PLANNING FOR AGRO-INDUSTRIES IN RURAL COMMUNITIES: THE CASE OF KINANGOP SUB-COUNTY, NYANDARUA COUNTY

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DECLARATION

This M.A. (Planning) Thesis research project report is my original work and has not been presented for a degree in any other university

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This project has been submitted for examination with my approval as the University Supervisor

Signed…… Date……..

Prof. Karanja Mwangi

DEDICATION

I would like to dedicate this thesis to my family – my beloved wife Jane Gitau for her endless support and my wonderful children Jaden Gitau and Joy Gitau for keeping my spirit up throughout the period of writing this thesis

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ABSTRACT

Agro-industries are important vehicles in rural development. They enhance food security and employment creation in off-farm activities, thereby boosting levels of income and government revenue that is generated from the rural economy. The industries are also a source of agricultural products that meet demand in the local and international market. These and other reasons justify the need for effective planning for agro-industries in fulfilling the quest for development in rural areas. This study is about planning for agro-industrial sub-sector in Kinangop Sub-county. It examined the extent to which the sub-sector is planned to foster rural development; assessed the state of the agro-industrial sub-sector in Kinangop sub-county; assessed the economic and social impacts of the agro-industries which signify rural development; evaluated the role of land use planning in siting and growth of agro-industries; and proposed planning interventions that can promote further growth of agro-industries in Kinangop sub-county. The study makes two assumptions. First effective planning for agro-industries has to happen within the framework of integrated development planning and implementation. In the second assumption, past efforts in improving rural economies in the study area have failed to improve rural standard of living conditions in rural region communities. Data was collected from three categories of data sources. First primary data was collected from a sample size of 80 farmer house households represent 0.05% of total population in the study area as per 2019 census population. Household questionnaires were administered to collect on socio-economic characteristics of the household, agricultural production, the state agro-industrial sub-sector and rural development planning in the study area. Second, key informant interviews schedules were administered in the 5 agro-industrial firms in the study area. Finally, three questionnaires were administered to officials of Nyandarua County Government to collect data on revenue received from agro-industrial firms, planning regulation affecting gro-industrial sub-sector and existing development projects and programs for the sub-sector. One of the key findings of the study is that both livestock and crop farming drive the rural economy in Kinangop sub-county. However, the agro-industrial sub-sector has not been planned for and developed adequately and as such, they have not thrived to their optimum potential. Specifically, the study has established that more than 80% of respondents engage in both commercial and subsistence farming. The farmers carry out livestock rearing for milk production and they also keep sheep and indigenous chicken. They also grow cabbages, tomatoes and spinach, sweet potatoes and kale. The third key finding is that market for processed agricultural products from the four major agro-industries is outside Nyandarua County where 90% of the products are sold. Of this proportion, 3% is for export market, while remaining 97% is sold in Kenya. Farmers are organized into six cooperatives societies, namely, Lucky Dairy, Njabini Farmers' Cooperative Society, Githioro Cooperative Society, Muki SACCO and Tarda Ardhi. The societies offer marketing services, supply of farm inputs at subsidized prices and also provide extension services that include training, Vertinary services and seedling supply at farm level. Lastly, the finding on planning is that planning for agro-industries is agro-industrial firm project specific, instead as integrated rural planning. The study has proposed comprehensive planning and development, strengthening the agriculture sector, training and capacity building, fostering economic interlinkages between Kinangop sub-county and potential markets and providing an enabling environment among others.

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ACRONYMS

CIDPs	County Integrated Development Plans
CSPs	County Spatial Plans
CSR	Corporate Social Responsibility
DFRD	District Focus for Rural Development
FAO	Food and Agricultural Organization of the United Nations
GDP	Gross Domestic Product
GIS	Geographic Information System
GPS	Global Positioning System
KNHPC	Kenya National Housing and Population Census
MDG	Millennium Development Goals
NEMA	National Environment Management Authority
NGO	Non-Governmental Organizations
NMT	Non-Motorized Transport
SACCO	Savings and Credit Cooperative
SPSS	Statistical Package for Social Sciences

CHAPTER ONE
INTRODUCTION

1.0 Introduction

According to Wilkinson and Rocha (2008), agro-industries establishments enhance farming initiatives by transforming, adding value to and distributing agricultural products. These types of industries undertake post-harvest activities that transform, preserve and prepare agricultural products for intermediary or final consumption (Sigei, 1987).

Agro-industries, therefore, fulfil needs in market demand for processed agricultural products. In this regard, the industries enhance food security and create off-employment in communities where they are located. The industries therefore contribute in economic development and poverty reduction. Wilkinson and Rocha, 2008 have suggested that agro-industries play important role in the development of a county and different regions of a country by interfacing development in agricultural production and industry, which is catalyzing factor in economic development.

Agricultural sector play a leading role in economic growth and poverty eradication while contributing to the creation of employment and gross domestic product (GDP). Luthfi (2003) estimates 75% of the world population lives on less than two US$ 2 a day in developing countries. This proportion of the population depends directly or indirectly on agriculture.

Up to the 1990s, agriculture was considered as a passive sector that is mere source of food and raw material for other sectors (Luthfi, 2003). This view no longer holds today. The sector is now a key driver of not only for development in general but modern industrial sector specifically (Luthfi, 2003). Agro-industrial sub-sector specifically has taken centre stage in the absence of heavy manufacturing countries and agriculture account for substantial economic output. In South America for instance, the agro-industrial sub-sector account for more than 33% of GDP. The sub-sector account for between 20% and 25% of GDP in Sub-Saharan countries (Wilkinson and Rocha, 2009).

In spite of the importance of the sub-sector agro-processing firms are not fully established. The low level of agro-processing capacity in the region creates a grim picture from losses of agriculture products from post-harvest losses. For example, post-harvest loss for fruits and vegetables stand at an average 35% to 50% of total annual output post-harvest for grains range between 15% and 25% (Otieno, 2017).

Agriculture sector contribute between 26% and 27% of GDP, employ more than 40% of the national population and over 70% of the rural populace (Kenya, 2018). Contribution of agriculture in rural development is, therefore, significant. However, agro-industrial development in the rural areas has is still growing. The agricultural sector features dominance of smallholder farmers whose marketed products are mostly not processed. The low level of investment in agro-processing initiatives is attributed to insufficient capacity, poor infrastructure and unreliable supply of raw materials (Otieno, 2017).

Agro-industrial sub-sector requires planning and policy intervention for it to stimulate economic growth and development. In the early 1980s, the government of Kenya launched the Sessional Paper No 4 of 1981 aimed to sustain self-sufficiency in the production of major foodstuffs and ensure fair distribution of nutritional food to all Kenyans. This was to be achieved mainly through interventions, such as regulating grain prices, state monopoly of distribution of agricultural inputs and providing fertilizer subsidies.

Later in 1990s the government of Kenya launched Sessional Paper No 1 of 1999 on Industrial Transformation to the Year 2020 (Kenya, 1996). The sessional paper provided a framework to stimulate growth of the economy and creation of employment by the expanding the industrial sector. The key focus of the paper was to foster social, political, and macroeconomic stability; improve exports and foreign earning; encourage human resource development; expand physical infrastructure; improve financial markets; enhance trade liberalization; stabilize labour market; and increased resource allocation to research and technology development.

The most recent policy is the Big 4 Agenda Strategy (Kenya, 2018). It proposes the creation of 1000 agro-processing SMEs and 600,000 new jobs countrywide. The targeted initiatives include local value addition for tea, coffee, meat, dairy, fruits, nuts and oils; warehousing and cold chain sites; and aquaculture, fish feed mills and fish processing industries (Kenya, 2018).

As far as planning for rural development is concerned in Kenya, it is notable that the development needs of the rural population are mostly covered within regional development plans such as County Integrated Development Plans and County Spatial Plans. The more recent policy for regional planning is taking shape around the concept of integrated development. Recognized as, perhaps, a keystone of regional development policy, the strategy is aimed at bridging the gap between urban systems and rural sectors (Kenya, 2018)

There are doubts concerning steps that can be taken, especially; methods that can be followed in assisting rural population to access resources. This is because there lacks integrated planning to guide spatial location of rural development projects. According to Okafor (2008) disregard for rural development as comprehensive public policy undertaking, has led to failure of projects than should be the case

Comprehensive planning for agro-industries has not received appropriate policy attention either as the focus remain agro-industrial plants and factories as isolate business firms. This focus has failed to stimulate rural development that can create jobs from value addition of farm products in the Kinangop sub-county. Comprehensive planning for agro-industrial sector will create requisite regional framework for both the industries, ways to foster for enhanced agriculture outputs for raw material as well as provision of requisite infrastructure and support facilities and facilities.

In Kinangop, the agro-processing enterprises mainly include potato, vegetable and milk processing companies. They process potatoes, kales, cabbages, green peas, carrots and dairy products such as yoghurt. The main potato and vegetable processing firm is known

as Midlands Limited. Milk processing enterprises include Brookside, KCC, Kinangop Dairy Ltd, Tuzo, Njabini Dairies, Mara farming, Kenya Fresh and Lucky Dairies.

The existing plans and policies that support the agro-industrial sector in Kinangop are captured within the Nyandarua County Integrated Development Plan (2018-2022). It proposes the expansion of the Midlands factory to boost potato farming. It also recommends the provision of offer storage facilities for green peas and carrots in the same factory. It further suggests the expansion processing and value addition to milk in order to increase provision of various dairy products. There are also proposals to establish one sugar-beet processing plant, a potato processing plant and a giant bamboo factory by 2022. Notably, all these are project-based proposals, which are contextualized in space and no mention is made of their integration with support infrastructure.

This study is founded on the premise that agro-industries in the rural areas cannot be planned for as project proposals, but as systems that must be coined within integrated development plans for the areas of concern. It holds that past efforts aimed at raising the level of the rural economy have not paid adequate attention to the structure of spatial relationships between the rural areas and their surrounding regions, thus affecting the functionality and productivity of the agro-industries therein.

Based on this view, the study realizes the need for a paradigm shift, one that not only improves the lot of those in rural areas, but which also involves a spatial logic that directs attention to real integration. Among others, the study focuses on the importance of spatial component of integrated rural development in enhancing agro-industries in rural areas.

1.1 Statement of the Problem

Kenya suffers from rural poverty despite the huge potential for agro-industrial productivity. According to Otieno (2017), the rural communities are still faced with challenges related to access to basic services, economic opportunities and some degree of incoherence with regard to planning related to rural-urban divide.

Notably, various parts of rural Kenya, Kinangop Sub-county included, have the natural capacity to produce various crop and livestock products and thus an indisputable potential

for agro-industrial development. However, the opportunity has not been optimally exploited and neither has proper planning been initiated to boost the agro-industrial sector. This situation has been observed by Wahinya (2013), who points out that Kenya has the potential of setting up some of the biggest agro-industries in the world but this has not been the case. He for instance observes that the Naivasha vegetable processing plant that used to depend on produce from the Kinangop has already been closed.

In Kinangop Sub-county, one of the outstanding agro-processing industries is Midlands Limited, which processes potatoes, carrots, cabbage, kales and peas. While potato is the second most important food crop after maize and its growth potential is high in Kinangop, only one establishment has seized this opportunity. This depicts under exploitation of this important resource which otherwise supports millions of people in other parts of the world.

The crop employs more than 2.5 million people worldwide and it has a higher yield per square metre and three harvesting seasons a year than maize. Potato processing is also big business in Europe, the United States and South Africa (Kirori, 2015).

The other agro-industrial opportunity in Kinangop Sub-county is dairy processing. The prospective products from this activity are numerous and they include processed milk, butter, cream, ghee and yoghurt. Furthermore, its economic potential is quite high considering that the dairy industry contributes 14% of agricultural GDP in Kenya despite facing significant challenges (USAID, 2019). In Kinangop Sub-county though, the industry is dominated by small and medium level operators, whose muscles are not strong enough to exploit the sector's potential optimally.

Given that a healthy and dynamic agro-industrial sector is an important foundation of rural development and for generating strong linkages to other economic sectors, proper planning for rural development is necessary. As UN-DESA (2015) observes, the success of sustainable rural development depends on, inter alia, developing and implementing comprehensive strategies, which tap into the potential for rural job in farming, agro processing and rural industry. This kind of planning promotes the development of rural

infrastructure, sustainable management of natural resources and investments in environmental protection.

However, in Kinangop sub-county, it is apparent that the existing plans do not take a comprehensive approach to planning for the agro-industrial sector. The Nyandarua County Integrated Development Plan (CIDP) (2018-2022) in particular provides project based proposals rather than spatially contextualized strategies for the development of agro-industries. This has impeded the development of the sector, thereby depriving the people of the prospective economic fruits that it can directly yield to them and the positive ripple effects that it can have on rural development in the area.

The need for this study rests on literature review and observation in the field that Kinangop Sub-county has potential for agro-industrial development that is not utilized in the absence of comprehensive regional development framework designed for the purpose.

The purpose of the study is thus to examine the role that planning for agro-industries can play in promoting rural development in Kinangop, with a view to proposing possible planning interventions to the current challenges."

1.2 Research Questions

The study questions were:

1. What are the main resource and geographical factors that influence establishing agro-industries in Kinangop Sub-county?
2. What are the available raw materials for agro-industries in the study area?
3. What are the economic and social benefits of agro-industries in rural development of the study area?
4. How can comprehensive sub-county regional planning for rural development resting on agro-industries be achieved?

1.3 Research Objectives

The study was conducted in the context of one overall objective and four specific objectives.

1.3.1 Overall Objective

The overall objective of the study is to carry out field study on planned development of agro-industries in rural communities in Kinangop Sub-county with a view to proposing comprehensive rural development framework for the area.

1.3.2 Specific Objectives

The four specific objectives of this study are:

1. To appraise the main resource and geographical factors that influence establishing agro-industries in Kinangop Sub-county;
2. To examine available raw material for agro-industries in the study area;
3. To evaluate economic and social benefits of agro-industries in rural development of the study area; and
4. To propose comprehensive sub-county regional planning interventions for rural development resting on agro-industries

1.4 Assumptions

The study has the three assumptions. First, the study assumes that agro-industries have potential to foster rural development if planned and developed taking into account sensitivities of development needs for rural communities. The second assumption is that jobs i.e. employment, incomes to rural households and tax revenue agro-industries pay to governments among benefits are positive justifications for the promoting agro-industries to foster rural development.

Lastly, the study assumes that planning for a comprehensive regional development framework would provide context for location and siting of agro-industries while which also promote productivity of raw materials required by the industries for their processing and production of goods sold in the market from the study area.

1.5 Justification of the Study

The first justification of this study is that agro-industries should be promoted because of the vital role they play in delivering growth and reducing rural poverty. Part of the

promotion is undertaking the studies, which can inform decisions pertaining to development of the sector.

Secondly, Kinangop sub-county has a promising agro-industrial sector. However, there exists scanty information about its contribution to the rural development and the level to which it has been planned for. This is thus a knowledge gap, which this study seeks to fill up.

Finally, this study brings out planning and policy issues relating to agro-industrial development, forms a basis upon which planning solutions can be sought in dealing with agro-industrial issues and offers recommendations for improvement planning for agro-industries and rural development

1.6 Scope of the Study

The scope of the study is both substantive and spatial as described in section 1.7.1 and 1.7.2.

1.7.1 Substantive Scope

The focus of this study was to establish the nature and level of planning that is required for optimal agro-industrial development as a means of fostering rural development in Kinangop. It is set to provide an assessment of the state of agro-industrial development in the study area, the contributions of agro-industries to rural development therein, the existing policy framework for the agro-industrial sector and the level of rural development planning. The assessment also covers the theoretical and conceptual underpinnings related to planning for agro-industries and rural development.

The study covered items on comprehensive regional development; agriculture, farming systems and support services; and agro-industrial jobs, incomes, and revenue. In addition the respondents involved in the study included residents/farmers of Kinangop Sub-County, agro-processing companies and Nyandarua County Departments of Physical Planning, Agriculture and Industries

1.7.2 Spatial Scope

The area of the study is Kinangop Sub-County of Nyandarua County. The sub-county has an area of 822 km^2 which 25.3% of the total area of the county. It is therefore sub-county regional study on improving role of agro-industries sub-regional rural development to address economic and social development needs of rural communities.

1.8 Limitations of the Study

The study had three main limitations. First, there was difficulty in getting some of the key informants due to their commitment in other places. The second, limitation was existence of scanty information on some of the agro-industries. The last limitation was inaccuracy of information on income as provided by some of the households.

1.9 Operational Terms

The study has three operational terms.

Rural: This term relates primarily to areas that have a relatively low population density compared to cities. Agriculture and related activities usually dominate the landscape and economy and transport and communications cover relatively large distances making travel and service provision relatively difficult and costly.

Rural Planning: Rural Planning is an activity of the state apparatus to coordinate, rationalize and/or (re)organize human activity and the distribution of resources in rural areas.

Agro-industries: These are post-harvest activities involved in the transformation, reservation and preparation of agricultural production for intermediary or final consumption.

1.10 Organization of the Thesis Report

The report has nine chapters. Chapter one introduces the study by presenting statement of the problem, objectives of the study as well as assumptions. The chapter also outlines the scopes of the study as well as operational terms.

Chapter two contains the Research Methodology. It elaborates on the procedures followed in carrying out this research, including the sampling techniques, research design and methods of data collection, analysis and presentation.

The third, fourth and fifth chapter covers Literature Review narrowing into the Agro Industrial Subsector, rural development, policy and legal framework consecutively. It provides a discourse on the conceptual, theoretical, and legal and policy frameworks for the subject under study. It gives an overview of the findings of previous studies, which form a background of this research.

The information presented in the fourth chapter covers location and natural resource details of the study area. The fifth chapter describes the economic activities and socio-cultural systems that influence development in Kinangop sub-county.

The sixth chapter captures the results of the study, which include an assessment of the state of the agro-industrial sector in the study area, the contributions of agro-industries to rural development and the level of planning for the agro-industrial sector and rural development

The last chapter contains Findings, Conclusions and Recommendations. It includes the researcher's interpretation of each of the study findings in the context of land use planning. The chapter also contains the recommended planning interventions that can promote agro industrial and rural development in the study area. It further provides the concluding remarks regarding the subject under study.

CHAPTER TWO
METHODOLOGY

2.0 Introduction

Research methodology is a procedure for carrying out a study (Mugenda and Mugenda, 2003). Research in planning utilizes a multiplicity of is methodologies. The methodologies applied in this study included participant observation, surveys, interviews, and secondary data analysis or/ archival study.

2.1 Research in Applied Social Sciences

Research in applied social sciences is carried out within the confines of a set of codes of conduct (Israel and Harry, 2011). The codes were observed in this study. A letter introducing the researcher was also prepared by the University's Department of Urban and Regional Planning, University of Nairobi and it was shown to the respondents or any other entity that would be affected by the research activities.

The purpose of the study and its sole relevance to the subjects of the research were explained to all stakeholders. There was also a declaration of the exclusivity of the research as an academic exercise and assured the respondents of the confidentiality of the information they gave to him. Finally, respondents were not coerced into participating in the study.

2.2 Types of Data

Primary and secondary data were used in this study. The primary data included the data sets that were collected from the field directly while the latter were obtained from existing literature (Mugenda and Mugenda, 2003).

2.2.1 Primary Data

Two types of primary data were collected. The first type is data on the types of agro-industries in Kinangop sub-county. Data was collected was on location of the agro-industrial firms, products, land occupied, operation capacities of the firms, infrastructural networks available for operation of the agro-industrial sub-sector, details of the

agricultural activities supporting the industries, opportunities for growth and challenges faced.

The second type of data collected was on the impact agro-industries on rural development in Kinangop sub-county. This set of information included economic returns from each industry, benefits of the agro-industrial sub-sector to farmers, social benefits of the sub-sector to the community and infrastructural developments resulting from the establishment of the agro-industries

2.2.2 Secondary Data

Three types of secondary were collected. First data in was collected from existing plan and policy guidelines on agro-industrial growth and rural development. The information included the level of implementation of the past plans relating to the subject under study and the successes and failures of those plans and policies in promoting agro-industries and rural development.

The second data collected was sourced from case study literature. The data included the standards on agro-industrial and rural planning, international and national policy directions on agro-industrial planning, laws and regulations governing agro-industries and land use planning and relevant case studies

2.3 Sources of Data

Primary data was collected from six sources and secondary data from eight sources.

2.3.1 Sources of Primary Data

The first source of primary data was households. The second source was agro-processing companies and the third was Nyandarua County Departments of Physical Planning, Agriculture and Industries. The agro-processing companies provided information about the background of industries, products dealt in, land occupied, their operation capacities, infrastructural networks serving them, details of the agricultural activities supporting the industries, opportunities for growth and challenges faced.

Information on economic returns (employment, income and revenue) from the industries and details of the agricultural activities were sourced from agro-processing companies and households/farmers. The data concerning planning matters were sourced from the County Department of Physical Planning. Finally, the assessment of the performance of the agro-industrial sector was obtained from the Nyandarua county departments that are in charge of agriculture and industries

2.3.2 Sources of Secondary Data

The source of secondary was past literature in books and reports. The data collected from these sources was on the background of the study area; theoretical and conceptual records about agro-industries and rural development, policy and legal frameworks, planning standards, and case studies.

2.4 Research Design

The research began by the formulation of the research questions, objectives and literature review. This formed the conceptual stage of the study. It was followed by the narrative phase, which involved the demarcation of study area extent, determination of data needs and sources, identification of the appropriate sampling procedure and methods of data collection, analysis and presentation, preparation of data collection instruments and actual data collection. Thereafter there was the interpretive stage, at which point the researcher interpreted the study findings in reference to each of the research questions.

The research approaches used were qualitative, quantitative and exploratory. The qualitative approach was applied in the description of the perceptions that various respondents had about the state of agro-industrial development, the contribution of the agro-industries to rural development and the level of planning for the agro-industrial sector.

Quantitative approach was used in instances where numerical accounts of the phenomena were required. It was applicable in the assessment of information such as number of employees in the agro-industries, income levels to farmers and industry workers,

production yields by farmers and industries and amounts of revenue accruing to the government.

The exploratory approach was applicable during literature review, in which case the researcher explored the existing information related to the subject under study. This gave a conceptual basis for this research and a bunch of facts with which the findings of the study would be compared in order to draw important conclusions.

2.5 Sampling

The details of sampling include the population, the sampling the sample sizes for each group of respondents and the sampling techniques used.

2.5.1 Population

The population sets that were involved in this study were categorized households engaging in farming, agro-industrial companies and Nyandarua County officials in the relevant departments.

2.5.2 Sampling Techniques

The methods of sampling used included stratified and purposive sampling techniques. Stratified sampling was applied in the selection of farmers/households while purposive sampling was used to identify the agro-processing companies and key informants from the County Government offices. In the stratification of farmers, two strata were sampled. These are crop and livestock farmers. This helped in assorting the information that relate to the two forms of agriculture, both of which contribute to the agro-industrial sector.

2.5.3 Sample Sizes

The sample sizes for each of the target respondents were different considering the difference in the sizes of target population. The required sample size for the households/farmers was estimated to be 138. This was arrived at using the following method:

$$n = \frac{t^2 \times p\,(1-p)}{m^2}$$

Where:

n - Sample size
t - Confidence level, 95% confidence level, whose standard score is 1.96
m- Tolerable Margin of error (5%)
p – Estimated prevalence to the traffic circulation situation (90% of the total population)

$$n = \frac{1.96^2 \times 0.9\ (1\text{-}0.9)}{0.05^2} = 138$$

However, due to financial constraints, 80 households were interviewed.

The other set of respondents were the key informants from the agro-industrial companies and the County Government. The number of respondents was equivalent to the number of industries and county departments involved. The sample respondents were thus 5 and 3 key informants from the industries and the County Government respectively.

2.6 Data Collection Instruments

The data collection instruments used in this study included questionnaires, interview schedules, observation guides, cameras and base maps. Questionnaires and interview schedules contained a set of questions targeted to households and key informants respectively.

The observation guides had a checklist of observable phenomena whose details were required in furnishing the research. A digital camera was also used to capture key features that are of interest in the study. Finally, a base map was prepared and used for purposes of locating various features that inform the study.

2.7 Methods of Data Collection

The study involved administering of questionnaires, interviews, observation, photography, mapping and document examination. Questionnaires were administered to households/farmers while interview schedules were used to gather information from key informants at the agro-industrial companies and the County Government.

Observation and photography were used to capture physical features such as the agro-industrial investments and the conditions of infrastructure serving the industries. Finally,

mapping was employed to capture spatial information while document examination was used in literature review.

2.8 Techniques of Data Analysis

Both quantitative and qualitative methods were adopted in data analysis. Quantitative data from the questionnaire was coded and entered into the computer for calculation of descriptive statistics. The Statistical Package for Social Sciences, version 22 and MS EXCEL were used to run descriptive analysis and produce frequency distribution and percentages.

The qualitative data from interview guides was categorized into themes as per the research objectives and described in narrative form along with quantitative facts. The qualitative data was used to reinforce the quantitative data.

2.9 Presentation of Results

The results of data analysis were presented using tables and pie-charts and narratives.

2.10 Conclusion

The study methodology used in this study comprised of a combination of the most suitable data collection, analysis and presentation techniques. The results are therefore reliable and are thus informative on the state of agro-industries and rural development planning in Kinangop Sub-county.

CHAPTER THREE
AGRO-INDUSTRIAL SUB-SECTOR

3.0 Introduction

The conceptual context for agro-industries and rural development planning is built around the literature that provides explanations on global, regional and local perspectives on agro-industries; rural development theories and concepts; and policy and legislative frameworks that influence operations of the agro-industrial sub-sector and rural development planning.

3.1 Global Trends

The concept of Agro-industries is largely understood as a component of the manufacturing sector where value is added to agricultural raw materials through processing and handling operations, are known to be efficient engines of growth and development. With their forward and backward linkages, agro-industries have high multiplier effects in terms of job creation and value addition (da Silva et al, 2009).

The agro-processing sector covers a broad area of postharvest activities, comprising artisanal, minimally processed and packaged agricultural raw materials, the industrial and technology-intensive processing of intermediate goods and the fabrication of final products derived from agriculture (da Silva et al, 2009). The prospects for continued growth in demand for value-added food and agricultural products constitute an incentive for increased attention to agro industries development within the context of economic growth, food security and poverty-fighting strategies.

According to UNIDO, (2008), the challenges unique to rural areas, as well as current trends such as global and regional economic integration, urbanization, privatization and the reduced role of national governments present both threats and opportunities to agro-industries. These challenges confront governments and support institutions that have to make fundamental changes in policies, strategies, work-force skills and organizational linkages to respond to developments in the world markets and to promote sustainable agro-industrial sector in the rural areas. The establishment of naturally beneficial linkages

between industry and agriculture is one of the central themes of the development process. Agro-based industries, therefore, have great priority in the rural development agenda, since they are be instrumental in fostering strong linkages between the agricultural and industrial sectors, which enhances the employment potential of rural areas (Shejal, 2013).

3.2 Local Perspective

The agro-industry and agro-business sector in Kenya is dualistic in nature, with a small proportion of large-scale firms and a large proportion of micro, small and medium sized farms. The productivity of agro-industry is generally lower than in other industries because of limited economies of scale; where comparisons of annual earnings per employee show that beer, tobacco manufacturing and dairy processing show higher earnings above those of the manufacturing sector (United Nations Industrial Development Organization, 2008).

The major factors hindering development of agro-industry in Kenya are the inadequate and seasonal raw material supplies, low levels of technology, high production and raw material costs, faulty distribution and marketing, and the high costs of credit, as well as problems caused by high corruption levels and generally high taxes for companies, including agro-based companies.

In the country, key elements of the enabling environment for agro-industrial development have been introduced. These include trade policies, including export promotion policies and incentives schemes for foreign direct investment (FDI), concessionary import duties on machinery, raw materials and intermediate inputs. There is also the legal and regulatory framework, including improved customs procedures, food safety and standards, labeling and certification (Kenya, 2018).

Other elements introduced include structural adjustment policies (trade liberalization, price controls, and privatization); a national export strategy to stimulate export growth; and the regional economic integration policy (East African Community and Common Market for Eastern and Southern Africa). However, Kenya has been slow in developing and implementing these policies. On the other hand, the country has attempted to

improve the enabling environment for agro-industries and agro-business by expanding and upgrading the infrastructural facilities, providing and improving water, electric power, sewers and sanitation, telecommunication facilities and roads (Kenya Markets Trust, 2019)

3.3 Types of Agro-industries in Kenya

Kenya's agro industrial sector is a significant employer and it has continued to grown steadily over the years. The main agro-industrial activities in the country include processing of tea, dairy products, meat, fruits and vegetables, grains, edible oil products and timber. (Kenya, 2018)

3.3.1 Tea Processing

Kenyan tea is among the leading earners of foreign exchange to the country's economy. About 60% of the tea is produced by small-scale farmers. Tea processing mainly takes place in Kericho, Bomet, Nandi, Kiambu, Thika, Maragua, Murang'a, Sotik, Kisii, Nyamira, Nyambene, Meru, Nyeri, Kirinyaga, Embu, Kakamega, Nakuru and Trans-nzoia (Kenya, 2015). Some of the registered firms undertaking this activity include James Finlay (Kenya) limited, Unilever tea factory limited, Nyayo tea zones development corporations, UTK limited, Sotik Tea Company limited, JFK limited, WTK limited, EPK limited and Eastern produce Kenya limited (Kenya , 2015).

3.3.2 Dairy Processing

Odero and Waitituh (2017) observe that Kenya's dairy sub sector contributes about 8% of the GDP with an annual milk production of 3.43 billion litres. Theprocessed dairy products include butter, cream, ghee and yoghurt. They are produced in the factories located within the Kenyan cities and towns as well as the rural settlements where dairy livestock area reared e.g. most parts of Nyandarua County.

3.3.3 Meat Processing

The meat products in Kenya include meat balls, minces, sausage, salami, ham, bacon, mutton, beef, pork and offals. These products account for over 80% of all the meat consumed the country with an average per capita consumption of about 15.5 kg. Meat

processing is a major contributor to Kenya's economy as it provides market for between 80% and 90% of the livestock reared by the pastoralists in the country (Kenya Markets Trust, 2019).

3.3.4 Processing of Fruit and Vegetables

Some of the most commonly processed fruits and vegetables in Kenya include mango, orange, apples, bananas, potatoes and tomatoes. The first four are used to produce soft drinks and to add flavour to various food products while the latter is mainly used in the production of tomato source and paste. These products are mainly produced within the major towns in the country, led by Nairobi. The companies involved in this offer a good market for farmers from rural areas in Eastern and central regions where most of the fruits are and vegetables are grown (Wamucii, 2019).

3.3.5 Grain Processing

Grain processing in Kenya mainly involves the production of peanut butter and flour from maize and wheat. This is done by a few large-scale private companies and numerous small-scale enterprises. According to a report prepared in 2019 by Grain Millers Association, the number of registered millers in Kenya is 103 and the approximated installed corn milling capacity is 1,62-1,77 million tons. The largest 19 mills produced about to 85-90 percent of total corn milling capacity.

3.3.6 Processing of Edible Oil and Fat Products

Edible oils and fats in Kenya are processed from coconut, chia seeds, organic vegetables, moringa seeds, sesame seeds and avocado among others. They are mainly produced in Nairobi and Mombasa and over 80% of the products are consumed locally (Kenya, 2019).

3.3.7 Timber Industries

According to a report done in 2013 by the Ministry of Environment, Water and Natural Resources, Kenya' had a wood supply potential of 31.4 million m^3. Timber, poles, fire wood and charcoal supply stood at 7,363,414m^3, 3,028,907m^3, 13,654,022m^3 and 7,358,717m^3 respectively. It is thus notable that timber processing in the country is a key

economic activity. It is however, underexploited since a demand-supply gap of about 10.3 million m^3 of wood products had already been registered in 2013.

3.4 Contribution of Agro-industries to Development

The main indicators of the agro-industrial contributions to development include input to GDP and the manufacturing sector and the level of formal employment created Considering the first indicator, it has been observed that the agro-processing sector in Low Income Countries contribute about 52% of total manufacturing value added (Wilkinson and Rocha, 2009). In agriculture-based, transforming and urbanized countries, the contribution of the sector to total manufacturing is estimated at 66%, 38% and 37%, respectively.

Furthermore, the sector contributes between 20% and 35% of the GDP in various countries such as Indonesia, Thailand, and Chile (Ibid 2009). In terms of employment, food processing and beverages provide the biggest proportion of jobs in the agro-industrial sector. Accounting for more than 50% of the total formal agro-processing sector in low income and lower medium income countries and more than 60% in upper medium income countries, it offered employment to about 22 million people globally in the year 2009 (ibid). In addition, the industry being an employer, it is a source of income to many people, both in direct sales and wages/salaries to workers. Sale of processed food and beverages generated] US$3.2 trillion in revenue in 2002 with food service sector accounting for 40%.

3.5 Theories

This section elaborates on theories that explain certain phenomena that are related agro-industries and rural development

3.5.1 Production Economics Theory

This theory explains the relationship between inputs and outputs in the production process of a firm. It states that the output (Y) of a firm is a function of the amount of capital (K), labour (L) and raw materials (R) used in the production process. This is represented as:

Y = f(K,L,R)

(Source: Beattie et al, 2009)

The theory is useful in assessing the production capacities of the industries and determining the manner in which profits can be optimized by balancing out the inputs and outputs (Ibid, 2009).

3.5.2 Industrial Location Theory

According to this theory, the general factors that attract an industry to certain geographical location include transportation costs, availability of raw materials and advantages of industrial agglomeration or deglomeration. It is notable that one of the main pull factors for agro-industries is the location of agricultural activities, which provide them with raw materials (Hanink, 2016).

3.5.3 Growth Pole Theory

The postulation in this theory is that economic growth occurs neither everywhere nor at the same time. Rather, it takes place in points or development poles from which it spreads out to the whole of the economy. The growth poles are considered as industrial investments, which are able to spur growth or create multiplier effects (Onginjo, 2018).

Based on the provisions of this theory, it can be argued that proper investment in agro-industries in areas like Kinangop sub-county can help to spur economic growth.

3.6 Conclusion

Agro-industries are important drivers of the economy as they add value to the agricultural sector by providing a setting for industrial and technological innovations. They also expand the job market within the agriculture sector. They are therefore worth planning for.

CHAPTER FOUR

RURAL DEVELOPMENT

4.0 Introduction

Rural Development is broader and more specific than agricultural development. It is broader because it entails much more than the development of agricultural production — for it is in fact a distinct approach to the development of the economy as a whole. It is more specific in the sense that it focuses (in its rhetoric and in principle) particularly on poverty and inequality (SOAS University of London, n.d).

Other scholars tie rural development to rural planning, and describe it as an activity/initiative that is concerned with increasing opportunities and life choices in rural places, through physical development, including the built as well as the natural environment, socioeconomic development, and the interaction and mutual influence of physical and socioeconomic development in support of community resilience and sustainability (Frank and Hibbard, 2016).

Sigei (1987) in his work covering a review of the District Focus for Development Strategy, notes that rural development is a strategy for enabling people to acquire endogenous capacity gain for themselves and their children more of what they need. Thus, the objectives of rural development extend beyond any particular sector to encompass improving sustainability of productivity of farming systems, creation of on-farm and off-farm jobs and reliable stream(s) of rural household incomes. This perspective leverages on rural livelihood as bottom-line of development, and therefore, treats empowerment of rural communities as an ingredient of development ((ibid, 1987).

4.1 Trends of Rural Development

Rural development directly addresses the most pressing needs faced by rural communities. Rural areas have traditionally been a field for primary production. Additionally, they have not only supplied industrial areas with food and raw materials but have also been the main source of human resources and original capital accumulation, which provide the basis for the economic and demographic growth of the centre (Frank

and Reiss, 2014). Today, there is a growing acceptance that agriculture alone cannot alleviate rural poverty, and spur development. With this knowledge, rural development is geared towards farm enterprises. The latter is necessary in generating additional and better jobs; provision of infrastructure, including information and communications technologies (ICTs) and market information systems (MIS); credit facilities and, the development of innovative economic alternatives such as processing, sustainable tourism and services; all which will lead to sustained economic diversification of rural areas (Boto et al, 2011).

4.2 Challenges of Rural Development

The problems facing developing countries and countries with economies in transition are many and daunting. They include widespread poverty, low levels of productivity and infrastructure development as well as poorly integrated markets. These problems are further exacerbated by underdeveloped rural industrial organization and linkages, characterized by small and medium-size enterprises inadequately linked to world markets and, in some cases, by a still incomplete process of economic liberalization in the transition from a centrally controlled economy to a market system (Nchuchuwe and Kehinde, 2012). This has been linked by many to the fact that in the past, growth-oriented and urban-based policies have been responsible for, among other considerations, the concentration of industrial enterprises in the already urbanized centres at the expense of rural areas where conditions have stagnated or deteriorated and hence encouraging rural-urban migration

According to Nchuchuwe and Kehinde (2012), three fundamental factors undermine rural development. First, roles of the state and formal public institutions impacting on agriculture sector to influence rural development are not clear. Public institutions, especially [or] parastatals dominate the agricultural sector by controlling supply of farming inputs, access to markets and finance. However, these institutions are inefficient and not responsive to market signals. Second, resources are concentrated in the hands of a few people. In some countries, resources such as land, capital and access to knowledge and technology have been concentrated in the hands of elites (Ibid, 2012). This

distribution has sometimes led to high unemployment and low productivity among rural inhabitants, combined with overcapitalization of agriculture and poor utilization of productive land (Ibid, 2012).

Furthermore, access to water is difficult for millions of poor women and men for reasons that go beyond the physical resource base. In some places, water is abundant, but getting it to people is difficult because of lack of infrastructure and restricted access. In other places, people's demands go beyond what the natural resource base can handle and not everyone is assured access to water. A growing population is a major factor but the main reasons for water problems lie elsewhere—lack of commitment to water and poverty, inadequate and inadequately targeted investment, insufficient human capacity, ineffective institutions, and poor governance (Boto et al, 2011). The other issue is lack of basic infrastructure in rural areas. This hinders economic development efforts that could bring new jobs to these communities. The rural poor often relies on inadequate public transportation and long commuting marred by poor road networks, while access to education and health services are challenges for rural families (Ibid, 2011).

Finally, there is limited access to financial resources. Many people in rural areas of Africa lack access to financial services. Moreover, most commercial banks are not interested in moving into these areas due to their low levels of income, lack of scale economies and poor infrastructure. Consequently, the absence of financial institutions in rural Africa has often enticed governments to step in, particularly with state-dominated banks focused on agriculture. Many of these initiatives have failed, however, because they tend to be too bureaucratic, policy-oriented, concentrated on risk to only one segment of the population and weak in customer focus (Ibid, 2011)

4.5 Planning for Rural Development

Given the past marginalization of rural planning, the vision of rural planning in The overall objective of rural development planning in 21st [twenty-first] century is to leverage community land based resource use practices that empower people in communities to participate in their own development. Rural planning and development

efforts should focus on increasing food production by rural farmers by building their farming capacity to contribute to national economy (Frank and Hibbard, 2016).

The overall goal is to improve standard of living in the rural communities. Also, improving this can be achieved by substantially improving the quality of nutritional intake and value of housing. The other ways are by improving the health conditions of the rural population; creating greater opportunities for employment and human development; and making it possible to have a progressively wider range and variety of goods as well as delivery of health, sanitation and social services in addition to stemming impacts of disasters (Tersoo, 2005).

According to (Kenny, 2003), most modern rural planning efforts seek to align to the rural development policies with rural development needs. This is to be achieved by enhancing competitiveness of rural regions so that they can contribute appropriately to achieving national economic development goals; providing opportunities to rural citizens to share a standard of living generally comparable to national norms and protecting key national elements of the built environment in rural areas.

Amdam (2005) has suggested that spatial planning in rural areas should adapt to development challenges by seeking full support in local rural communities, organizations carrying out development work there and local government authorities.

On their part rural planners focus commonly focus more on planning for rural access roads and services such as schools and local facilities for health service clinics. While these are important in rural development, a shift in the focus should pay more attention in planning for economic development. To date, planning for the rural areas lying beyond the towns has been mainly a top-down process, usually the domain of government departments concerned with rural agriculture and natural resources development including fisheries, forestry, wildlife and water production and supply.

The current trend towards decentralization is being accompanied by efforts to deconcentrate and devolve planning functions and concerns are turning to the

effectiveness of such efforts and the historical legacies that remain. Up to now, plans have usually been made in offices, remote from the areas being planned and the people who would be affected. Commonly, procedures set out in planning manuals have been rigidly applied and their focus has been largely on the use of land and land resources. The planning process has relied, first, on the gathering of information about the natural resources and socio-economic conditions of the area under consideration, followed by analysis and interpretation, all as a professional exercise (Dalal-Clayton et al, 2000).

4.6 Rural Development Planning Efforts in Kenya

In the aftermath of independence in 1963, Kenya adopted the policy of rural decentralization as a fundamental policy for rural development (Kirori 2015). Eight rural programmes were formulated. They focused on health; rural access roads (with emphasis on secondary, minor and agricultural feeder roads); primary education housing and rural water supply. The rural growth centres were designated as foci for trade, social services and communications to ensure an orderly course of development in all rural areas. Other areas of focus were rural works program for creating rural employment and rural development fund program as an important source of funding of district specific projects (Ibid, 2015).

The government therefore embarked on decentralization programs to promote rural development so as to achieve goals set in the African Socialism policy (Auya et al, 2015). The most notable decentralization programmes include, District Development Grant Program (1966), the Special Rural Development Program (SRDP) (1969/70), District Development Planning (1971), the Rural Development Fund (1975), and the District Focus for Rural Development [1983/84] (Sigei, 1987). These programs failed as a result of inadequate funding, lack of government commitment, and failure to actively involve beneficiaries in development projects among other factors Kenya of, 2010).

Another rural planning and development initiative in Kenya was the preparation of the National Development Plans (NDPs). Since independence, Kenya has produced nine NDPs by 2008. However, according to (Kirori, 2015), the planning and implementation

strategy for rural development started during the 2nd NDP (1970-1974) whose theme was "Rural Development."

The 2nd NDP (1970-1974), themed "Rural Development," emphasized the objective of socioeconomic transformation of all the people of Kenya and focused on rural development as the basic strategy for national development (Ibid, 2015). The 3rd NDP (1974-1978) - themed "Employment and Income Distribution," set a process of formalizing planning and implementation procedures in rural areas marked by the production of the first issue District Development Plans (DDPs: 1974-1978) (Ibid, 2015). The 4th NDP (1979-1983) – themed "Alleviation of Poverty," emphasized, among other things, the diversification of rural activities from small scale agriculture to industry and non-rural farm activities as well as increased effort in local-level community participation in program decision making.

The 5th NDP (1984-1988) - themed "Mobilizing Domestic Resources for Equitable Development," formalized the organizational strategy for planning and implementation of rural development by shifting the planning and implementation responsibility from headquarter ministries to the district. This is the District Focus Strategy (DFS) in which the district became the operational centre for rural development in terms of planning, coordination and implementation of district-specific development. As a long-range planning process, the DFS is based on the principle of complementary relationship between ministries responsible for sectoral approach to development and districts where various sectors are joined in common support of rural development activities.

There was then the 6th NDP (1989-1993), which was themed "Participation for Progress." It was aimed at increasing generation of wealth by reducing rate of concentration of economic activities in major towns at the expense of rural areas. The Plan emphasized continued decentralization of the planning process as reflected in the DFS and adoption of an integrated approach to planning.

The 7th NDP (1994-1996) was themed "Resource Mobilization for Sustainable Development" and it followed the integrated approach to planning and emphasized on the need to strengthen links between district and national development.

There was thereafter the 8th NDP (1997-2001). Its theme was "Rapid Industrialization for Sustainable Development." It emphasized on the necessity for effective implementation of the DFS for Rural Development and the Rural-urban Balance Strategy as key strategies for increased promotion of rural development using the District Development Committees (DDC) as the major implementing organ. The Plan emphasized increased location of light agro-based industries in rural areas and small towns so as to provide immediate markets for agricultural produce and raw material for industries. The Plan also emphasized pursuant of spatial pattern of urbanization with close linkages to agricultural resource base as a shift from urban primacy structure pursued in the past.

Lastly, there were the 8th and the 9th NDPs. The 8th emphasized fostering of economic growth by strengthening economic linkages between urban areas and their rural hinterlands. This would entail availing employment opportunities to rural population nearer to where they lived as well as redirecting rural urban migration to small towns by providing employment opportunities and promoting informal sector development to generate off-farm opportunities and reducing gap in income differentials between urban and rural areas (Kirori, 2015).

The theme of the 9th NDP (2002-2008) was "Effective Management for Sustainable Economic Growth and Poverty Reduction." It emphasized on the adoption of participatory and consultative approach to planning and implementation ensuring that resources are used where they are most needed and have greatest impact. It further pointed out the need to strengthen DFS for rural development with adequate legal and institutional framework so as to enhance community participation and self-governance as well as strengthening the management of development process and decision-making at all levels through the establishment of an effective monitoring and evaluation (M and E) network.

4.7 Conclusion

It is noted that agriculture alone cannot spur rural development, thus the need to create sectoral linkages and value chains with the industrial sector. This would promote the development of agro-industries and enhance generating employment and reducing poverty in rural areas through agricultural value chains. There is also need to provide the needed infrastructure and amenities within the rural setting.

CHAPTER FIVE

POLICY AND LEGAL FRAMEWORK

5.0 Introduction

There are a number of policies and laws that provide guidelines on the development of agro-industries and rural development planning in Kenya. The main ones include Kenya Vision 2030, Sustainable Development Goals, National Land Policy, Agricultural Policy, Industrialization Policy, the Constitution of Kenya (2010), County Governments Act (2012) and Physical and Land Use planning Act (2019)

5.1 Kenya Vision 2030

Initiated in 2008 to be the country's long-term development blueprint, the policy is hinged along three pillars. Among the three pillars is the economic pillar, which emphasizes the need for macroeconomic development for economic Stability. One of the strategies under the economic pillar is increasing value in agriculture, where incomes in agriculture, livestock and fisheries will be increased, through among other strategies, introduction of new land use policies in both urban and rural areas (Kenya, 2008).

The land use policies will enhance better utilization of high and medium potential lands by farmers, preparation of new lands for cultivation by strategically developing more irrigable areas in arid and semi-arid lands for both crops and livestock, and improve market access for small holders through better marketing. The policy therefore, is straightforward in outlining strategies that will promote economic growth in the rural areas. Furthermore, rural economic growth is largely underscored as a prerequisite for achieving and maintaining a sustained economic growth of 10% (Kenya, 2008).

5.2 Sustainable Development Goals

The Sustainable Development Goals SDG's is development agenda that was adopted in 2015, to replace the Millennium Development Goals (MDG's). The SDG's go much further than the MDGs, addressing the root causes of poverty and the universal need for development that works for all people (United Nations, 2016). Among the 17 adopted goals, is goal number 8 that seeks to promote inclusive and sustainable economic growth,

employment and decent work for all. Sustainable economic growth will require societies to create the conditions that allow people to have quality jobs that stimulate the economy while not harming the environment (Ibid, 2016).

5.3 National Land Policy

The Sessional Paper No. 3 of 2009 on National Land Policy provides for the maintenance of a system of land administration and management (Kenya, 2009). Accordingly, the policy has guidelines for economically viable, socially equitable and environmentally sustainable allocation and use of land, which also secures efficiency and effective utilization of land and land-based resources (Kenya, 2009). With high to medium potential zones in are dominated by small farm a holding in rural, lack of secure land-tenure has led to low investment in land improvement and productivity. Smallholder areas, therefore, are undergoing unregulated land fragmentation that lead to even smaller land sizes are uneconomical; leading migration to drier land areas. This therefore poses a challenge to Rural economic development is not only undermined but poverty reduction goals may not be achieved (Kenya, 2009).

Notably, the policy underscores land use planning as essential to the efficient and sustainable utilization and management of land and land-based resources. However, it notes that little effort has been made to ensure that such plans are effectively prepared and implemented. It also establishes that this is because of the functional disconnection between the plan preparatory authorities and implementing agencies. It is also as a result of lack of appropriate technical and institutional capacity of local authorities, inadequate human resource establishment in the ministry responsible for physical planning, absence of broad-based consultation and the lack of an effective coordinating framework for preparation and implementation of the planning proposals and regulations.

The policy further identifies key issues that need to be addressed in land use planning. The first one is the preparation of land use plans at national, regional and local levels. The plans are supposed to be formulated on the basis of predetermined goals and the need to integrate development between rural and urban areas. To secure effective rural land

use planning, the policy mandates the government to review the current laws related to planning to provide for rural land use planning; and recognize rural settlement planning as a tool for sustainable resource management, alignment of infrastructure standards and provision of public sites. It also requires the government to makes rural land use planning an integral part of land adjudication process and develop rural land use strategies for optimum productivity.

5.4 Agricultural Policy

Agricultural policy revolves around the main goals of increasing productivity and income growth, especially for smallholders; enhanced food security and equity, emphasis on irrigation to introduce stability in agricultural output, commercialization and intensification of production especially among small-scale farmers.

With respect to economic development of rural areas, the policy outlines key areas of concern, which include increasing agricultural productivity and incomes for smallholder farmers, irrigation to reduce over-reliance on rain-fed agriculture; and diversification into non-traditional agricultural commodities and value addition to reduce vulnerability. It also emphasizes on enhancing food security, encouraging private-sector-led development of the sector and ensuring environmental sustainability.

The policy also recognizes key issues affecting agriculture in rural areas as poor and inadequate rural infrastructure; and markets and transport systems that result in high transactions costs for farmers. It further indicates that poor infrastructure has contributed to the poor market integration in the country.

5.5 Industrialization Policy

The industrialization policy endeavors to address issues affecting the industrial sector by including broad-based strategies that would provide the sector with meaningful opportunities to realize its full potential. The policy provides a broad framework within which all stakeholders, including the public sector, private sector, civil society and development partners will contribute to industrial development.

Notably, amongst the principles outlined by the policy is the principle of regional dispersion. The policy highlights the need for equitable dispersion of industries throughout the country in order to accelerate the pace of development especially in rural areas as well as the marginalized areas.

In addition, the policy highlights the need to promote forward and backward linkages between agriculture and manufacturing and optimal utilization of agricultural resources. This is in recognition of the fact that agro-industries are as important as manufacturing industries in the realization of Kenya's industrialization goals.

5.6 Constitution of Kenya 2010

Article 27 of the Constitution of Kenya the reiterates that every person has the right to equal protection and equal benefit from the law. This equal treatment includes the right to equal opportunities in political, socio-cultural and economic spheres regardless of the living area; whether rural or urban.

Secondly, article breathes life into planning, by stating; "*the State may regulate the use of any land, or any interest in or right over any land, in the interest of defense, public safety, public order, public morality, public health, or land use planning".* This gives mandates for the state, on behalf of, and within the public interest, to develop land use plans for both urban and rural areas.

5.7 Physical and Land Use Planning Act, 2019

This law provides for the preparation of regional physical and land use development plans for the purpose of improving the land and providing for the proper physical development of such land. The plans are also meant to spearhead the suitable provision for transportation, public purposes, utilities and services, commercial, industrial, residential and recreational areas, including parks, open spaces and reserves.

It further provides for the contents of these plans (whose scope tends to cover both urban and rural areas), and provisions for approval. Rural development and planning is therefore governed by provisions made under this act.

5.8 County Governments Act, 2012

In Article 110 of the County Governments Act, the county governments are mandated to carry out spatial planning within their areas of jurisdiction. The plans are expected to provide strategies for rural development.

5.9 Summary of Literature

From the review of literature, a number of points are notable. First, rural development is over-reliant on agriculture. Secondly, rural areas are regarded as production fields for urban areas. Third, there is minimal focus on improving infrastructure and amenities in the rural areas. This has been the tipping point for other rural challenges such as rural-urban migration, with many deeming the rural areas as unattractive.

Furthermore, it is noted that agriculture alone cannot spur rural development, thus the need to create sectoral linkages and value chains with the industrial sector. This would promote the development of agro-industries and enhance generating employment and reducing poverty in rural areas through agricultural value chains. There is also need to provide the needed infrastructure and amenities within the rural setting.

Additionally, Kenya's planning framework for agro-industrial development manifests deficiency in so far as creating comprehensive solutions for the sector is concerned. The existing plans and policies tend to be ambiguous in terms of providing the structure for operation, governance and spatial and infrastructural development for agro-industries and the rural areas. Similarly, are policies don't provide clear direction for support of smallholders and producer organizations in a manner that would make farmers achieve economies of scale in production, marketing and acquisition of new skills. This leaves a loophole for smallholders to be exploited by large farms and exporters, who are able to access global markets.

Lastly, there is poor implementation of rural development policies and plans in Kenya. The trends of rural planning and development have been wide spread, with a myriad of issues on focus. These include poverty alleviation, decentralization, spatial distribution of services, resource mobilization, employment and income distribution and

industrialization. However, the top-down approach to formulation, implementation monitoring and evaluation of these policies has led to failure in achieving the desired development and transformation of rural areas.3.11 Conceptual Framework

From the review of literature, it emerges that rural development planning is a pre-requisite to a thriving agro-industries. It provides for appropriate use of rural land and ensuring that adequate space is allocated to farming activities and agro-industrial enterprises. It also provides a framework for ensuring that land uses that are compatible to agricultural activities and agro-industries are located close to them.

Moreover, planning provides direction for the provision of various infrastructures that are needed to support farming and agro-industrial production. Such include transport, energy, water supply, and waste management infrastructure among others.

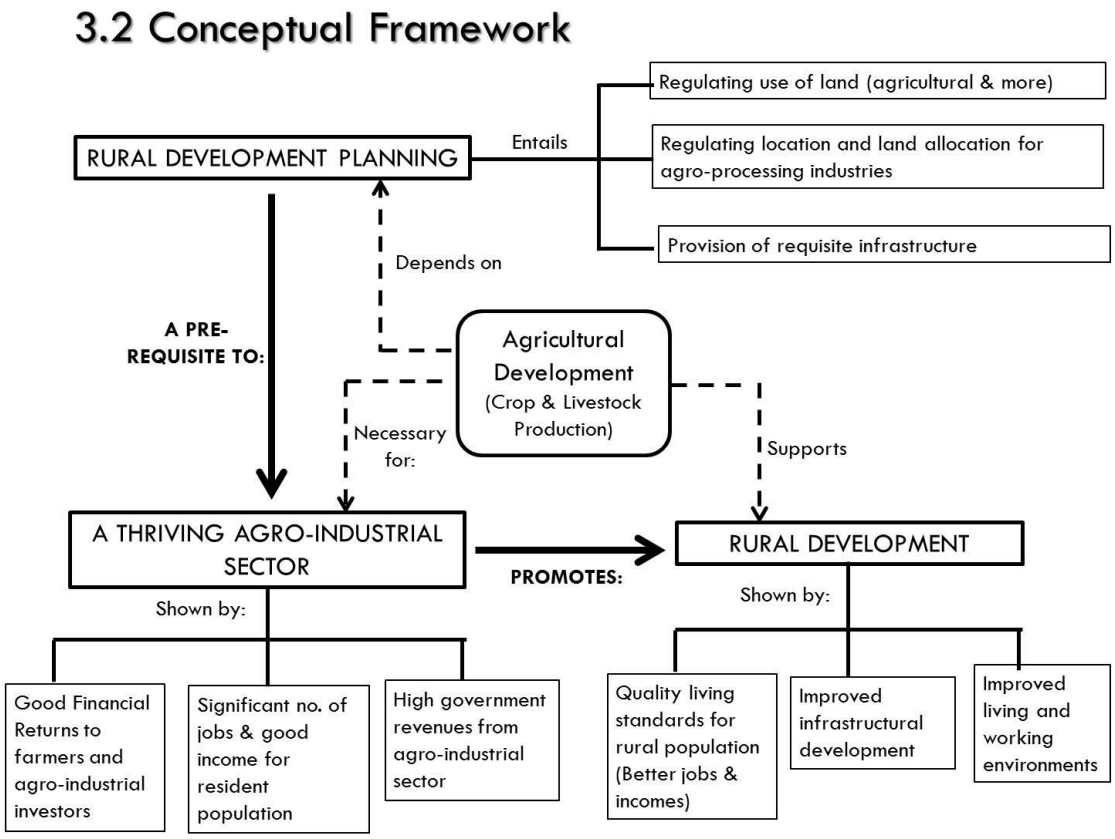
Secondly, it is notable that agro-industries cannot exist without agriculture. This is because the raw materials in the agro-industries constitute crop and livestock products. As such, it is essential that the agricultural sector is boosted in order to promote agro-industrial development. Part of the boosting can be achieved by planning for the sector and provision of the requisite infrastructure such as good transportation networks, adequate water and various farming machineries.

Promoting both agricultural and agro-industrial activities leads to high levels of production, better access to local and international markets by farmers and investors, increased employment opportunities, better incomes and steady agricultural revenue to the government. There are also indirect impacts such as development of better infrastructure. The latter happens when revenues increase to the point that the state is able to fund various infrastructural developments. When all these are achieved in the rural areas, then it can be said that rural development is taking place.

As such, it can be concluded that planning for agro-industries and agriculture is an essential tool for promoting rural development. This is in consideration of the fact that the agro-based activities support the biggest chunk of the rural population.

The relationship between agriculture, agro-industries, planning and rural development is illustrated in figure 1.

Figure 1: Conceptual Framework



Source: Author, 2019

CHAPTER SIX
KINANGOP SUB-COUNTY

6.0 Introduction

The study area, which is Kinangop Sub-County, is largely rural and rich in agro-based activities. As such, thus it offers a befitting setting for this study. In order to understand its capacity to support agro-industrial development, it is important to review its location setting and natural resource potential. This is the essence of this chapter.

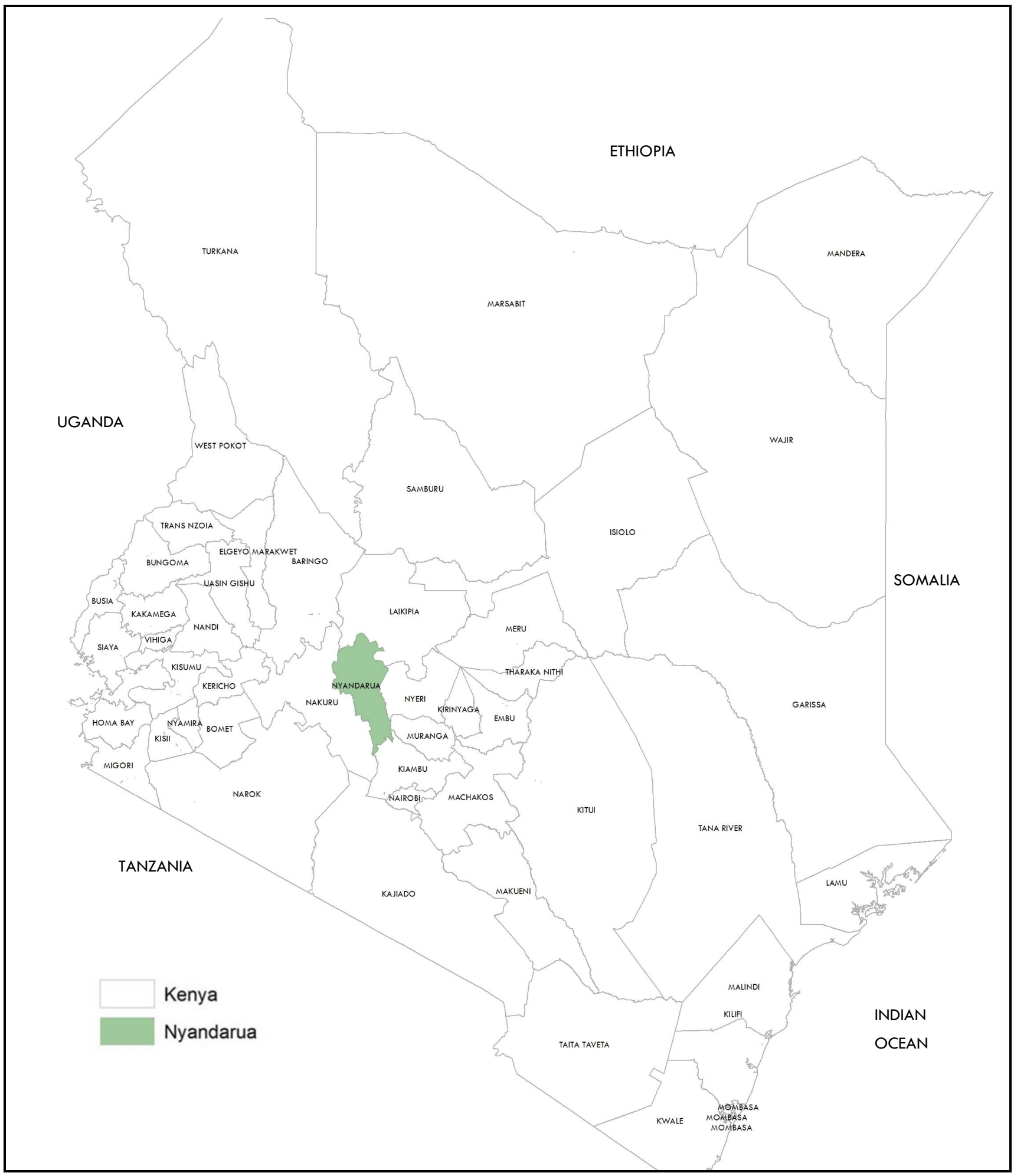
6.1 Location

Kinangop sub-county's location setting is within a region that is considered to form part of Kenya's food basket (Kenya, 2015). The region is characterized by a landscape and climate that favours the production food and cash crops and livestock rearing.

6.1.1 National Context

The study area is located in Kenya and is about 50 km north of country's capital city, Nairobi. It is one of the sub-counties in Nandarua County. Nyandarua is one of the 47 counties in the Republic of Kenya. The map overleaf shows the location Nyandarua County within Kenya.

Figure 2: Location of the Kinangop Sub-County in National Contest

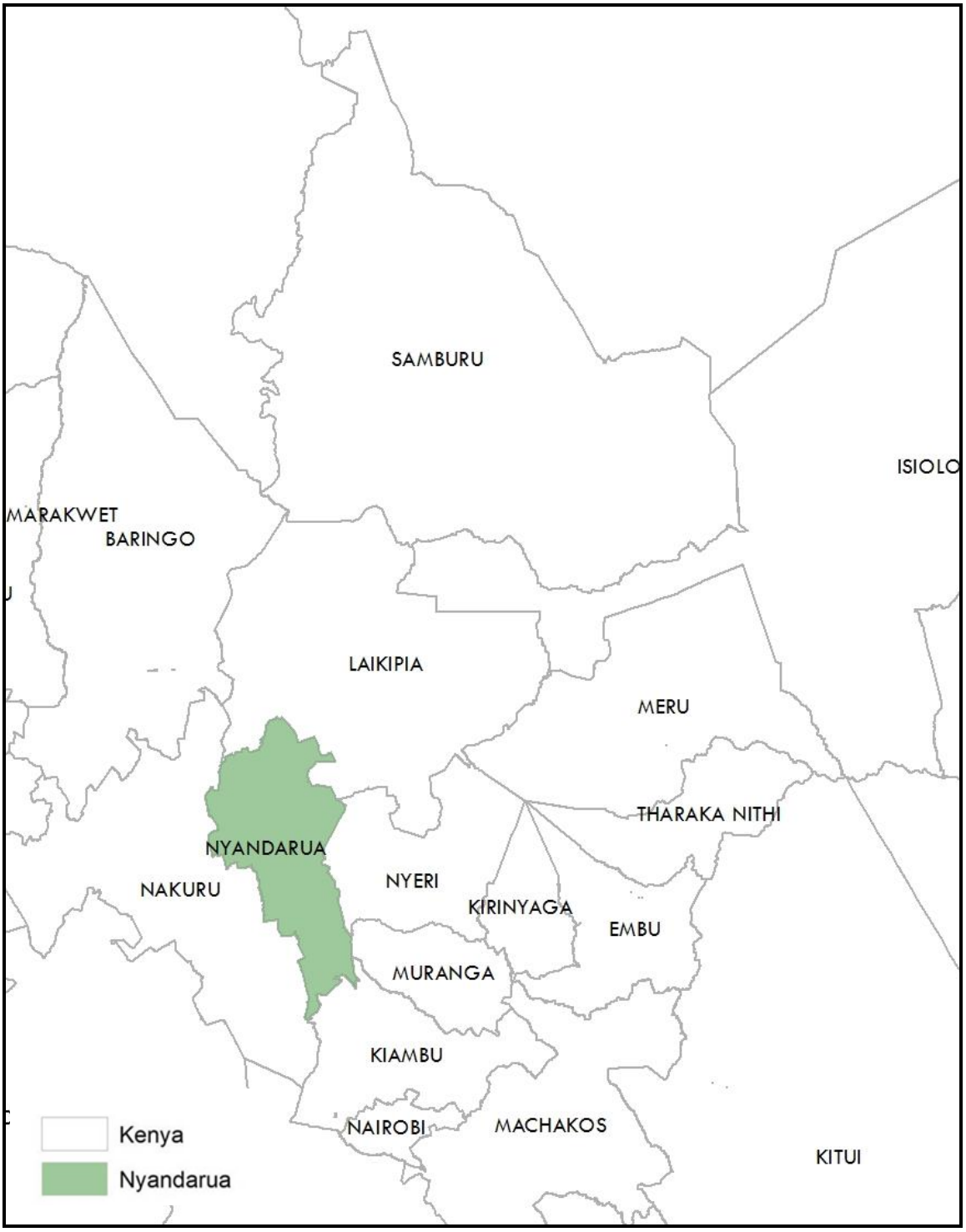


Source: Author, 2019

6.1.2 Inter-County Regional County Context

Kinangop sub-county is located within Nyandarua county, which borders Nakuru, Kiambu, Nyeri and Laikipia counties to the west, south, east and north respectively. The regional location context of the area is shown in the map overleaf

Figure 3: Location of Kinangop Sub-County in Inter-County Regional County Context

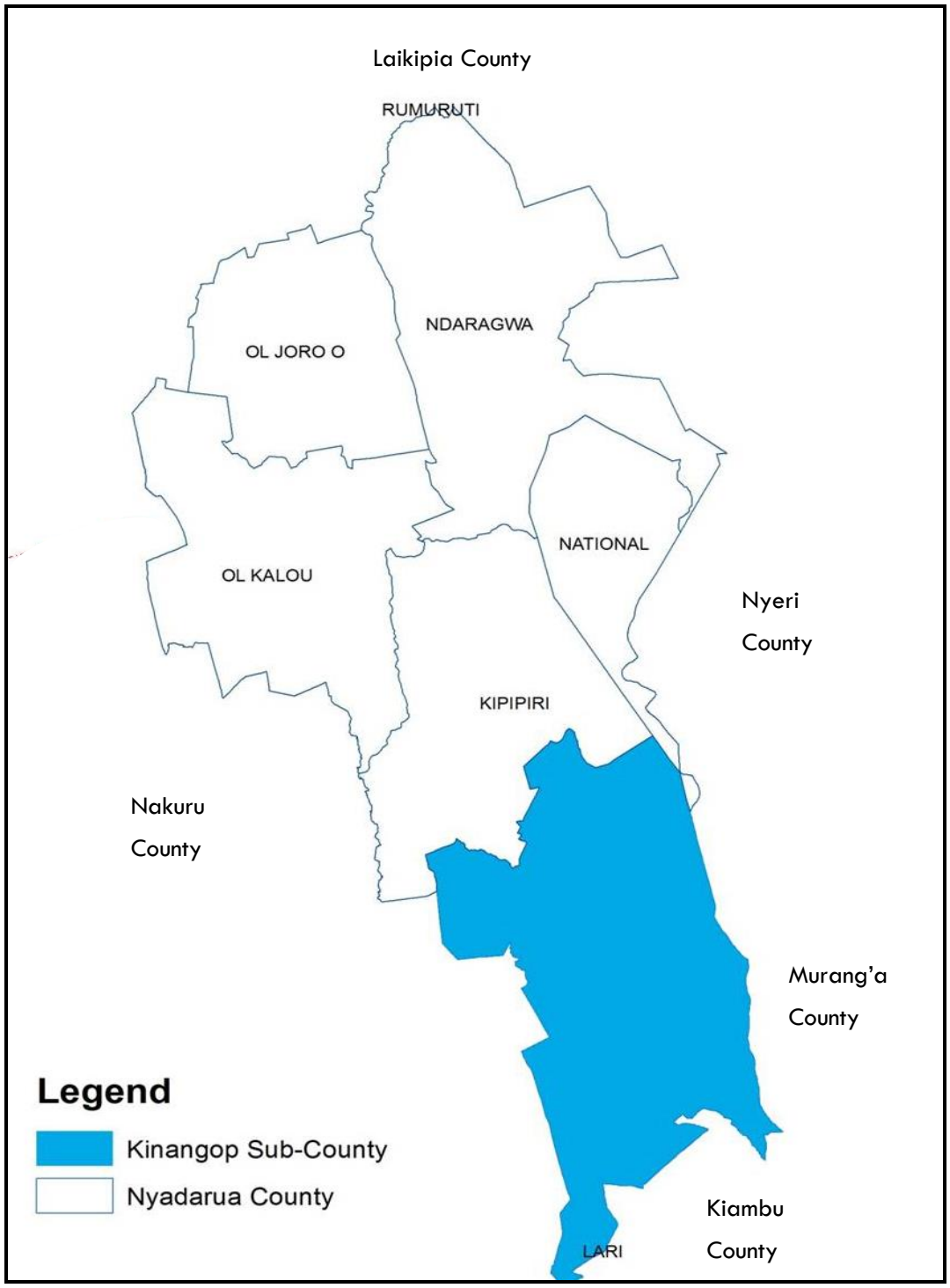


Source: Author, 2019

6.1.3 Nyandarua County Regional Context

Kinangop sub-county is located on the southern section of Nyandarua County. It is the largest of the six sub-counties, the others being Kipipiri, Ol Kalou, National, Ndaragwa and Oljoro. Figure 4 shows the location f Kinangop sub-county within Nyandarua county.

Figure 4: Location of Kinangop Sub-County in Nyandarua County Regional Context

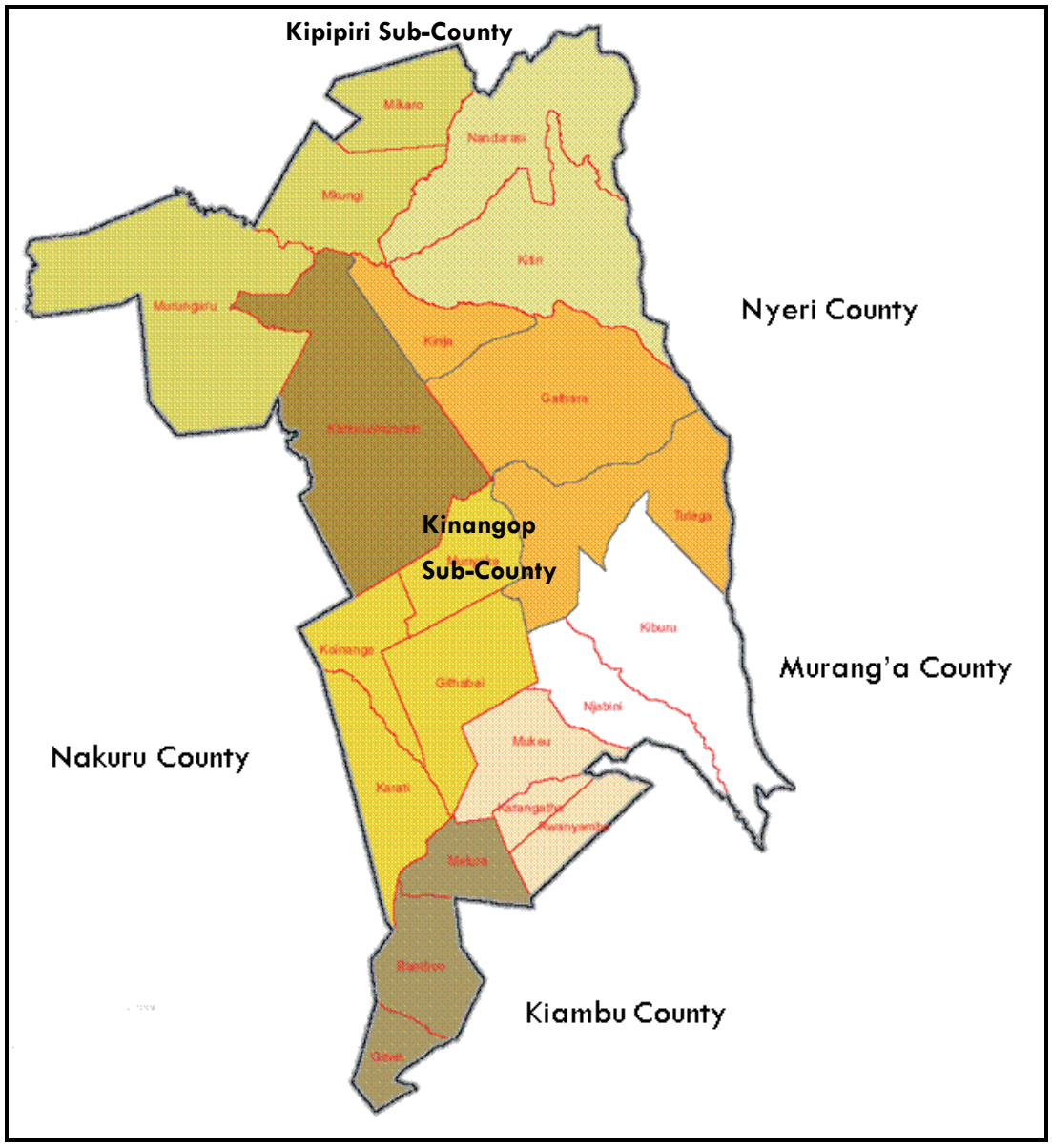


Source: Author, 2019

6.1.4 Administration and Development Units in Kinangop Sub-County

The study area covers 822 sq.km and has 8 wards including Engineer, Gathara, North Kinangop, Murungaru, Njabini/Kiburu, Nyakio, Githabai and Magumu. It also has 21 sub-locations as shown in figure 5.

Figure 5: Administration and Development Units in Kinangop Sub-County



Source: https://www.ngcdf.go.ke/index.php/2015-07-28-04-03-42/constituency/089-kinangop
(Retrieved on 11.05.2019, 5.35 P.M)

6.1.5 Lake Naivasha Basin and Kinangop Mountain Contexts

The study area also lies between the Kinangop Mountain and Lake Naivasha. The mountain and lake are structuring elements to the development patterns in the sub-county considering the fact that they are ecologically sensitive areas.

6.2 Physical Environment

The physical aspects include climate, topography, hydrology and soils. These are determinants of agricultural productivity and agro-industrial potential (Sigei, 1987)

6.2.1 Topography

The landscape of Kinangop Sub-county is steep along the eastern edge, where the Aberdare range traverses. However, the rest of the sub-county is fairly flat and can easily support agriculture and physical developments, including industrial plants (Kenya, 2015)

6.2.2 Soils

The soils are of volcanic origin and mainly include clay loams. They generally have high crop production potential.

6.3 Climate

The climatic conditions discussed include temperature, rainfall, humidity and wind

6.3.1 Temperature

The sub-county has a moderate temperature, ranging between 7.1^{o}C and 21.5^{o}C. This temperature supports the production of cabbages, potatoes, fruits, carrots, wheat kales, and dairy farming (Kenya, 2018).

6.3.2 Wind

Winds in the study area generally blow from East to West. The average speed is about 11 km/h. The wind is strong enough to support the movement of carbon iv oxide which is important for photosynthesis in the crops grown in the area (Kenya, 2018).

6.3.3 Humidity

The average relative humidity in Kinangop Sub-county is 39% (Kenya, 2013). This is neither too low nor too high and it thus promotes the right rate of transpiration, thereby supporting the production of high-quality crops (Kenya, 2013).

6.3.4 Rainfall

The minimum and maximum amounts of rainfall received are 700 mm and 1600 mm respectively. The rainfall is adequate for the production of the above-mentioned crops (Kenya, 2018).

6.4.5 Hydrology

The area has natural water resources such as streams and rivers. These need to be protected from pollution that arise from soil erosion of farmlands (especially in the steeper areas close to Aberdare range) and agro-industrial waste. This can be done by observing riparian reserves and locating the industries within safe distances from these water bodies (Kenya, 2013).

6.5 Conclusion

Kinangop Sub-county has a great natural potential for agricultural and agro industrial development. The climate and natural landscape are favourable for the production of numerous crops and livestock products. It is thus important to harness this potential by providing an enabling environment for the farmers and investors in the area.

CHAPTER SEVEN

KINANGOP SUB-COUNTY: SOCIAL SYSTEMS, CULTURE AND ECONOMY

7.0 Introduction

The details captured in this section of the report include economic activities and socio-cultural systems that influence development in Kinangop Sub-county. The socio-economic characteristics that a place manifests are indicators of the well-being of the people living there (Kenya, 2018). Therefore, the understanding of the social systems, cultural and economic background of Kinangop sub-county is important in assessing its rural development.

7.1 Population

According to the 2019 census report, the population size in Kinangop Sub-county is 111,410 while the density is 379. This is a decrease from the 2009 population of 192,379 and a density of 219 (Kenya 2009). The population is projected to increase to 248,863 by 2022 (Kenya, 2019). This is notably a significantly high population whose source of livelihood needs to be diversified from pure agriculture to industrialization.

7.2 Cultural System

The majority of the residents in the project area are the Kikuyu. Many people in the area are descendants of Christian converts. Some of them also observe traditional rites of passage. Like all other cultures in Kenya, morality is a quality that is highly valued among the residents of Kinangop Sub-county (Kanogo, 1987). *Irio*, (a mixture of the kernels from cooked green corn boiled with beans, potatoes, and chopped greens) is traditionally the common dish for Kinangop people. Ugali, served with stew like meat and vegetables is also currently preferred in the region. In terms of livelihoods, the people maintain a serious culture of business and farming (Ibid, 1987)

7.3 Economy

The main economic activities in Kinangop sub-county are farming, small scale businesses and agro industries. The main agro-industries are dairy companies. They include Brookside, KCC, Tuzo, Kinangop dairies and other small dairy companies. Other

industries are potato and vegetable processing firms, the main one of which is known as Midlands Limited. Further details about these industries are provided in chapter five. (Kenya, 2018)

7.4 Land Use

The bulk of the land in Kinangop sub-county is under agricultural use. The residential uses are within agricultural farms, except those within the trading centres. The commercial uses are also concentrated within the centres. The industries are on the other hand located along main roads. Any land use transformation need to promote functionality of the industries.

7.5 Infrastructural Networks

The study area has access to basic infrastructure, despite the existence of a number of challenges. The main mode of transport is the road and the available network constitutes minor, government access, settlement and rural access roads. They are bitumen, gravel and earth surfaced. The bitumen-surfaced roads are the fewest.

The main source of water in the Kinangop sub-county is rainwater, which ends up in dams and rivers. The sub-county is generally categorized as water scarce area due to degradation of water catchments. It is thus important to improve water supply if industries are to be served better.

In terms of sanitation, Kinangop sub-county has no sewerage system and the main modes of solid waste disposal include use of compost pits, disposal on farm gardens and burning. Evidently, provision of sanitation facilities needs to be improved.

Access to electricity supply is also dissatisfactory. According to the CIDP (2018-2022), more than 80% of the households are not connected to electricity. However, there are electricity supply lines along the main roads in the Sub-county. The agro-industries have tapped electricity from these lines.

7.6 Conclusion

As noted earlier, the natural environment in Kinangop sub-county is favorable for agro-industrial development. The people also have a rich entrepreneurial spirit and culture. However, the supply of infrastructural networks that support the agro-based sector and other economic activities is inadequate. These need to be planned for and provided accordingly in order to promote the effective operations of the agro-industries and enhance the general development of the area.

CHAPTER EIGHT
RESULTS OF DATA ANALYSIS

8.0 Introduction

The results of this study cover information on the importance rural development planning in promoting agro-industries, the existing planning policies and their role in enhancing agro-industries and the planning bottlenecks that constrain agro-industries in Kinangop Sub-County. It further details out the socio-economic characteristics of the households in the study area, some of which are a reflection of the performance agro-industrial sector.

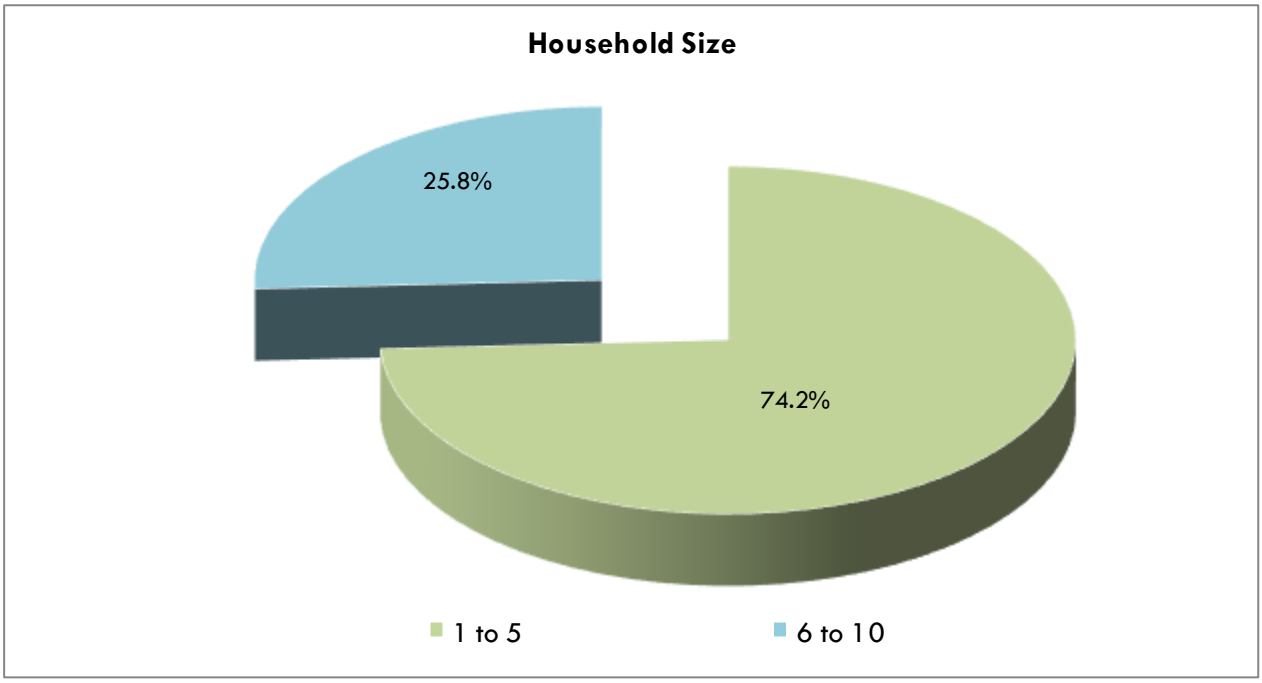
8.1 Socio-Economic Characteristics of the Households

The socio-economic background analysis of Kinangop sub-county shows that the households are made up of an average of five members whose main sources of livelihood are agriculture and agribusiness. The proportion of married people and literacy level are high at 80% and 97% respectively.

8.1.1 Household Size

As figure 5 show, households with 1 to 5 members account for 74.2% of 80 households that were in the study sample, followed by household with 6 to10 people.

Figure 6: Distribution of Sample Household Size



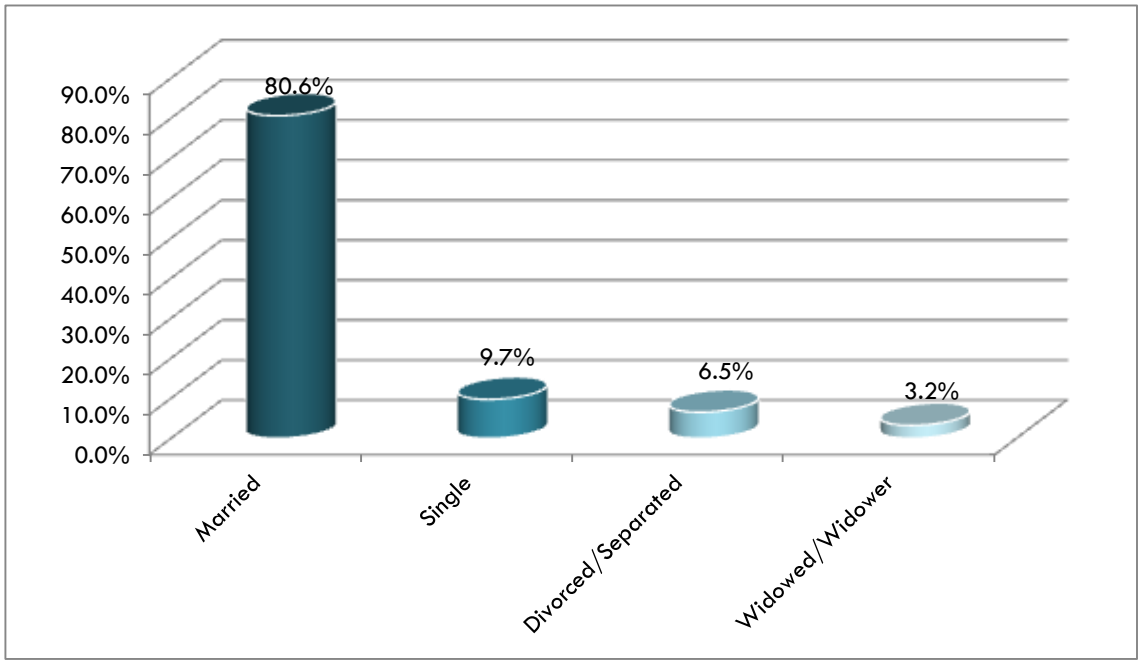
Source: Field Survey, 2019

The study found out that 47.9% and 52.1% of the population are males and females respectively. Further, a majority of the households are composed of people aged between 25 and 60 years old. This group constitutes 61.3% of the population, pointing to the fact that the area has a significantly huge labour force for the agro-industries. The rest of the population, 29.0% and 9.7% are below 24 years old and below (potentially in college and lower levels of schooling) and above 60 years old (potential retirees) respectively. The two groups are likely to be dependants of those aged between 25 and 60. If this is the case, then the dependency ratio in the study area, which comes to 59.9, is fairly low compared to the national level, which stands at 78.3. It is therefore evident that the expansion of the rural economy in Kinangop sub-county is essential so that the population making up the working age group can better support the dependants. Enhancing the agro-industrial sub-sector will potentially contribute to the expansion of the economy.

8.1.2 Marital Status

Figure 6 show that over 80% of the adults in the study area are married

Figure 7: Marital Status



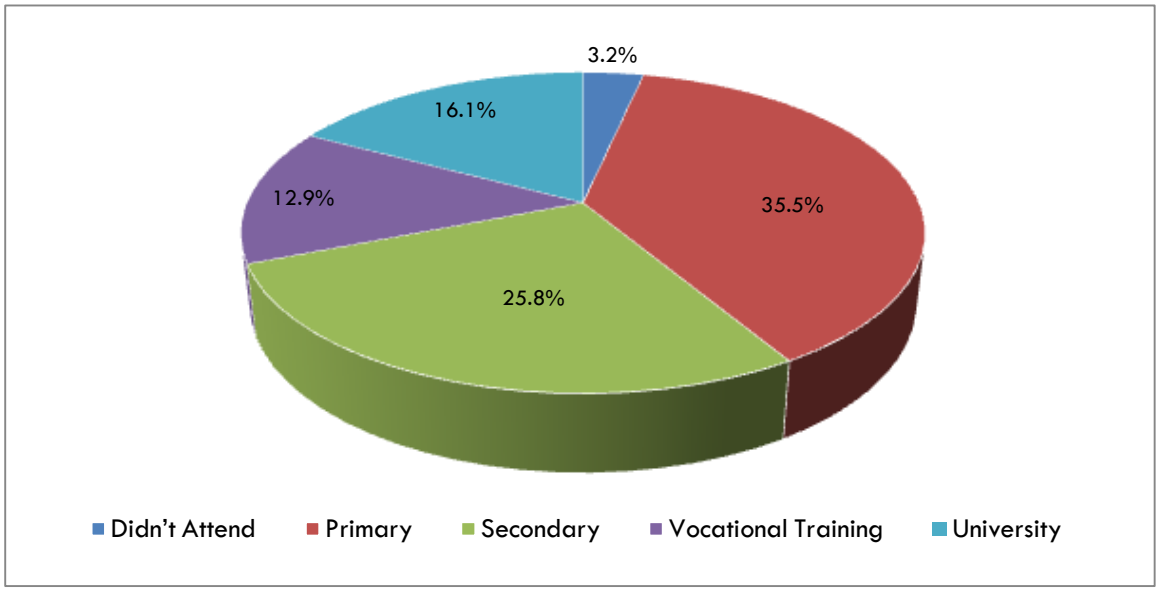
Source: Field Survey, 2019

This shows that institution of marriage is well established and it could be a sign of satisfactory level of societal integration. Solid family set-ups promote the spirit of working together among people (Amartya, 1999). This is needed in the work environments within the agro-industries.

8.1.3 Education Levels

The largest proportion of the population has attained primary level of education 35.5%. They are followed by those that have attained tertiary education level, who constitute 29.0% and include the people with vocational Training and university level of education. Those with secondary level of education make up 25.0% of the population. Only 3.2% have no education at all as shown in figure 7.

Figure 8: Levels of Education Achieved



Source: Field Survey, 2019

The results showed that the 29.0% of the population in Kinangop sub-county have the potential skills required in the agro-industries because they have post-secondary education.

8.2 Farming Systems

All the respondents involved in this study practice agriculture irrespective of whether they are engaged in other activities or not. 19.4% of the respondents also engage in business and 6.5% are in formal employment besides practicing farming. More than 80% of the residents engage in both commercial and subsistence farming, an indication that agriculture is a major source of livelihood in the area. About 16.1% of the people undertake purely commercial agriculture while those that exclusively carry out subsistence farming make up only 3.2% of the population.

The people engage in both crop and livestock production, with a majority 90.3% and 9.7% carrying out Mixed and Crop Farming respectively.

8.3 Crops

Crop farming in Kinangop sub-county covers horticulture, floriculture, vegetable, potato and fruit farming. The most commonly grown crops include potatoes, maize, cabbages, carrots, snow peas, spinach, kales, tomatoes, trees and flowers. On average, 21.8%, 20.2% and 9.7% of the population grow cabbages, potatoes and carrots respectively. The least grown crops are spinach/kales and tomatoes. Each is grown by 3.2% of the population.

8.3.1 Grain Farming

The grains that are grown in the study area include maize and snow peas. They are grown by 8.1% and 4.8% of the respondents respectively. They are grown both for subsistence and commercial purposes.

8.3.2 Vegetable Farming

The most commonly grown vegetables include cabbages, carrots, spinach, kales and tomatoes. Table 1 shows the proportions of the population that grow these vegetables.

Table 1: Vegetables Grown in Kinangop Sub-county

No.	Type of Vegetable	Average proportion (%) of population growing the crops
1.	Cabbages	21.8
2.	Carrots	9.7
3.	Spinach and kales	3.2
4.	Tomatoes	3.2

Source: Field Survey, 2019

8.3.4 Potato Farming

Potato farming is carried out by 20.2% of the population in Kinangop sub-county. The crop is grown both for subsistence and commercial purposes. Those that grow it for commercial purposes sell it to agro-industries such as Kinangop fries.

8.3.6 Floriculture

Floriculture is practiced by 8.1% of the households in Kinangop sub-county. The flowers are mainly exported to countries such as England and Germany.

8.4. Tree Farming

Tree farming is practiced by 8.1% of the households in Kinangop sub-county. The trees are sold to companies that produce wood and timber products such as Timsales. The farmers also use the trees to produce firewood and furniture for local consumption.

It is notable, that the people of Kinangop sub-county have diversified the kinds of crop produce they deal in. This means that the intensity of farming is higher in the area than in certain parts of the country (e.g. the lake region) where people mainly grow maize and beans for family consumption.

8.5 Livestock Farming

Livestock farming in Kinangop sub-county include dairy production, beef, pig farming, poultry and sheep farming. The livestock that are kept by the highest and lowest proportion of the farmers are cows and goats respectively as shown in table 2.

Table 2: Livestock Reared in Kinangop Sub-County

No.	Type of Livestock	Average proportion (%) of population rearing livestock
1.	Cows	28.0
2.	Poultry	17.2
3.	Sheep	10.5
4.	Pigs	3.3
5.	Goats	3.2

Source: Field Survey, 2019

8.5.1 Dairy Production

Dairy farming is the most practised form of livestock farming with 28% of the population in Kinangop sub-county involved. The milk produced is consumed at the household level and also sold to agro-industries such a Njabini Dairy and Lucky Dairy.

8.5.2 Beef Farming

The farmers who rear cows also practise beef farming. They form 28% of the total farmer households. They sell the beef to local butcheries and the meat processing industries such as Farmers Choice Kenya.

8.5.3 Pig farming

Pig farming takes place in farms owned by 3.3% of the households in Kinangop sub-county. The pork products are sold locally in the butcheries and processed within agro-industries that produce sausages like Farmers Choice Kenya.

8.5.4 Poultry Farming

Poultry farming takes place within 17.2% of the farmer households in Kinangop Sub-county. The poultry are kept for purposes of producing white meat and eggs. The poultry products are consumed at the household level and also sold both locally and outside the sub-county.

8.5.5 Sheep and Goat Farming

Sheep and got are reared for meat production. The livestock are kept by 10.5% and 3.2% of the farmers in Kinangop sub-county.

8.6 Agricultural Productivity

Productivity in crop and livestock faming within Kinangop sub-county has been assessed based on the yield and financial returns from the produce. One of the factors that influence the productivity levels is land use planning both at house hold farm and sub-county region levels.

8.7 Yield from Crops

The quantity of crops produced by farmers and the proportion that is sold are shown in table 3. For most of the products, the amount of produce sold is mostly lower than the total of what is produced. This confirms the fact that the products are meant for both consumption and sale.

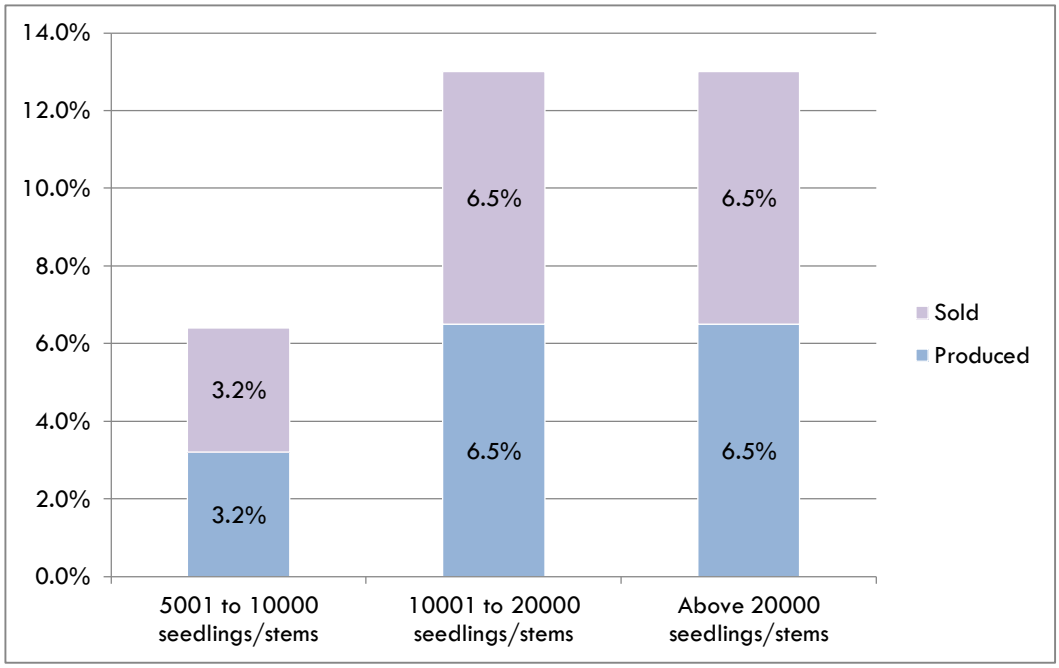
Table 3: Yield Quantity of Crops per Season

Yield Quantity per season	Potatoes		Maize		Cabbages		Carrots		Tomatoes		Spinach/ kales		Snow peas		Papino	
	Produced (%)	Sold (%)	Produced (%)	Sold (%)	Produced (%)	Sold (%)	Produced (%)	Sold (%)	Produced (%)	Sold (%)	Produced (%)	Sold (%)	Produced (%)	Sold (%)	Produced (%)	Sold (%)
10Kg to 500Kg	35.5	19.4	9.7	6.5	12.9	9.7	0.0	0.0	3.2	0.0	3.2	0.0	6.5	6.5	3.2	0.0
501Kg to 1000Kg	16.1	16.1	3.2	0.0	9.7	6.5	0.0	0.0	0.0	0.0	0.0	0.0	3.2	3.2	0.0	0.0
1001Kg to 5000Kg	25.8	19.4	3.2	3.2	38.7	38.7	12.9	12.9	0.0	0.0	0.0	0.0	3.2	3.2	0.0	0.0
5001Kg to 10000 Kg	9.7	9.7	3.2	0.0	12.9	9.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Above 10000 Kg	0.0	0.0	0.0	0.0	3.2	3.2	3.2	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Field Survey, 2019

Other than the above crops, the yield quantity of trees and flowers per season is also shown in figure 8.

Figure 9: Yield Quantity of Trees and Flowers per Season



Source: Field Survey, 2019

The statistics show that all the trees and flowers produced are sold. These products are not edible and cannot thus be used for family consumption.

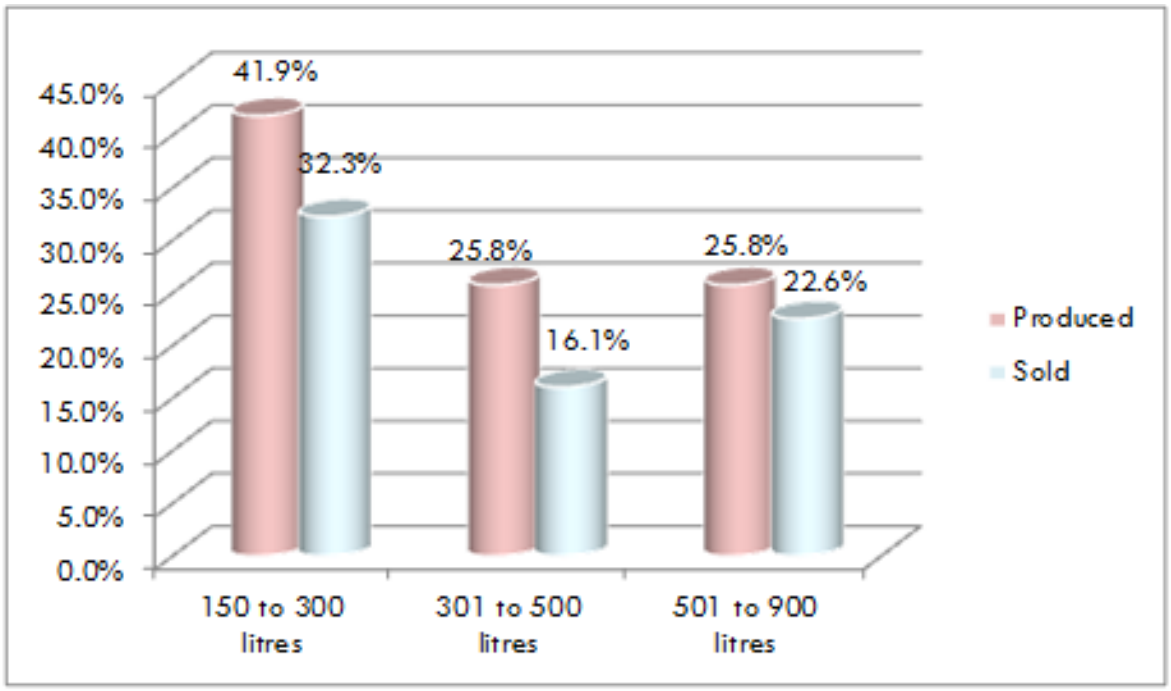
6.8 Yield from Livestock

The livestock products whose yields were quantified in this study include milk, eggs, meat and wool.

8.8.1 Yield of Milk

The amount of milk produced range from 150 to 900 litres. On average, about three-quarters of the milk produced is sold as shown in figure 9.

Figure 10: Quantity of Milk per Season by 80 Registered Farmers



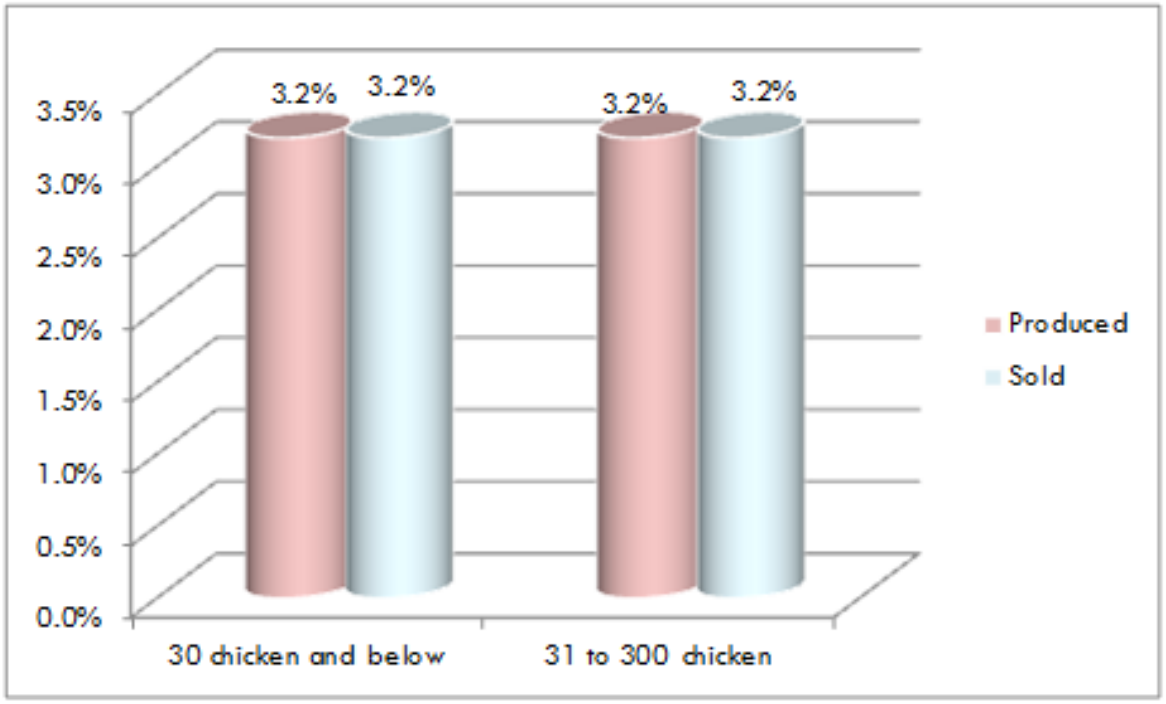
Source: Field Survey, 2019

This shows that milk production is done for both subsistence and commercial purposes.

8.8.2 Yield from Broiler Poultry

Those who rear chicken for commercial purposes maintain a stock of between 30 and 300. This is shown in figure 10.

Figure 11: Yield Quantity of Chicken Hatched every Three Months



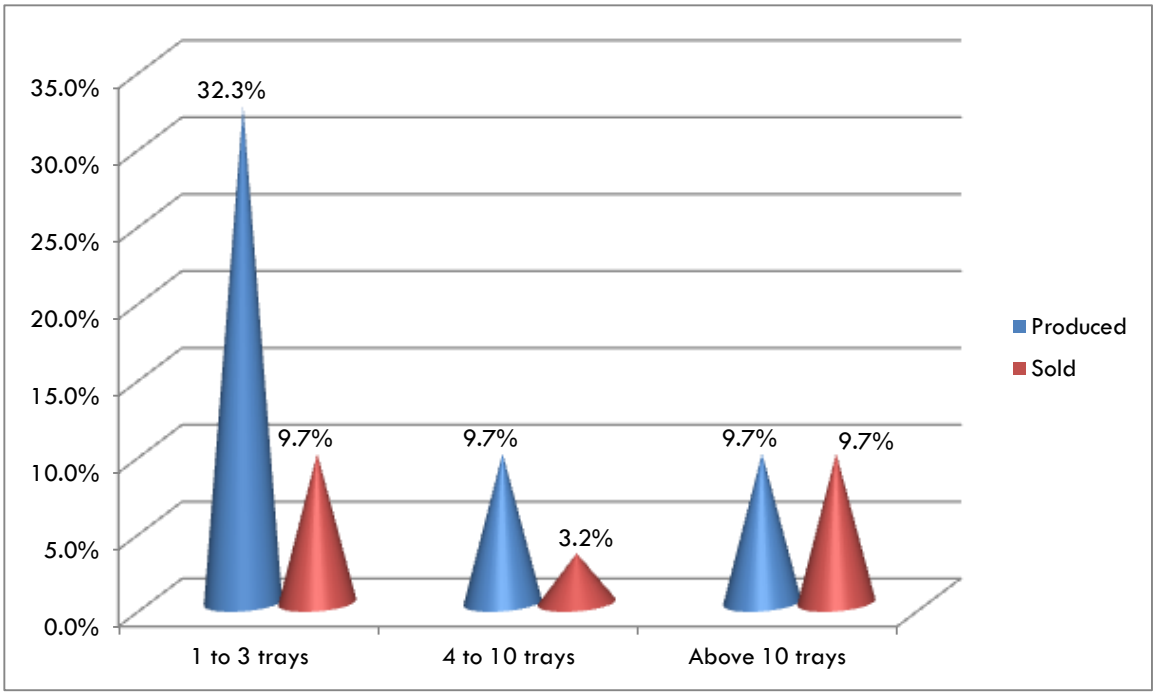
Source: Field Survey, 2019

The fact that the chicken is meant for sale is evident from the above illustration. It shows that the proportion of what is reared is equal to that which is sold.

8.8.3 Eggs

Like milk, egg production is meant both for subsistence and commercial purposes. The highest proportion (32.3%) of poultry farmers produces between 1 and 3 trays of eggs per season. Those that produce 4 to 10 trays and above 10 trays constitute 19.4% of the population. Of the 51.7% of farmers that produce eggs, 22.6 % sell the produce. This is demonstrated in figure 12.

Figure 12: Yield Quantity of Eggs per Season

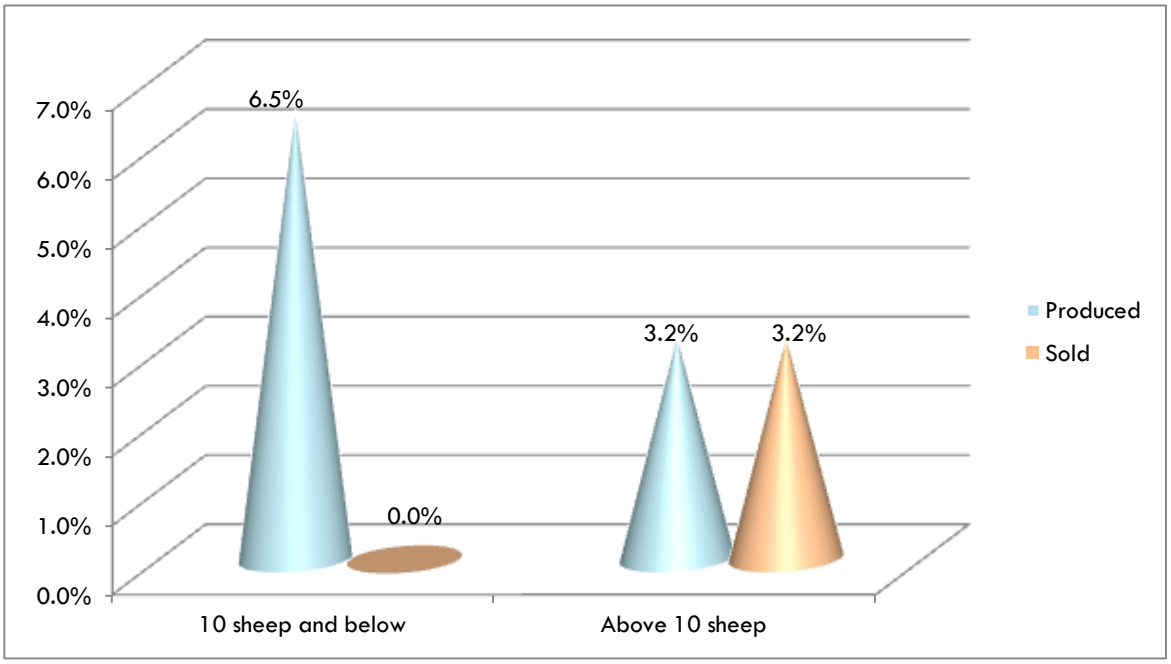


Source: Field Survey, 2019

8.8.4 Mutton

Most of the sheep farmers keep 10 sheep and below. This group does not engage in sale of sheep like the 3.2% of farmers who keep more than 10 sheep. This is shown in figure 12. Nonetheless, there it is observable that both subsistence and commercial sheep farming takes place in the study area.

Figure 13: Yield Quantity of Sheep per Season

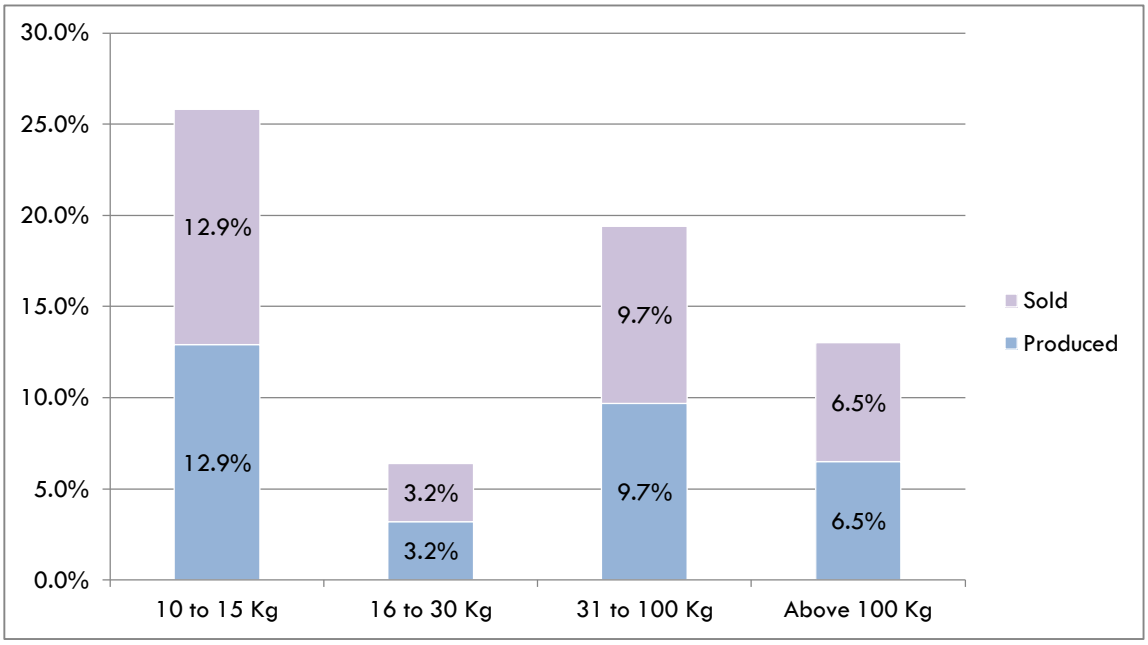


Source: Field Survey, 2019

8.8.5 Wool

The other product that results from sheep farming is wool. The least amount of wool produced is 10 Kg. On the higher hand, there are farmers that produce the product to the tune of 100 Kg and above. The study findings show that all the wool that is produced is usually sold as indicated in figure 13.

Figure 14: Yield Quantity of Wool per Season 40 sheep Farmers

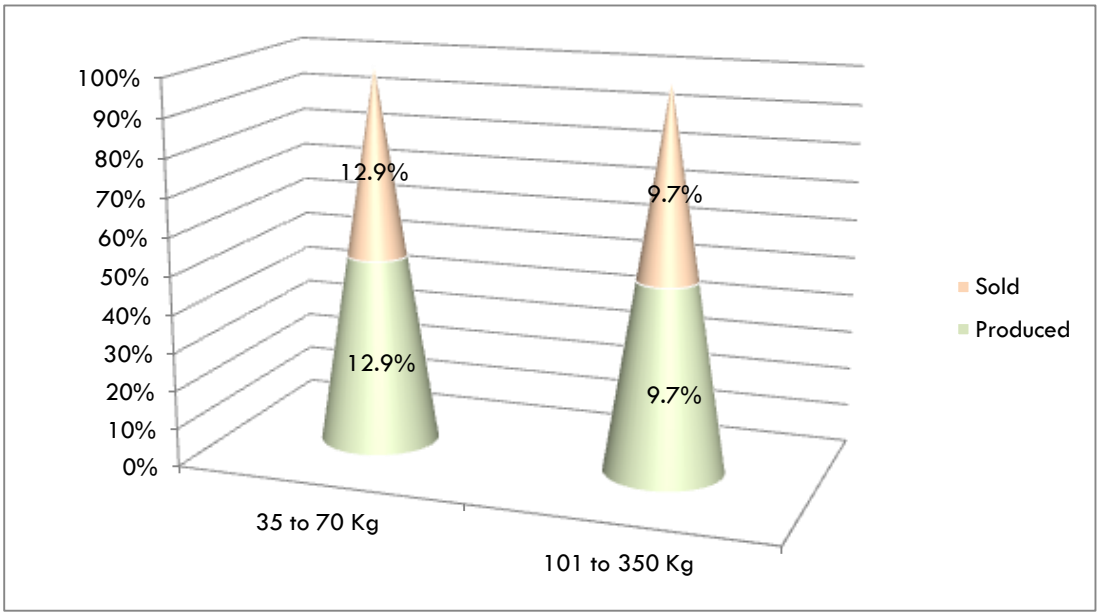


Source: Field Survey, 2019

8.8.6 Beef

Like wool, the meat produced is for commercial purpose. About 12.9% of farmers who engage in meat production produce between 35 Kg and 350 Kg.

Figure 15: Yield Quantity of Meat per Season by 60 Beef Farmers



Source: Field Survey, 2019

8.9 Revenue and Incoming from Farming in Kinangop Sub-County

The financial returns from crop production range from Ksh. 1000 and 5,000,000 per season depending on the type of crop one is growing. This is shown in table 4.

Table 4: Financial Returns from Crops

Amount Generated	Produce (%)								
	Potatoes	Maize	Cabbages	Carrots	Tomatoes	Spinach/ kales	Snow peas	Trees / flowers	Papino
Ksh. 1000 to 5000	6.5	3.2	6.5	3.2	0.0	0.0	0.0	0.0	0.0
Ksh. 5001 to 10000	6.5	0.0	3.2	0.0	0.0	0.0	0.0	0.0	0.0
Ksh. 10001 to 100000	51.6	6.5	51.6	6.5	0.0	0.0	12.9	3.2	0.0
Ksh. 100001 to 1000000	6.5	0.0	6.5	3.2	0.0	0.0	0.0	9.7	0.0
Ksh. 1000001 to 5000000	0.0	0.0	0.0	3.2	0.0	0.0	0.0	3.2	0.0

Source: Field Survey, 2019

The most financially beneficial crops are potatoes and cabbages as they generate between Ksh. 10,001 and 100,000 to more than 50% of the farmers. Tree and flower farming,

though practiced by very few people, bring income in millions of shillings to at least 3.2% of the farmers.

On the other hand, the returns from the sale of livestock products are lower than what accrues from sale of crops. The range is from below Ksh. 1000 to Ksh. 100,000. This is illustrated in table 5.

Table 5: Financial Returns from Livestock Products

Amount Generated	Produce					
	Milk	Chicken	Eggs	Sheep	Wool	Meat
Below Ksh. 1000	0.0	0.0	0.0	0.0	9.7	0.0
Ksh. 1000 to 5000	9.7	0.0	9.7	0.0	19.4	0.0
Ksh. 5001 to 10000	35.5	0.0	3.2	0.0	3.2	3.2
Ksh. 10001 to 100000	38.7	6.5	6.5	6.5	0.0	16.1

Source: Field Survey, 2019

Overall, the study area's economy benefits significantly from agriculture.

8.10 Market of Farm Produce

The market or buyers for the various crops and livestock are shown in tables 6 and 7.

Table 6: Market for Crop Produce

Buyers	Produce					
	Potatoes	Maize	Cabbages	Carrots	Snow peas	Trees / flowers
Brokers	58.1	0.0	58.1	16.1	-	3.2
Midlands	6.5	0.0	0.0	3.2	-	-
Livestock farmers	0.0	3.2	0.0	0.0	-	-
Final consumers/Local market	0.0	3.2	0.0	0.0	-	
Local farmers	0.0	0.0	3.2	0.0	-	6.5
Mara farming	-	-	-	-	3.2	-
Kenya Fresh	-	-	-	-	3.2	-
Export market	-	-	-	-	-	3.2

Source: Field Survey, 2019

Table 7: Market for Livestock Products

Buyers	Produce				
	Milk	Eggs	Wool	Meat	Chicken
Lucky Dairy	12.9	-	-	-	-
Brokers	22.6	-	22.6	12.9	-
Njabini Farmers' Cooperative Society	35.5	-	-	-	-
Brookside	3.2	-	-	-	-
Muki SACCO	6.5	-	-	-	-
Final Consumers	-	22.6	-	-	6.5
Retailers	-	3.2	-	-	-
Butchers	-	-	-	6.5	-

Source: Field Survey, 2019

It is evident that the most involved entities in the marketing system for farm produce are brokers. In addition, there are products whose buyers are unique. Good examples are trees/ flowers and milk whose buyers include the export market and farmers' SACCOs respectively. The products that are sold in the international market generate revenue both to the national and County Government, thus impacting the GDP more significantly.

The locations of market or buyers for the various produce are also summarized in table 8.

Table 8: Locations of Market or Buyers

	Potatoes	Maize	Cabbages	Carrots	Snow peas	Trees/ flowers	Milk	Eggs	Wool	Meat	Chicken
Njabini	25.8	6.5	29.0	19.4	-	3.2	54.8	19.4	9.7	9.7	3.2
Nairobi	6.5	0.0	0.0	0.0	6.5	-	-	-	-	-	-
Githioro	3.2	0.0	3.2	0.0	-	-	3.2	3.2	-	-	-
Soil	9.7	0.0	9.7	0.0	-	-	3.2	-	3.2	3.2	-
Karuangi	3.2	0.0	3.2	0.0	3.2	-	-	-	-	-	-
Kwa Horio	3.2	0.0	0.0	0.0	-	3.2	-	-	3.2	3.2	-
Munyaka	3.2	0.0	6.5	0.0	3.2	-	3.2	-	3.2	3.2	-
Sasumua	6.5	0.0	3.2	0.0	-	-	9.7	3.2	-	-	-
Kanyawa	0.0	0.0	3.2	0.0	-	-	3.2	-	-	-	-
Kanju	0.0	0.0	3.2	0.0	-	3.2	-	-	-	-	-
Holland	-	-	-	-	-	3.2	-	-	-	-	-
Kinangop	-	-	-	-	-	-	3.2	-	-	-	-
Engineer	-	-	-	-	-	-	-	-	-	-	3.2

Source: Field Survey, 2019

Notably, the buyers come from within and outside Nyandarua County, an indication that there are economic interlinkages between the study area and other parts of the country. These linkages need to be strengthened even further.

8.11 Transportation of Agricultural Products

The main means of delivering agricultural produce in the study area include personal, hired and human transport. The latter is the most widely used as evident in figure 16.

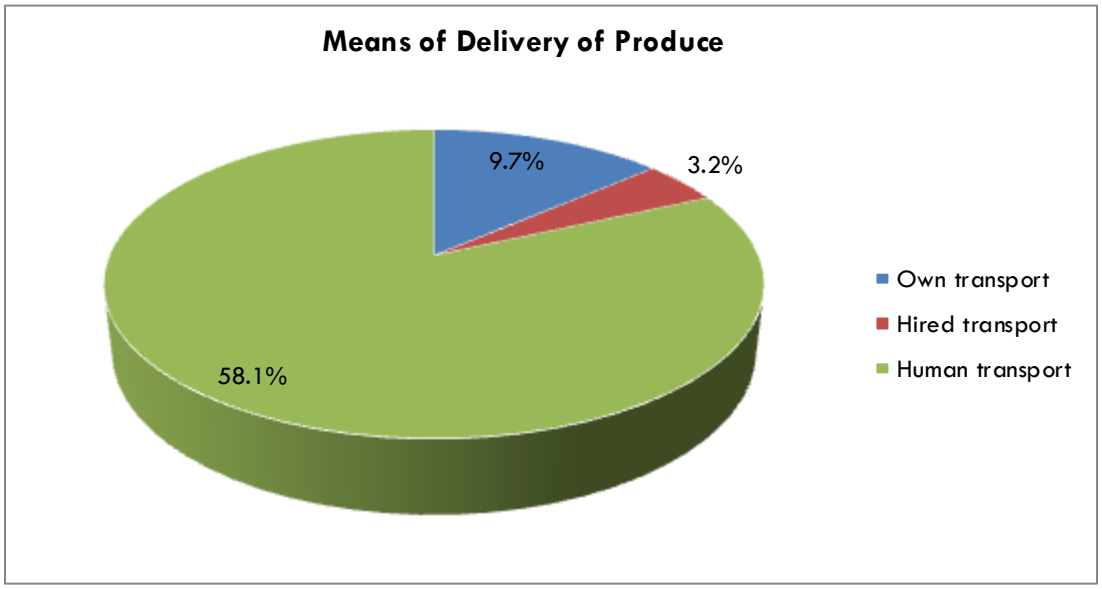


Figure 16: Means of Delivery of Produce

Source: Field Survey, 2019

The most used means of produce delivery is only favorable for short distances. However, in the event that the spheres of farmers' operations are widened beyond the local area, faster means will be necessary and the requisite infrastructure will also need to be provided. Most of the farmers rate the means that they use as either effective or very effective. This is shown in the table 9.

Table 9: Effectiveness of Delivery Means

Effectiveness	Own transport	Hired transport	Human transport
Very effective	3.2	3.2	22.6
Effective	6.5	-	35.5

Source: Field Survey, 2019

It is however important to note that as the farming activities get more advanced, the current means will become obsolete and better methods of transportation will have to be sought.

8.12 Access to Extension Services

Ninety-nine percent of the farmers have access extension services. The types of services they get are listed in table 10.

Table 10: Types of Extension Services Accessed

Extension Service	Proportion (%) of population accessing service as:	
	Service type 1	Service type 2
Veterinary services	83.9	3.2
Training services	3.2	51.6
Forestry services	6.5	3.2
Crop science services	3.2	0.0
Technical assistance	0.0	3.2

Source: Field Survey, 2019

The fact that the services are accessible is a plus to the performance of the agriculture sector.

8.13 Organization of Farmers

The farmers are generally organized into cooperative societies. According to the study findings, 61.3% belong to a cooperative society while the rest 35.5% do not. The cooperative societies include Lucky Dairy, Njabini Farmers' Cooperative Society, Githioro Cooperative Society, Muki SACCO and Tarda Ardhi. The proportion of farmers in each of them is 9.7%, 38.7%, 3.2%, 6.5% and 3.2% respectively. Notably, Njabini Farmers' Cooperative Society has the highest membership. The SACCOs help farmers in various ways as listed in table 11

Table 11: Benefits of Cooperative Societies in Agricultural Productivity

Nature of assistance	Proportion (%) of population accessing assistance as		
	Assistance type 1	Assistance type 2	Assistance type 3
Provision of training services	19.4	3.2	3.2
Offering credit facilities	41.9	19.4	0.0
Veterinary services	0.0	25.8	0.0
Provision of seedlings	0.0	3.2	0.0

Source: Field Survey, 2019

Main Challenges in Problems

8.14 Agriculture Sector Challenges

The challenges faced by farmers have been categorized as marketing, financial, infrastructural, transportation, access and disease related. They are tabulated in table 12.

Table 12: Agro-Industrial Sector Challenges faced by Farmers

Category	Challenges	% of Population Affected
Marketing Challenges	Unreliable brokers and buyers	64.5
	Insufficient market for farm produce	19.4
	Difficulty of producing high quality products required by brokers	3.2
Challenges of access to processing industries	Difficulty of producing the high-quality products required by processing industries	6.5
	Inability to provide produce in bulk as required by processing industries	9.7
	Difficulty of finding direct access to the processing industries	61.3
	Lack of nearby processing industries	3.2
	None	9.7
Financial Challenges	Insufficient capital/ finances	74.2
	Inability to pay for veterinary services	3.2
	Late or failure of payment for produce supplied to brokers or industries	12.9
	Low financial returns from farm produce	3.2
	None	3.2
Agricultural Infrastructure/ Equipment Challenges	Poor roads	3.2
	Insufficient farm inputs (seedlings and fertilizer)	45.2
	Inadequate farm land	3.2
	Power failure affecting egg incubation	3.2
	Lack of farm machinery and equipment	25.8
	Lack of green houses	3.2
	None	6.5
Transport/ Accessibility Challenges	Poor roads	6.5
	None	61.3
Challenges	Inability to pay for extension services	6.5

with extension services	Lack of extension services on crop production	19.4
	Inability of accessing veterinary services at night	3.2
	Lack of training services on poultry farming	3.2
	None	61.3
Challenges of Crop and Livestock Diseases	Proneness to crop and livestock diseases	41.9
	None	58.1

Source: Field Survey, 2019

The above suggestions have been considered and adopted in the recommendation section of this study.

8.15 Agro-Industries in Kinangop Sub-county

The number of agro-industries in Kinangop Sub-county is eight. They process potatoes and dairy products.

8.15.1 Potato Processing Industries

The potato processing industries in Kinangop Sub-county are Kinangop Fries and Jekam Farm

8.15.1.1 Kinangop Fries

This industry deals potato processing, and was started in 2019. It has 19 employees and it occupies 1.0 acre of land. Its customer base is in Nairobi, Nakuru, Naivasha and other towns. Its access to the market is considered to be difficult due to transport challenges.

The establishment access to piped water supply but also uses rainwater. Solid waste is either collected by the County Government while liquid waste channeled to a treatment plant. The road providing access to the site is tarmacked and in good condition.

Kinangop Fries offers direct access to farmers thereby limiting the exploitation they otherwise would experience from brokers. It also buys farmers' products at favourable prices. Its challenges include insufficient power interruptions and licensing difficulties. The county government however assists the industry in following up with *Kenya Power*

to enhance steady supply of electricity. The industry plans to diversify processed potato products and expand its market to places other than the currently served zones.

6.15.1.2 Jekam Farm

Jekam Farm is a company that engages in processing potato seeds. It was established in 1987 and has 9 employees. Today it processes approximately 9900 Kg of seeds per month. However, this reduces to about 3300Kg during the off-peak seasons. The estimated monthly value of yield is Ksh. 2.1 million and its market base is from all over Kenya.

8.15.2 Dairy Processing Industries

The dairy processing industries include Njabini Farmers' Cooperative Society, Muki Farmers' Cooperative Society, Lucky Dairy, Brookside Dairy Limited and Sasumua Dairy.

8.15.2.1 Njabini Farmers' Cooperative Society

Njabini Farmers' Cooperative Society was established in 1965. It is involved in the purchase of raw milk from farmers and selling it to other industries like Brookside Dairy Limited. The establishment occupies 1.05 Acres of land. It has employed 17 workers and it pays Ksh. 263,500 to the government in company tax every year.

Water supply to the dairy factory is from River Chania. The facilities within the compound comprise a milk cooling system, an agrovet and residential developments. The key informant from management of Njabini Farmers' Cooperative Society indicated that company has no problem of access to market for dairy products.

The cooperative offers a number of benefits to farmers and the general members of the community. The benefits offered to farmers include credit facilities and market for their products. The community on the other hand benefit from Corporate Social Responsibility (CSR) initiatives of the cooperative, which mainly involve training on best practices in farming.

The policy cited to support the industry is Cooperative Societies Act and the support so far received from the government was the purchase of the milk cooling system. The main challenges that the industry faces are price fluctuations for milk, poor transport and communication infrastructure. On the other hand, the opportunity that Njabini Farmers' Cooperative Society can venture into is milk pasteurization. The management thus plans to carry out this activity in the future and further establish a dairy feeds factory.

6.15.2.2 Muki Farmers' Cooperative Society

Muki Farmers' Cooperative Society was founded in March 2001. It engages in the purchase of raw milk from farmers and selling it, farming, feeds manufacturing and provision of artificial insemination and agrovet services. Its market base is mainly from within Nyandarua County. The establishment occupies 1.0 Acre of land. It has 136 employees and pays approximately between Ksh. 300,000 and Ksh. 500,000 to the government in form of annual revenue.

The current source of water to the establishment is Muhania-Tulasho Water. The methods of managing solid and liquid waste are burning and use of septic tanks respectively. The road providing access to the site is of murram surface and in average condition. Arising from the operations of Muki Farmers' Cooperative Society was the establishment of Kinangop Dairy Limited and a feed mill. The assessment of cooperative's management is that the industry does not have easy access to its market given that the transport system is poor.

Some of the CSR initiatives carried out by Muki Farmers' Cooperative Society include donations to Kinangop School for the Deaf and providing sponsorship in Geka-Half Marathon competitions and to Kinangop Football Club. The benefits offered to farmers include supply of animal feeds on credit and provision of ready market to dairy farmers.

The challenges that the industry faces include low milk production during certain seasons, poor roads and high cost of production. The future plan for the enterprise is to expand its market base beyond Nyandarua County.

6.15.2.3 Lucky Dairy

Lucky Dairy is an agro-industrial establishment that is involved in purchasing, processing, packaging and selling of milk. It was established in August 2016 and its customers are mainly located in Nairobi. The establishment occupies 1.0 Acre of land and it offers employment to 30 people. The annual revenue that it remits to the government ranges between Ksh. 300,000 and 500,000.

The current source of water to the establishment is Upper Chania. Solid waste is either burnt or collected by the County Government. On the other hand, liquid waste channeled to a treatment plant onsite. The road providing access to the site is in poor condition and thus needs improvement. The management of the industry notes that its access to the market is easy given that the demand for milk is high.

The benefits that accrue from Lucky Dairy include milk donations to Chania Primary, provision of ready market for raw milk and supply of dairy products at subsidized prices to farmers. The main challenges cited by the management of Lucky Dairy include insufficient government support and low milk production during certain seasons. The future plan is to expand the industry's machinery and its production capacity.

6.15.2.4 Brookside Dairy Limited

Brookside Dairy Limited is a large dairy processing firm founded in 1993. It has several branches with its headquarters in Ruiru, Kiambu County. The branch in Kinangop Sub-county is located in Engineer town. Its products include fresh pasteurized milk, butter, cream, ghee, yogurt and long-life milk products (Wachira, 2014).

6.15.2.5 Sasumua Dairy

Sasumua Dairy came to be in 2017, is involved in yoghurt production and has 7 employees. It produces approximately 7500 litres and 6000 litres of yoghurt per month during peak and off-peak seasons respectively. The estimated monthly value of yield is Ksh. 1.125 million and its market base is from Nyandarua, Garissa and Nakuru counties.

8.16 Spatial Distribution of Agro-Industries

Location on the eight agro-industrial firms covered by the study is concentrated in the southern, part of the region. This distribution follow and reflect distribution of all-weather roads, large land units of 10 acres above which is economically useful for profitable farming, better soils and rainfall of 1600 mm annually.

8.17 Sources of Raw Materials for Agro-Processing Companies

The agro-processing companies mainly acquire raw materials through self-production and direct purchase from farmers. They prefer these sources because the materials they provide are readily availability, affordable and are of good quality. Notably, there is a direct interdependence between farmers and agro-industries. This requires strengthening and support through planning and provision of requisite infrastructure.

8.18 Delivery of Agro-industrial Products

The customers for the agro-processing companies come to the site of production to get the products themselves. Onsite delivery of the agro-processed products is considered to be very effective by 50% of the companies.

8.19 Socio-economic Significance of the Agro-industries

The socio-economic significance of the agro-industries has been assessed by evaluating the details of employment, income, revenue and social benefits that accrue from their operations. The companies have a range of between less than ten and 100s of employees. The revenue they give to government is also significant amounting to 100s of thousands per establishment per annum. This means that the sector is a major contributor to the economy of the study area.

8.20 Agro-industrial Sector Challenges

The challenges faced by the agro-processing enterprises include weather fluctuations (which affect production of raw materials), scarcity of land, exploitation by and competition from brokers, occasional shortage of raw materials and pests and diseases. These problems are rated by the management of these enterprises as the most, 2nd, 3rd, 4th

and 5th most severe respectively. They are observably significant and they need to be solved.

The recommendations made by the agro-industrial entrepreneurs include facilitation of networks between farmers and providers of raw materials, improvement of veterinary services, training of farmers on pest and disease control and leasing of bigger chunks of land to agro-processing companies.

8.21 Influential Factor in the Location of Industries

In the absence of regional plan, Kinangop Sub-county investors have been left to make their own decision on local areas and sites where they can locate and construct industrial buildings. Data from 90% of the key informant in the industries show that availability of large land parcels for industrial developments, proximity to raw materials and access to infrastructure, are the most influential factors that investors took into account in deciding current locations and sites of their industrial building in the study area.

8.22 Common Types of Planning in Kinangop Sub-County

The common types of planning in Kinangop Sub-County include land use planning, planning for constituency and ward development projects, County Sectoral Plans and County Integrated Development Plans.

8.22.1 Land Use Planning

Land sub-division planning and change of land use planning are the most common types of planning in the region. The study found out that 50%, representing 40 households in the sample would subject their land to either of the two types of planning. Interestingly 35% of all respondents representing 28 households had one or both types of planning on their land.

8.22.2 Planning for Constituency Development Projects

Planning for constituency development projects takes place within the Constituency Development Fund offices. The common projects covered include social facility development projects and infrastructure network improvements (Kenya 2019).

8.22.3 Planning for Ward Development Projects

Planning for ward development projects takes place within the Ward Administration and County Assembly Representative offices. Some of the ward level projects are usually identified in the five-year County Integrated Development Plans.

8.22.4 County Spatial Plan

The preparation of County Spatial Plans is a legal requirement prescribed in the County Governments Act (2012). Nyandarua County began preparing its first County Spatial Plan in the year 2016 and its preparation is on-going to date. The proposals for the agro-industrial sector have thus not been finalized.

8.22.5 County Integrated Development Plan

Nyandarua County Integrated Development Plan (CIDP) of 2018 is also not adequate to guide agro-industrial development in then study area because it does not provide comprehensive plans for the sub-sector. It only recommends project-based proposals instead. The first project proposal is the provision of storage facilities for green peas and carrots in the same factory. The second is the expansion of facilities for processing and value addition to milk in order to increase provision of various dairy products. The last one is the establishment of one sugar-beet processing plant, a potato processing plant and a giant bamboo factory by 2022.

8.23. Implication for Lack of Comprehensive Plan for Kinangop Sub-county

Comprehensive regional development including development of agro-industries in the region is lacking. The two types of land use planning that are commonly prepared in the study areas are inadequate policy and technical instruments for guiding spatial as well as local site placement of agro-industries. Land subdivision plans meet the need of individual farmers and investors in transacting parceling, conveyancing and ownership. Land use plans on the other hand merely serve to land and property values.

8.24 Conclusion

The study area has a fairly thriving agro-industrial sector, despite the challenges faced. However, there seems to be little land use planning or awareness thereof. As such, the development potential of the sector has not been maximized. If rural development planning is improved, then the available agricultural land can be utilized more optimally and the infrastructure required for boosting the operations of farmers provided adequately. It is therefore essential that planning be heightened in the area and a comprehensive approach to planning of agro-industries be adopted. However, care must be taken not to impose very stringent regulations that would otherwise work against the agro-based production processes.

CHAPTER NINE
FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

9.0 Introduction

Summary of the findings of the study, main conclusions of the study and recommendations are presented and elaborated in this chapter. Areas for further research are also suggested.

9.1 Summary of Study Findings

The study has 5 major findings. Each one of the findings is has a determining role in existing underdeveloped agro-industries in the study area.

9.1.1 Finding on Types of Planning in the Study Area

The study findings indicate that agriculture and agro-industries are significant drivers of the economy in Kinangop sub-county. However, the sectors have not been planned for and developed adequately and as such, they have not thrived to their optimum potential. Planning for rural development is in the region is confined within national policies County Regional plans and Constituency and Ward Development Project Planning. Secondly, land use harmony is enhanced in the rural areas through development control. However, most of the people are not aware of the development control regulations. Lastly, the approach adopted in planning for agro-industries is mainly project based and has failed to deal with all the issues affecting the sector.

9.1.2 Finding on Productivity of Agriculture

It has also been established that more than 80% of the residents engage in both commercial and subsistence farming and the people have diversified the kinds of crop and livestock produce they deal in. The yields and financial returns accruing from the sale of these products are equally significant, ranging from tens of thousands to millions of shillings per production season per farmer.

9.1.3 Findings on Revenue, Household Incomes and Jobs

The financial incomes from crop production range from Ksh. 1000 and 5,000,000 per season depending on the type of crop one is growing. On the other hand, the returns from the sale of livestock products are lower than what accrues from sale of crops. The range is from below Ksh. 1000 to Ksh. 100,000. The most financially beneficial crops are potatoes and cabbages as they generate between Ksh. 10,001 and 100,000 to more than 50% of the farmers. Tree and flower farming, though practiced by very few people, also bring income in millions of shillings to at least 3.2% of the farmers. Finally, the agro-industries covered in this study have provided jobs to 320 people.

9.1.4 Finding on Market and Marketing of Agricultural Products

It is also noted that the market for agricultural products is found within and outside Nyandarua County. In addition, the most commonly used means of produce delivery are only favourable for short distances. Farmers also enjoy availability of a diversity of extension services and they are organized into cooperative societies from which they get financial and training assistance.

9.1.5 Finding on Influential Factors on Spatial Distribution on Agro-industries

The reports from 90% of the key informant in the industries show that the main influential factors on spatial distribution on agro-industries are availability of large land parcels for industrial developments, proximity to raw materials and access to infrastructure.

9.2 Conclusions

The study has made 5 main conclusions. The conclusions have been made on types of planning in the study area; productivity of agriculture; Revenue, household incomes and jobs; market and marketing of agricultural products; and the influential factors on spatial distribution on agro-industries

9.2.1 Conclusion on Types of Planning in the Study Area

Consideration the finding that the approach adopted in planning for agro-industries is mainly has failed to deal with all the issues affecting the agro-industrial, a more

comprehensive approach to rural planning is necessary in order to rectify this shortcoming. Public awareness on planning matters also needs to be heightened in the study area in order to ensure that developments conform to the plans.

9.2.2 Conclusion on Productivity of Agriculture

The findings about agricultural production in the study area point to the fact that the level of agricultural practice is high, with more than 80% of the residents engaging in both commercial and subsistence farming. This is an indication that agriculture is a major source of livelihood in the area. There is therefore the need to deliberately plan for the sector and ensure that all the support facilities are provided in order to enhance productivity and optimize returns to farmers and the government.

The other finding is that the farmers enjoy availability of a diversity of extension services. This is a booster to the performance of the agriculture sector. The farmers are also organized into cooperative societies from which they get financial and training assistance. These are important institutions, which need to be given roles within the implementation frameworks for various plans. Furthermore, the challenges that face the agriculture sector are numerous and diverse. The implication is any plan prepared for the sector need to be strategic enough to provide crosscutting solutions.

9.2.3 Conclusion on Revenue, Household Incomes and Jobs

The main finding is that the agro-industries in the study area provide a source of employment, revenue and household incomes. However, the economic potential of the agro-industrial subsector has not been optimized since the operations of most of the existing companies are still limited in capacity. The sector also faces significant challenges, which need comprehensive solutions. The process of solving the issues and improving the sub-sector thus requires deliberate planning.

9.2.4 Conclusion on Market and Marketing of Agricultural Products

It is also noted that the market for agricultural products is found within and outside Nyandarua County. This implies that there are economic interlinkages between the study area and other parts of the country (and beyond). These linkages need to be strengthened

through planning in order to enhance flow of the goods and improve the resultant returns. In addition, the most commonly used means of produce delivery are only favourable for short distances. This implies that faster means need to be adopted and the requisite infrastructure provided if farmers are to supply a bigger market whose sphere goes beyond the local area.

9.1.5 Conclusion on Influential Factors on Spatial Distribution on Agro-industries

The main influential factors on spatial distribution on agro-industries are availability of large land parcels for industrial developments, proximity to raw materials and access to infrastructure. In order to enhance sustainable distribution of these industries, spatial planning for the sub-sector needs to be comprehensive.

9.3 Recommendations

Considering the findings of this study, it has been noted that the agro-industrial sector and the general well-being of Kinangop Sub-county's economy can be improved. The study therefore makes the following five recommendations.

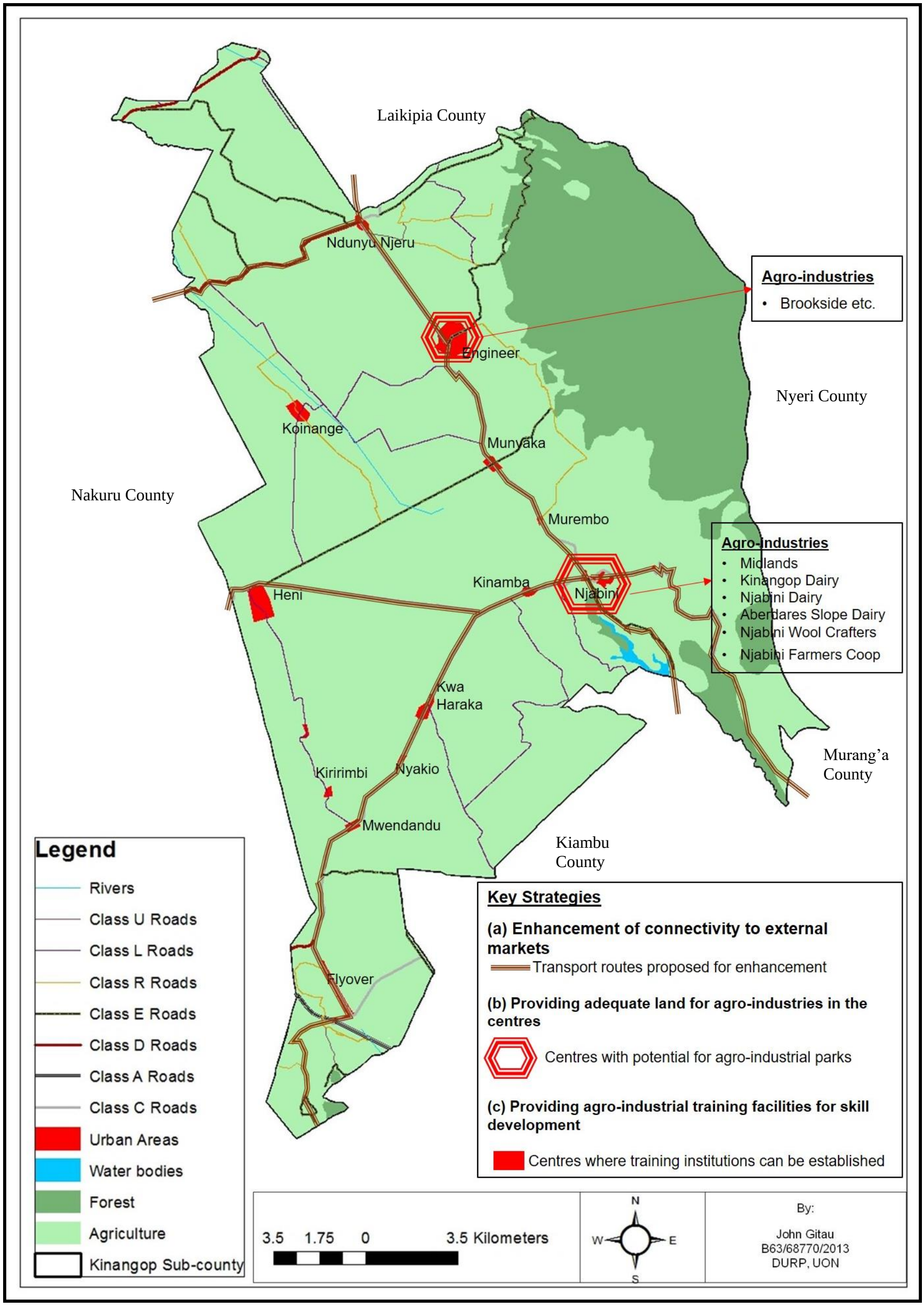
9.3.1 Comprehensive Planning and Development

This study has revealed that the current planning approach to rural and agro-industrial development is more is not comprehensive. As such, there is no proper structure for spatial relationships between Kinangop Sub-county and its surrounding regions, thus affecting the functionality and productivity of the agro-industries therein.

In response to this, it is proposed that comprehensive plans be formulated periodically to guide allocation of adequate land for farming and agro-industrial establishments, sufficient provision of various infrastructure and proper coordination between agricultural farms, agro-industries and other land uses.

In view of the above, a spatial strategy has been proposed and presented in the figure 16 overleaf.

Figure 17: Proposed Spatial Strategy for Agro-Industrial Development in Kinangop Sub-County



Source: Author, 2019

9.3.2 Strengthening the Agriculture Sector

In recognition to the fact that agro-industries cannot exist without farming, it is recommended that the agriculture sector be strengthened to improve its productivity. Particular attention should be given to enlarging the scale of commercial farming operations, enhancing farm mechanization and improving the farmers' technical and financial capacities to carry out farming better.

9.3.3 Training and Capacity Building

Training and capacity building is needed to sharpen the people's technical, financial and professional abilities to engage in more productive farming and agro-industrial initiatives. This role can be taken up by the government and NGOs among other institutions.

9.3.4 Fostering Economic Linkages between Kinangop Sub-county and Potential Markets

Considering the fact that the agro-based enterprises from Kinangop sub-county have their market base from within and outside Nyandarua County, it is evident that there are economic intra and inter-linkages that need to be strengthened. The flow of goods and people between the study area and other places need to be enhanced by providing the right transport and communication networks. Such linkages need to go beyond the national boundaries in order to enable exportation of the agro-industrial products from Kinangop sub-county.

9.3.5 Providing an Enabling Environment for Agro-Industrial Production

In order to provide an enabling environment for optimal agro-industrial production, the government needs to avoid restrictive policies; lobby for international trade for Kinangop sub-county farmers and agro-industrial investors; and provide the infrastructure requisite for the agro-based activities. The other way is to carry out training and capacity building among the people involved in these activities.

9.4 Suggested Areas for Further Research

Two areas are recommended for further research. The first one is a study on the Institutional factors influencing the agro-industrial sector in Kinangop sub-county. The second is a research on non-planning ways of promoting productivity of the agro-industrial sector.

REFERENCES

Amdam, J. (2005). *Spatial planning in rural areas; Experience from the Norwegian Regional Development Research Programme 1998-2004.* Volda University College.

Arap Sigei, F. K. (1987). *The District Focus for Development Strategy in Kenya: A case of Decentralization and the Changing Role of the Generalist Field Administration*. Birmingham: Institute of Local Government Studies Development Administration Group University of Birmingham.

Auya, S., Bunei, E. K., and Kimeu , S. (2015, November). *Rural Development Programs in Kenya: Challenges Facing Constituency Development Fund in North Mugirango/Borabu Constituency*. Asian Journal of Social Sciences and Humanities, 4(4).

Beattie, B. R., Robert T. C., & Myles, W. J. (2009). *Economics of Production*.

Boto, I., Fotabong, E., Proctor, F., Lopes, I., and Kebe, H. (2011). *Major drivers for rural transformation in Africa: Resources on Rural transformation in Africa.* Brussels Rural Development Briefings.

Dalal-Clayton, B., Dent, D., and Dubois, O. (2000). *Rural Planning in the Developing World with a Special Focus on Natural Resources: Lessons Learned and Potential Contributions to Sustainable Livelihoods*. Environmental Planning Issue (No. 20).

European Commission. (2008). *Sector Approaches in Agriculture and Rural Development. Tools and Methods Series*, Reference Document No. 5.

Frank, K. I., and Hibbard, M. (2016). *Rural Planning in the Twenty-First Century: Context-Appropriate Practices in a Connected World*. Journal of Planning Education and Research, 1-10.

Frank, K. I., and Reiss, S. A. (2014). *The Rural Planning Perspective at an Opportune Time*. Journal of Planning Literature, 29(4), 386-402.

Gallent, N., Juntti, M., Kidd, S., and Shaw, D. (2008). *Introduction to Rural Planning*. New York: Routledge Taylor and Francis Group.

Israel, M. and Harry, I. (2011). *Research Ethics for Social Sciences*. SAGE Publishing. London.

Institute of Economic Affairs. (2010). *Devolution in Kenya: Prospects, Challenges and the Future*. IEA Research Paper Series, 24.

Kalwar, S., Sahito, N. , Memon, I.A. and Hwang, J., Muhammad Yousif Mangi, M.Y. and Lashari, Z.A. *National Planning Strategies for Agro-based Industrial Development in Secondary Cities of Sindh Province, Pakistan*. Sustainability, Volume 11, No.7, 2019:1-18.

Kanogo, T.(1987). *Squatters and the Roots of Mau Mau*. J Currey Press

Kenny, M. (2003). *Social and Economic Aspects of Policy and Planning*. National University of Ireland.

Kenya, Republic of (2013). *Analysis of Demand and Supply of Wood Products in Kenya*. Government Printers. Nairobi, Kenya.

Kirori, G. N. (2015). *Rural Development Policies in Kenya: A descriptive Analysis over 1970-2001 Period*. European Journal of Business, Economics and Accountancy, 3(1).

Markets Trust, Kenya. (2019). *A Study on Meat End Market Trends in Kenya*. Nairobi, Kenya.

McNaughton, R. B. and Cozzarin, B.P. *Inter-organizational Linkages and Resource Dependence*

Mugenda, O.A., and Mugenda, O.G. (2003). *Research Methods : Quantitative and Qualitative approaches.* Nairobi: Acts Press.

Mulongo, L. S., Erute, B. E., and Kerre, P. M. (2010). Rural-*Urban Interlink and Sustainability of Urban Centres in Kenya; A case of Malaba Town*. 46th ISOCARP Congress. Nairobi, Kenya.

Nchuchuwe, F. F., and Kehinde D. A. (2012, July). *The Challenges of Agriculture and Rural Development in Africa: The Case of Nigeria*. International Journal of Academic Research in Progressive Education and Development, 1(3).

Nogales, E.G. and Webber, M. (2017). *Territorial tools for agro-industry Development:* Transforming_Africa's_Agriculture_through_Agro-Industrialization_B.pdf.

Ngau, P. M. and Mwangi, I.K. (2003) *Nyandarau District Development Plan, 2001 – 2030: An Integrated Plan for Sustainable Regional Development*. Nairobi: United Nations Centre for Regional Development. Pp 47-52, 58-59, 63-80

Odero-Waitituh, J.A. (2017). *Smallholder dairy production in Kenya; A Review*. Nairobi, Kenya

Perez. R. D. (2017). *Rural Industrial Policy and Strengthening Value Chains*. Santiago: UN Commission for the Latin America and Caribbean.

Poulton, C. and Kanyinga, K**.** *The Politics of Revitalizing Agriculture in Kenya*. Development Policy Review, 2014, 32 (2): 151-172.

Rashid, A. *Small-scale Industries and Rural Development: Implications for Rural Industrialization in Pakistan*. MPRA Paper No. 39178, June 2012.

Rypestøl, J.O. *Regional Industrial Path Development: The Role of New Entrepreneurial Firms*. Journal of Innovation and Entrepreneurship volume 6, Number 3 (2017).

Shejal, S. S. (2013). *Agro-based Industries and Rural Development*. International Journal of Scientific Research.

Silva, C. A., Baker, D., Shepherd, A. W., Jenane, C., and Miranda-da-Cruz, S. (2009). *Agro-Industries for Development*. The Food and Agriculture Organization of the United Nations and The United Nations Industrial Development Organization.

SOAS University of London. (n.d.). Unit One: *What is Rural Development.* London. Retrieved March 29, 2017, from https://www.soas.ac.uk/cedep-demos/000_P530_RD_K3736-Demo/module/pdfs/p530_unit_01.pdf.

Tersoo, P. (2013). *Agribusiness as a Veritable Tool for Rural Development in Nigeria*. Mediterranean Journal of Social Sciences, 4(8).

United Nations (2007, July). *Agro-based industries and growth: prospects for Sub-Saharan Africa*. Sustainable Development Innovations Brief(3).

United Nations Industrial Development Organization. (2008). *Services to Agro-Industries: Productive Capacity for Sustainable Livelihoods*. United Nations Industrial Development Organization.

Wachira, Charles (17 July 2014). *Danone Buys 40 Percent of Kenya's Brookside to Expand African Footprint*. Bloomberg News. Retrieved 14 June 2020.

Wamucii, S. (2019). *An Overview of the Fresh Produce Processing Industry in Kenya*. Nairobi, Kenya.

Webber, M. (2017). *Territorial tools for agro-industry Development.* Rome: Food and Agriculture Organization of the United Nations. Source" http://www.fao.org/3/a-i6862e.pdf. Accessed on 10/5/2020.

Wilkinson, J., and Rocha, R. (2008). *Agro-Industry Trends, Patterns and Development Impacts*. Global AgroIndustries Forum, New Delhi, 8-11 April 2008. New Delhi.

Woldemichael, A., Salami, A., and Mukas, A. *Transforming Africa's Agriculture through Agro-Industrialization.* Africa Economic Brief, Volume 8, Issues 7, 2017.

APPENDICES

Appendix 1: Household Questionnaire

DECLARATION: Any information provided herein is confidential and will be used for academic purpose only.

Column Titles	Response
QN Serial	
Interviewer Name	
Date of Interview	
County	
Ward	
Village	

Section 1: Respondent Socio-Demographic Characteristics

No	Column Titles????	Response	
1.	Name of Respondent (Optional)		
2.	Telephone/Physical Address (Optional)		
3.	Sex	Male	Female
4.	Age (Optional)		
5.	Marital Status	Married	
6.		Single	
7.		Divorced/Separated	
8.		Widowed/Widower	
9.	Household Size		
10.	Education Level	Didn't Attend	
		Pre-Primary	
		Primary	
		Secondary	
		Vocational Training	
		University	

Section 2: Economic Characteristics

No	Question	Response	
1.	Do you practice Agriculture?	Yes	No
2.	Type of Agriculture	Subsistence	
		Commercial	
		Both	
3.	Form of Agriculture	Crop Farming	
		Livestock Rearing	
		Mixed Farming	
4.	Crops Grown		
5.	Livestock Kept		
6.	Economic activities other than		

	agriculture	

Section 3: Agriculture Produce and Value Addition

1. Crop Produce

No	Type of [Crop??] Product	Yield		
		Quantity per season (kg)	Amount Sold (kg)	Value (Ksh)
1				
2				
3				
4				
5.				
6.				

2. Livestock Produce

No	*Type of Livestock Product*	*Yield Quantity per season*	*Amount of Yield Sold (Kgs)*	*Amount Generated (Ksh.)*
1				
2				
3				
4				
5.				
6.				

3. Main Buyer/Market for your agricultural produce

Type of Produce	Market/Buyer	Location

4. Delivery of Product to Markets/Buyers

No	Means of delivery	Response	Effectiveness
1	Own transport		
2	Hired Transport		
3	Public Transport		
5	Others (Specify)		

5. Extension Services

No	Question	Response	
1.	Do you access Extension Services?	Yes	No
2.	If yes, Type of Extension Service		

6. Cooperative/Sacco Membership

No	Question	Response	
1.	Are you a member of any cooperative society?	Yes	No
2.	If yes, Type of Cooperative		
3.	If yes, How does the cooperative society help in your agricultural productivity?		

Section 4: Planning Effects on Agricultural Production

1. Are you aware of any government planning regulations that affect the agriculture sector? ☐ ☐

Yes No

2. If yes, please state the regulations and their effect on agricultural production.

Category	Regulation (s)	Effects on agricultural production
Regulation(s) on subdivision of agricultural land		
Regulation(s) on change of use of agricultural land		
Others (Specify)		

Section 5: Challenges in Agricultural Practices

1. What challenges do you face while practicing agriculture?

Type of Challenge	**Applicability (Tick where applicable**	**Brief Discussion**
Marketing challenges		
Access to processing industries		
Financial Challenges		
Agricultural Infrastructure/Equipment		
Transport/Accessibility		
Extension Services (e.g. training, sensitization, veterinary services)		
Crop and Livestock Diseases		
Other (Specify)		

2. Recommendations

_____
_____

Appendix 2: Interview Guide for Agro-Industries

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1. The year when business was established:_____
2. Activities of the industry and/or products dealt in

_____

Acreage of land occupied by industry: _____

3. Number of employees: _____
4. Amount of annual revenue paid to government: _____
5. Location of target customers

_____

6. (a) Ease of linkage to customers located outside Kinangop Sub-county

   Easy ☐ Not Easy ☐

   (b) Reasons for answer in (a) above

_____

7. Current source of water: _____
8. Current waste management methods

   Solid waste:

   _____

   Liquid waste: _____
9. Current state of roads providing access to the industry

   Type of surface _____

   Condition_____

10. Infrastructural developments made as a result of the establishment of the industry

_____

11. Corporate Social Responsibility (CSR) initiatives to the community

_____

_____

12. Benefits of the industry to farmers

_____

13. Nature of government support received

_____

14. Policies supporting the industry

_____

15. Challenges faced

_____

16. Opportunities that similar industries can exploit in the agro-industrial sector

_____

17. Future plans of expansion of the industry

_____

Appendix 3: Enterprise Questionnaire

DECLARATION: Any information provided herein is confidential and will be used for academic purpose only.

Question	Response
QN Serial	
Interviewer Name	
Date of Interview	
County	
Ward	
Village	
Name of Industry/Enterprise	
Name of Key Informant	

Section 1: Background

1. Brief history of establishment

No	Historical Fact	Year
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		

2. Nature of industry

……

…….

3. Number of employees

……

……

Section 2: Agro-processed Products

1. Indicate the main processed products in the enterprise

……
……

2. Indicate the production capacity of your enterprise

Type of Product	Processed products during harvesting season (kg., litres, tonnes)			Processed products during off season (kg., litres, tons)			Annual Average total capacity
	Daily	Weekly	Monthly	Daily	Weekly	Monthly	
1.							
2.							
3.							
4.							
5.							
6.							

3. Please indicate the value of yield

No	Product Type	Yield Value
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		

4. Is the enterprise operating below its capacity? Yes No

5. If no, give reasons (tick where applicable)

No	Reasons	Response
1	Inadequate capital	
2	Shortage of labour	
3	Lack of/Inadequate raw materials	
4	Shortage of power	
5	High power costs	
6	Lack of market	
7	Poor Roads/Accessibility	
8	High transport costs	
9	Others (Specify)	

6. What is the source of raw materials?

No	Source	Response
1	Being brought by suppliers	
2	Buying directly from farmers	
3	Importing	
4	Others (Specify)	

7. Reason for preference of source of raw materials

No	Reason	Response
1	Easily available at right time	
2	Easily available at right place	
3	Good Quality	
4	Affordable	
5	Others (Specify)	

8. Who are your major customers for agro-processed products?

No	Customers	Response	General Location of Customer
1	Local Populace/Buyers		
2	Whole sellers		
3	Company		
5	Others (Specify)		

9. How do you deliver your products?

No	Means of delivery	Response	Effectiveness (Tick where applicable)
1	Own transport		Very Effective/Efficient
			Moderate
			Not Effective
2	Hired Transport		Very Effective/Efficient
			Moderate
			Not Effective
3	Public Transport		Very Effective/Efficient
			Moderate
			Not Effective
5	Others (Specify)		Very Effective/Efficient
			Moderate
			Not Effective

Section 3: Planning Effects on Agro-industrial production WHY UNDERLINE

1. Are you aware of any government planning regulations that affect the agro-industrial sector?

Yes ☐ No ☐

2. If yes, please state the regulations and their effect on agro-industrial production.

Category	Regulation (s)	Effects on Agro-Industrial Production
Regulation(s) on subdivision of agricultural land		
Regulation(s) on change of use of agricultural land		
Regulation(s) on location of agro-processing industries		
Others (Specify)		

Section 4: Challenges in the Agro-processing industry

1. What challenges do you face in the industry?

No	Crops Challenges	Livestock Challenges
1		
2		
3		
4		
5		
6		
7		
8		
9		

2. Rank of the challenges identified above in order of most pertinent

No	Challenge	Rank
1		
2		
3		
4		
5		
6		
7		
8		

3. Recommendations on how the challenges can be overcome

Challenge	Recommendations