livestock keepers. Thus, as citizens of Tanzania registered in specific villages, Maasai pastoralists have adapted to agricultural expansion by utilising the opportunities and respecting the limitations defined by village governments, thereby supporting and consolidating these institutions' land-governing authority. Yet, to secure wet-season grazing, they have also engaged in shaping an associated

but different governance terrain of forest and rangeland conservation interventions.

From fields to forests and grazing lands: recoding areas as wet-season common property pastures

While agricultural expansion has created new dry-season pastures on harvested fields, securing wet-season grazing areas has become challenging. Once central to seasonal mobility, uncultivated areas, including forests, shrubland, and grassland, have increasingly become cropland (Figure 3). Thus, cultivated fields dominate the landscape during the wet season. Our field data also show that securing access to uncultivated wet-season pastures has become critical to sustain herds and prevent conflict with farmers.

In the study villages, Maasai pastoralists, supported by donor-funded programmes, collaborated with central government institutions (including the Ministry of Lands, Forest and Beekeeping, and the KDC) as well as NGOs, like KINNAPA and TNRF, to recode historical grazing commons into legally recognised and protected pastoral spaces. Established under the Village Land Act, 1999; the Forest Act, 2002; Land Use Planning Act, 2007; and Grazing Land and Animal Feed Resources Act, 2010, Emborley Murtangos CBFR, Suledo VLFR, Olengapa, and Alolle, grazing areas provide exclusive collective grazing property rights to village members, i.e., enforceable legal protection against agricultural expansion. This was observed in Emborley Murtangos CBFR (see above). Further, in 2022, Kiteto District Land and Housing Tribunal issued a tribunal *status quo* order to the Olengapa Association of Livestock Keepers (OLKA) prohibiting farming activities by 24 villagers in the grazing area. The Certificate of Customary Rights of Occupancy (CCRO) issued by the involved village governments to Olengapa in 2021 legally recognised pastoralists' claims, despite pastoralists and government officials' expressed farming interests. Additionally, in 2021, Olengapa was gazetted under the Grazing Land and Animal Feeds Resources Act, 2010. As a result, Olengapa, Alolle, and Emborley Murtangos have continued to serve as wet season pastures when farms are cropped. Agricultural expansion also transformed Suledo VLFR into a wet season grazing area, as stipulated in the Forest Management Plan, 2021, Section 2.4.2: 6(i)(d). This was observed especially in Lengatei (Malimogo) and Sunya (Kichangani) villages, where Maasai pastoralists control little wet and dry season pasture. Although Suledo cannot meet the pasture needs for livestock in all 13 member villages, it has become a "safety net" during crises and a critical wet-season pasture for pastoralists in all the Suledo villages.

This further motivated the Maasai to contribute to forest conservation efforts. The Maasai in Sunya, for example, claimed

to be the "main protectors of the forest", a sentiment echoed by the non-Maasai residents. Accordingly, if the Maasai encountered any illegal activity in the forest, they immediately reported the case to Suledo's executive management or acted on their own.

During an interview in Kichangani, Sunya, one of the male elders, shared how the Maasai in 2011 actively resisted farmers from Sunya attempting to establish farms in the forest. This confrontation, driven by the Maasai's need to protect the forest for wet season grazing and farmers' desire to expand farmland¹⁴ escalated into violent clashes. According to interviews, tensions between the Maasai and non-Maasai in Sunya persist.

To ensure grazing remains an officially recognised use of the forest, the Maasai have also secured key positions in Suledo's governance structure, both in the zonal environmental committee and a newly instituted trust to represent their interests. The Maasai's critical role in conservation efforts through grazing was also acknowledged by the KDC forest officers, as noted in an interview with the retired forest officer, but also among the non-Maasai residents in Sunya and Lengatei.

Historically, Emborley Murtangos, Suledo, Olengapa, and Alolle have all been grazing commons under Maasai customs. However, in the face of agricultural expansion and land privatisation, their recoding through national law provided an institutional opportunity for the Maasai to ensure their grazing interests in these areas became collective property rights recognised and enforced by the state. They did so by acting and being recognised as rights subjects while also invoking their status as Indigenous peoples whose traditional livelihoods the state of Tanzania, through international conventions, is obliged to protect¹⁵. Hence, not only has the "Government, i.e., the state arrived in Tanzania's South Maasailand," but also the Maasai "entered the state."

14 The farmers argued that only the Maasai benefited from Suledo VLFR through grazing because non-Maasai could but did not dare bring their few cattle into the forest for fear of them being "absorbed" by bigger Maasai-owned herds, a fear our Maasai respondents, with a grin, confirmed to be well-founded. Hence, the non-Maasai farmers claimed that expanding their farms into the forest was fair as it was their only option to benefit from the VLFR, which was also theirs.

15 For example, point 11 in the pastoralists and hunter-gatherers organisations in Tanzania Submission to the Human Rights Council through the Universal Periodic Review Mechanism [UPR 25TH SESSION, 2016] reads: That recommendations in paragraphs 86.48, 86.49 and 86.52 on recognition of the notion of indigenous peoples, adoption of measures to protect and preserve the cultural heritage and traditional way of life of indigenous peoples and undertake effective consultations with indigenous peoples based on free, prior and informed consent and setting up an effective statutory consultation mechanism with organisations working on the rights of indigenous peoples to help avoid further conflicts given by Denmark and Finland have been implemented only partially by the Commission for Human Rights and Good Governance of Tanzania. However, the Government is still not supportive on acceptance and recognition of indigenous peoples.

Keeping it Maasai: internal rules for common grazing areas

Although formal rules increasingly regulate people's use of the landscape, interviews and FGDs revealed that the Maasai continue to draw on customary practices in governing the remaining pasture and reinforcing shared responsibilities. Importantly, the concept of *Olpur*, a meat-eating event where members contribute bulls and share the meat, symbolises that access to common-pool resources like Olengapa and Alolle, is tied to one's ability and willingness to contribute to the common pool resource. FGDs with *ilegigwenak* highlighted today's relevance of this practice as Maasai individuals who convert common grazing areas into private farms lose access or face access restrictions to such areas.

Modified by village boundaries, this practice also collectively affects the Maasai in Sunya and Lengatei. Village boundaries within Suledo VLFR determine which Maasai hold the primary grazing rights to what parts of the VLFR. Since Sunya and Lengatei include comparatively small shares of Suledo and no other designated grazing areas (see above), the Maasai in these villages have nothing to share with the larger Maasai community in Kiteto. Hence, although they are Maasai, they have no grazing rights in Emborley Murtangos CBFR, Olengapa, and Alolle joint grazing lands. A few respondents, however, informed that, through heavy bribery, they had circumvented the rule and gained access to Olengapa and Alolle joint grazing lands. "*Keeping it Maasai*" also involves maintaining communal *alalili* at a sub-village/locality level. Non-local Maasai are welcome in tough times, but on *olpur* basis only, and upon obtaining permission from local elders.

Further, in the Maasai-dominated village of Ndotoi, the council of elders still controlled who became the democratically elected village government chairperson. As one of the elders put it:

We simply elect the poor for the village chairman position because he has few cattle or none at all. This makes him obedient and available for the job. We rely on him to act on such government political positions because you cannot imagine a wealthy man, with many cattle, busy moving around to deal with such issues. We need people like him (a poor chairman) to serve us.

KII 79, March 2022.

This strategy was also confirmed by the village executive officer (VEO). While reviewing the household wealth ranking list in one of the sub-villages, we noticed that the sub-village chairperson ranked among the poorest. When asked about this, the VEO explained, "*This is normal here. Such political positions are normally for the poor. They are given such opportunities not only to serve people, but also so they too can get something*".

In sum, the Maasai have used their indigeneity, their status as rights subjects (citizens), and the associated official institutional opportunities of village land forest reserves and designated grazing areas to elevate land claims to common property vis-à-vis *external*, i.e., non-Maasai interests, thereby securing critical wet-season pasture against agricultural expansion. In principle, non-Maasai can also graze livestock in VLFRs and designated grazing areas. In practice, however, the Maasai have monopolised these grazing rights by cultivating a livestock rustling narrative. Still, most *internal affairs* are handled through traditional Maasai institutions. Accordingly, individuals' access to common grazing areas is regulated through Maasai rules modified by village citizenship. Thus, smaller Maasai groups' rights to use such areas outside their village are mediated by their ability and willingness to share grazing areas with fellow Maasai. Due to the agricultural expansion, this has become a function of how big a share of common grazing areas falls within the boundaries of their villages. Hence, "*keeping it Maasai*" has consolidated the wealth and power of existing Maasai elites while marginalising non-Maasai and Maasai whose villages include small wet season grazing areas (in part due to agricultural expansion).

Discussion and conclusion

Through the case of Southern Kiteto, Tanzania, we integrated biophysical and qualitative data to document land-use changes and investigate how the Maasai have adapted their transhumance grazing system to agricultural expansion, emerging institutional opportunities, and *vice versa*. Since 2000, agriculture has expanded rapidly, which, in combination with population growth, new market opportunities, and notably the village governments' official authority to issue private land titles, incentivised Maasai pastoralists to become farmers, including owners of farmland they lease to non-Maasai farmers. In addition to becoming farmers and negotiating access to graze livestock on non-Maasai's post-harvested private farms, the Maasai have successfully (a) collaborated with donor-supported projects aiming to set aside areas for livestock grazing and forest/nature conservation and (b) reversed the annual grazing cycle to use these areas as pastures in the wet season when growing crops "occupy" the farmlands.

Following Lund's (2024) terminology, this remarkable *process* of adaptation involved a simultaneous and interdependent recoding of (i) assets (land and forests), (ii) rights subjects (the Maasai), and (iii) public authorities (village governments, the District Council, traditional Maasai institutions, and the national judiciary). The Village Land Act of 1999 is foundational because it recodes village governments' public authority to recode land, i.e., officially sanction the establishment of private and common property within their jurisdictions. Tanzanian citizens are, by definition, rights subjects. Historically, however, dominant narratives about the

Maasai and other pastoralists have challenged their rights as “equal citizens,” i.e., by coding them as subjects whose traditional way of life and use of the landscape must change in the name of development, modernisation, and environmental conservation (e.g., Börjeson et al., 2008; Rwelengera and Abdallah, 2024; Rwelengera, 2025). When Maasai individuals’ claims to land become property through village governments’ authorisation (Maasai-dominated or not), that recursively authorises village governments as authorities (c.f. Lund, 2024; 4). In other words, the Village Land Act of 1999 made village governments matter in Maasai pastoralists’ adaptation to agricultural expansion *because* the Maasai pastoralists used them, instead of their traditional institutions, to validate private land claims. As a result, the authority of Maasai traditional institutions faded, but only slightly, as they are still the public authority regulating internal Maasai affairs, including who becomes the democratically elected village chairperson, i.e., leader of the new public authority. This illustrates the concepts of institutional bricolage and assemblage (Cleaver and De Koning, 2015; Li, 2007; 2014; Tsering, 2024) or, in Lund’s (2024) terminology, a recoding of traditional Maasai institutions’ public authority, here *by* the Maasai to regulate their *internal* affairs.

Our findings on land use change and agricultural expansion and adaptability echo several other studies (Börjeson et al., 2008; Trench et al., 2009; McCabe et al., 2010; Msoffe et al., 2011; McCabe et al., 2020). However, we find the Maasai have become farmers by exercising their rights as Tanzanian citizens to obtain land as private property and then inviting non-Maasai farmers to cultivate such areas through sharecropping and renting arrangements. In turn, the Maasai have utilised post-harvested farmland as dry-season pastures, partially because these are better than natural forests or grasslands. In Maasai-dominated villages, wealthy Maasai pastoralists did not need to move their livestock in search of dry-season pasture because they had secured large enough individual landholdings for post-harvest grazing. In non-Maasai-dominated villages, however, the Maasai pastoralists had “missed the opportunity” of becoming large-scale landowners. Thus, they paid non-Maasai farmers in their own or distant villages, including these villages’ governments, to access post-harvested fields. Interestingly, this recoding of assets, rights subjects, and public institutions (Lund, 2024) appears to enhance and distribute the financial value of farmland between farmers, pastoralists, village governments, and the KDC. First, only livestock can turn crop residuals left on harvested fields into monetary value. Second, the fodder value of post-harvested farmland sustains a higher than otherwise possible livestock population in Southern Kiteto. Third, farmers, pastoralists, village governments, and KDC share this additional financial value through private deals and taxation arrangements.

However, as agricultural expansion reduced traditional wet-season pastures, becoming farmers was not enough to maintain the Maasai’s pastoral way of life. Thus, supported by foreign donors and local NGOs, and working through village governments, the

Maasai successfully recoded traditional grazing commons to wet season pastures (VLFRs and designated grazing areas) where agriculture is prohibited. This was achieved through the Forest Act of 2002, the Grazing Land and Animal Feed Resources Act of 2010, *and* their status as Tanzania citizens *as well as* indigenous people (rights subjects). Hence, again, the Maasai “entered the state” to successfully recode land, but this time as common property that does not formally exclude non-Maasai. Interestingly, the operational rules for VLFRs and designated grazing areas are a mixture of traditional Maasai and village government institutions, illustrating that the rise of new public authorities (here, village governments) do not necessarily obliterate and entirely replace old ones (here, Maasai traditional leaders). Rather, they are recoded to enforce rules of accessing the asset (a specific grazing area) based on a traditional coding of Maasai individuals as rights subjects that distinguishes between those who can and cannot contribute to a larger common pool of grazing areas (c.f. Lund, 2024). Overall, this makes sense in pastoral communities where herders’ movements of livestock for pasture span far larger areas than individual village governments’ jurisdictions. Further, common pool grazing areas should be large enough and preferably geographically connected such that the grazing pressure may be distributed over time without having to move livestock through farmland with growing crops. This is almost the situation in Southern Kiteto, where all common grazing areas, except for Napalai joint grazing land, are geographically connected (see Figure 1).

Considering the ongoing agricultural expansion, the translocation of pastoralists, and the increasing number of associated conflicts and violence in Tanzania (see Rwelengera and Abdallah, 2024), the case of Southern Kiteto should inspire policymakers, planners, and pastoralists. The latter may take immediate action by pushing to establish VLFRs and joint grazing areas through village governments, where these can be held accountable by their pastoralist citizens, if they issue private land titles, e.g., for individual gains, that undermine an officially established common property grazing area. Strategically, the Maasai should coordinate such district-level activities across larger areas through their traditional governance structure (all traditional Maasai leaders, *ilaigwenak*, have a registered organisation in Kiteto). Locally, the Maasai should acknowledge that non-pastoralists are unlikely to support VLFRs and joint grazing areas if they conclude that promised benefits from these in the form of products or revenue streams remain out of their reach (see Sungusia et al., 2020). As post-harvest grazing on farmland documents, it should be possible to agree on sharing some of the financial benefits from livestock grazing on common property areas with the greater community, which already happens through the livestock transaction tax. Further, VLFRs and joint grazing areas do not hold unlimited grazing capacity. Based on a 1-year grazing experiment in Suledo VLFR, where local Maasai participants defined high, moderate, and low grazing intensities, Okick et al. (2025) conclude that only

low to moderate grazing intensity with periods of recovery following traditional grazing practices supports the coexistence of grazing animals and a rich understory plant community.

Policymakers and planners should acknowledge the mutually beneficial and largely peaceful co-existence of farmers and pastoralists in Southern Kiteto, which appears to optimise the landscape's financial output while promoting national forest and rangeland conservation priorities. However, as [Rwelengera and Abdallah \(2024\)](#) document, this will require a reorientation of many politicians and government officials who subscribe to ill-informed but die-hard narratives portraying pastoralism and forestry as incompatible and that free-ranging of livestock constitutes a health hazard to wildlife, people, and livestock.

However, as our case illustrates, the coding and recoding of assets, rights subjects, and public authorities is a never-ending process that depends on law and regulation, cultural norms, social values, and practice ([Lund, 2024, p.4](#)). For example, village governments' authority to include livestock grazing in the management of VLFRs may be challenged through the Forest Regulation of 2004 14 (4) (a), which states that “*No licence for grazing or cultivation shall be issued in any natural forest*” (see also [Rwelengera and Abdallah, 2024](#)). Further, the eviction of illegal farmers from the Emborley Murtangos CBFR (see above) has been slow and incomplete. Thus, proponents of establishing common property grazing areas in the landscape should not only work to recode land through existing laws but also counter the narratives on pastoralism's detrimental effects and associated interpretations of other laws that could undermine their interests and objectives.

Analytically, [Lund \(2024\)](#) conceptualisation of possession as the outcome of a constant coding and recoding of its constituent and interdependent elements, assets, rights subjects, and public authorities, has proven particularly useful in understanding the recent history of the Maasai's adaptation to agricultural expansion in Southern Kiteto. Importantly, it offers a way to identify and understand cause-and-effect relationships over time, including the role of the state through the enactment and enforcement of formal law. Thus, as indicated above, it may also be used to develop tactics and strategies serving (or undermining) political ends. As summarised by [Lund \(2016; 1200\)](#): “...public authority is always *in the making*” (italics in the original) and “Treating the “state” as a finished product gets in the way of understanding it”. Hence, our case is part of the state-making process in Tanzania.

The concepts of bricolage ([Cleaver, 2012; Cleaver et al., 2013; Cleaver and De Koning, 2015; Whaley, 2018](#)) and assemblage ([Li, 2007; 2014; Tsering, 2024](#)), served us well in describing the phenomenon of constant institutional (re)arrangements but offered less clarity about the defining processes of governance. Likewise, [Ribot and Peluso's \(2003\)](#) concept of access shows that law does not exclusively decide who can derive benefits from what assets through which processes. However, in our case, official law and its use have been decisive for Maasai pastoralists because it offers an opportunity to secure *exclusive*

access to land and forest resources through *property formation* (and thus state-making).

Additionally, while our results show that it is possible (and profitable) to turn harvested farms into seasonal pasturelands, they also demonstrate pastoralists' ability to develop new institutional arrangements, including working rules ([Cleaver et al., 2013](#)) to fit a dynamic context. Due to agricultural expansion, forests under CBFM institutional arrangements have become critical wet-season pastures, thus reducing potential conflicts between farming and livestock grazing when crops crowd the landscape. Although legally shielded by the Forest Act, 2002, Suledo VLFR's importance and the Maasais' active policing of it as a grazing common property have, in practice, prevented its conversion to farmland. This challenges the livestock—forest conservation dichotomy. Thus, our results also challenge the crop cultivation—pastoralism-forest conservation dichotomy by documenting that the three can and do indeed coexist.

However, while pastoralists have adapted to these changing conditions, our findings also document unintended consequences of conservation policies for non-pastoralist communities. Non-Maasai farmers, who do not engage in livestock rearing, feel excluded from the benefits of CBFM. Fear of livestock theft and unmet promises of timber harvesting have left these communities disillusioned. This exclusion raises questions about the long-term viability of forest conservation in Suledo, as marginalised farmers may resort to encroachment or other forms of resistance. Thus, the future of the Suledo VLFR and the other designated grazing areas in Southern Kiteto may depend on more inclusive governance strategies that address the interests of both pastoralists and non-pastoralists, ensuring an equitable distribution of conservation benefits and fostering a broader community support for sustainable management practices.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving humans were approved by Sokoine University of Agriculture and the respective local government authorities. The studies were conducted in accordance with the local legislation and institutional requirements. The ethics committee/institutional review board waived the requirement of written informed consent for participation from the participants or the participants' legal guardians/next of kin because the study involved interviews and discussions with community members and local authority representatives. It

involved minimum risks and confidentiality concerns. All participants gave informed verbal consent to participate. Identifying information has been anonymised to protect confidentiality. Pseudonyms are used throughout. Written informed consent for publication was not required, as no individual-level identifying data are presented.

Author contributions

EBM and TT conceived project idea; EBM, TT, RPK, and JMA jointly designed the study; EBM, collected data, EBM and TT, analysed the data and wrote most of the manuscript; EBM, TT, RPK, and JMA, reviewed and edited the manuscript, JMA, RPK, and TT, supervised the study. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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