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Research Paper

The Changing Dynamics of Agricultural Land Use in Kenya: Legal responses to address the threat of food insecurity from land fragmentation

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Abstract: Land fragmentation is a critical issue in Kenya, posing a major threat to food security in the country. This study investigates the impact of land fragmentation on food security, with a focus on changes in agricultural land use. Using a mixed-methods approach that uses qualitative and quantitative data from desktop research, the findings reveal that land fragmentation leads to a rapid decline in arable land without the corresponding technologies to improve productivity. Cultural practices, shifting agricultural habits, and changing demographics drive land fragmentation, resulting in reduced agricultural productivity, limited credit access, and higher transaction costs, all of which adversely affect food security in Kenya. The study also emphasizes the significance of land tenure security, particularly for smallholder farmers who own fragmented land. Insecure land tenure hinders investment, credit access, and long-term agricultural planning. The paper concludes by recommending policy interventions such as land consolidation programs, leasing and collective farming, as well as property tax to address the issue of land fragmentation and enhance food security.

Keywords:
1. Land use change
2. Agriculture
3. Land fragmentation
4. Land leasing
5. Contract agriculture

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1. Introduction

According to the Kenya National Bureau of Statistics (KNBS, 2019), Kenya's population is expected to grow at an annual rate of 1.5% over a twenty-five-year period starting from 2020. This population growth drives increased demand for land, leading to fragmentation due to subdivision and land use changes, particularly on agriculturally productive lands. The process of

inheritance further accelerates sub-division as beneficiaries of deceased landowners seek their share of the land. As plots become smaller, the type of farming conducted on them has shifted towards small-scale subsistence farming. This has led to difficulties in adopting modern technologies, accessing credit, and long-term production planning for smallholder farmers, thus limiting their potential to increase yields. The situation is further exacerbated by rural-urban migration, where younger demographics opt for urban opportunities over rural ones, leading to labor shortages in the agricultural sector. This reduced labor availability has resulted in decreased agricultural productivity, leaving land fallow in the absence of alternative labor sources.

Land tenure insecurity also plays a significant role in undermining food security. The prevailing cultural practices in many Kenyan communities, such as favoring male heirs over female heirs in asset inheritance, deprives women of the benefits of land ownership, despite their larger role in the agricultural labor force (NLC & FAO, 2021). As a consequence, women face difficulties accessing credit, which often requires land as collateral, since they lack title documents in their names. The overall succession process in the country is not well understood, lengthy, and cumbersome, often leading to incomplete land distribution and a lack of secure tenure. To address these issues and their socioeconomic impacts, this paper suggests implementing policy interventions aimed at combating land fragmentation. If adopted and executed, these interventions can improve agricultural productivity, reduce transaction costs, and ultimately contribute to improved food security in Kenya.

2. Drivers of Agricultural Land Fragmentation

Agricultural land use disruption is characterized by the adoption of new uses for land brought on by pressures from population growth, urbanization, inheritance, and climate change. These changes impact the security of tenure and the ability of landowners to realize the agricultural potential of the land.

2.1. Urbanization

According to the Kenya National Bureau of Statistics, 27.51% of the population live in urban areas with an annual growth rate of 0.48% (KNBS, 2021). Devolution, following the promulgation of the Constitution of Kenya (Government of Kenya (GoK), 2010), heralded the growth of at least 47 new urban centers which attracted rural-urban migrants in search of white-collar employment and investments. The net effect of migration is the increased demand for land for settlement which had previously been used for agriculture. Ideally, urban growth should follow controlled land use planning. In reality, however, rapid urbanization has coincided with unchecked expansion and disregarded zoning regulations. In Nakuru, for example, population growth has caused the town to rapidly expand, forcing land use planners to revise master plans to accommodate the disruption with the resultant effect of reducing land under vegetation in favor of residential and commercial development (Annan et al., 2022). At the core of urban expansion is the subdivision of land in satellite towns, which were hitherto sparsely populated farmlands. As demand for land to supply urban amenities increases property values, landowners have been dissuaded from pursuing the relatively less lucrative but all-important agricultural work (Auya et al., 2022). Even in peri-urban areas used for smallholder farming, there is a notable deviation from agriculture as demand grows for settlement and commercial spaces, threatening urban and peri-urban agriculture (Wilkomm et al., 2021).

Urbanization significantly affects food availability, affordability, and supply. As rural-urban migration increases and younger populations opt for urban, white-collar jobs, labor availability

for crucial food production declines. This demographic shift leaves agricultural land vacant and underutilized. Non-farming urban dwellers become net food buyers (Szabo, 2015), and their access to adequate and high-quality food depends on personal income and availability. Rising food prices disproportionately affect poor, urban households, leading to fewer meals or sacrificing other expenses to buy food. The changing lifestyle of the growing middle class is also driving an increase in the consumption of processed foods high in sugar and sodium or unhygienically prepared street food, leading to a rise in lifestyle diseases, foodborne illnesses, and malnutrition (Matuschke, 2009; Mensah et al., 2002).

2.2. Succession

Land is an emotive subject in Kenya, as it is not only a source of income but also considered to be a valuable asset. It is a common desire to own land for stature, investment, and to secure current and future living conditions (Grigg, 1980 as cited in NLC & FAO, 2021). Inheritance, a prominent means of acquiring farmland, subdivides land among the heirs of a family. Traditionally, many Sub-Saharan African societies followed patrilineal succession practices where land was divided among male heirs of the household (Demetriou, 2014). However, the Constitution of 2010 ended this discriminatory practice in Kenya by allowing equal rights between male and female heirs, thus intensifying fragmentation to allow distribution to the additional beneficiaries.

A study of 13 counties by the NLC & FAO (2021) revealed that 65.4% of the respondents acquired their land through inheritance. Moreover, the majority of inherited lands measured under two acres (NLC & FAO, 2021). These relatively small parcels of land are mostly suitable for subsistence farming rather than the profitable cash crop farming. Cash crops require large tracts of land for economic viability and are difficult to cultivate on limited plots (Mwesigye & Barungi, 2021). As a result, the prevailing pattern of land inheritance and subdivision can hinder the cultivation of cash crops, which have the potential to boost income and economic growth. The fragmentation of land into smaller pieces limits the scale of agricultural operations, making it difficult for farmers to benefit from economies of scale and modern agricultural technologies (Bentley, 1987). Furthermore, the practice of dividing land equally among heirs often leads to land parcels that are too small to be effectively managed or cultivated profitably. Consequently, this situation perpetuates subsistence farming and impedes the transformation of the agricultural sector into a more commercially viable and productive enterprise. Addressing land fragmentation and its associated challenges is essential to unlock the full potential of agriculture and improve food security and livelihoods in Kenya.

2.3 Climate Change

Kenyan farmers rely largely on the natural weather for their agriculture. Planting seasons are planned based on expected long and short rains that traditionally arrived in March – May and October - December, respectively (Kenya Meteorological Department, 2020). Climate change has led to unpredictable weather patterns, including five consecutive failed rain seasons, that have significantly impacted food production and hindered the country's food security. (IGAD Climate Prediction and Applications Centre, 2023). Increasingly adverse weather conditions as a result of climate change and climate variability through sustained droughts and floods have compromised the chemical integrity of soil and inhibited the ability of natural vegetation to regenerate, causing severe degradation of the land. Land degradation is the multifaceted and gradual decline in the physical, biological, and chemical aspects of both soil and vegetation. It crucially affects the overall economic productivity of terrestrial ecosystems, soils, vegetation, living organisms, and associated ecological, biogeochemical, and hydrological processes.

(Reynolds, 2001 as cited in Waswa, 2012). In the face of these challenges, farmers are urged to adopt technologies that enhance crop resilience. However, poverty among smallholder farmers hinders their ability to afford high quality seeds, forcing them to reuse seeds with low yields from previous harvests, perpetuating the cycle of low productivity and profits(Annan et al., 2022). Furthermore, due to the urgency to improve yields, planting seasons are being shortened, leaving little time for soil to regenerate and inadvertently exacerbating the problem.

The result of drought conditions experienced in the country is a systemic reduction in arable land. Deforestation is rampant as alternative land is sought for subsistence agriculture and settlement. The Mau Forest, for example, has experienced significant land cover change due to population growth demanding land for settlement and subsistence agriculture. The encroachment has led to drastic and considerable land fragmentation, deforestation of important water towers, and as a result, further degradation of fertile topsoil and dwindling water resources (Olang & Musula, 2011). Undoubtedly, overexploitation of forest resources is one of the main drivers of climate change threatening the livelihoods of forest-dependent people who cannot adequately adapt to changing conditions (Di Falco, 2014).

3. Impact of Land Tenure Insecurity on Food Security

Land tenure encompasses the rights and responsibilities tied to land ownership, usage, transfer, and succession (La Croix, 2002). Typically, land tenure security is associated with having an official title issued by the government. It involves the extent of a landowner's rights to control, manage, utilize, and dispose of the property (La Croix, 2002; FAO, 2002; Economic Commission for Africa, 2004). However, this perspective overlooks unregistered land use rights, leading to situations where women are disadvantaged in communities that favor male land registration. Widows are often disinherited by in-laws when male landowners pass away. Nonetheless, attempting formal succession is challenging, expensive, and time-consuming resulting in informal ownership structures.

Land fragmentation threatens land tenure security, especially where rights are not formally recognized (Cholo et al., 2019). While the Constitution of Kenya recognizes equal rights between men and women to own property, historical and cultural norms are still prominently upheld in most Kenyan communities. In such instances, it is common to find that land is subdivided among male heirs while women are relegated to farmhands who produce enough food for household consumption. Decision making on the sale, leasing, and profits from farm produce is often entrusted to the men while women merely determine which subsistence crops to plant (Mwesigye & Barungi, 2021).

As society evolves to become more consumerist, there is a preference for private land ownership, leading to the conversion and disposal of community lands to private owners. The subdivision of formerly communal lands to smaller parcels for disposal to individuals intensifies fragmentation and loss of arable land to boundaries. Furthermore, it dispossesses those who cannot afford to register official titles in their favor people who would otherwise have been able to eke out a living from the utilization of communal land. The lack of titles impedes access to credit since landowners do not have titles against which credit can be collateralized. The size of the land also affects the degree of credit that can be afforded to a farmer, as the value of the land must be commensurate to the amount borrowed, which in turn impedes on farmers' capacity to deploy modern farming techniques that would increase the productivity of the small plots on which they farm.

4. Policy Recommendations to Address Land Fragmentation

The Constitution has empowered parliament to enact legislation prescribing minimum and maximum acreage of land with respect to private property, with the objective to ensure sustainable use and equitable access to land. This forms the basis on which county governments formulate development plans to regulate land use (GoK, 2019). Land control boards established under the Land Control Act exercise oversight over the use of agricultural land to ensure that it is effectively utilized. Unfortunately, the complacency of government agencies in failing to enact critical legislation and failure to implement existing laws threatens to worsen land fragmentation. (Mbuvi et al., 2022). To discourage fragmentation, especially where subdivision is done for speculative purposes, the proposed Rating Bill can be used to impose property taxes on idle land.

4.1. Restriction on Minimum Acreage

Proposals for minimum and maximum private land sizes have been explored in Kenya before. The National Land Policy of 2009, with consideration for population growth and increasing demand for land for agriculture and settlement, proposed the development of a system to determine minimum acreage and ensure all subdivided properties conformed to set minimums (GoK, 2009). A 2015 bill known as the Minimum and Maximum Land Holding Acreage Bill was presented in Parliament for debate, but it lapsed before it would be passed into law. The Bill established sub-county land control committees which would conduct scientific studies to determine the minimum and maximum land sizes for various uses and carry out periodic revisions of minimum and maximum land sizes (GoK, 2015). The debate on landholding restrictions can generate emotive and hard-lined positions from both policymakers and landowners. Nonetheless, it remains one of the greatest tools to curtail land fragmentation. A viable alternative would be to move the debate to counties where land sizes are infused with local zoning laws. At this decentralized level, the county governments are better positioned to effectively respond to their unique circumstances.

4.2. Taxing Idle Lands

Land is a highly profitable asset and is perceived as a secure investment with a continuous appreciation in value. The demand from investors has led landowners and land dealing companies to subdivide land into smaller parcels to maximize profits. However, this land subdivision often results in speculative purchases, where land remains undeveloped. This phenomenon of land speculation is influenced by inadequate public policy planning, linked to planned or ongoing infrastructural development in a region (Kinuthia et al., 2021). Land speculation has negative consequences, including reducing available land for use as it is often split in anticipation of price increases (GoK, 1959). Furthermore, it leads to underutilization since the land may not be put to productive use before resale. In areas like Kajiado, where pastoralism has been a traditional way of life and an economic backbone for the Maasai people, the subdivision of land for speculation severely diminishes available grazing land (Rozen, 2016). A straightforward measure to counteract land speculation and encourage development is to implement property taxes on vacant land (Amirtahmasebi, Orloff & Wahba (n.d)). Currently, the Rating Act has been unsuccessful in preventing land fragmentation, as rates are determined by market valuation rather than land use. The proposed National Rating Bill should be revised to explicitly introduce deterrent rates on idle land, aiming to effectively address the issue of land fragmentation for speculative purposes.

Inheritance causes land subdivision to distribute assets among beneficiaries, but this does not guarantee that they will develop the parcels they inherit. Often, new landowners may live elsewhere without utilizing their land for agriculture, posing a risk to food security due to under exploitation (Waswa, 2012). Land control boards should be held accountable when they permit dealings in agricultural land that do not foster agricultural productivity on freehold land. On the other hand, government leases are subject to conditions set by the landlord. All leases granted by the government impose a condition to develop the land within the stipulated period. If these conditions are not met, the tenant risks property forfeiture or a denial of renewal of the lease on expiration.

4.3 Farm Enterprise Restructuring

Although there is opposition to land fragmentation, some argue in its favor, suggesting benefits such as crop diversification, optimized agro-ecological zones, and reduced risk of disasters and pests for smallholder farmers (Iheke, 2016). More pressing, however, is Kenya's persistent food production deficit that relies on imports to meet the country's needs (Mohamed, 2021). Developing agriculture for commercial purposes may be a more sustainable approach. Consolidation could provide a pathway towards creating bigger land plots and promoting large-scale commercial agriculture. Land consolidation provides a remedy to fragmentation by exchanging scattered plots for larger ones (Melmed-Sanjak, 1998 as cited in Hristov 2009) and offers numerous advantages over fragmentation, including reduced production costs due to minimized travel between parcels (NLC and FAO, 2021), improved access to essential infrastructure like roads and irrigation channels (Hristov, 2009), increased crop options, including economically viable cash crops suitable for larger plots, and enhanced credit access due to higher land market values. Despite this, consolidation is socially and financially demanding, requiring significant time and expertise to implement.

Where consolidation may not be feasible, land leasing can address the issue of fragmented agricultural land. Encouraging landowners of scattered plots to lease their land to investors immediately corrects the engrained practice of subdividing inherited lands while simultaneously enabling large-scale production. Land lease can be a cost-effective alternative to consolidation, employing collaboration among neighboring smallholder farmers while making use of vacant and underutilized land.

Smallholder farmers can address the challenges of land fragmentation through collaborative efforts such as collective contract farming. Contract farming involves an agreement between a farmer and a buyer to produce and purchase products at a prearranged price, with the buyer often providing technical support and agricultural inputs (Minot, 2012; FAO, 2023) Through collective contract farming, neighboring smallholder farmers can pool their resources and negotiate agreements with investors for food production at agreed-upon prices. This collaborative approach prevents individual farmers from being disadvantaged in negotiations and empowers them to speak with a unified voice, leading to better results. Similar to land leasing, collective contract farming efficiently uses fragmented land while fostering rural development. In addition, it can reduce the need for lengthy and costly succession procedures by promoting collaborative farming among beneficiaries.

5. Conclusion

Food security is a major concern in Kenya due to the reliance on rain-fed agriculture, which has become unpredictable and insufficient. Failed rain seasons and extended droughts caused by climate change lead to land degradation and forest encroachment, further exacerbating the

situation. The increasing population exerts pressure to expand settlements into agricultural areas, resulting in the loss of productive land due to urbanization and land subdivision caused by inheritance.

To address land fragmentation, existing policies and legislation should be strengthened, and institutions responsible for preserving agricultural land should be held accountable. Consolidating fragmented land into larger tracts can support large-scale commercial agriculture to meet domestic food needs and facilitate surpluses for export. In cases where land consolidation is not feasible, neighboring fragmented plot owners can consolidate their land and encourage commercial crop choices by leasing it to investors. Additionally, neighboring smallholder farmers can also utilize collective contract farming to enhance rural livelihoods by entering into farming contracts with buyers for prearranged prices.

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