Original Article

Balancing Bricks and Bread: Real Estate Expansion and Its Implications for Food and Nutrition Security in Kiambu County, Kenya

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Abstract: *Land is a vital resource for sustainable development, yet rapid urbanization, speculative investments, and weak land governance are reshaping its use, particularly in peri-urban regions like Kiambu County, Kenya's third most urbanized and agriculturally significant county. This study examines the impact of urban expansion on agricultural land using a mixed-methods approach that combines agricultural production data and satellite imagery from 2010 to 2025. Findings reveal the extensive conversion of prime farmland, particularly in areas such as coffee, tea, banana, and potato-growing regions, into residential and commercial developments, especially along key infrastructure corridors. Agricultural productivity is declining, and over 90% of the food consumed in the county is now purchased, eroding household food production capacity and contributing to growing food insecurity, which affects 18.3% of the population. Despite agriculture contributing 17.4% to household income, shrinking profitability, high land prices, and lack of coordinated planning are accelerating the shift away from farming. The absence of a County Spatial Plan (CSP), fragmented institutional mandates, and inadequate incentives for farmers are further compounding these trends. The study concludes that protecting Kiambu's agricultural base requires urgent finalization and implementation of the CSP, integrated land-use monitoring, promotion of densified urban development, and fiscal incentives to retain agricultural land and support high-value farming systems.*

Keywords: *Food Security, Land fragmentation, Land governance, Real estate development, Spatial planning and Urbanization.*

I. INTRODUCTION

Land is fundamental to sustainable development, serving multiple functions including food production, human settlements, environmental conservation, and infrastructure development (Carrilho, João, et al., 2019). In Kenya, the intensifying pressure on land, driven by rapid urbanization, population growth and infrastructural expansion, is increasingly transforming land use patterns, particularly in peri-urban areas (Thuo, 2020). Kiambu County, Kenya's third most urbanized county after Nairobi and Mombasa, offers a vivid illustration of this change. Its urbanization, currently at 3.45% compared to the national average of 4.3%, reflects ongoing demographic shifts and a rising demand for residential and commercial development (KNBS, 2023a). These dynamics are especially visible along key transport corridors, such as the Southern, Western, and Northern Bypasses, where agricultural lands are rapidly being converted into gated communities, shopping centres, and high-density housing (Abuya, Dennis, et al., 2019).

Kiambu County is a major contributor to Kenya's agricultural Gross Domestic Product (GDP), benefiting from fertile soils, favorable climate, and proximity to urban markets in Nairobi (Kiambu County, 2022; KNBS, 2024a). The county produces significant volumes of crops, including coffee, vegetables, fruits, dairy, and poultry, making it a vital pillar of the country's food system (KNBS, 2024b). However, this role is under threat. Studies indicate that the built environment has expanded at an accelerated pace, leading to extensive encroachment into prime agricultural zones and fragmentation of the rural landscape (Sheng et al., 2025). Furthermore, agricultural land is being increasingly consumed by real estate development. According to Business Daily (2020), although real estate is economically beneficial, this could undermine food security, local livelihoods, and environmental sustainability if left unregulated. This transformation is not only a consequence of population growth, but also speculative land acquisition, poor enforcement of planning standards and lack of harmonized land use policies (Abuya et al., 2019). In Kiambu County, the lure of high rental income and capital gains has turned land into a speculative asset. A report by the Kenya National Bureau of Statistics (KNBS, 2023a) revealed that, on average, individuals in Kiambu County own up to five housing units, many of which are not occupied but held for investment purposes. This trend has intensified artificial land scarcity, driving up land prices and pushing agricultural land out of reach, especially for smallholder farmers and low-income households.

Moreover, the failure to effectively regulate this growth has led to unauthorized subdivisions, unplanned development, and mounting pressure on infrastructure and services (Ndambuki, 2025). The consequences are far-reaching, including the displacement of farming households, environmental degradation, inefficient land use, and weakened food systems. In Kiambu, where urban sprawl intersects with fertile highlands, the stakes are particularly high. Despite the rapid urbanization, the county lies within high to medium agricultural potential (Abuya et al., 2019), yet this valuable agricultural base is shrinking rapidly.

The issue at hand is not urban growth itself but the absence of integrated land use planning that prioritizes both urban development and food system sustainability. Food security, often viewed as a rural concern, is increasingly becoming an urban governance issue, especially in counties like Kiambu, where urban and rural spaces are deeply interconnected (Abu Hatab, Assem, et al., 2019). The urban poor heavily depend on nearby agricultural lands for affordable food, and any threat to this supply chain compounds their vulnerabilities (Evergreen Infrastructure, 2025; FAO, 2024).

This study explores these dynamics through a mixed-methods approach, combining agricultural statistics and spatial analysis. It assesses the extent of land use changes in Kiambu between 2010 and 2025, by analysing satellite imagery from Google Earth Pro to identify expanding built-up areas into agricultural zones and evaluates the implications for food and nutrition security. Ultimately, it contributes to the discourse on how urbanizing counties can harmonize land use, enhance development control, safeguard strategic agricultural land, while still accommodating economic and population growth. Kiambu's experience offers a critical lens into the broader challenge of balancing development imperatives with the long-term goal of sustainable land and food systems.

II. LAND USE AND REAL ESTATE GROWTH

The peri-urban areas of Kiambu are increasingly characterized by land use tensions driven by sprawl. Located at the urban-rural interface of Nairobi, Kiambu has undergone rapid transformation, with large tracts of agricultural land being converted into residential and commercial development. Musa & Odera (2015) observed that, between 2000 and 2015 alone, agricultural land declined by 15-20%. This pattern mirrors broader African and Asian peri-urban trends where farmland is commodified, tenure systems are restricted, and subsistence agriculture becomes marginalized (Gebre & Gebremedhin, 2019). This shift is particularly pronounced in areas such as Kiambaa, Gatundu and Limuru, where land fragmentation and real estate speculation have accelerated. While such transformation supports real estate-led economic growth, it is likely to disrupt the viability of agriculture as a source of livelihood, reducing local food production and household resilience. Kiambu County experiences a high preference for residential use, estimated at 8.6%, particularly in areas like Ruiru and Thindigua, reflecting speculative demand rather than coordinated planning (KNBS, 2023a). The absence of an approved or enforceable County Spatial Plan (CSP) might have intensified land conversion pressure.

Kiambu County ranks second in GDP contribution (5.7%) after Nairobi, reflecting a robust economy buoyed by construction, real estate, and services (KNBS, 2024a). However, when adjusted for population size, the county ranks 10th in Gross County Product (GCP) per capita. This discrepancy signals that economic gains are not evenly distributed across the population. Between 2019 and 2023, the county population was projected to grow by nearly 10%, without a proportionate increase in per capita economic growth (KNBS, 2023b). While areas closer to Nairobi experience rising property values and investments, rural and peri-urban populations face stagnant incomes and limited access to basic services (Koch Properties, 2024; Cytonn, 2025). Poverty rates hover around 20% and spiked to 26.7% in 2020 due to COVID-19 disruptions (KNBS, 2024c).

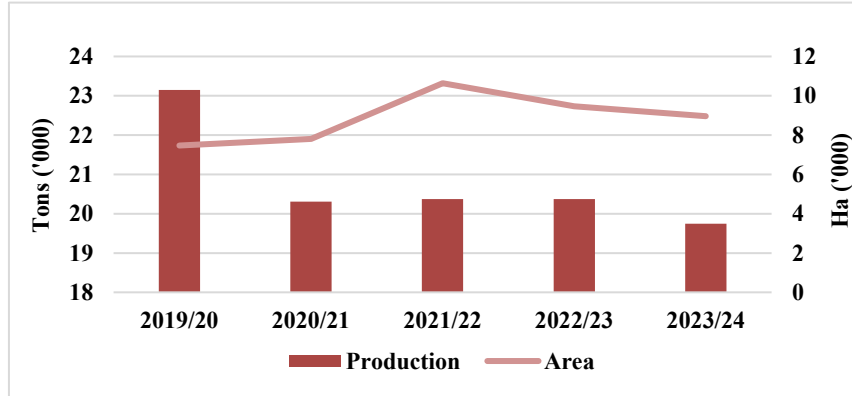## III. IMPACT ON FOOD AND NUTRITION SECURITY

Agriculture remains a foundational livelihood in Kiambu County, directly contributing 17.4% to household income (Kiambu County, 2022); yet, food insecurity persists. According to the Kenya National Bureau of Statistics (KNBS), 18.3% of the county's population is food poor, and 19.19% live below the poverty line (KNBS, 2024c). The vulnerability is closely linked to the erosion of local food systems. About 91.3% of food consumed in Kiambu is purchased, with only 5.5% produced by households themselves (KNBS, 2024b). This is substantially above the national average and reflects reduced household food production capacity.

Historically, Kiambu County has been one of Kenya's foremost coffee-producing counties, significantly contributing to national and rural livelihoods. However, recent trends show a reversal. Both the area under coffee cultivation and total yields have steadily declined. According to KNBS and the Coffee Directorate, the area under coffee in Kiambu county reduced from 10,800 hectares in 2014 to 8,000 hectares in 2019, and further to 7,468 hectares in the 2019/20 season (Ministry of Agriculture, Livestock and Fisheries, 2020). Although production recovered briefly to 10,637 tons in 2021/22, it fell again to 8,957 tons in 2023/24, as shown in Figure 1.

Similar downward trends are observed in other key crops as well. Banana production fell from 117,951 tons in 2017 to 64,873 tons in 2019, while beans dropped from 33,029 tons in 2020 to just 6,283 tons in 2022. Irish potato output declined from 184,495 tons in 2017 to 53,971 tons in 2022, despite relatively stable acreage. Even tea (Figure 2) and indigenous vegetables,

although more stable, have shown stagnation or a decline in acreage. This stagnation in productivity is largely attributed to an increasing shift towards more lucrative alternatives such as real estate (KIPPRA, 2023).

Figure 1: Kiambu County coffee production for the year 2019/20 – 2023/24

Source: KNBS 2024

Figure 2: Kiambu County tea production for the year 2019- 2023
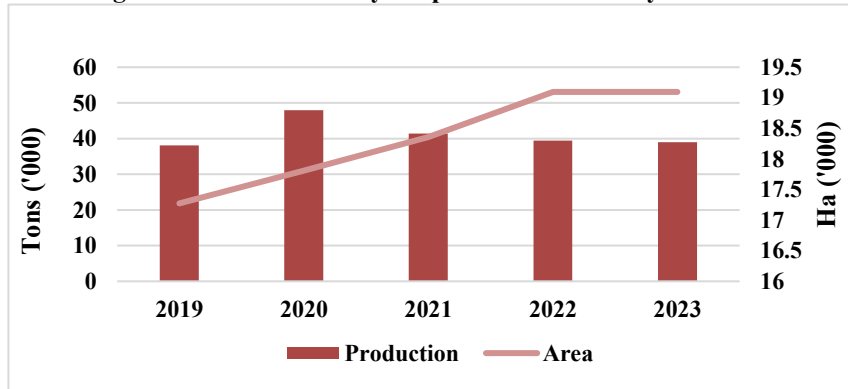

Source: KNBS 2024

These changes are not just economic but also have an impact on food and nutrition security. Declining farm incomes reduce farmers' ability to purchase sufficient and diverse food. With 65.5% of Kiambu County farmers engaged in subsistence farming (Ministry of Agriculture, Livestock and Fisheries, 2019), shrinking returns from both food and cash crops directly affect households' food access (Hashmiu et al., 2022). Kenya's smallholder farmers are especially vulnerable to price and yield shocks (Kiambu County 2023). In Kiambu County, this vulnerability is manifesting in a shift away from traditional crop farming, with land being converted into more productive investments or agriculture being exited altogether (Ministry of Agriculture, Livestock, and Fisheries, 2023).

IV. SPATIAL EVIDENCE ON LAND USE CHANGES

A spatial-temporal analysis of Kiambu County, using Google Earth imagery from 2010 and 2025, reveals significant shifts in land use patterns, with the expansive conversion of prime agricultural land, particularly tea and coffee estates and horticultural farms, into built environments. This transformation is most pronounced in peri-urban zones and along major transport and infrastructure corridors, reflecting the county's proximity to Nairobi City and intensifying urban pressure from the metropolis. Notably, key hotspots include the Kiambu-Ruaka Corridor, the Ruiru-Tatu City Axis, Tigoni, Kikuyu, and Thika. In the Kiambaa–Ruaka corridor, formerly characterised by intensive coffee and horticultural cultivation, satellite imagery reveals an almost complete transformation into residential, commercial, and high-rise developments. Similarly, Ruiru, especially around the Tatu City Special Economic Zone, has transitioned from Agro-ranching zones to high-density mixed-use developments. In the Githunguri and Limuru tea-growing belts, urban sprawl has increasingly led to fragmentation and conversions to leisure and gated community developments. These trends are mirrored in Kikuyu and Thika, where agricultural plots are now interspersed with industrial and commercial properties, indicating a shift in land-use priorities.

Figure 3: Satellite imagery for various parts of Kiambu County

Githunguri 2010 **Githunguri 2025**
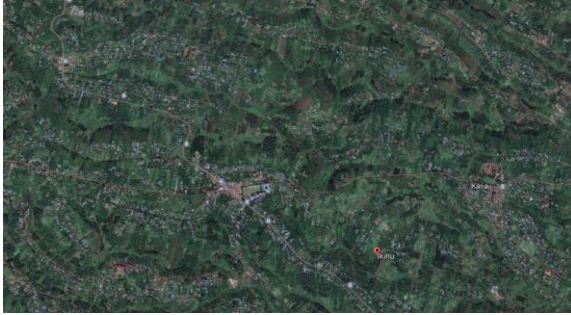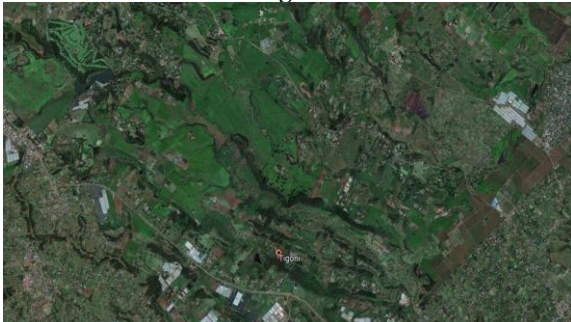

Ruaka 2010 **Ruaka 2025**

Tatu City 2010 **Tatu City 2025**

Tigoni 2010 **Tigoni 2025**

Source*: Google Earth*

    The progressive land conversion, as evident in remote sensing comparisons (Figure 3), exhibits spatial fragmentation, declining vegetative indices, and a narrowing of contiguous green belts. These patterns align with projections from the various Kiambu County Integrated Strategic Urban Development Plans (ISUDPs), which have flagged escalating land use conflicts between agricultural sustainability and urban expansion (Kiambu County, 2024). The findings are further reinforced by recent studies (KIPPRA, 2023), which attribute the rapid decline of agricultural land in peri-urban counties, such as Kiambu, to speculative real estate investment, unregulated development, and weak enforcement of development plans.

V. POLICY AND LAND GOVERNANCE GAPS

This transformation is underpinned by deep-seated policy and land governance gaps. Although the county has Integrated Strategic Urban Development Plans (ISUDPs), it lacks a county physical land use development plan, commonly referred to as the County Spatial Plan. The absence of a binding spatial framework could have contributed to unchecked land use conversions and fragmented development. Additionally, regulatory compliance is likely undermined by fragmented institutional mandates involving key departments and agencies, such as the Department of Lands and Physical Planning, Agriculture, National Environment Management Authority (NEMA), National Construction Authority (NCA), and county planning units, as well as inadequate land information management systems. The proliferation of unplanned settlements and ad hoc subdivisions of agricultural land could imply a disconnect between planned and actual land use dynamics. Furthermore, limited incentives for landowners and farmers to maintain agricultural production in the face of high land prices, delayed crop returns, and a lack of access to affordable credit and rewarding agricultural markets have made agriculture an unattractive investment (Cropnuts, 2020). As a result, farmers are selling or leasing land for non-agricultural uses, particularly in horticultural, tea, and coffee belts, where profitability has stagnated due to global market volatility and structural inefficiencies (World Bank, 2015).

VI. CONCLUSIONS AND RECOMMENDATIONS

Kiambu County faces growing food insecurity, with 18.3% of the population classified as food poor and 91.3% of households relying on purchased food, despite agriculture's significant contribution to the county's economy. Declining production of key crops, including coffee, bananas, potatoes, and beans, has weakened local food systems. Low returns, land fragmentation and the rapid conversion of farmland into urban development drive this. These trends are exacerbated by the absence of the County Spatial Plan (CSP) and supportive policy frameworks, weak enforcement of development controls, fragmented institutional mandates and limited incentives to retain agricultural land. To reverse this, the county must finalise and implement the CSP, strengthen interdepartmental coordination, and deploy real-time land-use monitoring tools. Incentivizing agricultural land retention through tax reliefs or zoning, promoting densified urban development, and investing in high-value agriculture such as dairy, horticulture, and avocado farming will be key. Balancing growth with agricultural sustainability is essential to protect the county's economic base and enhance food and nutrition security.

VII. REFERENCES

[1]   Abu Hatab, A., Cavinato, M. E. R., & Amr, A. A. (2019). Urban sprawl, food security and agricultural systems in developing countries: A systematic review of literature. Cities, 94, 129–142. https://doi.org/10.1016/j.cities.2019.06.001
[2]   Abuya, D., Oyugi, M., & Oyaro, E. (2019). Management of the effects of land use changes on urban infrastructure capacity: A case study of Ruaka Town, Kiambu County, Kenya. American Journal of Geographic Information Systems, 8(4), 158–190. https://doi.org/10.5923/j.ajgis.20190804.02
[3]   Carrilho, J., Borges, M., Cossa, H., & Ribeiro, R. (2024). Sustainable land use: Policy implications of systematic land regularization in Mozambique. Land Use Policy, 138, 107046. https://doi.org/10.1016/j.landusepol.2023.107046
[4]   Cropnuts. (2020, February 18). Solutions to challenges facing agriculture in Kenya. https://cropnuts.com/solutions-to-challenges-facing-agriculture-in-kenya/
[5]   Cytonn. (2025). Ideal areas to live in Nairobi for different income levels. https://www.cytonn.com/blog/article/ideal-areas-to-live-in-nairobi-for-different-incomes
[6]   Evergreen Infrastructure. (2025). Are there any challenges associated with urban agriculture? https://www.evergreeninfrastructure.com.au/blog/challenges-of-urban-agriculture
[7]   FAO. (2024). The State of Food and Agriculture 2024. Food and Agriculture Organization of the United Nations. https://doi.org/10.4060/cd2616en
[8]   Gebre, T., & Gebremedhin, B. (2019). The mutual benefits of promoting rural-urban interdependence through linked ecosystem services. Global Ecology and Conservation, 20. https://doi.org/10.1016/j.gecco.2019.e00707
[9]   Hashmiu, I., Agbenyega, O., & Dawoe, E. (2022). Cash crops and food security: Evidence from smallholder cocoa and cashew farmers in Ghana. Agriculture & Food Security, 11(1). https://doi.org/10.1186/s40066-022-00355-8
[10] KNBS. (2023). Kenya Housing Survey Basic Report. https://www.knbs.or.ke/wp-content/uploads/2025/01/2023-24-Kenya-Housing-Survey-Basic-Report.pdf
[11] Kiambu County. (2022). Crop and Livestock Production. Kiambu County Government. https://dev.kiambu.go.ke/crop-and-livestock-production/
[12] Kiambu County. (2023). Participatory climate risk assessment report. https://maarifa.cog.go.ke/sites/default/files/2024-06/PCRA%20Improved%20Version_Kiambu_06.10.2023.pdf
[13] Kiambu County. (2024). Kiambu County Integrated Strategic Urban Development Plans. Kiambuassembly.go.ke. https://www.kiambuassembly.go.ke/the-assembly/kiambu-county-municipalities/file/461-kiambu-town-integrated-strategic-urban-development-plan
[14] Kili, H. (2025, March 5). Monetizing farming: Solutions for Kenya's agriculture challenges. Business Daily. https://www.businessdailyafrica.com/bd/corporate/enterprise/solutions-for-kenya-s-agriculture-challenges-4952712
[15] Kinuthia, H., Majale, C., & Letema, S. (2021). Influence of public policy planning on peri-urban land speculation in the Greater) Eastern Bypass in Nairobi Metropolitan. Land Use Policy, 107, 105515. https://doi.org/10.1016/j.landusepol.2021.105515
[16] KIPPRA. (2023, June 30). Implications of agricultural land subdivision in Kenya – Page 4. https://kippra.or.ke/implications-of-agricultural-land-subdivision-in-kenya/4/
[17] KNBS. (2023a). Kenya Housing Survey Basic Report. https://www.knbs.or.ke/wp-content/uploads/2025/01/2023-24-Kenya-Housing-Survey-Basic-Report.pdf
[18] KNBS. (2023b). Understanding Population Projections: Computed Estimates of Future Population Sizes and Structures Based on the Past and Current Situation of a Population Group. https://www.knbs.or.ke/wp-content/uploads/2024/06/Population-Projections-Article.pdf
[19] KNBS. (2024a). Gross County Product – 2024 - Kenya National Bureau of Statistics. Kenya National Bureau of Statistics. https://www.knbs.or.ke/reports/gross-county-product-2024/
[20] KNBS. (2024b). National Agriculture Production Report - 2024 - Kenya National Bureau of Statistics. Kenya National Bureau of Statistics.

https://www.knbs.or.ke/reports/national-agriculture-production-report-2024/

[21] KNBS. (2024c). The Kenya Poverty Report. https://www.knbs.or.ke/wp-content/uploads/2024/10/The-Kenya-Poverty-Report-2022.pdf

[22] Koch Properties. (2024). Comparing Nairobi neighbourhoods for property buyers. https://koch-properties.com/blog/comparing-nairobi-neighborhoods-for-property-buyers_67569ad5bcd3f88da7b45f63

[23] Ministry of Agriculture, Livestock and Fisheries. (2019). KilimoSTAT. Kilimo.go.ke. https://statistics.kilimo.go.ke/en/2_3a/

[24] Ministry of Agriculture, Livestock and Fisheries. (2020). National Coffee Policy. https://kilimo.go.ke/wp-content/uploads/2024/10/Final-Coffe-policy-July-2020-1-1.pdf

[25] Ministry of Agriculture, Livestock and Fisheries. (2023). Assessing labour productivity for Kiambu County. https://asdsp.kilimo.go.ke/wp-content/uploads/2023/10/1.-f-KIAMBU-County_suitability-atlas.pdf

[26] Musa M. & Odera P. (2015). Land Use Land Cover Changes and their Effects on Agricultural Land: A Case Study of Kiambu County -Kenya. https://www.researchgate.net/publication/287210808_Land_Use_Land_Cover_Changes_and_their_Effects_on_Agricultural_Land_A_Case_Study_of_Kiambu_County_-Kenya

[27] Ndambuki, S. (2025, June 19). Are county policies steering property trends in the right direction? Daily Nation. https://nation.africa/kenya/life-and-style/dn2/are-county-policies-steering-property-trends-in-the-right-direction--5086164

[28] Sheng, S., Zhang, P., Huang, J., & Ning, L. (2025). Research advances and emerging trends in the impact of urban expansion on food security: A global overview. Agriculture, 15(14), 1509. https://doi.org/10.3390/agriculture15141509

[29] Thuo, A. (2020). A study of peri-urban areas as sites for understanding urbanization in developing countries: Using Nairobi peri-urban areas as a base case study. Developing Country Studies, 10(10), 31–40. https://www.researchgate.net/publication/373512010

[30] World Bank. (2015). Kenya agricultural sector risk assessment. https://documents1.worldbank.org/curated/en/294711467992513646/pdf/97887-REVISED-WP-P148139-PUBLIC-Box393257B-Kenya-Agricultural-Sector-Risk-Assessment.pdf