

**INFLUENCE OF KINYOO SUNFLOWER OIL PROJECT
BENEFITS ON COMMUNITY LIVELIHOOD. A CASE OF
NKUMBO COMMUNITY, MERU COUNTY, KENYA.**

**BY
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DECLARATION

This project is my original work and has not been presented to any other University for any other award.

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L50/70827/2015

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DATE

The project has been submitted for examination with my approval as the University supervisor.

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DEDICATION

This valuable work is dedicated to my beloved husband Philip Odera, my son Alvin Hera, my late father Nkonge Magiri and my mother Mary Magiri and other family members who laid down the foundation of my education which has made me what I am today. I also dedicate this work to the Kenyan government who will use it to improve on sunflower oil production in Kenya.

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LIST OF ABBREVIATIONS AND ACRONYMS

NASS	-	National Agriculture Statistics Service
GDP	-	Gross Domestic Product
ASA	-	American Soya bean Association
KARI	-	Kenya Agricultural Research Institute
MOA	-	Ministry of Agriculture
CEJA	-	European Council of Young Farmers
SWF	-	Shanglin Women's Federation
NZCFS	-	New Zealand China Friendship Society
PRSP	-	Poverty Reduction Strategy Paper
UN	-	United Nations
IFPRI	-	International Food Policy Research Institute
GDP	-	Global Domestic Product
LDW	-	Local Development Window
MDG	-	Millennium Development Goals
CRSP	-	Coastal Rural Support Programme
LVEMP	-	Lake Victoria Environmental Management Project.

ABSTRACT

Agriculture is an important source of income and the world's largest business. One third of the economically active population obtains its livelihood from agriculture. Smallholder sunflower crop production and sunflower oil processing is an important sector that produces and nourishes rural as well as urban people with quality oil, which is free from cholesterol. The aim of this study therefore was to establish the influence of Kinyoo Sunflower oil project benefits on community livelihood. A case of Nkumbo community, Meru County Kenya. The independent variable was Sunflower oil project while the dependent variable was community livelihood. The objectives of the study were to establish how infrastructural development, financial benefits, social cultural benefits and environmental benefits realized from Kinyoo Sunflower Oil Project influences community livelihood. Literature was reviewed to establish facts as they are in other countries. The researcher adopted descriptive research design because it allows one to use various forms of data as well as incorporating human experience. The target population was people of Nkumbo Community comprising of 2400 people. The researcher had a sample of 240 respondents from the population who and 5 factory workers. To get the sample of 240 persons, the researcher used the 30% rule as taught by Mugenda and Mugenda (2003). From the factory five workers were interviewed. Questionnaires and interview schedules were used to collect data from the respondents. Interview schedules were used for qualitative while open headed and closed ended questions were used to collect quantitative data. A pilot test was done on three people from the project and five people from the community to determine the accuracy and consistency of the instrument before they were used for collection of actual data. To establish the validity of the instruments, the researcher sought the advice of her supervisor from the Department of Extra Mural Studies, University of Nairobi. To test the internal consistency of the questions listed on the instrument used, test-retest technique was used. This involved administering the same measure of the variable on two separate occasions, two weeks apart. Questionnaires were administered to the respondents on pre-arranged date with the help of research assistants and interviews were conducted by the researcher. Quantitative and qualitative data was generated using questionnaires and interview schedules. Data collected was edited and coded. Descriptive statistics was used that is mean and standard deviation. It was then presented using tables. The names of all the informants were coded to conceal their identity and to maintain confidentiality. It was established that Kinyoo Sunflower Oil project has benefited the community through infrastructural development at 100% availability of roads, hospitals, schools, water and electricity. The community has embraced various livelihood activities but sunflower business is highly practiced. Consequently, the study makes recommendations that the County Government should support the factory through more funding, researcher and marketing of the products from the factory to enable them sell internationally.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Agriculture is an important source of income and the world's largest business. One third of the economically active population obtains its livelihood from agriculture. The benefits of agriculture have been immense (Cohen, 1995). Agriculture accounts for more than 30% of GDP and 60% employment in Sub-Saharan Africa, excluding South Africa (May, 1999). According to NASS (2011) most of the crops grown internationally include cotton, wheat, maize, soyabeans, rice, sugarcane and corn among others. Nelson and Panggabean (1991) noted that to add to the existing cash crops, sunflower farming should be increased in various parts of the world mainly due to quality of its oil, which is useful for the human consumption and for production of biodiesel hence promoting community livelihood. Osorio *et al.* (1995) emphasized that due to its large capacity of adaptation to different climatic conditions, sunflower is an excellent option for crop rotation for several production regions. Sunflower is an important edible vegetable oil source as it is one of the most widely cultivated oil crops in the world due to its ability to grow in large semi-arid regions without irrigation (Baydar, 2005).

Among the crops that are cultivated is sunflower. Sunflower is thought to have originated in Mexico and Peru and it is one of the first plants to ever be cultivated in the United States. It has been used for more than 5,000 years by the Native Americans, who not only used the seeds as food and an oil source, but also used the flowers, roots and

stems for a variety of purposes including a dye pigment (Baydar, 2005). The Spanish explorers introduced sunflower to Europe, and after being first grown in Spain, it was subsequently introduced to other neighbouring countries (Cohen, 1995). Currently, sunflower oil is one of the most popular oils in the world. The leading commercial producers of sunflower seeds include Russia, Peru, Argentina, Spain, France and China (The George Mateljan Foundation, 2001-2010). Sunflower seeds have very high oil content; they are one of the main sources of polyunsaturated oil. Sunflower seeds are an excellent source of vitamin E, the body's primary fat-soluble antioxidant. Vitamin E travels throughout the body neutralizing free radicals that would otherwise damage fat-containing structures and molecules such as cell membranes, brain cells, and cholesterol. By protecting these cellular and molecular components, vitamin E has significant anti-inflammatory effects that result in the reduction of symptoms in asthma, osteoarthritis and rheumatoid arthritis. Vitamin E has also been shown to reduce the risk of colon cancer, help decrease the severity and frequency of hot flashes in women going through menopause, and help reduce the development of diabetic complications (The George Mateljan Foundation, 2001-2010).

According to Myers (2002), sunflower has been used for more than 5,000 years by the Native Americans, who not only used the seeds as food and an oil source, but also as used the flowers, roots and stems for a variety of purposes including a dye pigment. Companies like Adams vegetable oils and America Tohkin Ent. Inc. are among the sunflower oil processing industries in the United States (Heinemann, 2009). The leading commercial producers of sunflower oilseeds include Russia, Peru, Argentina, Spain,

France and China (The George Mateljan Foundation, 2001 – 2010). According to Al-Sharkas (2004), sunflower is one of the fastest growing oilseed crops in India popularly known as “Surajmukhi”. The crop was introduced in 1969 prior to which it was used mainly as an ornamental plant. Companies such as SCO Studen & Co. Holding, Oilio – AOR and Tampieri SPA are sunflower oil processing companies based in India (Al-Sharkas, 2004).

South Africa produces 95% of sunflower seed which is processed for sunflower oil (ASA, 2008). In Kenya, sunflower research was initiated and undertaken for four years by KARI. After four years of research, farmers identified two sunflower hybrids (HB 8998, HB 7369) and one open pollinated type (Rekord) as suitable for production (KARI 1996, 1998 and 2001). Sunflower is regarded as a high value cash crop and a source of high quality edible vegetable oil (MOA Rachuonyo and Homabay 1996 - 2001). The area covered by sunflower as a cash crop has increased from 4560 hectares in 1999 to 7793 hectares in 2003 and production of sunflower oil increased from 3819 tonnes in 1999 to 8129 tonnes in 2003 (MOA, 2005). In Meru, Mount Meru Millers is keen to encourage farmers to start producing sunflower oil which they guarantee a market. Companies which include among others Arkay Manufacturing plant, Bidco Oil Refineries, Kapa Oil Refineries, Rift valley product Ltd and Voi Industries are the main buyers of oil seeds and process them to produce sunflower oil (MOA, 2005).

Livelihoods perspectives start with how different people in different places live. A variety of definitions are offered in the literature, including, for example, ‘the means of

gaining a living' or 'a combination of the resources used and the activities undertaken in order to live' (Mielke, 2000). According to May (1999), the extent and nature of poverty in the rural communities has led to the implementation of a range of development programmes and projects aimed at improving rural livelihoods. European Council of Young Farmers (CEJA) supports farmers to get involved in sunflower oil projects to promote their living standards through access to land, credit and production rights as well as strengthening education and training facilities for young people in rural areas (NASS 2011).

1.2 Statement of the Problem

The main crops grown in Kenya are maize, wheat, beans, peas, sweet potatoes, cotton, tea leaves, coffee, rice, and sorghum among others. Maize is a principal staple food of Kenya, averaging over 80% of total cereals (rice, wheat, millet and sorghum), this makes agriculture the largest contributor to Kenya's Gross Domestic Product (GDP) (Mwanda, 2000). In the year 2005, agriculture, including forestry and fishing, accounted for about 24 % of the GDP, as well as for 18 % of wage employment and 50% of revenue from exports, infrastructural development, boosting people's livelihood among other benefits (MOA, 2005). However, there is need for improving agricultural sector in Kenya so that the sector increase food availability, reduce poverty, enable the country to increase market for products, address pressing social needs, and eventually become self-sufficient in basic food requirements thereby promoting community livelihood (NASS, 2011). The major cash crop in Nkumbo community, Meru is cotton. The Kenyan cotton-processing industry has an installed capacity of over 120 000 bales of cotton lint per year,

which is able to meet half of the national demand for cotton products. Kenya has consistently produced less than 30 000 bales of cotton lint annually since 1990, so the country is a net importer of the commodity, causing adverse strain on its foreign exchange reserves (IFPRI, 2008). The farmers in the community have introduced sunflower farming and sunflower oil production as another cash crop in the area. Kinyoo Sunflower Oil project is one such that the farmers from Nkumbo community, Meru County have embraced to bring about development and boost their livelihood. This study sought to establish whether benefits brought about by the project are felt by the community. With the understanding that development is vital in every community, the researcher sought to find out the Influence of Kinyoo Sunflower Oil project benefits on Community Livelihood. A Case of Nkumbo Community, Meru County, Kenya.

1.3 Purpose of the study

The purpose of this study was to establish the influence of Kinyoo sunflower oil project benefits on community live hood in Nkumbo Community, Meru County, Kenya.

1.4 Objectives of the study

The objectives of the study were:-

- i. To establish how infrastructural development benefits realized from Kinyoo Sunflower Oil Project influences community livelihood.
- ii. To establish how financial benefits realized from Kinyoo Sunflower Oil Project influences community livelihood.

- iii. To establish how social cultural benefits realized from Kinyoo Sunflower Oil Project influences community livelihood.
- iv. To establish how environmental benefits realized from Kinyoo Sunflower Oil Project influences community livelihood.

1.5 Research questions

The following were the research questions.

- i. How does infrastructural development realized from Kinyoo Sunflower Oil Project influence community livelihood?
- ii. How do financial benefits realized from Kinyoo Sunflower Oil Project influence community livelihood?
- iii. How do social cultural benefits realized from Kinyoo Sunflower Oil Project influence community livelihood?
- iv. How do environmental benefits realized from Kinyoo Sunflower Oil Project influence community livelihood?

1.6 Significance of the Study

This study was expected to provide information on the influence of sunflower oil project to the people of Nkumbo Community in Meru, Kenya. This will be helpful to scholars who wish to further study on the topic as well as help the Kenyan government know the benefits of the community and if possible support more farmers to engage in sunflower oil production. It was hoped that the study would give valuable information to

the stakeholders involved in promotion of sunflower oil community projects in Meru County.

This study was also to yield information that would give an understanding on the benefits that are brought about by sunflower oil project to livelihood. It was also to give information that may act as literature review for the future academicians who may write further research papers on related topics. Other development practitioners may use the recommendations there to either initiate or improve similar projects like sunflower oil project. The study will also be used to generate information that will contribute towards achieving some of the key pillars in the Vision 2030 and MDGs on eradication of extreme poverty through promoting community livelihood. The general public will also benefit from the findings of the study by understanding the benefits of community projects in promoting community livelihood.

1.7 Assumptions of the study

The study assumed that the benefits being realized in the community are as a result of the sunflower oil project that is being carried out. It was also assumed that there would be no moderating variable and that project was not be affected by any external factors like political influences because decisions are made by the members of the community who are participants in the project. The researcher also assumed that a household comprises of 4 members.

1.8 Delimitations of the study

Benefits of sunflower projects are many to a community. However this project was limited to infrastructure development, employment, living standards and influence on education that has been brought about by the project. The study was delimited to the use of questionnaires and in-depth interview schedules.

1.9 Limitations of the study

Since the study had not been carried out in the area, the researcher had skewed literature review on the topic. To counter this, the researcher reviewed existing literature from developed countries get the actual picture on the situation on the ground. Since the study was carried out in Meru County, the findings may not be representative of other counties. The study period was also limited in that the time allocated for data collection and analysis was not sufficient. This means that the researcher hired more research assistants than those specified for faster data collection and coding. The researcher faced financial limitations, and as such was required to solicit funds elsewhere so as to complete the research on time as required.

1.10 Significant terms of the study

Community livelihood: Will refer to the living standards of the people who are engaged in sunflower oil project.

Sunflower oil project: A project that involves crushing of sunflower seeds to produce sunflower oil

Infrastructure:	This will refer to basic amenities that are required for economic and social development of individuals within a community.
Financial:	This will refer to employment or an income.
Social culture:	This will refer to activities such as networking, community cohesion that bring the people together towards a common goal.
Environmental:	Will refer to natural resources
Household:	This will refer to a family set up

1.11 Organization of the study

This project is organized in five chapters. Chapter one covered the introductory part of the study; background to the study; the statement of the problem; purpose of the study; objectives of the study; research questions, significance of the study, assumption of the study; delimitations of the study; limitations of the study; significant terms of the study and organizations of the study. Chapter two covered the review of the available literature. This review of literature critically analyzes what has been done about the topic vis-à-vis the objectives. The chapter also comprises of the theoretical framework and conceptual framework. Chapter three outlines the research design and the methodology. It points out the research design; target population; sample size and sample selection; data collection instruments, data collection procedures; data analysis techniques and ethical considerations. Chapter four dealt with research findings and discussion as per the

objectives of the study. Under each objective, data was presented as follows: introduction (what was done to get the data), presentation of the results, highlights of the results and lastly the interpretation and discussion of the results. Chapter five focuses on the summary of the findings and practical implications. It outlines the main findings of the study as drawn from the results in chapter four. These findings are closely tied to the objectives of the study. This chapter also provides the conclusions as well as the recommendations from the study which were systematically drawn in terms of contribution to practice.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the concept of community livelihood, infrastructural development, financial, social cultural and environmental benefits realized from community projects and community livelihood. It also analyzes the Social Cognitive Theory of change as advocated for by Robbins finally a conceptual framework for the study.

2.2 Concept of Community Livelihood

According to Scoones, (1998), community livelihood refers to the means of securing the basic necessities-food, water, shelter and clothing- of life. He further states that livelihood in itself is a set of activities, involving securing water, food, fodder, medicine, shelter, clothing and the capacity to acquire above necessities working either individually or as a group by using endowments (both human and material) for meeting the requirements of the self and his/her household on a sustainable basis with dignity. The activities are usually carried out repeatedly. For instance, a fisherman's livelihood depends on the availability and accessibility of fish. According to Chambers & Conway (1992) a livelihood comprises the capabilities, assets (including tangible and intangible resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks, and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base.

Anseeuw *et al.*, (2001) and Perret, (2003) noted that the term “livelihood” is used rather than “job” or even “source of income”. First, most rural people work in agriculture (as farmers or farm workers) or get non-farm or off-farm job opportunities only seasonally and often part time. Second, individuals and households create a living from various sources: production (farming, local craftwork, small-scale industries), own labour, trading, transfers (grants and remittances); this last form of entitlement often forms the backbone of rural people’s livelihood in South Africa, especially through old-age pensions). According to Ellis, (1998), livelihood systems may include: farming activities and income; non-farming activities and sources of income (e.g. gathering from the wild and local trade, food processing, local services –traditional healing, repair, handcrafting); off-farm activities (e.g. permanent, seasonal or casual external jobs and wages, self employment in trade, small scale industry and businesses); non-income related activities (i.e. housekeeping, child / relative caring, fetching firewood and water for domestic use); non-activity related sources of income (i.e. remittances, welfare). According to these results, males dominated sunflower production in the ward. Stephens (1992) argued that though most livelihood activities are considered gender neutral though they are often gender biased depending on the activities a community is involved in where male dominate hard jobs such as farming, construction and carpentry among others.

2.3 Infrastructural developments realized from community projects and community livelihood

According to Willoughby (2004b), infrastructure includes things such as electricity, roads, and water and transport networks among others. It involves both physical facilities (roads, energy generation, water connections) and services (transport services, energy and water supply). It also involves investment, management, maintenance, capacity building and policy making. While carrying out a study on infrastructure and community livelihood in America, World Bank (2005) found out that the development of infrastructure can increase impact on rural household incomes. Cooperative interactions across multiple infrastructure services can result in a substantially greater impact as compared to the sum effect of each service taken individually. Productive opportunities have a better chance of being exploited with access to various infrastructure services and it was noted that each service builds on the other to produce a “multiplier effect”.

According to World Bank (2004), a study carried out in Germany found out that in order to support community livelihood through infrastructural development various municipalities have come to delegate management for water and sanitation projects as well as off-grid electricity to user committees or user cooperatives. These entities, generally comprises of community members where the service is being provided, essentially serve as local administrators of the service. They are responsible for receiving regular payments from fellow community members, as well as monitoring and maintaining the systems. Users expressed the highest level of satisfaction with this model

of management, particularly those administered by cooperatives, in terms of providing adequate service delivery with limited interruptions in service. 66% of projects administered by user committees, and 80% of those administered by user cooperatives were identified as offering a high quality of service, as opposed to 44% of those managed by public entities and only 10% of privately-managed projects.

According to Willoughby (2004b), in Sub Saharan Africa,, investments in irrigation enhance infrastructural development thus enhancing community livelihood. New or refurbished irrigation systems add to the infrastructure of households and communities. This results to improving decision-making in the households and removing uncertainty through better management rather than simply to improving irrigation systems on their own thereby contributing to community livelihood. Recognizing the need to complement the investments in road rehabilitation and maintenance, the government of Malawi has sought to promote greater benefits to rural households through the incorporation of an innovative strategy to support broader rural development through the Local Development Window (LDW) (Kumar, 2003). World Bank/IEG (2008) stated that a LDW serves as a coordinating mechanism to bring together supply and demand by identifying areas of productive growth, building the capacity of local service providers, and facilitating access to financial resources. Local development plans are prepared through a participatory process with local stakeholders to define priorities for both income-generating and social welfare projects in rural areas to improve the livelihoods.

The many benefits of infrastructure have also been confirmed by the UN Millennium Project (2005), which advocates a major increase in basic infrastructure investments to help countries (especially in Africa) escape the poverty trap and from these studies it is evident that a community that embraces community projects will then improve the livelihood of its people. Thomas (2002) stated that investment in transport can create economic opportunities for the poor directly through employment in infrastructure construction and maintenance, and the provision of rural transport services, and indirectly through improving the conditions and opportunities for marketing goods and services (see, for example, reducing input prices, opening opportunities in new markets, and offering seasonal migration opportunities for work; it can also improve opportunities for household travel for social purposes, such as visiting family or accessing health facilities. Access to health facilities and personnel and other basic needs is critical for all. A rural road provides the opportunity for the poor and very poor to access these services based on their needs and give the government an opportunity to reach the poor (Sekaran,2010).

There is agreement between many authors and major international development agencies that past and present approaches to community development have not had the success necessary to alleviate poverty and that a change in approach is necessary (World Bank, 1998; Organization for Economic Co-operation and Development, 1999; Thomas, 2002; Kumar, 2003). In India, sunflower farms are visited via train that runs from Bangkok and has different stops to have a view of the plantations and the beautiful sceneries. A vibrant local sunflower industry is therefore likely to spawn the development

high value secondary industries such as honey and animal feed manufacturing (Mielke, 2000). The Indian community groups in isolated villages are collecting sunflower seeds from the nearby forest and using the oil seeds to make biodiesel in a small pedal-powered processor. The biodiesel is used to run water pumps, an electricity generator, and a tiller. Women have participated in the seed collection and the planning and development of micro-energy systems, and men are coming in also to support and offer any additional support that may be required. (Krajcova-Kudlackova, 1997).

2.4 Financial benefits realized from community projects and community livelihood

According to Chambers & Conway (1992) projects bring benefits to local communities by creating jobs and investment in the surrounding area and income generation which promote the livelihoods. Agriculture has a central role in the rural economy of most developing countries, which means that rural employment entails mainly agricultural work – including both on-farm self-employment and wage employment (World Bank, 2009). The many authors of the UN (2005) report while carrying out their studies on community livelihood, noted that in America community projects generally generates cash income for a community in ways such as regular wages for those with jobs which acts as a large cash boost to the livelihoods, casual earnings opportunities from selling grass, food, wood, crafts, etc., profits from ownership of business enterprises, collective income earned by the community. These earnings, in turn, are partially recycled within the local economy creating a multiplier effect. While carrying out their study in European countries (World Bank, 2009) found out that there is a considerable improvement in the income level of the people as a result of the

community projects embarked on by them, because, majority of the rural dwellers were living under zero income before the projects were embarked upon to promote their livelihood.

In UK, some of the communities are considering the potential to use income generated to develop projects that can create jobs, and improve the local economy, such as establishing a village shop or pub. Engagement in a significant long term project involves local people in a range of activities, improving skills and confidence. By making collective decisions about the use and distribution of income local communities also develop greater self determination through the direct control of local resources (UN, 2005). In New Zealand for instance, Maori communities are using ecotourism community projects as a means of sustainably utilizing physical resources at their disposal in a way which can provide employments to locals and promote their livelihoods through income generation (Dodge, 2003). According to Crawley (1998), in India the financial mobility due to participation in the projects has led to an improvement in the quality of life, according to some of the successful groups. Overall, many families were able to address their basic needs better than before. Some of government reports shown that the record on the repayment of loans by members of the projects was often better of most spend the income earned, on their families, leading to improved health and nutrition of the poor population and for improving the quality of their lives.

In Africa, World Bank (2007) found out that any approach to rural employment promotion needs to prioritize agriculture and also the rural-to-urban continuum within

which employment occurs. It must also recognize that many workers and households obtain revenues from both rural and urban areas, from farm and non-farm activities, in the formal as well as in the informal economy. Any given growth in the economy will be able to reduce poverty fast only if the employment potential it creates enables poor people to raise their income, either through reduced unemployment or underemployment or through higher returns on labour, or both (UN, 2005). The Coastal Rural Support Programme (CRSP) in Kenya has been working in semi-arid, marginalized rural areas of Coast Province since 1997. Over the last decade, the programme has grown from working with four village organizations comprising less than 300 community members to working with 195 village organizations comprising more than 30,000 members. This has helped the majority of households to increase agricultural production and income, in spite of the increasing poverty in Coast province (MOA, 2005) and from this it is evident that community projects are an important element in promoting livelihood.

According to Fabricius & Koch (2004) many of the projects have been implemented with the argument that future economic, social, and environmental development in the rural communities is best secured by improving rural economy, which is continuously marked by high levels of unemployment. Apart from direct employment of farmers and factories in the oil sector, there is a creation in seed industry, transportation, energy and utilities, animal feed industries, packaging industry among other sectors of jobs (KARI, 2001). Shanglin Women's Federation (SWF) based in China, has trained a total of 1750 women in different aspects of sunflower farming, management and marketing and in the year 2007 the women projects were able to

increase their production from 400 to 450 jin per mu, (approx 3200-3600 kg/ha) where sunflower oil production increased the income by 25%. In addition sunflowers are promoted as ecological tourism venture (NZCFS, 2007). According to Monotti (2004) in Zimbabwe there is a countrywide project managed by the national oil company through contracts with participating farmers. Women's groups are involved in the project, and more women than men are engaged in *Jatropha* cultivation.

2.5 Social cultural benefits realized from community projects and community livelihood

According to Moritz (2003) social sustainability is an important dimension of successful strategy. Rural communities hold a wealth of social capital in the form of extended networks of mutual solidarity, shared beliefs and traditions, and commitments to retain long-standing practices of daily life. Development projects when defined through sound participatory processes can reinforce and sustain social capital. Conversely, incremental resources brought into rural communities can be divisive and destructive if various groups compete for access through a process that is not generally accepted and understood. One need not idealize the degree of social cohesion within villages. Rural society is not homogeneous, and widespread poverty creates tensions. Growth necessarily brings change, and change can cause conflict. Because the social dynamics of rural areas present challenges to which there are no easy answers, the participatory process should be designed to be as transparent and broadly inclusive as possible, and at least a portion of benefits should be targeted to particular groups that might otherwise be under-recognized, such as women and young people.

Among the studies carried out in the United States of America on community livelihood, Stone and Hughes (2002a) found out that a cohesive community is one where there is common vision and a sense of belonging for all communities; the diversity of people's different backgrounds and circumstances are appreciated and positively valued, and this was brought about by community projects who had a common interest and were working towards the same goal to promote their livelihood. In a report written by World Bank (1994) it was noted that adequate and timely information through efficient communication system helps to develop rational consciousness in rural community and thus ensure political, economical and social stability.

According to Moritz (2003) in Europe community projects contribute to the protection of local culture and language. The collective endeavour of developing and managing projects can improve social cohesion, creating new networks and connections between individuals. Engagement in a significant long term project such as development of new ideas involves local people in a range of activities, improving skills and confidence. By making collective decisions about the use and distribution of income local communities also develop greater self determination through the direct control of local resources.

In India, the social impact of the community project increased involvement in decision-making, awareness about various programs and organizations, increased access to such organizations, increased expenditure on health and marriage events. Among the

communities where the projects are operated by women, family the respect and status of women has increased, children education has improved significantly. The sanitation in members' households has improved and it has led to better health in members' families (Dube, 1988). Among the Kenyan communities, the projects have increased awareness and political empowerment process. The community members have great influence on decisions in the political life of village, and therefore, it can be said that after joining the projects the members have improved their status in family, become helpful in family finance and sometimes helped others too. Now, most of the members feel that they get more respect; not only in the village, but from the family members as well (Chinchilla, 2004).

Before engaging in sunflower oil production, the farmers have to be taught on the process and its requirement. This boosts the education level of the country and its people. In South Africa initiative that involves soliciting and training farmers to grow sunflower seeds and soya beans has been organized with the collaborative engagement of the government, the private sector and research institutions. Both men and women farmers are engaged as out-growers (FAO, 2008). Rees et al., (1997) noted that in Uganda a project that aims to support poor smallholder women farmers, has brought about 900 women who are engaged in sustainable farming, to become the owner, manager, producer and supplier of sunflower seeds to Mukwano Group (an oil processing company in Uganda). In Kenya, Muuo wa kwosau women group that comprises women who are single, divorced, widowed and teenage mothers who does not have any source of income, came together and formed the group to address their common

problem of malnutrition affecting their children (Okoko et al.,1998). They identified sunflower farming for edible oil production with beekeeping for honey and goat farming for milk production in their farms in the remote rural areas of Matuu location, Yatta Division of Machakos County (PRSP, 2001). This project has brought about edible sunflower cooking oil sale and daily use (KARI, 2001).

2.6 Environmental benefits realized from community projects and community livelihood

Sunflower plants develop symbiotic relationships within the soil environment and with insects, including bees (Chambers & Conway 1992). A study carried out in North America, it was found out that soil adaptations are demonstrated by the relationships sunflowers have with certain mycorrhizae, or fungus organisms. This adaptation enables sunflowers to ingest ample amounts of organic matter from the soil and makes their root systems more accessible to soil nutrients, such as nitrogen, water and phosphorous. The mycorrhizae benefit by ingesting sugars manufactured by the plant body. Sunflowers' large flower heads and inflorescences contain nectar that attracts bees, and in turn, bees transport the flower's pollen grains from plant to plant, which aids in their fertilization (IFPRI, 2008).

Campaigners in Japan are asking people to grow sunflowers, said to help decontaminate radioactive soil, in response to the Fukushima nuclear disaster that followed March's massive quake and tsunami. The massive earthquake and tsunami left more than 23,000 people dead or missing on Japan's northeast coast and crippled the

Fukushima nuclear power plant that has leaked radiation into the environment since. Almost 10,000 packets of sunflower seeds at 500 yen (\$6) each have so far been sold to some 30,000 people, including to the city of Yokohama near Tokyo, which is growing sunflowers in 200 parks (Kumar, 2003). In China, most of the tourists' visit the sunflower plantations via trains to have a view of the farm once the flowers are formed (IFPRI, 2008). In Kenya, the sweet scent from the flowers attracts bees and the communities are able to build beehives and harvest honey which gives them income to support their livelihood activities. Cake from sunflower which will feed the goats for milk production, sunflower stalks, leaves that are used for composite manure, soil fertility and also threads for basket weaving, sunflower production prevents wind erosion on soil, bees get nectar from sunflower and sunflower seed and oil sales used to pay school fees for the children. The project also provides labour and has brought about development such as installation of electricity, water and roads construction (KARI, 2001).

Land, water and forests are the primary resources of agricultural production, and are the resources essential to maintain human life and well-being. The use of these resources must be balanced with conservation to support sustained national development, and to avoid environmental degradation and losses in agricultural productivity. The natural resource base provides many benefits to different groups of people in both urban and rural areas (MOA, 2005). In order for a project to thrive successful in any community, environmental conservation is key. This involves taking care of the air and the earth's atmosphere, animal and plant life, humans and cultural development, and the planet's water (World Bank/IEG, 2008). Once the environment is well taken care of, risks of

diseases are reduced and it does not pose as an health hazard to animals and the community dwellers as well as the farm (Word Bank, 2007).

According to Jaetzold (2006), in Britain, research and policy has tended to focus on community project for environmental conservation. The communities have a role to play through greater involvement in environmentally sustainable activities and environmental management. Therefore, involvement of communities in development programmes through projects can effectively increase awareness of society to ward environmental conservation. According to Emerton (1999), in most of the Chinese communities community-oriented approaches to environmental conservation usually have a strong economic rationale. They are typically based on the premise that if local people participate in exercise and economically benefit from this participation, then the community welfare will improve. Campese (2009) states that rights of indigenous people are often particularly relevant for conservation and sustainable use of natural resources, due to the frequent overlap of high biodiversity areas and indigenous lands, and the vulnerability of natural resources-dependent customary livelihoods to changes in access or use. Indigenous peoples' tradition ecological knowledge, traditional system control, use and management of lands and resources, and traditional institutions for self governance also contribute substantially to conservation.

In Kenya under LVEMP the government has introduced a strategy to guide and coordinate community activities was that aims at building the capacity of local communities and their institutions to take over devolved responsibilities from the Central Government as per Local Government Reform initiative which means empowering the

communities to manage and utilize available natural resources for their livelihood, income generation and economic development (LVEMP, 2003). In Tanzania Community conservation strategies are eminently suited to help meet the Millennium Development Goal (MDGs), especially those related to eradicating poverty and ensuring environmental sustainability through community projects (Pathak *et al.* 2005).

2.7 Theoretical framework

This study will be anchored on Social Cognitive Theory of change as propounded for by Robbins (2003). The theory states that individuals can learn by direct experiences, human dialogue and interaction, and observation. Social learning theory, later renamed social cognitive theory, proposes that behavior change is affected by environmental influences, personal factors, and attributes of the behavior itself. The individual must possess self-efficacy. They must believe in their capability to perform the behavior and they must perceive that there is an incentive to do so. Social learning theory is an extension of operant conditioning. In other words, behavior is a result of consequences. Individuals react to how they perceive consequences of their behavior. Consequently for social learning to exist, the individual's positive expectations of the behavior should outweigh their negative expectations. The consequences or outcomes may be classified as having immediate benefits such as feeling energized or long-term benefits such as experiencing improvements in cardiovascular health.

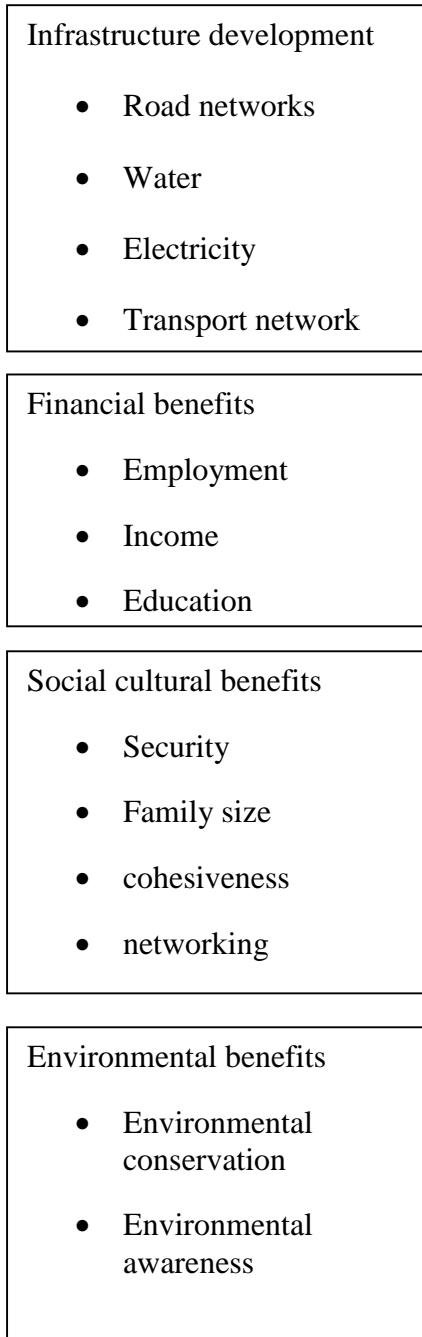
According to my study it is believed that through community projects, individuals are the participants and therefore can learn through direct experiences, human dialogue, interaction and observation and this can bring about an improvement in their livelihood.

2.8 Conceptual Framework

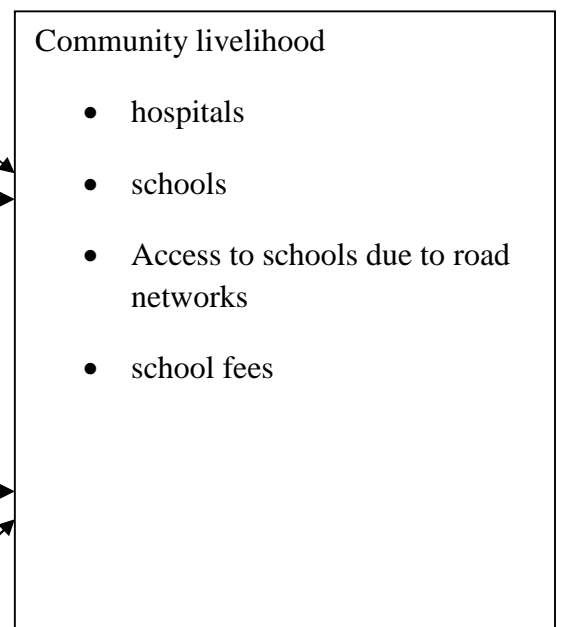
Many of the projects have been implemented with the argument that future economic, social, and environmental development in the rural communities is best secured by improving rural economy, which is continuously marked by high levels of unemployment (Fabricius & Koch, 2004). Apart from direct employment of farmers and factories in the oil sector, there is a creation in seed industry, transportation, energy and utilities, animal feed industries, packaging industry among other sectors of jobs (KARI, 2001). The conceptual framework clearly states the four independent variables and the dependent variable and shows their relationship.

The following conceptual model (Figure 1) serves the study as its framework

Independent variable



Dependent variable



2.9 Knowledge gap

Literature has been reviewed on the importance of sunflower farming and the benefits of sunflower oil seed to the bodies but none has addressed the subject under study on the benefits that a community derives from farming of sunflower and selling of the oil seeds. The researcher therefore wishes to find out the benefits of a sunflower oil project to a community's livelihood.

From the Social Cognitive Theory of change very little has been mentioned on change that is brought about by community projects and therefore the need for this research.

2.10 Summary of the literature reviewed

Literature was reviewed according to the objectives of this study which include: financial benefits, social cultural benefits, infrastructural development and environmental benefits. Infrastructure development can increase impact on rural household incomes and thereby boosting community livelihood as argued by World Bank (2005). Cooperative interactions across multiple infrastructure services can result in a substantially greater impact as compared to the sum effect of each service taken individually. Productive opportunities have a better chance of being exploited with access to various infrastructure services and it was noted that each service builds on the other to produce a “multiplier effect”. Projects bring benefits to local communities by creating jobs and investment in the surrounding area and income generation which promote the

livelihoods. Social sustainability is an important dimension of successful strategy as was established by Moritz (2003). Rural communities hold a wealth of social capital in the form of extended networks of mutual solidarity, shared beliefs and traditions, and commitments to retain long-standing practices of daily life. Development projects when defined through sound participatory processes can reinforce and sustain social capital. Land, water and forests are the primary resources of agricultural production, and are the resources essential to maintain human life and well-being. The use of these resources must be balanced with conservation to support sustained national development, and to avoid environmental degradation and losses in agricultural productivity. The natural resource base provides many benefits to different groups of people in both urban and rural areas (MOA, 2005).

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter presents the research design, target population, sample selection procedure and the sample size, data collection instruments and data collection procedure. It also presents how data was analyzed and the various ethical considerations that were considered in the study.

3.2 Research Design

The study adopted a descriptive survey research design. Descriptive survey research design was chosen because it involves collecting quantitative and qualitative data in order to answer questions or test hypothesis concerning the current status of the subjects of the study (Kerlinger, 2000). According to Mugenda and Mugenda (2003) the design seeks to identify the nature of factors involved in a given situation, determine the degree in which they exist and discover the links that exist between them.

3.3 Target population

The target population was the people of Nkumbo Community comprising of 2400 persons. This is where sunflower oil production is carried out at Kinyoo Sunflower oil Project which is within the area. The researcher also interviewed 5 workers from the factory.

3.4 Sample size and sample selection

In an ideal situation, data should be collected from the whole target population in Nkumbo Community. However, since the population was too large and scattered, it was prohibitively expensive to use the whole population in the study. It was also not necessary and practical to make a list of the entire population especially for the members of the community.

3.4.1 Sample size

In an ideal situation data should be collected from the whole target population of Nkumbo community. Since the population was too large and scattered, it was prohibitively expensive to use the whole population in the study. Out of population of 2400 people from the community, the researcher drew a sample of 240 persons. The sample size was determined by using Mugenda and Mugenda's (2003) proposition of 30% of the target population. With the 5 workers from the factory the total sample size was 245 people.

3.4.2 Sample selection procedure

According to Sekaran (2010), a sample selection procedure entails how the actual respondents will be identified to participate in the study. From the total number of 245 respondents the researcher used interval sampling. This is where the first respondent was chosen randomly to include one of eight respondents and every eighth person after this was be interviewed

3.5 Data Collection Instruments

Questionnaires and interview schedules were used to collect data from the respondents. Interview schedules were used for qualitative while open headed and closed ended questions were used to collect quantitative data. Mugenda and Mugenda (2003) and Emma & Allan (2009) observed that use of both qualitative and quantitative data collection methods employs strategies of inquiry that involve collection of data either simultaneously or sequentially to best understand research problems. According to Creswell (2003) this is known as mixed method of research.

Questionnaires were divided into five sections. Section one covered the background information where the respondent was required to give personal characteristics that would be investigated such as sex, age among other and the date of interview was also indicated. Section two covered the livelihood activities that they are involved in and 10 questions were presented. Under section three the first objective which is benefits of infrastructural development to community livelihood was covered. Respondents were presented with 6 questions on the present condition of infrastructural facility and 10 questions on benefits of infrastructural facilities. Under section four, the researcher presented 7 questions to measure the second objective which is the financial benefits. Section five measured the social cultural benefits as the third objective and here the researcher presented 6 questions to the respondents. The final section was to measure the environmental benefits and here 5 questions were presented to the respondents. The interview guides had no sections and were presented to factory section heads only.

3.5.1 Pilot testing of the instruments

A pilot test was done on three people from the project and five people from the community. The three were directly involved in the processing of sunflower oil and are employees under the project while the five from the community were farmers who supply the project with sunflower oil seed and are consumers of sunflower oil. Those respondents that were used for pilot testing were not included or interviewed in the real study. The main aim of piloting was to determine the accuracy and consistency of the instrument before they were used for collection of actual data. This enabled the researcher to establish to what extent the instruments measured accurately the attributes under investigation and if the questions were well understood by the target population.

3.5.2 Validity of the instruments

Validity is the accuracy and meaningfulness of inferences which are based on the research results (Mugenda and Mugenda, 2003). According to Silverman (2005) content and construct validity is supposed to be established by referring the instruments for professional judgment to check whether it measures what it claims to measure. Thus, the researcher sought the advice of her supervisor from the Department of Extra Mural Studies, University of Nairobi to validate the instruments. Their correction and suggestions were used to produce the final copy of the research instruments.

3.5.3 Reliability of the instruments

The reliability of an instrument refers to degree of consistency with which a research instrument measures whatever it is intended to measure and yields consistent results (Silverman, 2005). To test the internal consistency of the questions listed on the

instrument used, test-retest technique was used. This involved administering the same measure of the variable on two separate occasions, two weeks apart. According to Creswell (2003), the interval of time between administrations should be considered with this form of reliability because test-retest correlations tend to decrease as the time interval increases. Therefore the period of two weeks interval increases the correlational value as opposed to a longer period of time. A reliability correlation coefficient of +0.76 indicates a high degree of internal consistency and the instrument can be used for data collection (Kathuri & Pals, 1993).

3.6 Data collection procedure

Kerlinger (1978) states that in order to implement the general objectives and plans of a research study, specific and relevant methods of data collection must always be used. He further states that problems dictate methods to a considerable extent, but methods, their availability, feasibility and relevance influence problems' understanding and possible solutions. McMillan and Schumacher (1993) argue that in order to begin the research, the researcher will have to formally acquire the necessary documents that will introduce him or her to the expected respondents, stating the intent of the researcher and the purpose for the study. The researcher secured a research permit from the relevant ministry and an introductory letter from the university which enabled her to carry out the research effectively.

Questionnaires were administered to the respondents on pre-arranged dates with the help of research assistants who were hired and trained as per the requirements and objectives of the study. The researcher conducted the interviews and recorded the

responses on a sheet of paper. The interviews were thought out beforehand to enable the researcher standardize and ask the same questions and in the same order. Interview appointments were made early enough to those who were interviewed.

3.7 Data analysis techniques

Data collected was edited and then coded. Data analysis was carried out using descriptive statistics that is mean and standard deviation. Quantitative and qualitative data was generated using questionnaires and interview schedules. Data was presented using frequency tables. Before data entry, screening was done to ensure that responses are legible and understandable and that the respondents were within an acceptable range and are complete, and all of the necessary information had been included (Leary, 2004).

3.8 Ethical Consideration

Before the administration of the questionnaire, the researcher sought to be granted permission to conduct the study from the School of Continuing and Distance Education, University of Nairobi. Participation was clearly explained to the participants before they signed their consent forms and the participants were allowed to withdraw from the study at any stage. Cohen and Manion (1994) suggest that informed consent is an important issue that one has to consider. The purpose of the study was explained to the participants so that they make their own informed choices. The study ensured that words and language that seemed to be sensitive to religion, culture, marriage status or tribe were avoided. The names of all the informants were coded to conceal their identity and to maintain confidentiality.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter presents analyses and interprets the data collected through questionnaires and interviews schedules. The chapter covers demographic information, responses on the objectives which are infrastructural development, financial benefits, social cultural benefits and environmental benefits.

4.2 Response Rate

All the 245 questionnaires issued in the study were fully filled and collected. This provided a 100% response rate. This was ensured through issuing and waiting for averagely thirty minutes for the respondents to fill the questionnaire. The questionnaires were collected immediately they were completed to ensure that they were not misplaced.

4.3 Demographic Information

This section provides the background of the study findings and hence looks at the demographic information that includes; gender of the respondents and age of the respondents.

4.3.1 Gender

Livelihood activities vary differently according to gender and cultural beliefs. The researcher sought to find out if in the communities under the study, both male and female were involved in various livelihood activities especially sunflower farming. The

respondents were asked to state their gender and the results are as summarized in Table 4.1 below.

Table 4.1: Gender of respondents

Gender	Score	Number	Mean
Male	10	128	10
Female	5	117	5

Findings in Table 4.1 shows that 128 respondents were males and the remaining 117 were females. According to these results, males dominated sunflower production in the ward. These findings comply with that of Stephens (1992) who argued that though most livelihood activities are considered gender neutral, they are often gender biased depending on the activities a community is involved in where male dominate hard jobs such as farming, construction and carpentry among others.

4.3.2 Age of the respondents

The researcher sought to determine the age of the respondents to establish whether sunflower farming as a livelihood activity is embraced by all villagers. In the questionnaires the researcher asked the respondents to indicate the age bracket in which they fall. The results were as summarized in Table 4.2 below.

Table 4.2 Age of respondents

Age category in years	Score	Number	Mean
18 - 25	2	50	2
26 – 34	3	68	3
35 – 44	4	75	4
45 and above	5	52	5

Table 4.2 depicts respondents' age categories. From the Table, it shows that 50 farmers were aged between 18 and 25 years, 68 between 26 and 34 years, 75 between 35 and 44 years, 52 between were aged 45 years and above. This shows that the community members were involved in sunflower activities at all ages since the difference was too minimal.

4.4 Community Livelihood Activities

Each community has its own activities that are considered as livelihood activities. In order to determine the livelihood activities in the communities under study, respondents were asked to indicate their livelihood activities from the list of economic and social activities as presented in Table 4.3 below. The livelihood activities were considered as activities that the community members undertake to earn a living and boost their living standards.

Table 4.3 Livelihood activities that are carried out in the community

Activity	Score	Number	Mean
Sunflower farming	5	60	5
Livestock farming	3	45	3
Civil servant	2	15	2
Sunflower oil business (retail)	5	50	5
Carpentry	1	10	1
Motorcycle riding	1	10	1
Saloonist	2	15	2
Sunflower oil seed business (from farmers)	3	45	3
Social groups like informal saving	5	50	5

Results of the livelihood analysis show that respondents were more involved in sunflower production was 60, livestock farming was 45, sunflower oil business was 50, social groups was 50 and buying sunflower oilseeds from farmers was 45 as their major economic livelihood activities. This shows that sunflower farming was the main activity that was carried out within the communities and contributes greatly as a source of income to boost their living standards and also support other activities like livestock farming. Other activities include carpentry had 10, motorcycle had 10, saloonist had 15 and civil servants was 15. It was observed during the field study that respondents were involved in more than one economic activity. This is in agreement with Scoones, (1998) who pointed out that community livelihood refers to the means of securing the basic necessities-food, water, shelter and clothing- of life and involves a set of activities. Ellis(1998), supports

this in that livelihood systems may include: farming activities and income; non-farming activities and sources of income (e.g. gathering from the wild and local trade, food processing, local services –traditional healing, repair, handcrafting); off-farm activities (e.g. permanent, seasonal or casual external jobs and wages, self employment in trade, small scale industry and businesses); non-income related activities (i.e. housekeeping, child / relative caring, fetching firewood and water for domestic use); non-activity related sources of income (i.e. remittances, welfare).

4.5 Infrastructural Development and Community Livelihood

Infrastructural Development is the first objective as to why this study was carried out. The researcher sought to find out if community projects contribute to infrastructural development or whether they are well maintained. To determine the infrastructural facilities that promote economic and social development in the community respondents were asked to tick if the infrastructure mentioned exists in the community and the present condition. Table 4.4 below gives the analyses of the responses received.

Table 4.4: Distribution of infrastructural facilities available by respondents

Infrastructural facilities	yes		No
	Score	number	mean
Roads	5	245(100%)	5
Hospitals	5	245(100%)	5
Primary schools	5	245(100%)	5
Secondary schools	5	245(100%)	5
Electricity	5	245(100%)	5
Water	5	245(100%)	5

Results from Table 4.4 above on availability of infrastructural facilities and their conditions shows that roads, hospitals, water, electricity, and schools were all available and this gave a 100% .

Table 4.5: Conditions of the infrastructure available at the community

Infrastructural facilities	Good			Fair			Poor		
	Score	number	mean	Score	number	mean	Score	number	mean
Roads	4	145	4	4	70	4	3	30	3
Hospitals	1	137	1	1	33	1	3	20	3
Primary schools	2	135	2	2	45	2	1	10	1
Secondary schools	1	130	1	5	100	5	2	15	2
Electricity	5	160	5	3	65	3	3	20	3
Water	5	160	5	4	75	4	1	10	1

On their present condition as per table 4.5 all were noted to be in good condition with electricity and water having the highest respondents at 160 and the lowest recorded was primary schools 135 respondents. This would be attributed to the sunflower business because it is vital to development of the community and that's the main focus. The findings are in agreement with Willoughby (2004b), who stated that infrastructure includes things such as electricity, roads, and water and transport networks which involves both physical facilities (roads, energy generation, water connections) and services (transport services, energy and water supply). To support the findings, UN Millennium Project (2005) further states increase in infrastructural development enables countries (especially in Africa) escape the poverty trap and from the studies it is evident that a community that embraces community projects will then improve the livelihood of its people and contribute greatly to infrastructural development.

4.6 Financial Benefits and Community Livelihood

This is the second objective of the study where the researcher sought to find out whether sunflower business had any financial implications to the community as a source of income and that enables them to cater for their basic needs. To determine the financial benefits realized from the sunflower oil project, respondents were presented with 7 statements on how the financial gains realized influences their livelihood activities on a 5-point scale of Strongly Agree, Agree, Undecided, Disagree and Strongly Disagree. This was scored 5, 4, for positive statements 3 for undecided and, 2, 1 for negative statements. From the analysis of the seven statements, the highest and the lowest individual scores were 60 and 46 respectively, with a mean score of 53.0. Respondents with a score of between 46 and 60 were categorized as having a view that the financial benefits realized from the various activities were able to support their basic needs and therefore had a favourable perception that the project was of financial benefits to their community livelihood. With scores between 45 and 26 they had no favourable view towards the financial benefits as they were not able to meet their basic needs favourably. The responses were as summarized in table 4.5 below.

Table 4.6 Analysis on income generated from livelihood activities

Response analysis	Score	Number	Mean	%
Favourable positive	5	200	5	81.6
Unfavourable negative	2	40	2	16.3
Undecided	1	5	1	2.1

Result of analysis on Table 4.5 shows that majority (81.6%) of the respondents agreed that financial benefits realized from the sunflower oil project enabled them meet their basic needs. This is because the sunflower oil factory purchased sunflower oil seeds from the farmers and payed them timely. The well maintained infrastructure that enabled them deliver their sunflower produce to the factory soonest was a major contributor. This corroborates what was noted by Chambers & Conway (1992) that projects bring financial benefits to local communities by creating jobs and investment in the surrounding area and income generation which promote the livelihoods. The World Bank (2009) supports these findings by stating that found out that there is a considerable improvement in the income level of the people as a result of the community projects embarked on by them, because, majority of the rural dwellers were living under zero income before the projects were embarked upon to promote their livelihood.

4.6.1 Salary bracket

The researcher requested the 5 factory section heads to state their salary scales and is presented in table 4.7 below.

Table 4.7 Salary bracket

Salary scale (Kshs)	Score	Number	Mean	%
Less than 5,000		-		-
5,000 – 10,000	3	1	3	20
11,000 – 15,000	4	1	4	20
16,000 and above	5	3	5	60
Total		5		100

The results in the table above shows that 1 (40%) of the heads of sections was earning between Kshs. 5,000 – 10,000, the other 1(20%) was earning Kshs. 11,000 – 15,000 and the other 3(60) were earning above Kshs. 16,000. The payment was based on the work and output required from each one of them. These findings corroborates with the many authors of the UN (2005) report who while carrying out their studies on community livelihood, noted that community projects generally generates cash income for a community in ways such as regular wages for those with jobs which acts as a large cash boost to the livelihoods, casual earnings opportunities from selling grass, food, wood, crafts, etc., profits from ownership of business enterprises, collective income earned by the community.

4.6.2 Education level of the respondents

To find out whether the farmers had any educational background that would enable them read and write, the researcher requested the farmers to state their educational background as summarized in table 4.7 below.

Table 4.8 Education level of the respondents

Education level	Score	Number	Mean	%
No formal education	2	45	2	18.4
Primary Education	5	75	5	30.6
Secondary Education	4	69	4	28.1
Post secondary education	3	56	3	22.9
TOTAL		245		100

Results in Table 4.7 presents the education level of respondents whereby farmers 45(18.4%) had no formal education, 75(30.6%) had primary education, 69(28.1%) had secondary education, and had 56 (22.9%) post-secondary education. These results indicate that majority 75(30.6%) the sunflower farmers had primary education which gives them the basics of reading and writing. This means that they were able to understand when taught what is required of them in sunflower farming or the production business. The results are in agreement with Crawley (1998) that financial mobility due to participation in the projects has led to an improvement in the quality of life, and families are able to address their basic needs better than before and education is one of the basic need. Through the income generated from the sale of sunflower to the factory most families are able to get basic education.

4.7 Social Cultural Benefits and Community Livelihood

The researcher raised social cultural benefits as the third objective in order to determine if the sunflower business had any impact on the security, family size, cohesiveness and community networking. To determine the social cultural benefits realized from the sunflower oil project, respondents were presented with 5 statements on a 5-point scale of Strongly Agree, Agree, Undecided, Disagree and Strongly Disagree. This was scored 5, 4, for positive statements 3 for undecided and, 2, 1 for negative statements. Out of these statements they were analyzed under three categories which are security, cohesiveness and networking. From the analysis of the five statements, the researcher categorized them as favourable for the positive, unfavourable for the negative and the undecided. The researcher analyzed security, communication networks and community cohesiveness in the table 4.8 below whereas family size was analyzed under a different table.

Table 4.9 Availability of security within the community by respondents

Responses	Score	Number	Mean
Favourable positive	5	200(81.6%)	5
Unfavourable negative	1	35(14.3%)	1
Undecided	3	10(4.1%)	3

From the results above as represented in table 4.9 it is clear that the community has experienced good security represented by 200 (81.6%) of the respondents. The

findings corroborates with those of Moritz (2003) that social sustainability is an important dimension of successful strategy. Rural communities hold a wealth of social capital in the form of extended networks of mutual solidarity, shared beliefs and traditions, and commitments to retain long-standing practices of daily life.

Table 4.10 **Availability of communication networks within the community by respondents**

Responses	Score	Number	Mean
Favourable positive	5	210 (85.7%)	5
Unfavourable negative	1	30 (12.2%)	1
Undecided	3	5 (2%)	3

The findings as shown in table 4.10 above indicated that 210 (85.7%) were involved in various community social groups for networking. This has been brought about by the sunflower business where they have formed community collection centres for sunflower oil seeds and also community outlets for the sunflower oil.

Table 4.11 **Availability of community cohesiveness activities by respondents**

Responses	Score	Number	Mean
Favourable positive	5	150 (61.2%)	5
Unfavourable negative	1	60 (24.5%)	1
Undecided	3	35 (14.3%)	3

In Table 4.11 above 150 (61.2%) respondents embraced community cohesiveness. These findings are also supported by Stone and Hughes (2002a) who in their study found out that a cohesive community is one where there is common vision and a sense of belonging for all communities; the diversity of people's different backgrounds and circumstances are appreciated and positively valued, and this was brought about by community projects who had a common interest and were working towards the same goal to promote their livelihood.

4.7.1. Family size

To determine the family size of the respondents the researcher asked them to state the number of people in a household. This was important because the researcher had assumed that a household would comprise 4 persons of maturity age 18 and above. The results are summarized in Table 4.9 below.

Table 4.12 Family size

Family size	Score	Number	Mean	Percent (%)
Less than four members	1	65	1	26.5
Four members	3	70	3	28.6
More than four members	5	110	5	44.9
TOTAL		245		100

Results in Table 4.12 show that 110 (44.9%) respondents were from families with more than 4 members and 65(26.5%) respondents were from families with less than 4 members. These findings reveal that families had more than 4 members and this enabled farmers to engage more in agricultural production because of the labour force available in the household, many times it is farmers with more labour that are able to take advantage of high production in agriculture.

4.8 Environmental Benefits and Community Livelihood

This was the fourth objective of the study to determine how environmental benefits influenced community livelihood. Under this the researcher considered environmental conservation and environmental awareness while analyzing the responses. To establish the environmental benefits, the respondents were issued with 5 questions which was presented on a 5-point scale of Strongly Agree, Agree, Undecided, Disagree and Strongly Disagree. This was scored 5, 4, for positive statements 3 for undecided and, 2, 1 for negative statements. The environmental benefits that were considered were environmental cleanup days, use of sunflower remains as manure, harvesting of honey, frequent visits to farms and practice zero grazing for the livestock. Out of the responses received the analysis is presented in Table 4.10 below.

Table 4.13 Responses on Environmental Conservation measures and environmental awareness

Activity	Yes			No		
	Score	Number	Mean	Score	Number	Mean
Use of manure	5	245 (100%)	5			
Harvest honey	4	220 (89.8%)	4	1	5(10.2%)	1
Zero grazing	3	200 (81.6%)	3	1	45 (18.4%)	1
Clean up days	3	200 (81.6%)	3	1	45(18.4%)	3
Frequency of visitors	3	170(69.4%)	3	2	75(30.6%)	3

Result of analysis on Table 4.13 shows the project had great environmental benefits to the villagers. Out of the responses gathered 245 (100%) was recorded as using the sunflower remains as manure for the farm to increase its farm fertility which will lead to a greater yield in production. 220 (89.8) % stated that they harvest honey and this is simply because the sunflower while in the farm attracts bees therefore easy to hang beehives under a tree and harvest honey. 200(81.6%) responded that they practice zero grazing whereby they have built for their cattle and use the cake that is derived from the factory to feed while in the cattle shed. Environmental cleanup scored 200(81.6%) where the community members gather together to clean up through community social groups. Frequency of visitors to the farmers was the least with 170(69.4%) however it was recorded above average. These finding corroborates with those of IFPRI,(2008) that Sunflowers' large flower heads and inflorescences contain nectar that attracts bees, and in

turn, bees transport the flower's pollen grains from plant to plant, which aids in their fertilization. Further to support the findings KARI (2001) noted that cake from sunflower which will feed the goats for milk production, sunflower stalks, leaves that are used for composite manure, soil fertility and also threads for basket weaving, sunflower production prevents wind erosion on soil, bees get nectar from sunflower and sunflower seed and oil sales used to pay school fees for the children. The project also provides labour and has brought about development such as installation of electricity, water and roads construction.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This final chapter presents the summary of main findings, draws conclusions based on the findings, makes recommendations and also suggests areas of improvement. By so doing, it underlines the contribution of this research to existing knowledge and identifies relevant areas for future research.

5.2 Summary

The following sections provide a summary of the study findings based on study objectives which included; infrastructural development, financial benefits, social cultural benefits and environmental benefits. The response rate recorded 100% because all the 245 questionnaires were collected and interviews were carried out as was planned.

The findings of the study revealed that 128 (52.2%) respondents were males and the remaining 117(47.8%) were females. According to these results, males dominated sunflower production in the ward. It was also found out that most of the respondents were aged between 35 – 44 years which was 31%. It was found out that various livelihood activities that were carried out in the community which included; sunflower production (92%), livestock farming (69%), sunflower oil business (77%), social groups (77%) and buying sunflower oilseeds from farmers (69%), carpentry (15%), motorcycle (15%),

saloonist (23%) and civil servants. This shows that most of the respondents were involved in sunflower business as their major livelihood activity.

Infrastructural development was the first objective of the study. The study revealed that different infrastructural facilities such as roads, hospitals, water, electricity, and schools were all available and this gave a 100% . On their present condition all were noted to be in good condition with electricity at 65.3%, water at 65.3%, roads 59.2%, hospitals 55.9%, primary schools 55.1% and secondary schools at 46.1% and this would be attributed to the sunflower business because it is key to development of the community and that's the main focus.

The study revealed that the financial benefits were realized from the sunflower business through employment and income generation. This is evidenced where majority 81.6% of the respondents agreed that financial benefits realized from the sunflower oil project enabled them meet their basic needs which include food, clothing, shelter and education. Out of the 5 factory sectional heads, there was income earned from the business that enabled them engage in other activities that support their families. It was indicated that they were earning between Kshs. 5,000 and Kshs. 16,000. The study also revealed that majority 75(30.6%) the sunflower farmers had primary education which gives them the basics of reading and writing. The education is as a result of the income realized from employment and also sales of the sunflower oil seeds and sunflower oil.

The study revealed that social cultural benefits were realized from the sunflower benefits. This is evidenced where the responded stated that they had good security at 200 (81.6%), 150 (61.2%) stated there was community cohesiveness and 210 (85.7%) that there were various community social groups for networking. Under this the family size was analyzed where 110 (44.9%) respondents were from families with more than 4 members and 65(26.5%) respondents were from families with less than 4 members which supports the sunflower business through labour.

The study also revealed that there were environmental benefits which included environmental conservation and environmental awareness. It was recorded that 245 (100%) use sunflower remains as manure for the farm to increase its farm fertility 220 (89.8) % stated that they harvest honey and this is simply because the sunflower while in the farm attracts bees therefore easy to hang beehives under a tree and harvest honey. 200(81.6%) responded that they practice zero grazing whereby they have built for their cattle and use the cake that is derived from the factory to feed while in the cattle shed. Environmental cleanup scored 200(81.6%) where the community members gather together to clean up through community social groups. Frequency of visitors to the farmers was the least with 170(69.4%) however it was recorded above average.

5.3 Conclusion

The study concludes that Kinyoo Sunflower oil project has positively influenced the community livelihood of Nkumbo community. The community livelihood activities which are practiced include sunflower farming, livestock farming, employed as civil

servants, sunflower oil business, carpentry, motorcycle riding, hairdressers, sunflower oilseeds business and social groups like informal saving. Under infrastructural development the community has road networks developed, water, electricity installed and transport networks which makes their work easy. The financial benefits realized include employment, income from different sales and education. The social cultural benefits include security within the communities, increase and stable family size, community cohesiveness and social networking groups. The environmental benefits were noticeable through environmental conservation and environmental awareness.

5.4 Recommendations

The study recommends the following:

That the county government supports the community by helping them acquire the current technology in the market to enable them produce large quantities of sunflower oil that can be sold even internationally. That KARI being the body that promotes agricultural in Kenya and in collaboration with the Ministry of Agriculture, should be able to train the members on new ways of sunflower farming to enable them meet international standards. That KARI should carry out research to enable the farmers know the health benefits that are realized from using sunflower oil for cooking.

That Kinyoo Sunflower Oil project should market its products intensively to enable them sell and get involved into global market for their products. That the Government of Kenya encourages communities to get involved in such projects as a way

of poverty eradication. This can be done by setting aside some amount for community development projects.

5.5 Suggestions for further study.

The study suggests the following areas for further research:

- a. The influence of community projects on poverty eradication and a community livelihood activity.
- b. Community projects as a way of enhancing cohesiveness within a community.
- c. Other benefits that are realized from community projects that boost community livelihood.
- d. Other benefits for sunflower other than oil seeds and the cake as livestock feeds.

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APPENDICES

APPENDIX I: LETTER OF TRANSMITTAL

University of Nairobi

P.O Box 3167

Eldoret– Kenya

Dear Respondent,

RE: INTRODUCTORY LETTER FOR DATA COLLECTION

My name is Naomi N. Nkonge. I am a student at the Univeristy of Nairobi undertaking a degree in Masters of Arts in Project Planning and Management. I am undertaking a research project entitled: **Influence of Kinyoo Sunflower oil project benefits on Community Livelihood. A case of Nkumbo Community, Meru, Kenya.** You have been selected to participate in this study to obtain your perceptions and views regarding the research topic. There are no good or wrong answers but your honest participation in answering the questions will assist in establishing the influence of the sunflower oil project on community livelihood in Nkumbo Community. The information provided will be treated with utmost confidentiality.

Thank you in advance.

Signature.....

Date.....

Naomi N. Nkonge

MA Student

University of Nairobi

APPENDIX II: QUESTIONNAIRE
UNIVERSITY OF NAIROBI
DEPARTMENT OF EXTRA –MURAL STUDENTS
SUBLOCATIONS

INTRODUCTION AND CONSENT

Good morning/afternoon/evening Sir/Madam. My name is Naomi N. Nkonge. I am a postgraduate student of University of Nairobi carrying out research on the influence of Kinyoo Sunflower Oil Project benefits on Community Livelihood. A case of Nkumbo Community, Meru, Kenya. Your sublocation was selected for the study and I visit you today to seek your consent to collect data concerning sunflower oil project and its influence on community livelihood. The data is for academic purposes only. Summary statistics will be used and no names of respondents will be made known. I have the necessary research permits and letters of introduction from relevant offices and now seek permission to collect data from a sample of people of this community. The members will be guided in filling out the questionnaires. The responses from the members will be held with utmost confidentiality and will only be available to me. Their responses will not be of any monetary returns. Members will be free to ask questions as we proceed. They may also refuse to respond to questions they do not feel comfortable answering. Kindly indicate with a in the brackets where appropriate. This interview will take about 10 minutes.

SECTION 1: BACKGROUND INFORMATION

- 1 Questionnaire ID/No ()
- 2 Start time () ()
- 3 Date of interview (dd/mm/yyyy) () ()
- 4 Name of the sub-location

5 Gender: Female () Male ()

6 Family size: Less than 4 () between 4 and () More than 5 ()

7. What is your age?

1 = 18 – 25 () 2 = 26- 34 () 3 = 35 – 44 () 4 = 45 and above ()

SECTION II: LIVELIHOOD ACTIVITIES

In this section kindly tick () under ‘YES’ or ‘NO’ the livelihood activities are you involved in.

	Question	Yes	No
1.	Sunflower farming		
2.	Livestock farming		
3.	Civil servant		
4.	Sunflower oil business		
5.	Carpentry		
6.	Motorcycle riding		
7.	Saloonist		
8.	Sunflower oilseeds business (buying from farmers)		
9.	Social groups like informal saving.		
10.	Others (specify)		

SECTION III: INFRASTRUCTURAL DEVELOPMENT

1. Kindly state the condition of the following structures in your area. Tick () appropriately.

	Question	Good	Fair	Poor
1.	Roads			
2.	Hospitals			
3.	Primary schools			
4.	Secondary schools			
5.	Electricity			
6.	Water			

2. Kindly tick appropriately according to how best the following statements suits you.

	Question	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
1.	Our community roads are easily accessible.					
2.	Our roads are tarmaced					
3.	The roads are not affected by weather					
4.	There is plenty of water for domestic purposes and farming.					
5.	We use borehole water					
6.	There is piped water at every homestead					
7.	There is electricity at every homestead					
8.	There is power rationing					

9.	There are enough primary schools in our community					
10.	There are enough secondary schools in our community					

SECTION IV: FINANCIAL BENEFITS

Kindly tick appropriately how best you agree or disagree with the statements below

	Question	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
1.	I am able to pay for the electricity monthly without any problem					
2.	I am able to feed my family					
3.	I can pay for medical fees without any problem					
4.	I can pay for my children's school fees					
5.	I earn my income from the sunflower oilseed sales					
6.	I am an employee at the factory					
7.	I sell sunflower oil seeds to Kinyoo sunflower oil project					

SECTION V: SOCIAL CULTURAL BENEFITS

Kindly tick appropriately how best you agree or disagree with the statements below

	Question	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
1.	I participate in community local groups					
2.	We work together to achieve our goals					

3.	Our community security is intact					
4.	There are community network groups					
5.	My family has more than 4 members					
6.						

SECTION VI ENVIRONMENTAL BENEFITS

	Question	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
1.	We have environmental cleanup days					
2.	I use sunflower remains as manure for my farm					
3.	I harvest honey from the bees					
4.	We have visitors to our farms frequently					
5.	I practice zero grazing for my livestock					

Thank you for responding to this questionnaire.

APPENDIX III: INTERVIEW GUIDE
UNIVERSITY OF NAIROBI
DEPARTMENT OF EXTRA –MURAL STUDENTS
FACTORY WORKERS

INTRODUCTION AND CONSENT

Good morning/afternoon/evening Sir/Madam. My name is Naomi N. Nkonge. I am a postgraduate student of University of Nairobi carrying out research on the influence of Kinyoo Sunflower Oil Project benefits on Community Livelihood. A case of Nkumbo Community, Meru, Kenya. Your sunflower oil project was selected for the study and I visit you today to seek your consent to collect data concerning sunflower oil project and its influence on community livelihood. The data is for academic purposes only. Summary statistics will be used and no names of respondents will be made known. I have the necessary research permits and letters of introduction from relevant offices and now seek permission to collect data from the factory section heads through oral responses. The responses from the members will be held with utmost confidentiality and will only be available to me. Their responses will not be of any monetary returns. Members will be free to ask questions as we proceed. They may also refuse to respond to questions they do not feel comfortable answering. This interview will take about 10 minutes.

SECTION 1: PERSONAL DETAILS

- 1 Name
- 2 Department
- 3 Gender: Female () Male ()
- 4 What is your age?

1 = 18 – 25 () 2 = 26- 34 () 3 = 35 – 44 () 4 = 45 and above ()

- 5 What is your sublocation?.....
- 6 What is the level of your education?.....
- 7 How long have you been working at the factory?.....
- 8 What position do you hold at the factory?.....
- 9 What is your salary bracket? In Kshs.
 - a. Less than 5,000
 - b. 5,000 – 10,000
 - c. 11,000 – 15,000
 - d. 16,000 and above
- 10 Are the conditions at the factory favourable?.....
- 11 How long does it take to travel from your home to the factory?.....
- 12 Do you use public means?.....
- 13 Do you process the sunflower oil for retail and wholesale?
- 14 Do the people from the community buy sunflower oil for their domestic purposes?
- 15 How much do you sell the sunflower oil per litre?
- 16 How often do you improve your infrastructure?
- 17 Do you sell the cake for livestock to local people often?
- 18 Do you offer any training to farmers on sunflower farming?
- 19 Is the sunflower grown in your locality sufficient for sunflower oil production?

20 Do you have any methods that you adopt to conserve the environment?

21 If yes kindly state a few.....

RESEARCH PERMIT