Original Article

Rural Land Sub-Division and its Impact on Maize Production: The Case of Kiminini Sub-County in Trans-Nzoia County

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ABSTRACT

Globally, around three million hectares of agricultural land are lost each year to other land uses. This results in a huge decline in household food production and livelihood security. Maintaining rural land in optimally sized allotments is critical for sustainable food and livelihood security. Sustainable natural resource management and increased productivity of primary industries can also be assured by ensuring that economically viable land sizes are maintained. The literature reviewed indicates that there is limited information on land sub-division trends, their associated impacts on the settlement schemes, and development control measures in the rural area of the Kiminini sub-county. This study investigated the trend of rural land subdivisions in Kiminini sub-county from 1963 to 2018. It examined the causes of rural land subdivision, its impacts on household maize production and has proposed policy interventions to reduce rural land subdivision in Kiminini for food and livelihood security. A cross-sectional survey of 120 households was conducted. Focus group discussions, key informant interviews, and observations were also used to collect the data. The findings have revealed that household land size has decreased from the initial 30 acres to 1.5 acres leading to a reduction in maize production from the potential 600 (90 kgs) bags to 30 (90 kgs bags), a 95% reduction. The main causes of land sub-division are inheritance, for sale, population pressure, and poor implementation of policies. There is no land use plan for the sub-county to guide land use, and there are no guidelines to regulate development. The study recommends land use planning through the development of a local physical development plan, determination of a minimum land size for maize growing, e.g., 5 acres, agricultural land protection zoning, policy review of the land inheritance tradition, consolidation where it has been subdivided to un-

economic units and promotion of alternative technology for sustainable agricultural practices.

INTRODUCTION

Intensive agricultural land sub-division has created uneconomic sizes of land, which has a direct impact on agriculture and livestock production (Museleku & Syagga, 2018). This poses a major threat to food security in the country, especially with the increasing population. The effects of the agricultural land subdivision are cumulative and their aggregate impacts threaten human existence and economic development.

Subdivision of agricultural land poses a long-term threat to land-dependent agricultural industries and therefore this is an area of study that carries much weight and relevance. For agricultural land to continue playing the key roles of food production for the country's ever-increasing population, there is a need to preserve and protect this land in economical sizes. Kenya aspires to increase agricultural productivity and use this sector to drive growth towards the realization of Vision 2030 (GoK, 2007) but to achieve this, the conservation of prime agricultural land is vital.

Kiminini Sub-County is a major agricultural area located within Trans-Nzoia county. Its role in food production has remained vital, not only locally but also nationally. The dominant agricultural enterprises are maize, beans, and production of dairy products. According to the Kenya Agricultural Research Institute, Trans-Nzoia maize yields have been reducing from the year 2003 to 2018 at a rate of 15% per annum. This is not a good trend for food security in Kiminini Sub-County and the entire country. Despite the important role that the sub-county plays in household maize production, the land subdivision rate is becoming a threat. Initially, the average size of the agricultural parcels ranged between 30 and 10 acres (CGOTN, 2013).

However, over time due to population increase and the inheritance tradition, the demand for land has gradually increased leading to the fragmentation of the otherwise prime farmland. Today, there are households with plots as small as 0.1 acres. Studies indicate that production can increase or decrease with decreasing land sizes (Noack & Larsen, 2019). It is not clear how maize production is changing with the changing land sizes in the study area and the implication of this on food security. The purpose of the study therefore is to examine the emerging

pattern of land sub-division in the Kiminini sub-county and its effect on household maize production.

Objectives of the Study

This study sought to analyse rural household land subdivisions and their impact on household maize production, which is the main source of food security in Kiminini Sub County. The specific objectives of the study were to examine household land size change in Kiminini Sub-County from 1963 to 2018. It sought to determine the main causes of rural household rural land subdivisions in Kiminini. The study was meant to find out the impacts of the intensive rural land subdivision on household maize production in Kiminini. Policy and planning interventions to ensure the optimal household land size in Kiminini Sub-County were proposed.

LITERATURE REVIEW

Trends of Land Subdivision

Of the total land area in Kenya of 56.9 million hectares, more than 90% is agricultural land (both crop and pastoral land). Agriculture is the backbone of the Kenyan economy contributing to approximately 25% of the GDP. However, in the recent past, agriculture in rural areas all over the country has been greatly challenged, especially due to the pressure from commercial and other urban-generated land uses (Republic of Kenya, 2003).

Prime agricultural land in Kenya is becoming alienated from mainstream agriculture due to urban encroachment and rural residential development. The quality and quantity of agricultural land in the country are thus diminishing (Nyadimo, 2006). This trend has adversely affected the country's agricultural resource base because of the reduced arable land.

Maize is the main staple food in the diet of over 85% of the population in Kenya. The per capita consumption ranges between 98 to 100 kilograms, which translates to at least 2,700 thousand metric tonnes per year. Conservation of maize farms is important to ensure food security in Kenya (Nyoro et al., 2004)

Causes of Rural Land Subdivision

The increase in rural population and the increase in demand for arable land has resulted in the intensive subdivision of land. This has denied the country preservation of precious agricultural land that may sustain food production to feed the nation without relying on food hand-outs (Njuguna & Baya, 1999).

According to Thomas (2006), the transformation from traditional communities to a centrally planned market economy has led to excessive subdivision and selling of land. Privatization of land after independence has led to subsequent fragmentation of land to serve the demands of the market economy. Liberal inheritance law and traditions are one cause of Rural Land Subdivision (FAO, 2002). The rural areas are characterized by poor enforcement of the existing development control measures, and they are left to develop organically with very few restrictions.

Impacts of Rural Land Subdivision

On the one hand, sustainable land subdivisions can provide land for farmers to carry out agricultural activities to improve their livelihood. On the other hand, unsustainable agricultural land fragmentation and subdivision can undermine economically and environmentally sustainable uses of land and other resources. In agricultural systems, very small holdings and severe land fragmentation can hinder economic and environmental investments such as tree planting, irrigation, and terracing. Agroecological conditions also influence optimal farm sizes in some regions; land fragmentation is a way for the poor to diversify livelihood strategies as in Rwanda (FAO, 2007). This may negate policies of national food security and nutrition since the reduction in agricultural land may lead to a reduction in maize production in countries that rely heavily on rain-fed agriculture like Kenya. Land subdivision also hinders mechanization to some extent. Moreover, agricultural land sub-division may also lead to an increase in land values, increase in housing costs, and rentals (Kondi et al., 2018). Uncontrolled and uncoordinated subdivisions result in a conflict of land uses. This calls for an urgent need to have strategic plans in place to contain and guide this type of development. Land subdivision is a major environmental concern, and there is a need

to adopt sustainable patterns of development. Rural land subdivision has led to reducing farmlands, causing loss of wildlife habitat and scenic qualities that attract tourism, increased air pollution and increased energy consumption (Mureti, 2014). Excessive land subdivision has led to the formation of rural slum areas.

Measures to Reduce Land Subdivision

A case study of Pennsylvania gave three measures to reduce land subdivision, and these include the right to farm act that protects farmers from land use changes, agricultural zoning, purchase of agricultural conservation easements and agricultural security areas (Kornacki, 2008).

RESEARCH DESIGN

A quantitative research design was applied by sampling 120 households through survey research. (Mugenda and Mugenda, 2003) Indicate that the survey method involves gathering information from a sample group in order to assess their current situation with regard to one or more variables. Satellite images were also analysed between 2013 and 2018

Secondary Data

Secondary data that was reviewed for this study included; the historical development of the study area, the policy and regulatory framework for subdivision of rural agricultural land, trends in household maize production in Kiminini from 1963 to 2018 and in the country in general. This data was obtained from the land registry and maps, development plans and existing institutions. Land use development and subdivision approvals records were obtained from records in the physical planning offices of Trans Nzoia planning offices. Data on the trends in the growth of the population was obtained from census reports on population and housing from 1969 to 2009. Data from various books, journals, government documents, and studies on the effect of land use changes were gathered and analysed.

Primary Data

Primary data consisted of information collected from field surveys in the study area. A survey was done in two stages: reconnaissance and the main field survey. A reconnaissance survey was undertaken as a familiarization tour of Kiminini Sub-County. The survey allowed for the feasibility of the proposed instruments to be assessed and their suitability estimated. Data was then collected through an interactive and evaluative field survey. The survey involved asking questions to a representative sample of the target population. A total of 120 standard household questionnaires were administered, and key informants from various key national and county government departments and real estate investors in the area were also administered. Photography, observations, and existing maps and satellite imagery were used to complement the questionnaire. Semi-structured interview schedules were used to interview key respondents from government departments.

The primary data for this study thus included; population size and composition of the study area, population growth trends in the settlement, household maize production in the Kiminini sub-county, trends in the rural land subdivision, causes of rural land subdivision in Kiminini, impacts of the intensive rural land subdivision on household maize production in Kiminini and proposed policy measures to reduce rural land subdivision in Kiminini.

The information required for the study included establishing the land subdivision practices in the sub-county, their effects, causes and implications of the effects. The respondents also provided information on possible planning interventions for effective rural land subdivisions in Kiminini Sub County. The design allowed for the collection of both quantitative and qualitative data at the same time.

Figure 1: Conceptual Framework

Source: Author 2018
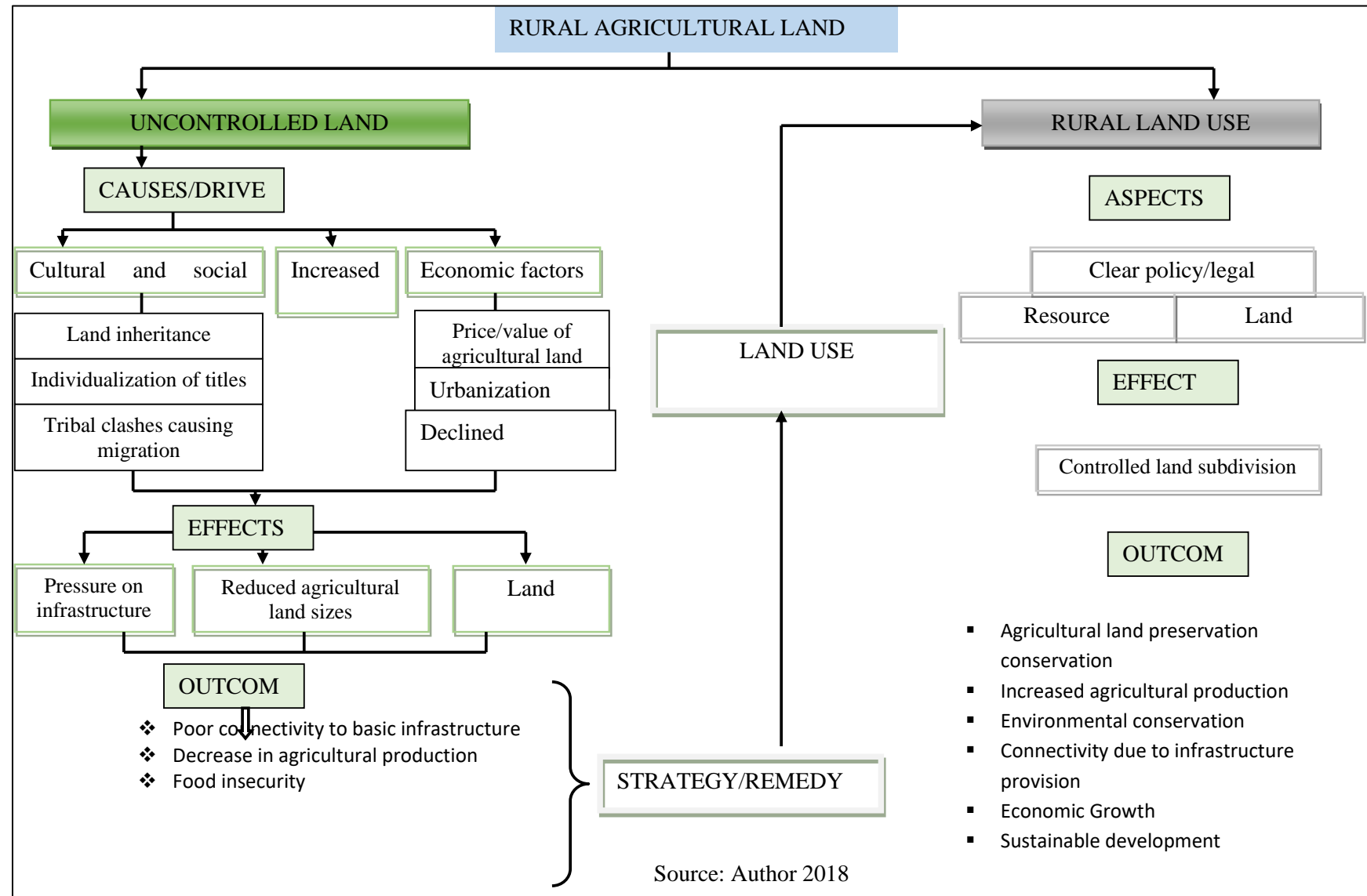
Location

Kiminini Sub County lies on GPS Coordinates 00054'00" N and 34055'00" S. The sub-county covers an area of 395.3 Km2 (Kenya Bureau of Statistics, 2010). Kiminini Sub County is one among many Sub Counties in the Kenyan Highlands that is good for household maize production. Kiminini lies between an altitude of 1700-1850 meters above sea level and has a rugged topography.

Population

The Sub County has a population of 231,191 people with 114,902 males and 116,289 females. The growth rate from 1999 to 2009 was 3.7 percent. Assuming the growth rate is maintained, the population for Kiminini is projected to be about 318,094 in 2019 using the population projection formula of $PT=P0(1+K)$ t (Al-Eideh & Al-Omar, 2019). Population growth is a major driver of development change in Kiminini and as such is a determinant of other parameters such as land subdivisions, solid waste generation, food security, water consumption, land use patterns, and settlement.

Population growth is partly explained by net migration into the area. Post-election violence of 1992 and 2007 in the Mount Elgon region led to the immigration of many people to the Kiminini area, which was a shelter for the post-election violence victims. Most people want to purchase a piece of land on the fertile grounds of Kiminini. Projections show that immigration will continue unless a deliberate effort is made to preserve the land for large-scale agriculture (FAO, 2016). The overall population density of Kiminini Sub County is 584 people per square kilometre.

Climate and Natural Resources

Kiminini is rich in natural features and resources. It lies in Trans Nzoia County, which is known as "The food basket of Kenya'. It covers part of the Mount Elgon Forest catchment and tributaries of the Nzoia river flow through the Kiminini sub-county (CGOTN, 2013). Kiminini has a highland equatorial type of climate. The rainfall is well distributed throughout the year. The annual rainfall ranges between 900 mm and 1400 mm. The slopes of Mt. Elgon to the west receive the highest amount of rainfall.

Land Tenure

The land tenure system in Kiminini has evolved over time. At the time of independence, the whole of Trans Nzoia County was crown land reserved for the 'white farmers. After independence, the ownership was transferred to the Government of Kenya (Boone, 2012). The county has two types of Landownerships; public and private. The government owns the land where government facilities are erected and also river and road reserves. The privately owned land was previously owned by the government, but it has now been allocated or sold to individuals and institutions.

Crops and Livestock Production

The Main crops produced in Kiminini are maize, beans, wheat, tea & potatoes. Other crops include coffee and a variety of horticultural crops. The average household farm size in Kiminini is one and a half acres for small-scale and 30 acres for large-scale farming (Trans Nzoia County Department of Agriculture, 2013). The main Livestock reared include cattle, goats, chicken, sheep, and fish.

FINDINGS

Land Use in the Kiminini Sub-County

The study area is characterised by a number of diverse land uses. The original settlers were farmers, and thus agriculture was the dominant land use. This is because the land in the area is arable, but with time this trend is changing due to population increase. Agricultural land is the most prevalent, with 61% of the respondents saying that agriculture is the main land use. Up to 28% of the respondents alluded that residential land use is prevalent, while 11% of them indicated commercial to be the main land use. Kiminini was mainly agricultural land, but the study shows that residential and commercial land uses are slowly invading the land that was meant for agriculture.

Farming in Kiminini is carried out at small-scale levels and large-scale levels at approximately 63% and 37%, respectively. Small-scale farming is mainly for subsistence, while large-scale farming is

mainly for commercial purposes. Maize farming is widely practised and mostly at a commercial level. The study revealed that one acre of land produces about 20 bags of maize and three bags of beans, mainly for subsistence. Large-scale farms that range from 10 to 100 acres produce as many as 200 bags to 2000 bags of maize and 30 to 300 bags of beans. These large-scale farms have diminished over time. The study revealed that the average predominant land size was one and a half acres which produced 30 bags of maize and 4.5 bags of beans.

Respondents gave the average land size before they acquired as 30 acres which would produce 600 bags of maize and 90 bags of beans if the conditions were held constant.

Most farmers practice mixed farming of both crop and animal rearing. With the diminishing Agricultural land, Kiminini dwellers cannot depend only on maize production which requires large tracts of land. They therefore opt to supplement crop farming with animal rearing.

Plate 1: Main Crops Grown in Kiminini Sub County

Source Author, 2018

Maize and beans are the main food and cash crops grown in Kiminini Sub-County. The study revealed that the average predominant land size was one and a half acres which produced 30 bags of maize and 4.5 bags of beans. Respondents gave the average land size before they acquired as 30 acres which would produce 600 bags of maize and 90 bags of beans if the conditions were good. Some farmers also plant bananas to be consumed at the household level. Animal rearing in the study area complements crop farming since, with the decreased sizes of agricultural land, crop production is barely sufficient.

Process of Land Subdivision in Kiminini

The land is subdivided through survey procedures or clan agreements. Land for sale is subdivided by a contracted surveyor. An agreement is then written in the presence of an advocate, land seller, land buyer, and witnesses. The application for land title is submitted to the county lands offices. Up to 61% of the landowners interviewed still do not have their title deeds. Customary land for inheritance is subdivided by the clan elders. 74% of the residents interviewed acquired land by buying while 26% of others acquired through inheritance.

Table 1: Table showing methods of land acquisition

Method of Land Acquisition	Frequency	Percentage
Buying	89	74%
Inheritance	31	26%
Total	120	100%

Source: Author, 2018

Figure 2: The above Google images show the process of land sub-division over the years

2013

2018

Sizes of land and trends of land Sub-division in Kiminini Sub-division

The average land size of farms in the study area was one and a half acres for small-scale farming and 15 acres for large-scale farming. Respondents gave the average land size before they acquired it as 30 acres. 33% of the sample population intend to subdivide their land for inheritance purposes, while 23% of the sample intend to subdivide the land for selling purposes. Up to 44% do not intend to subdivide the land, but as much as they do not want to subdivide the land if the need arises, most of them will eventually subdivide their land. Market demand encourages subdivision into even smaller plots. Land sizes are reducing in Kiminini Sub-County. The land sizes for the respondents are as shown in the table below:

Table 2: The land sizes of respondents

Land Size	Frequency	Percentage
Below 1 acre	54	45
1-5 acre	36	29
6-10 acre	18	15
Above 10 acres	13	11
Total	120	100

Causes of Rural Land Subdivision in Kiminini

The study sought to establish the causes of land sub-division in Kiminini. The chart below summarizes the causes as revealed from the field survey:

Figure 3: Causes of rural land subdivision

Causes of rural land subdivision in Kiminini

- Demographic factors: population growth
- Economic causes: Increased land prices, market demand
- Cultural causes: land inheritance
- Institutional causes: poor rural agricultural land management
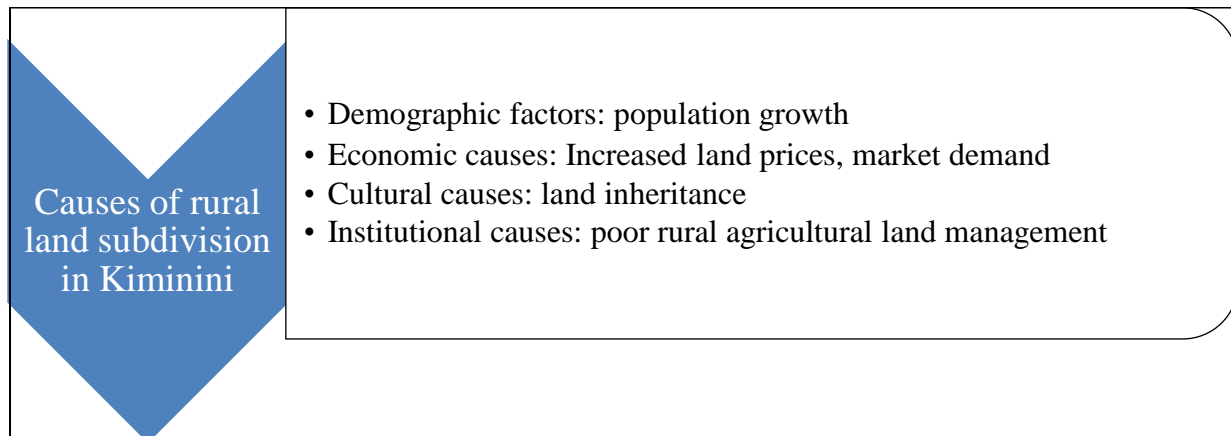
Source: Author, 2018

Demographic Factors

Population growth and immigration have put land in the study area under pressure to transform into urban land use such as residential use. The proximity of the study area to Mt Elgon Forest has made the area an ideal 'safe zone' for squatters evicted from the Mt Elgon Forest in order to conserve the forest. The eviction of the Mt Elgon Forest residents without alternative options for their livelihood has created problems for the study area. The population in Kiminini has increased tremendously. Population growth has increased the demand for land, thus further land subdivision to meet the demands of the growing population.

The respondents were asked about the extent to which population increase has led to land sub-division in Kiminini. The responses given range between very great and great thus confirming that with increased population, cases of land subdivision increase uncontrollably due to the market created by the population. This gradually results in a decline in household maize production due to the decreased sizes of agricultural land.

From the study, it was established that 71% of the respondents thought that demand for residential space had caused land sub-divisions in Kiminini to a very great extent; 27% alluded that demand for residential space has caused land sub-divisions in Kiminini to a great extent while only 2% responded that residential space demand is just a neutral cause for rural land sub-division.

Some of the respondents (12%) immigrated to Kiminini due to post-election violence in Mount Elgon between 1992 and 2007. This led to an increase in population in Kiminini township. Some of the immigrants sold their land in Mt. Elgon and bought land in Kiminini, which is a more peaceful environment. Therefore, the nature and condition of the neighbouring settlements affect Kiminini.

Economic Causes

Broadly speaking, economic factors influence agricultural land subdivisions through market forces, i.e., the supply and demand for agricultural land (Museleku & Syagga, 2018). Economic drivers may also interact with institutional factors and policies. Privatization of land after independence has led to subsequent fragmentation of land to serve the demands of the market economy. Out of the residents interviewed, 62% of persons interviewed bought land in Kiminini due to employment and search for fertile land for cultivation. Many landowners in Kiminini sell part of their land or the whole of their piece of land to meet their needs such as school fees, food, funerals, and to start businesses, among other needs. The per capita income in the study area influences agricultural landowners to subdivide their land and sell it to property developers. This is also encouraged by the fact that the return from agricultural activities is not enough to support the livelihood of the residents. Subdivision trends in Kiminini are expected to increase since 23% of the sample population intend to subdivide the land in future both for inheritance

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and commercial purposes, but 77% do not intend to subdivide their piece of land.

Cultural Causes

Numerous cultural factors influence the decision-making process of an agricultural land owner. Liberal inheritance law and traditions are one cause of Rural Land Subdivision (FAO, 2002). In East Africa, land inheritance practices and land tenure systems (for example, customary rights), individualization of titles, and acceptability to sell agricultural land (commodification of land) directly affect agricultural land subdivision. The case is no different in Kiminini. Cultural/social ties have affected land subdivisions, with 26% of the respondents inheriting land from their clans. The land is subdivided for each generation from father to son. This leads to a decrease in agricultural land sizes with every subsequent generation.

The study interviewed one prominent farmer, *Mwalimu Wetu*, who owns 100 acres of land. He has preserved his land and has not subdivided it to the sons. He said the large tract of land gives a better amount of produce and is easier for mechanization. His fear, however, is that once he dies, his sons will subdivide the land. Such productive land should be preserved according to *Mwalimu Milimo*.
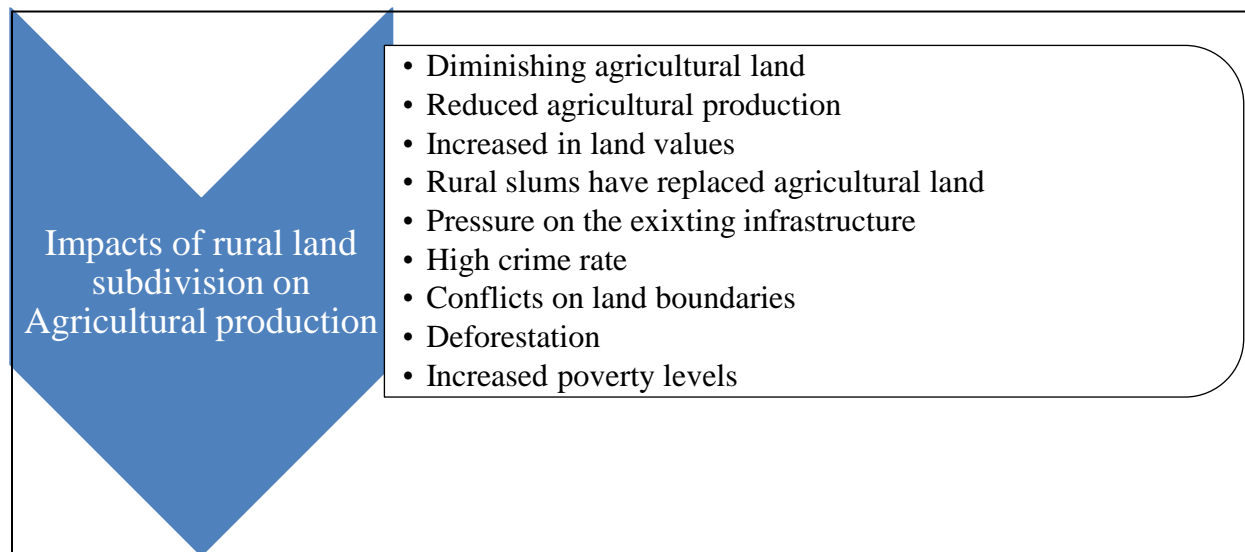
Institutional Causes

The use of resources such as agricultural land is facilitated by local and national policies; thus, institutions play a great role in the designation of property rights and thus have an impact on individual landowner decision-making. In Kenya, the rural areas are characterized by poor enforcement of the existing development control measures, and they are left to organically develop (Kitur, 2019, pp. 31-32). The study, therefore, sought to know whether weak and ineffective land institutions led to excessive land sub-divisions in Kiminini.

The study revealed that 56% of the respondents indicated that weak and ineffective land institutions led to excessive land sub-divisions in Kiminini to a very great extent and 22% said that weak and ineffective land institutions led to excessive land sub-divisions to a great extent. According to 10% of the sample population, weak and ineffective land institutions led to excessive land sub-divisions to a small extent, while 12% said that weak and ineffective land institutions did not lead to excessive land sub-divisions.

Impacts of Rural Land Sub-division on Household Maize Production

Land fragmentation has had both socio-economic and environmental impacts on rural development. Some of these impacts are discussed below:

Figure 4: Impacts of Rural Land Sub-division on Household Maize Production

Impacts of rural land subdivision on Agricultural production

- Diminishing agricultural land
- Reduced agricultural production
- Increased in land values
- Rural slums have replaced agricultural land
- Pressure on the exixting infrastructure
- High crime rate
- Conflicts on land boundaries
- Deforestation
- Increased poverty levels

Diminishing Agricultural Land

The average land size of farmlands in the study area was one and a half acres for small-scale farming and 15 acres for large-scale farming. Respondents gave the average land size before they acquired it as 30 acres.

As indicated by the statistics, agricultural land sizes have been declining with time. By 1963 in Kiminini, the average agricultural land size was 30 acres, but due to subdivisions, the average size has reduced to as low as 1.5 acres. Prime agricultural land is being lost as a result of subdivisions, sales, and conversion to a variety of urban uses.

Reduced Household Maize Production

Subdivision of agricultural land has significant impacts on household maize production. Reduced farm sizes translate to decreased outputs.

The study revealed that the original agricultural land sizes, which were 30 acres would produce 600 bags of maize and 90 bags of beans. Currently, the household maize production is 30 bags of maize and three bags of beans for the average land size, which is 1.5 acres. This level of production does not allow the sale of the product; thus, it is mainly for subsistence. The original large-scale farms have diminished over time.

Increase in Land Values

Demand created by the increasing population has led to increased land prices. Households thus opt to sell part of their land to get monetary returns which are more valuable to them. As revealed earlier by the findings of this research, agricultural produce is not enough to fulfil the needs of the residents. Therefore, the opportunity of subdividing and selling agricultural land to sustain their upkeep and satisfy their needs seems the best and the only option available for them. The chart below summarizes the findings of the extent to which increased land values have affected agricultural land subdivisions.

Increased land values have led to a reduction in the number of investors who are willing to invest in land for agriculture. Leasing land for one year in Kiminini is now approximately Ksh 8,000 per acre, which is expensive for the area and therefore, they opt to do other businesses rather than farming.

Kiminini Sub County has been experiencing ribbon developments due to the presence of the Kitale-Webuye highway. The land values in these areas are exorbitant and developers will always want to put up development that will give the maximum returns. This process has also resulted in the uncontrolled subdivision of Agricultural land along the road into very small plots that are economically unviable and with no reference to change of use (Mureti, 2014).

Rural Slums on Agricultural Land

Subdivisions in the study area have also influenced the mushrooming of informal settlements within the Sub-County. These are characterized by poor housing, lack of proper accessibility, and generally deplorable conditions. The respondents were asked about the extent to which land sub-division has led to increased rural slums. They observed that land sub-division is a major cause of rural slums in the Sub-County

Observations during the field survey revealed that there was dilapidated housing characterized by small mud houses, less vegetation, inadequate sanitary facilities, and a water supply with narrow roads leading to these dwellings. Such villages include *Muthangari*, *Kwa Thomas,* and *Sokomoko,* among others. *Muthangari* and *Kwa Thomas* were squatter settlements for the workers of large-scale farmers. *Sokomoko* was a large farm that has since been subdivided into small portions.

Pressure on the Existing Infrastructure

The respondents gave one effect of land sub-division to be reduced access road width. It was observed that some roads were narrow and could not allow tractors and lorries to pass through. This therefore, causes farmers to use oxen and human beings to do ploughing, planting, and harvesting because the roads are too narrow to allow mechanization. Lack of mechanization definitely leads to reduced agricultural production. Riverfronts have also been cultivated, leading to silting of river Kiminini and agrochemical pollution of the river.

Some of the residents, 68%, use wells where most homesteads have dug boreholes and this has led to dried wells. Underground water is being over utilized and this may lead to the depletion of groundwater reservoirs. This was evident during the study, where some wells were said to be drying up during the dry season.

Other effects of Rural Land Sub-division

The study inquired about any other effects of rural land sub-division and the respondents listed the following:

A high crime rate is one effect where farm produce is stolen and therefore, many farmers are discouraged from doing large-scale farming. The farm produce is stolen because of the upcoming rural slums where residents do not have agricultural land, so they steal from the nearby farms to survive.

Conflicts on the land boundaries are another effect of unsustainable rural land sub-division. Farmers explained that there are many conflicts over land boundaries where some neighbours move their boundaries to acquire land that is not theirs. There are a lot of roads and river reserves acquired by private individuals, and this has caused a lot of conflicts in Kiminini. Conflicts also arise from the planting of eucalyptus tree species on boundaries, and this has led to reduced maize production and drying of boreholes since eucalyptus utilizes excess groundwater.

Deforestation is another result of unsustainable rural land sub-division. The study revealed that most residents with less than one acre did not plant trees on their boundaries because they save the land for little maize and vegetable production. Rural slums are characterized by little vegetation where the whole land is used for building houses, and no space is left for trees, shrubs, grass, or flowers.

The Measures in Place to Mitigate Rural Land Sub-division in Kiminini

The study sought to get mitigation measures in place to mitigate Rural Land Sub-division in Kiminini.

Traditional measures

Customary land for inheritance is subdivided by the clan elders. The elders are the only ones allowed to subdivide the land with their sons. As mentioned earlier in this document, 26% of the landowners acquired their land through inheritance from their parents.

Legal measures

Sub-division application is made to the Lands department by the proponent. The Physical and Land Use Planning Act No.13 of 2019; gives provision that no private land within the area of a local authority may be subdivided except in accordance with the requirements of the local

physical development plan (Government of Kenya, 2019).

Land for sale and development is subdivided by surveyors who present the sub-division schemes to the Lands Department in Trans Nzoia County. Registration and planning are then done in the land registry, and a land title is given afterwards. The legal requirements are available, but enforcement is inadequate; hence there is an increase in the informal land subdivision.

CONCLUSION AND RECOMMENDATIONS

Conclusion

Kenya is an agriculturally based economy and has a majority of her population deriving their livelihood from different forms of agriculture. Agriculture not only creates employment and earns income for farmers but also ensures food security in the nation. It is thus the main driving force of the Kenyan economy and should be supported. The trends in rural land subdivision and the resultant loss of agricultural land do not look promising for the future of agriculture in Kenya.

As revealed by the research, many agriculture-based rural areas, which were synonymous with large tracts of agricultural land have been transforming in spatial dimensions due to the subdivision of land into uneconomical sizes and uncontrolled sale of agricultural land to private housing and commercial developers. Subdivision therefore remains a major threat to agriculture in rural areas. If no action is taken, Kenya will definitely not achieve its vision 2030 objective of increasing agricultural production and raising incomes in agriculture. In the study area, population growth has been putting pressure on the arable land. Residents have been carrying out uncontrolled land subdivisions causing land fragmentation where there are dispersed parcels of small and irregular sizes. Due to this, the area cannot attain its maximum productivity in agriculture. All factors which encourage rural land subdivision are an obstacle to agricultural production and productivity, and interventions should be put forward to address this.

One of the major factors affecting land use and land subdivision is tenure. Land tenure types and policies tend to determine the nature of agriculture carried out and influences other land use practices. In order to achieve sustainable agriculture, the country needs to adopt policies and strategies that promote the conservation of highly productive agricultural land. This should be done by devolving natural resources such as land to local communities and encouraging local-level sustainable resource management.

Recommendations

A spatial plan should be prepared for the study area in order to guide its development and transformation in socio-economic structure. The plan should seek to limit the sub-division of agricultural land to a minimum of 5 acres in order to earn a rural annual household income of Ksh 195,120. (KEBS, 2016). This can be done by only titling land that is 5acres and above.

Agricultural protection zoning (APZ) be done to restrict the density of non-farm residential development and also contain limits on subdivision and site design criteria including buffers and setback requirements (McCafferty, 2018, pp. 1-2).

Mixed farming should be encouraged in the Kiminini sub-county, where crop farming is done alongside livestock rearing. This will use less land as compared to relying on crop farming only. Informal land subdivisions, as a result of the culture of inheriting land must be regulated. The government of Kenya should draft and enforce policies that support large-scale farming. The policies drafted also should address the issue of traditional land inheritance. The priority of these policies should be on maintaining and improving the capacity of the higher potential agricultural land.

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