FACTORS INFLUENCING SUSTAINABILITY OF DAIRY GOAT PROJECTS: A CASE OF INTEGRATED SMALL LIVESTOCK PROJECT IN MUKURWEINI DISTRICT, CENTRAL PROVINCE, KENYA.

BY

ALICE MURUGI MBACHO

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DECLARATION

I declare that this is my original work and has not been presented for a degree or any other award in any University or any institution of higher learning for examination.

Signature _____ Date 12/7/2011

Alice M. Mbacho

Registration Number: L50/72603/08

This research project has been submitted for examination with our approval as the university supervisors.

Signature _____ Date 12/7/2011

Dr. Dismus M. Bulinda

Lecturer, Department of Education Administration & Planning,

University of Nairobi.

Signature _____ Date 12/7/2011

Ms. Lydia Wambugu

Lecturer, Department of Extra Mural Studies,

University of Nairobi.

DEDICATION

This research project is dedicated to my sons Hezron Mwangi and Eric Munyiri for being my greatest blessing and source of encouragement throughout the research work. May the good Lord bless them always.

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ABBREVIATIONS AND ACRONYMS

ASAL: - Arid and Semi-Arid Lands

CBO: - Community Based Organization

CDF: - Constituency Development Fund

CKDAP: - Central Kenya Dryland Agricultural Programme

DGAK: - Dairy Goat Association of Kenya

F1: - First Filial Generation

FAO: - Food and Agricultural Organization

FARM-Africa:- Food and Agricultural Research Management-Africa

GDP: - Gross Domestic Product

GOK: - Government of Kenya

GTZ: - German Agency for Technical Co-operation

HPI/K: - Heifer Project International Kenya

ISLP: - Integrated Small Livestock Project

KDPG: - Kenya Dual Purpose Goat

MGBA - Meru Goat Breeders Association

NGO: - Non-Governmental Organization

NMK: - Njaa Marufuku Kenya

SGP: - Sheep and Goat Project

SPSS: - Statistical Package for Social Sciences

SR-CRSP: - Small Ruminant Collaborative Support Program

UNDP: - United Nations Development Project

ABSTRACT

The Livestock sub-sector accounts for 12% of Kenya's Gross Domestic Product (GDP), 40% to the agricultural GDP and employs 50% of agricultural labour force and the sector is dominated by small scale producers. Upgrading of indigenous goats with the exotic dairy goat breeds through development projects like Integrated Small Livestock Project (ISLP), developed high quality cross bred dairy goats with potential to produce more milk and meat and help contribute to poverty alleviation and nutrition deficiencies. The objective of the study was therefore to assess the factors influencing sustainability of dairy goat project in Mukurweini District. The study adopted a descriptive survey design and the target population was 211 persons drawn from the smallholder dairy goat groups, the divisional extension officers, and the community opinion leaders. Simple random sampling was adopted where representative sample of thirty percent (30%) of the 211 people was randomly sampled to get sixty six (66) respondents. Primary data was solicited through semi-structured questionnaires and personal interviews.

The study established that goat farmers were involved from the project initiation mainly through chiefs' barazas and friends as reported by 50% and 46.7% of the dairy goat group officials respectively. It was also revealed that funding of the dairy goat project during the six years of implementation was adequate as reported by 66.7% of the dairy goat group officials as good and excellent and 33.3% as moderate. On the dairy goat breed introduced, the study indicated that they were prolific since 35% of the dairy goat group officials reported 11-21 offsprings while 45% reported more than 33 offsprings during the first year of the dairy goat project. On twinning, 28.3% of the dairy goat group officials reported 11-21% twinning and 48.3% reported more than 33% twinning. The overall management of the dairy goat project was good since 100% of the dairy goat group officials indicated that their groups were meeting monthly and 95% of them had been trained on group dynamics thus improving on group managerial skills. Still in management, 88.3% of the dairy goat group officials reported fewer incidences of diseases of the dairy goats, 65% reported more than 33 upgraded dairy goats sold on average per year per group and 100% reported an increase in income of the dairy goat group members.

The following recommendations were made. There is a need to adequately prepare the beneficiaries of a project before embarking on the implementation. Project funding should be planned from the initiation stage so that all project activities are incorporated and budgeted for to ensure adequacy. On breed choice the government should be able to import the best breeds from reputable countries.
There is need to continuously capacity build the goat farmers' inorder to equip them with group managerial skills.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The goat was probably the first animal to be domesticated around 9,000-7,000 B.C. (Devendra and Mcleroy, 1987). This long association between the goat and humans indicates the variety of functions the goat can provide. Devendra and Mcleroy (1987), continued to say that the goat like many other domestic animals, were first used for meat production, but also preceded the cow as a dairy animal, and are small, hardy and easier to maintain than cattle. The indigenous goats are found in most parts of Kenya and are used in upgrading programmes with the exotic imported goats to increase production of meat and milk (Peacock, 1996). She continues to say that goats have traditionally been milked by people in the Central and Eastern Kenya highlands and improving their production through upgrading offered one option to improve the lives of people in those areas.

Improvement of people's standards of living remains one of the greatest challenges facing most governments in developing countries, majority of whom are dependent on agriculture. Agriculture which includes livestock is the single largest productive sector in the Kenyan economy and is expected to provide the main impetus of Vision 2030, which is Kenya's economic blue print for the next twenty years. Livestock sub-sector accounts for 12% of Kenya's Gross Domestic Product (GDP), 40% to the agricultural

GDP and employs 50% of agricultural labour force and the sector is dominated by small scale producers, (Republic of Kenya, 2008).

Goats form an integral component of the livestock sector in Kenya, and the goat population is estimated at 14.5 million, where the dairy goats are 200,000 and the meat goats are 14.3 million spread throughout all the agro-ecological zones (Republic of Kenya, 2008). In particular, goats are suitable for small scale resource poor farmers: they are cheap to acquire compared to cattle, they require little land, they reproduce quickly, produce high quality milk, and they are able to feed on a wide range of forages (Peacock, 2005). Dairy goats' introduction as interventions for improving the livelihoods of small-holder producers can thus be viewed as a success, both for the animals and the producers as their potential is high (Republic of Kenya, 2008).

The selection of goat for breeding over the centuries has been based on the ability of the particular goat breed to adapt to local ecological and disease conditions and to meet the farmers' requirements for meat and milk (Ahuya, Okeyo and Muriithi, 2004). This traditional goat breeding programme has facilitated the development of high quality cross-bred dairy goats that produce meat and milk and are more resistant to diseases than the exotic breeds. Introducing exotic dairy goat genes through judicious cross-breeding seems more appropriate. According to Peacock (1996), the success and sustainability of cross-breeding is likely to be sensitive to the involvement of participating farmers and farmer organizations. Success is most likely to be achieved where the breeding strategy is just one of the components of a programme aimed also at increasing dairy goat

productivity through the general improvement of animal health, nutrition and management.

Dairy goats were first introduced in Kenya in 1955 by the white settlers from Europe, and were mainly kept in the highland areas of Kenya which has a climate similar to their place of origin (Gichohi, 1997). During the 1970s and 1980s, dairy goats were introduced in Government Agricultural Institutions while in 1990s dairy goats were brought in by development projects such as the Integrated Small Livestock Project (ISLP) and Food and Agricultural Research Management (FARM)-Africa Dairy Goat and Animal Health-Care Project, contributing to the growth of dairy goat population in the country (Republic of Kenya, 1998). In 1992, ISLP introduced German Alpine dairy goat breed in parts of Central and Eastern Provinces of Kenya with the aim of promoting the production of dairy goats towards the income and nutritional needs of the smallholder farmers.

According to Gichohi (1997), the indigenous goats were used as basic material in upgrading programmes, where they are crossbred with exotic German Alpine breed to develop new dairy goat lines and strains which have adapted well and have shown improvement in performance. Their potential make an important contribution in alleviating poverty and nutritional deficiencies especially in children and expectant mothers in both densely populated and arid and semi-arid areas of Kenya. There has been significant interest in the use of crossbred goats, which have seen them being introduced in various parts of the country through development projects such as ISLP

and FARM-Africa with a considerable sustainability and benefits to the smallholder farmers even after the funding ceases (Republic of Kenya, 2007). In recent attempts to genetically improve the local goat populations, the breeding programmes have generally been decentralized and adaptive research-centered, with farmer participation. In addition, the contributions and/or preferences of the farmers intended to benefit from such efforts are usually taken into account, leading to fast adoption of the technologies and high adoption rates or success (Ahuya et al., 2001).

Before a goat project is introduced, the attitudes toward goats and data on the resource base of the target population must be collected to determine cultural attitudes and access to resources (Munyua, 1997). The feasibility of the goals and the means of reaching these goals should be evaluated based on the resources and cultural attitudes of the target population (Khan, 2000). Particular attention should be paid to who has control over resources and how cultural attitudes may affect who has control over the goats and their products. Farmers should be involved right from the beginning as key players in identifying the problems, prescribing solutions and setting up the sequences and priority of activities aimed at solving their problems. Lessons learnt from the past goat development projects should be used as basis for future improvement initiatives (Munyua, 1997).

One of the factors that led to success of goat improvement initiatives in Kenya is the group approach which provided forums for farmers to come together with a common goal (Ahuya et al. 2003). The establishment of farmer groups at the lowest levels of the

society gives them an opportunity to acquire collective bargain and solidarity necessary for lobbying for change in their favor (Verhagen, 1985). The target farmers in the dairy goat development projects are involved from the initiation of the project where they are organized into groups to ease training and provision of resources for the husbandry of the high producing cross-bred dairy goats. According to Gichohi (1997), project activities such as capacity building through training have been successfully achieved by using the farmer groups, which is cheaper and saving.

Dairy goats' development projects provide the much needed funding to import the exotic dairy goat breeds for upgrading the indigenous goats and for training the target farmers in the project area on the proper management of the upgraded dairy goats. According to Proasne (2005), for a project to produce sustainable results, the project managers have to ensure that funding is adequate to support the identified solutions to the problems in the long-term, and the community receives training in the maintenance and management of any new technology provided through the project. The intention of this study was to find out how the involvement of the smallholder farmers' in the initiation of the project, the funding of the project, the introduced dairy goat breed and the management of the project by the farmers after they were trained influenced sustainability of smallholder dairy goat development project. Mukurweini District was the area of study where the ISLP was assessed with the aim of establishing the factors leading to its sustainability.

1.2 Statement of the Problem

The introduction of exotic dairy goats for breeding through development projects in Kenya resulted to up-graded or cross-bred dairy goats that adapted well to local ecological and disease conditions, and the resulting high quality cross-bred dairy goats were able to meet the farmer's requirements for meat and milk. Past studies by Okeyo (1997), and Ahuya et al., (2004) have shown the advantages of the cross-bred dairy goats over the indigenous goats in terms of production of milk and meat and the growth rates. Okeyo (1997), and Ahuya et al., (2004), in their studies also reported a considerable amount of sustainability of the dairy goat projects and poverty reduction in areas where such projects were implemented.

There have been no studies or research carried out on the factors influencing sustainability of dairy goat development projects. This study sought to investigate how certain factors like involvement of smallholder farmers' in the initiation of the project, funding of the project, quality of dairy goat breed and management of the dairy goat project influenced sustainability of ISLP, German Alpine dairy goat in Mukurweini District.

1.3 Purpose of the Study

The purpose of this study was to make an assessment of factors that influence sustainability of ISLP, German Alpine dairy goat in Mukurweini District.

1.4 Objectives of the Study

The objectives of the study were:

1. To investigate how the involvement of smallholder farmers' in the initiation of ISLP, German Alpine dairy goat influences sustainability of the project.
2. To assess how funding of ISLP, German Alpine dairy goat influences sustainability of the project.
3. To determine how the introduction of German Alpine dairy goat breed influences sustainability of dairy goat project.
4. To investigate how management practices of ISLP, German Alpine influences sustainability of the project.

1.5 Research Questions

The study set out to answer the following questions:

1. How did the involvement of smallholder farmers, in the initiation of the ISLP, German Alpine dairy goat influence sustainability of the project?
2. How did the project funding influence the sustainability of the ISLP, German Alpine dairy goat project?
3. To what extent did the introduction of German Alpine dairy goat breed influence sustainability of the project?
4. How did the management practices of ISLP, German Alpine dairy goat influence sustainability of the project?

1.6 Significance of the Study

Dairy goat projects have become very popular to small holder farmers and to donors as a way of reducing poverty in rural Kenya. This is more so in the densely populated areas of Central Kenya highlands where the farm sizes per household are not enough to sustain keeping of dairy cattle. This study might be significant in contributing to the understanding of the factors that influence the sustainability of dairy goat project inorder to replicate the success to other areas with similar conditions.

The government on the other hand might gain by getting investment funds through proper utilization of resources. Due to success of this project, the government could re-direct its scarce resources to other deserving areas like education and health since investment in dairy goat project would be getting the required results. The government might also benefit from the study in that it would be able to target the dairy goat project beneficiaries in a more informed way, and be able to replicate the project in areas where poverty is high, with the aim of reducing it.

The donor's confidence in the implementers might be enhanced, which means they could be willing to support other needy initiatives for the betterment of the people. The success of dairy goat project might also serve as an eye opener to other communities doing similar projects. They might use the succeeding project as learning ground from where they come to see and replicate. This study might indeed have multiplier benefits

as a result of establishing the factors that influence sustainability of the ISLP, German Alpine dairy goat project in Mukurweini District.

1.7 Limitation of the Study

The formal level of literacy of the respondents in the study area was a hindrance to data collection in this research study. This was reduced by the researcher conducting face to face interviews to dairy goat farmer group committee members with the challenge and interpreting the questionnaires to them. Poor terrain was also a hindrance to data collection and was countered by the researcher facilitating the research assistant to use a motorcycle to reach all the respondents.

1.8 Delimitations of the Study

The study was carried out in Mukurweini District in Central Province of Kenya because the district had the highest number of successful dairy goat farmer groups in the Province (Republic of Kenya, 2007). The study also involved administering questionnaires to dairy goat farmer group officials, the Livestock Extension Officers and the chiefs since they were best placed to understand how the dairy goat project was implemented.

1.9 Basic Assumptions of the Study

The study assumed that the respondents provided reliable and valid data without influence of traditional taboos. The study also assumed that the variables remained constant. Finally the study assumed that the questionnaires would be returned in time duly completed for easier making of conclusions in relation to the study.

1.10 Definitions of Significant Terms

Funding of the project: - This refers to the monies provided by the German Government and the Government of Kenya to run the ISLP project.

German Alpine dairy goats: - These were the exotic dairy goats imported from German to upgrade the local farmers' goats in the project area.

Integrated Small Livestock Project: - This is a dairy goat project which was funded by the Federal Republic of German and Government of Kenya to promote dairy goats in Central and Eastern Kenya highlands.

Involvement of Goat Farmers: - This means allowing the project primary beneficiaries to play a key role in the process of project development right from its initiation, implementation and its sustainability.

Management: - Refers to the skills, tools and techniques that were being used by the dairy goat group officials to run the project activities.

Quality of Dairy Goat Breed: - These are characteristics of goats which make them produce more milk and grow faster to the benefit of the farmers.

Sustainability: - Sustainability is the ability of dairy goat project to continue benefiting the smallholder farmers during the project life time and after the donor withdrawal from the project.

1.11 Organization of the study

This research project is organized into five chapters. Chapter one comprises the introduction and highlights the background information on the importance of dairy goat keeping. It also includes the statement of the problem, the purpose of the study, the

objectives and research questions, significance and the limitation of the study, delimitation of the study, basic assumptions, definitions of significant terms and the organization of the study.

Chapter two aimed at identifying what other researchers have done in the area of dairy goat development projects. The chapter looked at the history of dairy goat projects, main reviews of dairy goat projects, involvement of farmers in dairy goat project initiation, dairy goat project farmer groups, dairy goat project critical review of major issues, funding of the dairy goat project, dairy goat breed, management of dairy goat project, the conceptual framework and summary of literature review.

Chapter three described the research design, target population, sample size and sampling procedure, research instruments, piloting, validity of instruments, reliability of instruments, data collection procedures, data analysis techniques, operational definition of variables and the ethical issues of the study.

Chapter four presented data analysis, presentation and interpretation of research findings.

Chapter five discussed the summary of findings, discussions of the findings, conclusions reached and then gave the recommendations as per the responses from the respondents. Finally the chapter pointed out the areas the researcher thought would require further research in related fields.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter looked at the history of smallholder farmers' dairy goat projects, main reviews of dairy goat projects, involvement of farmers in dairy goat project initiation, dairy goat project farmer groups, dairy goat project critical review of major issues, funding of dairy goat project, dairy goat breed, management of dairy goat project, the conceptual framework and the summary of the chapter.

2.2 History of Dairy Goat Projects.

Improvement of people's standards of living remains one of the greatest challenges facing most governments in developing countries, majority of whom are dependent on agriculture. Agriculture which includes livestock is the largest productive sector in the Kenyan economy and is expected to provide the main impetus of Vision 2030, which is Kenya's economic blue print for the next twenty years. Livestock sub-sector accounts for 12% of Kenya's Gross Domestic Product (GDP), 40% to the agricultural GDP and employs 50% of agricultural labour force and the sector is dominated by small scale producers, (Republic of Kenya, 2008).

Dairy goats were first introduced in Kenya in 1955 by the white settlers. These goats were from Europe, and were mainly kept in the highland areas of Kenya which has a climate similar to their place of origin (Gichohi, 1997). During the 1970s and 1980s,

dairy goats were introduced in Government agricultural institutions such as Egerton College, Wambugu Farmer Training Centre and Embu Institute of Agriculture. In 1990s dairy goat were brought in through development projects such as the Integrated Small Livestock Project (ISLP) and Food and Agricultural Research Management (FARM)-Africa Dairy Goat and Animal Health-Care Project, contributing to the growth of dairy goat population in the country (Republic of Kenya, 1998). In 1992, ISLP introduced German Alpines bucks (males) to upgrade local goats into milking types in the project areas of Central and Eastern Provinces. Later the FARM Africa Dairy Goat and Animal Health- Care Project imported British Toggenburg bucks and does (females) for the project areas, which covered Meru and Tharaka-Nithi Districts (Gichohi, 1997).

In Kenya, about 80% of the land is arid and semi-arid (ASAL) rangelands (Republic of Kenya, 2008). Production of red meat is the major enterprise in ASAL areas, with milk produced for subsistence. Milk is therefore commercially produced in the high and medium potential areas of the country, where the land available for grazing is decreasing fast because of the rise in human population and competition from crop enterprises. This competition for scarce resources, particularly land, has eliminated livestock production especially the big stock from small farms in the very densely populated areas of the country.

Introducing dairy goats into very small farms in these populated areas and rearing them under the zero grazing or stall feeding system may be the only way of ensuring that the farm families get milk where extra is sold for economic gain (Peacock, 1996). Goats

require less feed per head for maintenance than cattle, therefore several goats can be kept in place of one cow. For instance, a dairy goat require about 3-4 kg dry matter per day, while a dairy cow requires about 18-20 kg dry matter per day. This means that for every one dairy cow, a farmer can comfortably keep five dairy goats. According to Hetherington (1982), with the ability to exist on roughage with a minimum of bought-in feed, the goat is ideal for smallholder and the 'do-it-yourself' enthusiast. Goats' produces milk of a high quality which many people prefer to cow's milk with its many by-products such as butter, cheese, yoghurt and meat.

2.3 Main Reviews of Dairy Goat Projects

In the late 1970s and early 1980s, many development organizations and researchers (Winrock, 1983) recognized the potentially important role of goats in agricultural development. One result of this increased interest in goats has been several goat distribution projects or goat introduction projects which have been directed towards poverty alleviation and increased food security among the resource poor farmers. The past studies on dairy goat projects were on introduction of exotic bucks and does to cross-breed with the indigenous goats to improve productivity. These projects were: - the ISLP, which introduced German Alpine bucks in parts of Central and Eastern Provinces of Kenya in 1992; the FARM-Africa Dairy Goat and Animal Health-Care Project introduced British Toggenburg bucks and does in Meru and Tharaka Districts in 1996 and later in 2004 extended in Mwingi and Kitui Districts and Heifer Project International Kenya (HPI/K) introduced Saanen does in Western Kenya in 2006.

The ISLP was started in 1992 as a Technical Co-operation Programme between the Government of Kenya (GOK) and the Federal Republic of German through German Agency for Technical Co-operation (GTZ) to promote dairy goat production. The overall goal of the programme was to promote the contribution of dairy goats towards the income and nutritional needs of the smallholder farmers. The farmers' benefits were realised through the sale of goats, milk consumption by the families and manure utilization in their farms. The target for the project were smallholder farmers organized into groups located in Central Kenya and some parts of Eastern Province, where land subdivision and acquisition of freehold title deeds resulted into very small parcels of land approximately 0.3 hectares which could not support rearing of dairy cattle.

The programme involved cross-breeding of the locally available goats with the German Alpine bucks resulting to highly performing cross-bred dairy goats which could produce more milk and many kids through twinning. The farmers in the project area experienced increased income through sale of the upgraded animals which fetched more cash than the local goats (Republic of Kenya, 1997). In 1994 the Dairy Goat Association of Kenya (DGAK) was formed as a non-profit making Non-Governmental Organization (NGO) for sustainability and continuity of the project after winding up in 1998. The association drew its members from smallholder dairy goat farmers in groups in the project areas and it is giving services to the farmers even today, long after the project winded up.

FARM-Africa, a NGO introduced a dairy goat and animal health care project in Meru Districts, in Kenya, in 1996. The project was based in the medium potential zones of

Meru Central and Meru South Districts, in the Eastern Province of Kenya. The target groups of the project were poor farmers in self-help groups who were given basic trainings on dairy goat husbandry and group dynamics. The aim of the project was to produce a crossbred goat by cross-breeding local goats with the Toggenburg where the resulting crossbred goat could produce enough milk for the family and had traits of the local goats to resist diseases.

According to (Ahuya, 1997), the cross-bred goats resulting from the upgrading programme saw the number of the cross-bred dairy goats increase in the project area, and the growth rate together with milk yield increased given the levels of feeds provided. He further says that the demand for the cross-bred goats increased among the people in the project area and the local farmers were more willing to participate in the goat management especially the breeding programme, resulting to partnerships and sustainability of the project. The same research indicated that the families who kept improved dairy goats had improved their own nutritional levels through having more animal protein available and increased income levels.

HPI/K is a NGO whose mission is to work in partnership with others to end hunger and poverty and to care for the earth through the sharing of livestock and knowledge (Owade, 2006). HPI/K works with community groups to end hunger, poverty and environmental degradation through responsible management of animals and natural resources. The project work with organized self-help groups who are loaned life dairy goats of Saanen breed, and trained on their husbandry practices. The people involved are located in high

populated areas with small land holdings per family. The objective of the project is to develop a sustainable source of high quality dairy goat breeding stock in Kenya to meet the nutrition requirements for proteins and improve their livelihoods through increase of income. The project covers parts of Nyanza, Western, Rift Valley and Coast Provinces and its still expanding.

At the household level, these projects increased milk production from the cross-bred goats and significantly contributed to improved nutrition especially for children and for the sick people. These projects have further contributed to improved rural incomes through sale of culls, goats for breeding, and creation of employments both directly and indirectly.

2.4 Involvement of Farmers in Dairy Goat Project Initiation

Goat rearing had been practiced for a long time and its milk utilized by the inhabitants with no taboo in Central and Eastern Kenya highlands. Due to the numerous advantages of dairy goats such as; small size, easy to handle, good utilization of farm by-products, capacity to withstand diseases, easier to market and their high twinning ability, they have became the alternative source of the milk in these areas (Republic of Kenya, 1997).

Before a goat project is introduced, the attitudes toward goats and data on the resource base of the target population must be collected to determine cultural attitudes and access to resources (Munyua, 1997). The feasibility of the goals and the means of reaching these goals should be evaluated based on the resources and cultural attitudes of the target

population (Khan, 2000). Particular attention should be paid to who has control over resources and how cultural attitudes may affect who has control over the goats and their products. According to Munyua (1997), farmers should be involved right from the beginning as key players in identifying the problems, prescribing solutions and setting up the sequences and priority of activities aimed at solving their problems. He continued to say that lessons learnt from the past goat development projects should be used as basis for future improvement initiatives.

An important factor for the sustainability of projects is the genuine involvement of local people as active participants and equal partners whose concerns and experience are intrinsic to the project's success. Stanley (2003), observes that communities must be empowered through training and active participation for sustainability of their projects. He also ascertained that general principles of participation approach include encouraging communities to take responsibility and promote participation for all.

2.5 Dairy Goat Project Farmer Groups

According to Ahuya et al. (2003), one of the most successful community based goat project has been implemented through farmer group approach, which uses farmer groups as the entry point to the community. The group also forms the basic grassroots institution for community based goat improvement initiatives. Farmer groups are formed by people within the same community who share a common interest or vision.

Social capital in the form of groups is used in communities worldwide, especially in rural areas, as safety nets to cope with risks, mutual assistance and for social and spiritual reasons. Groups provide a means of collective action for farmers, providing resources such as credit, labor, and information while they allow farmers to obtain new technologies, benefit from economies of scale, enter into stable relationships with suppliers, and set rules for natural resource management (Place et al. 2002; Stringfellow et al. 1997).

There are many types of groups in rural Kenya which are part of the social fabric of the country. Although groups have been a type of social capital used by farmers for generations in Africa, the harambee movement following Kenyan independence greatly increased the number of grassroots-level groups with development objectives. Harambee, meaning "let's all work together," was a government initiative designed to encourage people to contribute resources to supplement and complement the government's development efforts. Most of the dairy goat projects in the country work with farmer groups to upgrade their animals. Today, registration of such groups with the government is usually required for farmers to receive government or other project assistance (Republic of Kenya, 2008).

According to (Mulwa, 2008) Community Based Organizations (CBOs), if started and supported with the right motive, have the potential to become effective vehicles for community empowerment and forums people's participation in decision-making on matters that affect them. He continues to say that CBOs brings forth the sense of

ownership which is fundamental to the success and sustainability of community based projects. By coming together, people create for themselves the opportunity for collective analysis of their situations. Verhagen (1985), echoes that establishment of farmer groups at the lowest levels of the society gives them an opportunity to acquire collective bargain and solidarity necessary for lobbying for change in their favor.

One of the factors that led to success of goat improvement initiatives in Kenya is the group approach which provided forums for farmers to come together with a common goal. The groups have not only acted as breeding groups but also as development orientation undertaking other activities such as fund raising to support their membership. Project activities such as capacity building through training have been successfully achieved by using the farmer groups, which is cheaper and saving (Gichohi, 1997).

2.6 Dairy Goat Project Critical Review of Major Issues

In setting up a sustainable intensive goat production system, the challenges that might occur must be addressed wholesale. Despite the important roles of goats, many and enormous challenges to the goat genetic improvement programmes exists, especially under the smallholder production systems. These challenges includes; lack of systematic animal identification and recording systems, absence of consistent selection criteria and/or well designed breeding programmes, low levels of formal literacy and lack of or poor organizational structure (Kosgey, 2004). He continues to say that, in pastoral flocks, high mobility, shared pasture and watering facilities reduce independence,

especially the breeding decisions. In general, these constraints can be classified as: technical, institutional or organizational, managerial and socio-economic factors (Okeyo, 1997).

Past genetic improvement programmes in the Eastern Africa region, for both small and large ruminants, have been more research-linked and motivated (Okeyo, 1997; Ahuya et al., 2005) and tended to be inflexible and research or multiplication stations-based (Peters, 1991). One common weakness had been the inability to have comprehensive and truly participatory development protocols right from the diagnosis and prescription to prognosis stages (FAO, 1995), while others had no prognosis at all (Carles et al., 1991). The first major goat research and development initiative in Kenya and indeed the Eastern Africa region was a United Nations Development Project (UNDP) funded and Food and Agricultural Organization (FAO) executed Sheep and Goats Project (SGP) from the early 1970's to late 1980's (Okeyo, 1997; Ahuya et al., 2004). During this period and in this project, animals were collected from farmers and placed in research and multiplication stations to be improved through selection or crossbreeding with the aim of identifying genetically superior bucks and distributing these to farmers. After fifteen (15) years of station-based work, the SGP failed to establish the level of upgrading to exotic goat genotype that would be both sustainable and compatible with the existing resources, technical know-how and socio-economic realities of the recipient communities (Okeyo, 1997).

Between 1980 and 1995, the United States Agency for International Development (USAID) funded Small Ruminant Collaborative Support Program (SR-CRSP) which

developed a synthetic dual-purpose goat breed, the Kenya Dual Purpose Goat (KDPG) by crossbreeding four goat breeds, the local Small East African and Galla, and the exotic Toggenburg and Anglo-Nubian (Ahuya, 1987; Mwandotto et al., 1992). The breeding component of the programme was based at the Ol' magogo field station of the National Animal Husbandry Research Center, Naivasha (Republic of Kenya, 1990). However due to government budgetary and too frequent human resource turn-over and some times competence inconsistencies, the population of the new breed never grew large enough to be stabilized and sustained (Carles et al., 1991; Rege et al., 2002).The program failed to define sustainable breeding objectives jointly with the stakeholders and only determined the optimum level of exotic dairy genes by computer simulations. In addition the project did not go on-farm in good time and in large enough animal numbers. The farmers, who were the target clientele, were never involved in the design and the implementation until when the product had been developed.

A review of the past crossbreeding programmes indicates that, most of them were never designed and implemented in a participatory manner, and did not take into consideration the aspirations of the target farmers, who in most cases are small-scale resource- limited livestock keepers (Kosgey et al., 2006). In general, crossbreeding of dairy goats involving beneficiaries seems to be the most common method of genetic improvements used by the governments and Non-Governmental Organizations (NGOs) in the East African region.

2.7 Funding of Dairy Goat Project

Major donors such as the World Bank, the African Development Bank and bilateral aid agencies incur huge expenditures to implement development projects in developing countries inorder to achieve expected returns from the investments. In view of this, sustainability of these projects must be assured inorder for the gains from the development expenditure to surpass the debt load of the developing countries (Khan, 2000).

Proasne (2005), notes that for a project to produce sustainable results, the project managers have to ensure that funding will be adequate to support the identified solutions to the problems in the long-term. For this to occur, it is necessary that the technologies introduced be cost effective and easily understood by the beneficiaries. Also, it is important that people in the community receive instruction in new techniques, as well as training in the maintenance of any new technology provided through the project.

Secure funding is a critical factor in determining whether a project is sustainable or not (Mcglone, 1999). Local projects tend to need two types of funding: money to help them set up and funding to cover running costs. Both are equally important but many projects find funding for running costs very difficult to obtain. Late release, insufficient amounts, poor timeliness in releasing funds, is also a challenge in the implementation of community projects.

2.8 Dairy Goat Breed

Dairy goat production and improvement at the community level is a concerted effort especially where group or community based approach to goat improvement is embraced in terms of managing breeding services, recording and registration to ensure that inbreeding problems are eliminated (Munyua, 1997). One of the many factors that determine the success or failure of any livestock enterprise is the choice of breed. The choice of dairy goat breeds and genotypes needs to be matched with the prevailing and anticipated future production environments. It is not good enough to provide potentially high producing genotypes such as British Toggenburg or German Alpine to farmers who lack the basic skills in goat husbandry, housing, health and feeding (Okeyo, 1997).

Many past dairy goat development efforts in the country have failed because of mis-match between the farmers' ability to profitably rear such goats and the goat own ability to withstand the local environments, which are often rather harsh (Ahuya et al., 2005). The issue of quality, availability and access to breeding stock, is closely related to the source of the initial exotic stock and the subsequent breeding programme put in place to multiply the exotic or stabilize the resultant levels of crossbreds or upgrades. To have quality assurance, the origins of the initial breeding stock need to be reputable, while the records of pedigree, reproduction and production must be ascertained and certified for the imported dairy goats.

Good quality breeding stocks, of whatever breed, Toggenburg, Alpine, Saanen, etc are largely inadequate without any accompanying breeding plan to sustain the good quality crossbred. Most projects bring in few bucks to farmers to use for cross-breeding with local meat goats or grading-up schemes, without due consideration of what happens after the first filial generation (F1) is produced (Ahuya et al., 2005; Philipsson et al., 2006). In absence of an accompanying effective husbandry skill building, high mortality rates are observed among the subsequent generations, as part of the natural selection against the more productive animals, resulting in less productive animals surviving. From the many lessons learnt from past and on-going dairy goat projects, governments and development agencies that promote dairy goats in the East Africa region should support or undertake projects which bring in good quality stock with sound breeding and management programmes to reduce disease incidences at farm level (Okeyo, 1997). Long-term socio-economic benefits of crossbreeding programmes, based on specific prevailing circumstances and genetic variability of the indigenous populations need to be considered when introducing exotic breeds (Ayalew et al., 2003a; b).

To ensure local and continued availability of breeding stock, farmers need to be facilitated to form legally recognized breeder associations, and be technically supported by governments and NGOs to be able to produce and select breeding stocks of high enough genetic merits. In this regard, the FARM-Africa Meru Goat Breeders Association (MGBA) and ISLP Dairy Goat Association of Kenya (DGAK) models are good examples that can be replicated by the other up-coming dairy goat programmes. The community based dairy goat breeding schemes, through buck stations, and breeder

units if technically appropriately designed and supported would ensure, continuous local supply of quality and local adapted breeding stock in a sustainable way (Ahuya et al., 2001; Ahuya et al., 2003).

2.9 Management of Dairy Goat Project

Project management is defined as the application of knowledge, skills, tools and techniques to project activities in order to meet Stakeholder's needs and expectations from a project (Burke, 2006). The management of dairy goat project is mostly undertaken by officials of farmer groups elected by the members of the groups. Their mandate is to oversee the smooth running of the project for the benefit of the members. The success or failure of the project therefore is greatly determined by how they handle this responsibility. In managing the dairy goat project, these officials should hold meetings regularly; have skills like communication, conflict resolution, and knowledge for upgrading the local goats and be able to make decisions on group cohesiveness (Republic of Kenya, 1998).

Community leaders therefore need training on community led and farmer managed dairy goat production and improvement. The sustainability of community based programmes depends on how much the community leaders are involved in the programme. The improved dairy goats require improved management systems, in terms of good housing, proper feeding and mineral supplementation, planned breeding management that involves systematic recording (Ahuya, 1987). He further pointed out that, most of the successful community based goat improvement initiatives have been due to rigorous

capacity building of key stakeholders and the farmer, hence training should be part of the implementation package.

Management of dairy goat projects among communities involved cross-breeding of dairy goats with exotic breeds such as Toggenburg and Alpines. The projects set-up a sustainable community based management package where interested farmers were organized into groups and trained on management techniques of the high performing cross-bred dairy goats. The project also establishes farmer to farmer and extension to farmer training programmes aimed at creating a favorable environment to enable the improved goats to realize their full potential for milk and meat production. The basis of the breeding and management objectives of dairy goat projects lie in the traits possessed by the cross-bred dairy goats such as; increased milk production, rapid growth rate for meat production and manure for crop production (Okeyo, 1997).

A sustained project is one whose programmes, outputs and services are maintained continuously over time, and keeps that focus with its original goals and objectives. It is now widely recognized that under the current situation of globalization and liberalization, any project induced products which cannot be produced and sold under market determined cost and prices and cannot earn profit under these conditions, are neither likely to be sustained nor would these be beneficial to the economy (FAO,1995). All tasks and activities of dairy goat projects should ensure quality of animals is maintained, numbers increased and the market share is retained. This keeps the income and nutrition benefits flowing (Ahuya et al, 2004).

2.10 Conceptual Framework

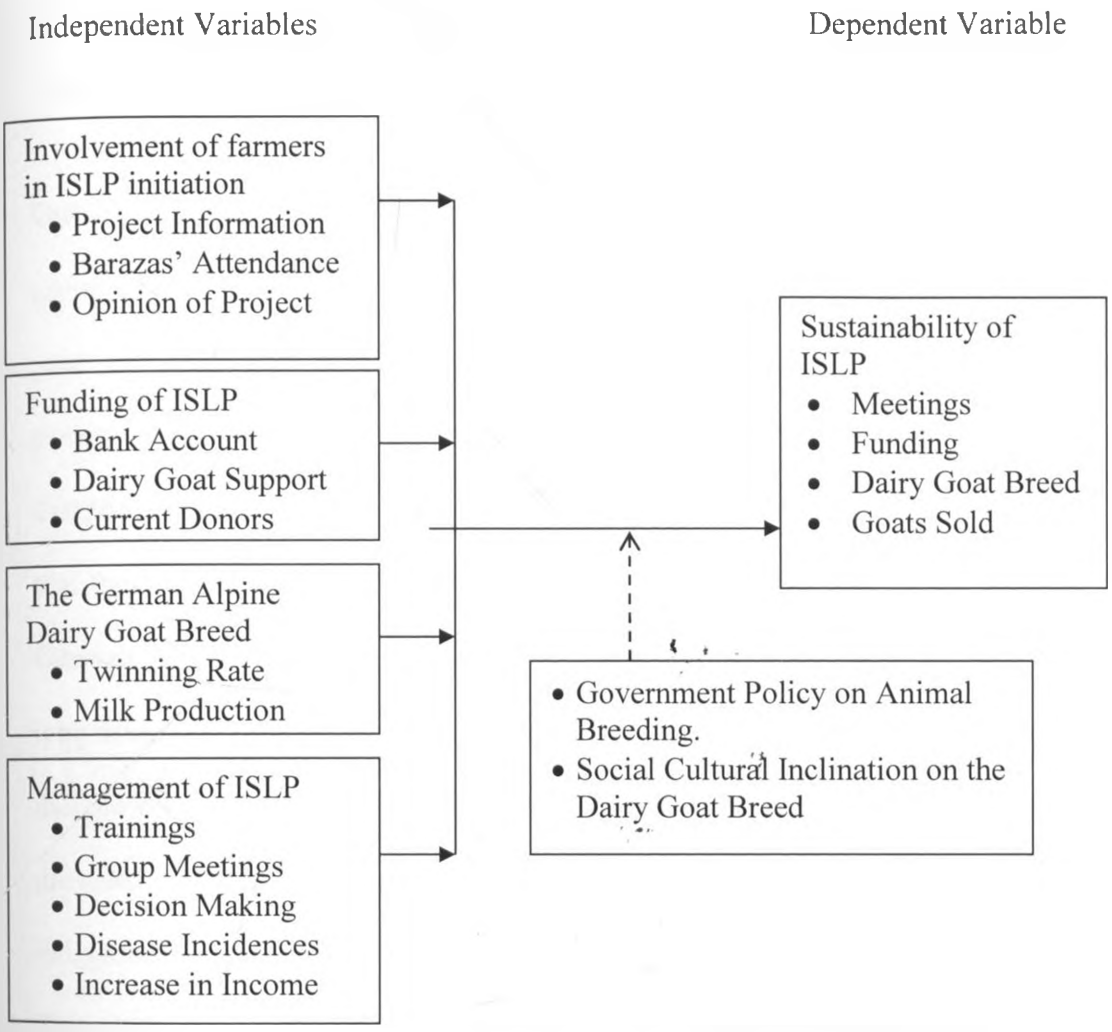

Figure 1

Sustainability of dairy goat project in this study was conceptualized as the dependent variable while the involvement of farmers in ISLP initiation, funding of ISLP, German Alpine dairy goat breed and management of ISLP were viewed as independent variables. It was assumed that the dairy goat project in Mukurweini District was influenced by the above factors during its implementation which in turn led to its sustainability. The

livestock policy on Animal Breeding and the social cultural inclinations regarding the new dairy goat breed introduced were some of the intervening variables for the study.

2.11 Summary of Literature Review

One of the factors that led to success of goat improvement initiatives in Kenya is the group approach which provided forums for farmers to come together with a common goal. For dairy goat development to sustainably meet their intended goals, especially poverty reduction among the poor, dairy goat development projects must be soundly designed, with the right partnership forged such that each provides the respective roles that they are best placed to provide. It is assumed that the smallholder farmers' ISLP, German Alpine dairy goat in Mukurweini District has been successful and sustainable long after the completion of the donor funded project in 1998. During the initiation of the project, the smallholder dairy goat farmers were fully involved, the funds were provided adequately and timely, while high quality breed was introduced to upgrade the indigenous goats and the farmer groups were properly trained on management issues. This study investigated the factors influencing the sustainability of the ISLP, German Alpine dairy goat in Mukurweini District, in Central Province, Kenya. The success of this project could be duplicated in other areas as a means of poverty reduction initiative.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter gives a detailed outline of how the study was carried out. It describes the research design, the target population, the sample size and sampling procedure, research instruments, piloting, validity of instruments, reliability of instruments, data collection procedures, data analysis techniques, operational definition of variables and the ethical issues of the study.

3.2 Research Design

The study adopted a descriptive survey design to assess the factors influencing sustainability of dairy goat project ISLP in Mukurweini District. Descriptive survey design is used in preliminary and exploratory studies to allow the researcher gather information, summarize, present and interpret it for the purpose of generalization (Orodho, 2003). Kothari (2004), also recommends descriptive design as it allows the researcher to describe, record, analyze and report conditions that exist or existed.

The design was suitable for this study because it did not involve manipulation of variables and allowed the researcher to generate descriptive data about aspects of sustainability of dairy goat project in Mukurweini District.

3.3 Target Population

The study was carried out in Mukurweini District in Central Province of Kenya. The District was chosen because it had the highest number of successful dairy goat farmer groups in Central Province (Republic of Kenya, 2007). The target population of the study comprised of 211 people drawn from the smallholder dairy goat farmer groups' officials, the divisional livestock extension officers and the chiefs as tabulated in table 3.1.

Table 3.1: Target Population of the Study

Category	Source	Population
Officials of Dairy Goat Groups	65 Registered dairy goat groups with three (3) officials each	195 Officials of the dairy goat groups
Divisional Livestock Extension Officers	4 Divisions	Four (4) Division Livestock extension officers
Chiefs	12 Locations	Twelve (12) chiefs
Total		211

3.4 Sample Size and Sampling Procedure

According to Kothari (2004), sampling is the selection of some part of an aggregate or totality on the basis of which a judgment or inference about the aggregate or totality is

made. The study adopted a simple random sampling method. This is because smallholder dairy goat farmer groups are found in all the divisions of Mukurweini District and it was important to give each and every group in the district an equal chance of being in the study.

A representative sample of thirty percent (30%) of the sixty five (65) registered smallholder dairy goat farmer groups were randomly sampled to give twenty (20) smallholder dairy goat groups for the purpose of the study. According to Cochran (1977), a sample of 30% of the population is sufficient for the study. From each dairy goat group randomly sampled, three officials were picked to give the researcher a total of sixty (60) respondents in this category. The three dairy goat group officials from each group were the chairman, the secretary and one committee member since they were best placed to understand how the dairy goat project was implemented.

The researcher also sought the opinion of the divisional livestock extension officers, by selecting randomly thirty percent (30%) of the four (4) divisional livestock extension officers to give the researcher two (2) respondents in this category. Division livestock extension officers were chosen since they have a general overview of ISLP dairy goat project in terms of its initiation, funding levels, dairy goats breed adaptability and how the dairy goat project was managed.

Apart from the information given by the officials of the dairy goat groups and the division livestock extension officers, the researcher also sought the opinion of the key informants in Mukurweini District. In this study, the chiefs of the twelve (12) locations

of the District were identified as the most appropriate. Using simple random sampling, thirty percent (30%) of the chiefs were randomly selected to give four (4) respondents in this category. This category was identified since the chiefs had an overall understanding of development issues taking place in their locations. In total the sampling procedure provided the researcher with a sample size of sixty six (66) respondents as indicated in table 3.2.

Table 3.2: Sample Size

Category	Population	30% of Population
Dairy Goat Group Officials	195 Officials of the dairy goat groups	60
Divisional Livestock Extension Officers	4	2
Chiefs	12	4
Total	211	66

3.5 Research Instruments

This study used questionnaires for the purposes of gathering information from the dairy goat farmer group officials, the divisional livestock extension officers and the chiefs. Both the primary and secondary data was collected for the purposes of this study. Questionnaires with both open and closed ended questions were used to collect the

primary data. Open ended questions were used to seek in-depth information. Secondary data was collected from the office of the district livestock production office and other written reports from the Department of Livestock Production library. Further secondary information was obtained from review of journals and similar research conducted previously.

3.5.1 Piloting

A pilot study was conducted on five (5) persons, including one chairman, one secretary and one committee member of one dairy goat group from one Division, one chief and one divisional extension officer from the same Division to ascertain the correctness of the research instruments before data collection. After piloting was done, the questionnaires were adjusted so that they were properly understood and well framed. This ensured that the research questions derived suitable answers from the respondents towards the stated research objectives.

3.5.2 Validity of Research Instruments

Mugenda and Mugenda, (1999) defines validity as the accuracy and meaningfulness of inferences which are based on the research results; it's the degree to which results obtained from analysis of the data actually represent the phenomenon under study. In order to improve validity of the instruments, the researcher used simplified and precise questionnaires which were easily understood and well framed for the respondents. The researcher also consulted the livestock experts and incorporated the supervisors' opinion inorder to make valid inferences.

3.5.3 Reliability of Research Instruments

On reliability, Mugenda and Mugenda, (1999) defines it as a measure of the degree to which a research instrument yields consistent results or data after repeated trials. Reliability is important because it enables the researcher to identify misunderstandings, ambiguities, and inadequate items in the research instruments and make the necessary adjustments so that data collected can have more reliability. In order to improve consistency of results from the instruments, the researcher standardized them by using test-retest method. At this point, the researcher administered the same questionnaires twice after a lapse of one week to five (5) dairy goat group officials from the groups that were not used in the study. The data got was used to calculate coefficient of reliability using Reliability Coefficient (Cronbach Alpha) formula:

N/ (N-1)*(Total Variance - Sum of Individual Variance)/Total Variance

Where:

N = Total questionnaires administered

Variance = Square (Score – Average)

From the data colleted;

The total questionnaires =17

Total Variance = 14

Sum of individual Variance = 2.8

Alpha = 17/ (17-1) * (14 – 2.8)/14 = 1.0625 * 0.8 = 0.85

Reliability Coefficient = 0.85. These results are supported by Mugenda, (2008) who says that a reliability coefficient of 0.80 or more implies that there is a high degree of reliability of data.

3.6 Data Collection Procedures

After the research proposal writing, approval was granted by the supervisors and a research permit obtained from the Ministry of Higher Education, Science and Technology. The researcher also sought an authority from the Director of Livestock Production (DLP) to go to Central Province and to the District Commissioner Mukurweini to collect data. Thereafter the officer incharge of the District Livestock Production Office, Mukurweini District was contacted before the start of the study. The study used survey method of data collection. The Researcher and the District Livestock Production Officer of Mukurweini District and two Divisional Extension officers went through the semi-structured questionnaire and corrected them before piloting the questionnaires. The research assistance was trained on how to administer the questionnaires and together with the researcher piloted the questionnaires.

After piloting the questionnaires, corrections were made and then they were hand delivered to the identified samples of the population by the researcher and the research assistant with adequate instructions and easy to understand language. They include the dairy goat farmer group chairmen and secretaries, the divisional livestock extension officers and the chiefs. Dates of collecting the filled in questionnaires were agreed upon at the point of delivery and follow-up done through telephone. For the dairy goat

committee members, questionnaires were used to interview the respondents at their farms since most of them were formally semi-literate to fill in questionnaires on their own. The respondents were assured strict confidentiality of their identities.

The primary data included the respondents' bio-data, involvement of dairy goat farmers in the project initiation, funding and support of the dairy goat project, the German Alpine dairy goat breed and their milk production levels and management of dairy goat project in terms of training in group dynamics, decision making and income levels of the dairy goat farmers. The responses from the respondents helped the researcher to get data on the stated objectives of the study.

3.7 Data Analysis Techniques

After the data collection exercise, a thematic approach was adopted in data analysis to cover all the areas of the study. Then the research instruments were assembled for summarizing, coding and cleaning. Data cleaning is whereby the researcher goes through the coded data one by one to find out if there are any errors. Data cleaning helps in catching and correcting errors and inconsistent codes (Nachmias and Nachmias, 2005).

Data generated from questionnaires was organized, tabulated and classified into sub-samples for common characteristics with responses being coded to facilitate basic statistical analysis. Orodho (2003), argues that the simplest way to present data is in frequency or percentage tables, which summarizes data about a single variable. Data was analysed using the Statistical Package for Social Sciences (SPSS) and presented conveniently using frequency tables.

3.8 Operational Definition of Variables

The researcher identified behavioral dimensions, indicators or properties denoted by the main variables under the study inorder to render them measurable. The measurements were both objective and subjective.

Table 3.3 Operational Definition of Variables

Objective	Variable	Indicator	Measurements	Scale
1.To assess sustainability of dairy goat project	**Dependent** Sustainability of Dairy Goat Project	Meetings	Number of meetings	Ratio
		Funding	Level of funding	Ordinal
		Dairy Goat Breed	Number of Offsprings	Ratio
		Goats sold	Number of Goats sold	Ratio
2.To investigate how the farmers were involved in the initiation of the dairy goat project	**Independent** Involvement of farmers in dairy goat project initiation	Project Information	Source of project Information	Nominal
		Attendance of Barazas	How Barazas were attended	Nominal
		Opinion about Dairy Goat Project	Whether allowed to give opinion about project	Nominal

3.To assess how funding of ISLP influences sustainability of the project	**Independent** Funding of dairy goat project	Bank Account Project Support Current donors	Availability of Bank Account Source of Support Level of Support by Current Donors	Nominal Nominal Ordinal
4. To determine how the introduction of German Alpine dairy goat breed influences sustainability of the project	**Independent** German Alpine Dairy goat breed	Twinning Rate Milk Production Milk Production	Number of Twinning Level of milk production Number of Litres Produced	Ratio Ordinal Ratio
5. To investigate how management practices of ISLP influences sustainability of the project	**Independent** Management of dairy goat project	Trainings Group Meetings Decision Making Disease Incidences Increase in Income	Whether Trained Frequency of meetings Method of Decision making Frequency of Disease Incidences Level of Income	Nominal Nominal Ordinal Ordinal Ordinal

The study design was descriptive survey, while the tool of data analysis was measure of central tendency and percentages.

3.9 Ethical Issues

While this research will contribute to the knowledge of the factors that influence project sustainability, it also maintained utmost confidentiality about the identity of the respondents. All the respondents were given a free will to participate and contribute voluntarily to the study. Necessary research authorities were consulted and permission granted while due explanations were given to the respondents before commencement of the study.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION OF FINDINGS

4.1 Introduction

This chapter presents data analysis, presentation of findings and interpretation of the research findings. The study aimed at assessing the factors influencing sustainability of dairy goat projects: case of integrated small livestock project in Mukurweini District, Central Province, Kenya.

4.2 Questionnaire Return Rate

Out of the sixty six (66) respondents sixty (60) were dairy goat group officials representing an overall response of 91.0%, two (2) were divisional livestock extension officers while four (4) were opinion leaders representing 3.0% and 6.0% of the overall response respectively. The return rate was 100% as sixty six (66) questionnaires were returned fully filled by sixty six (66) respondents. This was because the questionnaires were hand delivered to the respondents and follow up done by telephoning. The research assistance was facilitated with airtime and fuel for the motor cycle to collect the filled in questionnaires from the respondents at the agreed time.

There were more responses from the dairy goat group officials than in the other categories as more questionnaires were administered to them since they were the main category of the study respondents as proposed in the study. Their response was of great

importance to this study because in real terms they are the ones who mostly determine the direction of the project as far as policy formulation and implementation is concerned.

4.3 Demographic Characteristics of the Respondents

The study looked into the demographic characteristics of the respondents' inorder to establish whether they had any influence on the factors influencing sustainability of the dairy goat project. The study set to establish the gender composition of the respondents, the age of dairy goat officials, the education level of the respondents and the group operation time.

4.3.1 Gender of the Respondents

The study looked into gender composition within the officials of the dairy goat groups' inorder to establish whether gender has any influence on the factors influencing sustainability of the dairy goat project. The study revealed that most of the dairy goat group officials were male accounting to an overwhelming majority of 76.7% of the dairy goat group officials, with only 23.3% representing females. For the Divisional Extension Officers gender representation was 50% male and 50% female while the chiefs were 100% males. This may be due to the fact that women normally shy away from leadership elective positions and the fact that Mukurweini District as a society is largely patriarchal with most of the leadership positions being male dominated. The observations are summarized in table 4.1.

Table 4.1: Gender of the Respondents

Gender	Frequency	%
Male	46	76.7
Female	14	23.3
Total	60	100.0

4.3.2 Age of Dairy Goat Group Officials

Table 4.2 reveals that, 78.4% of the dairy goat group officials were over the age of 40 years while 18.3 % and 3.3% were 30-40 years and less than 30 years respectively. The study found out that most of the dairy goat projects are implemented by men and women who are mature and with property like land against which the dairy goats can be kept and fed. These categories of people are above the age of 40 years.

Table 4.2: Age of Dairy Goat Group Officials

Age in years	Frequency	%
< 30	2	3.3
30 – 40	11	18.3
40- 50	16	26.7
> 50	31	51.7
Total	60	100.0

4.3.3 Level of Education

Table 4.3 indicates that 35% of the dairy goat group officials had primary certificate, while 56.7% had secondary education and 6.7% and 1.7% had college and University education respectively. According to the study 65.1% of the respondents had secondary education and above and were the ones at the management level of the dairy goat groups which may result to better management of the groups leading to sustainability of the project. This is supported by Kosgey 2004, who in his study identified low levels of formal literacy as one of the challenges of the goat improvement programmes.

Table 4.3: Education Level of Dairy Goat Group Officials

Level of Education	Frequency	%
Primary	21	35.0
Secondary	34	56.7
College	4	6.7
University	1	1.7
Total	60	100.0

4.3.4 Group Operation Time

Table 4.4 shows that 25% of the dairy goat group officials indicated that their groups had existed for less than five years, 60% indicated existence for 6-11 years and 15% indicated that their groups existed for 12-22 years which was from the time the dairy

goat project started. It can be noted that there were no dairy goat groups that existed before the dairy goat project was introduced i.e. over 23 years and that 60% of the dairy goat groups were formed immediately after the dairy goat project ended while 25% were newly formed groups. This could indicate continuity and sustainability of the dairy goat project as the group formation is continues.

Table 4.4: Operation time

Operation Time	Frequency	%
<5 years	15	25.0
6-11 years	36	60.0
12-22 years	9	15.0
Over 23 years	0	0
Total	60	100.0

4.4 Involvement of Smallholder Farmers in Project Initiation

Involvement of the beneficiaries when initiating a project may determine the sustainability of the project. The study set out to establish where the dairy goat group officials got the information about the dairy goat project when it was being initiated, the number of meetings held by the dairy goat groups before the start of the project, and the how the barazas/meetings were attended when the project was being initiated.

4.4.1 Source of Information about the Dairy Goat Project

Table 4.5 shows that 50% of the dairy goat group officials indicated that their group members got the information about the project through barazas, 3.3% got from church while 46.7% got from friends. The study indicates that 96.7% of goat farmers got the information on dairy goat project initiation from the barazas and friends, showing that most of the goat farmers were aware of the dairy goat project when it was being introduced which could have contributed to the project sustainability. This is supported by Munyua (1997), where he observes that farmers should be involved right from the beginning of a project as key players in identifying the problems, prescribing solutions and setting up the sequences and priority of activities aimed at solving their problems.

Table 4.5: Source of Information about the Dairy Goat Project

Source of Information	Frequency	%
Barazas	30	50.0
Church	2	3.3
Friends	28	46.7
Total	60	100.0

4.4.2 Number of Meetings Held Before Start of Project

From table 4.6, the result shows that 76.7% of the dairy goat group officials reported that less than five (5) meetings were held in their groups before the start of the project,

21.7% reported 6-11 meetings held, 1% reported 12-17 meetings held and none reported over 18 meetings. These results shows that the idea of the dairy goat project was well received by the goat farmers necessitating them to take it up after only a few meetings, thus indicating how fast the project was accepted by the beneficiaries and the perception they had on the enterprise being introduced.

In another response, the study also found out from 100% of the dairy goat group officials that the dairy goat project was appropriate for the area due to small land size, the project could reduce poverty and lack of any other projects in the area. This is supported by Peacock (1996), who said that introduction of dairy goats in small farms of the populated areas may be the only way of ensuring that the farm families get milk and extra is sold for economic gain.

Table 4.6: Number of Meetings Held Before Start of Project

Meetings	Frequency	%
<5	46	76.6
6-11	13	21.7
12-17	1	1.7
>18	0	0
Total	60	100.0

4.4.3 Attendance of the Barazas/meetings

One hundred percent (100%) of the Divisional Livestock Extension Officers indicated that the method used to disseminate information about the initiation of dairy goat project was through barazas and meetings. They also reported that the barazas were well attended by 100%. The chiefs on the other hand reported that the organized barazas to introduce the dairy goat project were well attended by 100%. The study indicates that the goat farmers were receptive to the dairy goat project and were ready to take responsibility of rearing them for their own benefits which could lead to project sustainability. This is supported by Mulwa (2008), who says that when farmers are involved a sense of ownership is realised which is fundamental to the sustainability of community based projects.

4.5 Funding of Dairy Goat Project

Funding is a very important factor in determining the success and sustainability of a dairy goat project. The researcher sought the opinion of the respondents on the funding of the dairy goat project during the implementation years to determine whether it was adequate or not. The researcher also sought to know the current donors and support of the dairy goat groups with a view of ascertaining the continuity of the dairy goat project in the study area.

4.5.1 Funding/ Support of the Dairy Goat Groups

Table 4.7 indicates that 26.7% of the dairy goat group officials said that the funding was excellent in their groups, 40% indicated that the funding/support was good while 33.3% reported a moderate level of funding. None reported poor funding levels.

Table 4.7: Funding/Support of Dairy Goat Groups (Group Officials)

Group Officials	Frequency	%
Excellent	16	26.7
Good	24	40.0
Moderate	20	33.3
Total	60	100.0

In the study also, the chiefs as shown in table 4.8 indicated that the funding/support was 25% excellent, 50% good, 25% moderate and none reported poor funding. One hundred percent (100%) of the dairy goat group officials also indicated that their groups had bank accounts, while the Division Livestock Extension Officers indicated that the funding of the dairy goat project during the years of implementation was excellent by 100%. These findings indicate that funding of the dairy goat project during the years of implementation was adequate which could lead to project sustainability. This is supported by Proasne (2005), who noted that for a project to produce sustainable results, the project managers have to ensure that funding will be adequate to support the identified solutions to the problems in the long term. Mcglone (1999), in his study also

noted that funding is a critical factor in determining whether a project is sustainable or not.

Table 4.8: Funding/Support of Dairy Goat Group (Chiefs)

Chiefs	Frequency	%
Excellent	1	25
Good	2	50
Moderate	1	25
Total	4	100.0

4.5.2 Current Support of Dairy Goat Group

Table 4.9 shows that 55% of the dairy goat group officials reported that their groups had donors supporting them, while 45% reported that they were getting their support through group members' contributions.

Table 4.9: Current Support of Dairy Goat Groups

Donor Support	Frequency	%
Yes	33	55
No	27	45
Total	60	100.0

Table 4.10 indicates the current donors supporting the dairy goat groups as reported by the dairy goat group officials. These includes; GOK/CDF/NMK by 28.4%, IFAD/CKDAP by 13.3% and DGAK/GTZ by 13.3% while 45% represented the ones supported by group members contributions. These results of table 4.8 and table 4.9 indicates that the dairy goat project is still attracting donors and those not supported by donors are supporting themselves through own contributions for continuity and sustainability of the dairy goat project. This is supported by Republic of Kenya, (1997) report which indicated that farmer organization like DGAK was formed for sustainability and continuity of the project after winding up of ISLP in 1998.

Table 4.10: Current Donors Supporting Dairy Goat Groups

Donors	Frequency	%
GOK/CDF/NMK	17	28.4
IFAD/CKDAP	8	13.3
DGAK/GTZ	8	13.3
Non-response	27	45.0
Total	60	100.0

4.6 German Alpine Dairy Goat Breed

One of the many factors that determine the success or failure of any livestock enterprise is the choice of breed. The study set out to determine the number of offsprings that the

farmers had at the end of the first year of the dairy goat project, the twinning rate and milk production of the introduced cross-bred dairy goats.

4.6.1 Number of Offsprings in the First Year of Project

Table 4.11 shows that 8.3% of the dairy goat group officials reported less than 10 offsprings realised during the first year of the dairy goat project, 35% reported 11-21 offsprings, 7% reported 22-32 offsprings and 45% reported more than 33 offsprings. In the same study, 100% of the Division Livestock Extension Officers reported that the offsprings realized by the farmers in their divisions in the first year of the project were more than 33. The number of offsprings that the farmers had at the end of the first year of the dairy goat project was an indication that the introduced breed was proliferatic and could lead to sustainability of the project. This is supported by (Ayalew et al., 2003a; b) who recommended that long-term socio-economic benefits of dairy goat projects needed to be considered when introducing exotic breeds.

Table 4.11: Number of Offsprings in the First Year of the Project

Offsprings	Frequency	%
<10	5	8.3
11-21	21	35.0
22-32	7	11.7
>33	27	45.0
Total	60	100.0

4.6.2 Twinning rate

Table 4.12 shows that less than 10% twinning rate was reported by 16.7% dairy goat group officials, 28.3% reported 11-21% twinning rate, 6.7% reported 22-32% twinning rate and more than 33% twinning rate was reported by 48.3% during the first year of the dairy goat project. In the same study, the Division Livestock Extension Officers reported more than 33% twinning rate in their divisions during the first year of the dairy goat project. The rate of twinning indicated that the dairy goat breed introduced had the characteristic of twinning and dairy goat farmers in the project could realize more offsprings leading to sustainability of the project. This is supported by Republic of Kenya, (1997) report, which indicated that one of the advantages of dairy goats is their twinning ability among other factors which have made them become the alternative source of the milk in Central and Eastern Kenya highlands.

Table 4.12: Number of Twinning

Twinning	Frequency	%
<10%	10	16.7
11-21%	17	28.3
22-32%	4	6.7
>33%	29	48.3
Total	60	100.0

4.6.3 Milk Production

In table 4.13, 93.3% of the dairy goat group officials indicated that there was an increase of milk production from the upgraded dairy goats in their groups, and 6.7% reported lack of increase of milk production. In the same study, 100% of the Division livestock Extension Officers indicated that dairy goat farmers in their Divisions had recorded an increase in milk production. The chiefs also reported that they strongly agree that upgraded dairy goats produce more milk than local goats by 100%. The study shows that smallholder dairy goat farmers recorded an increase in milk production during the six years of the project which could lead to project sustainability. This is supported by Okeyo (1997), who observed that the basis of breeding dairy goats lie in the traits possessed by the cross-bred dairy goats such as increased milk production among other factors.

Table 4.13: Increase in Milk Production

Increase in Milk Production	Frequency	%
Yes	56	93.3
No	4	6.7
Total	60	100.0

4.6.4 Level of Milk Production

Table 4.14 indicates that 25% of the dairy goat group officials reported less than one litre of milk per doe per day, 73.3% reported 1-2 litres per doe per day and 1.7% reported more than two litres of milk per doe per day in their groups. The results indicate that most of the upgraded female goats produced 1-2 litres of milk per day thus showing an increase in milk production from the introduced dairy goat breed which could lead to dairy goat project sustainability. This is supported by studies of Okeyo (1997), and Ahuya et al., (2004) which have shown the advantages of the cross-bred dairy goats in terms of increased level of milk production and growth rate among other factors.

Table 4.14: Number of Litres of Milk per Doe per Day

Milk Litres	Frequency	%
<1	15	25.0
1-2	44	73.3
>2	1	1.7
Total	60	100.0

4.7 Management of Dairy Goat Project

The management of smallholder dairy goat projects is mostly undertaken by group officials elected by the members of the group. Their mandate is to oversee the smooth running of the group activities for the benefit of the members. The success or failure of

the project therefore is greatly determined by how they handle this responsibility. The study looked into the management on the basis of whether the dairy goat group officials were trained on group dynamics, whether the groups held meetings regularly, how decisions were made in the groups, the level of disease incidences of their goats and the number of goats sold per dairy goat group per year.

4.7.1 Training of Group Officials

Table 4.15 shows that 95% of the dairy goat group officials were trained on group dynamics while only 5% indicated that they had not been trained from the time they assumed office. In the same study, 100% of the Divisional Livestock Extension Officers agreed that they had been organizing trainings targeting dairy goat groups in their Divisions. The study shows that the dairy goat group officials had been trained on group dynamics which could lead to well managed dairy goat groups leading to sustainability, since it is through training that leadership, communication, decision making and general managerial skills are acquired. This is recommended by Ahuya (1987), who in his study noted that most of the successful community based goat projects have been due to rigorous capacity building to goat farmers and hence training should be part of the implementation package.

Table 4.15: Training in Group Dynamics

Trainings	Frequency	%
Yes	57	95
No	3	5
Total	60	100.0

4.7.2 Meeting of the Dairy Goat Groups

The study indicated that 100% of the dairy goat group officials had their groups meeting monthly as also reported by 100% of the Division Livestock Extension Officers in their Divisions and 100% of the chiefs in their locations. From the same study, 50% of the chiefs reported that the dairy goat groups in their Locations were very cohesive while 50% reported that they were moderately cohesive. The study shows that the dairy goat groups were meeting regularly and were cohesive enough which is crucial for the sustainability of dairy goat project since major decisions are made in such gatherings. This is supported by Republic of Kenya, (1998) report, which indicated that in managing the dairy goat project, the officials should hold meetings regularly, have skills like communication, conflict resolution and knowledge for upgrading the local goats and be able to make decisions on group cohesiveness.

4.7.3 Decision Making

Table 4.16 indicates that 61.7% of the dairy goat group officials reported that their dairy goat groups made decisions through consultation, and 38.3% reported decisions were made through voting. The chairman ruling had 0%. From the same study, 50% of the chiefs reported that the dairy goat groups in their Locations made decisions through consultation and 50% reported that decisions were made through voting. The study shows that the dairy goat groups were democratic and consultative in their decision making process which could lead to cohesive groups and a sustained dairy goat project. This is supported by Stanley (2003), who ascertains that general principles of participation approach include encouraging communities to take responsibility and promote participation for all.

Table 4.16: Decision Making

Decision Making	Frequency	%
Through Consultation	37	61.7
Through Voting	23	38.3
Chairman Ruling	0	0
Total	60	100.0

4.7.4 Disease Incidences of the Dairy Goats

Table 4.17 indicates that 88.3% of the dairy goat group officials reported fewer incidences of diseases in their groups, 11.7% reported hardly ever and none reported more frequent incidences of diseases. The study shows that a well managed dairy goat group has the members' dairy goats healthy with fewer incidences of diseases which could result to increased upgraded goats and hence sustainability of the project. This is supported by Okeyo (1997), who recommended that governments and development agencies that promote dairy goats in the East African region should support projects which bring in good quality stock with sound breeding and management programmes to reduce disease incidences at farm level.

Table 4.17: Diseases Incidences of the Dairy Goats

Disease Incidences	Frequency	%
More frequent	0	0
Less Frequent	53	88.3
Hardly Ever	7	11.7
Total	60	100.0

4.7.5 Dairy Goat Sold Per Year

Table 4.18 shows that 3.3% of the dairy goat group officials reported less than 10 upgraded dairy goats sold on average per year per group, 5% reported 11-21 upgraded

dairy goats sold per year, 26.7% reported 22-32 upgraded dairy goats sold per year and 65% reported over 33 upgraded dairy goats sold per year per group. In the same study, 100% dairy goat group officials reported that there was an increase of income for the dairy goat group members making it a profitable endeavor. The study indicates that the number of dairy goats sold per year increased which could be a measure of how well the dairy goat groups were managed leading to the dairy goat farmers benefiting economically and the dairy goat project sustained. This is supported by Ahuya et al, (2004), who in his study indicated that sustainability of the dairy goat project entailed doing all tasks/activities to ensure numbers increase to keep the income and nutrition benefits flowing.

Table 4.18: Number of Upgraded Goats Sold

Upgraded Goats Sold	Frequency	%
<10	2	3.3
11-21	3	5.0
22-32	16	26.7
>33	39	65.0
Total	60	100.0

CHAPTER FIVE

SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter discusses the summary of the findings; conclusions and the recommendations as reported by the respondents. This is in relation to involvement of farmers in project initiation, project funding, the German Alpine dairy goat breed and the dairy goat project management. Finally the chapter points out the areas the researcher thought would require further research in related fields.

5.2 Summary of Findings

Involvement of farmers in the initiation of the dairy goat project was viewed as a very important factor that determines sustainability of the dairy goat project. The study set out to look at how the farmers got the information about the dairy goat project when it was being initiated, whether they were allowed to give their opinion about the dairy goat project, the number of meetings held before the start of the dairy goat project and how the barazas/meetings were attended. Fifty percent (50%) of the dairy goat group officials reported that the members of their groups got the information about the dairy goat project from barazas, 46.7% reported that they got from friends and 100% reported that they were allowed to give their opinion about the dairy goat project. The study established that as few as five meetings were held before the farmers could start the dairy goat project as reported by 76.7% of the dairy goat group officials. The study also

found out that farmers were very interested with the dairy goat project since 100% of the chiefs reported that the barazas organized to introduce the dairy goat project were well attended. The foregoing shows that the farmers in the study area were involved during the initiation of the dairy goat project through barazas which were well attended while majority of the dairy goat farmers were allowed to give their opinion on the dairy goat project leading to sustainability of the project.

The study looked into the funding of the dairy goat project during the implementation years and the current support of the dairy goat groups. The study revealed that the funding of the dairy goat project during the six years of implementation was good and excellent as reported by 66.7% of the dairy goat group officials in their groups and 33.3% reported moderate funding. Seventy five percent (75%) of the chiefs also reported funding as being good and excellent in the dairy goat groups in their locations and 25% reported moderate funding. The study further revealed that the dairy goat project continued attracting other donors after the main project donor left, which was reported by 55% of the dairy goat officials, while 45% reported that they continued getting their support from the group members' contributions. The donors included; DGAK/GTZ, IFAD/CKDAP and GOK/CDF/NMK. These factors show that the dairy goat project was adequately funded during the implementation years and later was supported by other donors and group contributions leading to sustainability of the project.

On the introduced German Alpine dairy goat breed the study set out to look at the number of offsprings and twinning rate realised by the farmers during the first year of

the project implementation and the increase and level of milk production of their upgraded dairy goats. Thirty five percent (35%) of the dairy goat group officials reported 11-21 offsprings and 45% reported more than 33 offsprings. On twinning, 28.3% of the dairy goat group officials reported 11-21% twinning rate and 48.3% reported more than 33% twinning rate. On whether the dairy goat milk production increased or not, 93.3% of the dairy goat group officials reported that there was an increase of milk production in their groups. On the level of milk production per doe per day, 73.3% of the dairy goat group officials reported 1-2 litres of milk per doe per day and 25% reported less than one litre per doe per day. These results show that the German Alpine dairy goat breed which was introduced by the project in the study area was of good quality leading to project sustainability.

The study also looked into the management of the dairy goat project in terms of the trainings of the dairy goat group officials, frequency of dairy goat meetings, how decisions were made in the dairy goat groups, group cohesiveness, disease incidences of the dairy goats, the number of upgraded dairy goats sold per year per group and the increase in income. Ninety five percent (95%) of the dairy goat group officials reported that they were trained in group dynamics and 100% of the Division Livestock Extension officers reported that they organized for trainings targeting the dairy goat groups. In terms of conducting meetings 100% of all the respondents reported that the dairy goat groups met monthly while decision making was reported by 61.7% of the dairy goat group officials as being made through consultations and 38.3% through voting. Fifty percent (50%) of the chiefs reported that the dairy goat groups in their locations were

very cohesive while 50% reported that they were moderately cohesive. On disease incidences, 88.3% of the dairy goat group officials reported that their group members had fewer incidences of disease occurrence of their dairy goats while 65% of them reported that their groups were selling more than 33 upgraded dairy goats per group per year on average. In the opinion on whether the income of the dairy goat farmers increased or not, 100% of the dairy goat group officials reported that the income of the members of their dairy goat groups increased due to the sale of the upgraded dairy goats. The foregoing results show that the dairy goat group officials were trained to manage their dairy goat groups well which resulted to more upgraded dairy goats sold and income of the farmers increasing leading to sustainability of the project.

5.3 Discussion of Findings

Sustainability of dairy goat projects is influenced by many factors which determine its attainment. As observed by Stanley (2003), the most important factor for sustainability of projects is the genuine involvement of local people as active participants and equal partners whose concern and experience are intrinsic to project sustainability.

The study found out that the farmers in the study area were involved during the initiation of the dairy goat project through barazas/meetings which were well attended to inform them on the exotic dairy goat breed which was to be introduced to upgrade their local goats. This is supported by Mumyua (1997), where he observes that farmers should be involved right from the beginning of a project as key players in identifying the problems,

prescribing solutions and setting up the sequences and priority of activities aimed at solving their problems.

Funding of the dairy goat project was found by a majority of the respondents to be adequate during the implementing years which could lead to project sustainability. This is supported by Proasne (2005), who noted that for a project to produce sustainable results, the project managers have to ensure that funding will be adequate to support the identified solutions to the problems in the long term. Mcglone (1999), in his study also noted that funding is a critical factor in determining whether a project is sustainable or not.

For the dairy goat breed introduced for upgrading of the local goats, the study found out that they were prolific and the beneficiaries gained by getting more offsprings through twinning which led to an increase in the upgraded dairy goats. In the study also, the respondents reported an increase in milk production which could lead to improved nutrition to the dairy goat farmers. This is supported by (Ayalew et al., 2003a; b) who recommended that long-term socio-economic benefits of dairy goat projects needed to be considered when introducing exotic breeds.

On the management of the dairy goat project, the study established that majority of the dairy goat group officials had group management skills impacted on them during the group dynamic training, making them involve all the dairy goat group members in decision making which resulted to group cohesiveness. The study also established that

all the dairy goat groups were meeting regularly i.e. monthly resulting to well managed dairy goat groups with fewer incidences of diseases and more upgraded dairy goats sold per year per group culminating to an increase in income to the dairy goat farmers. This is supported by Ahuya et al, (2004), who in his study indicated that sustainability of the dairy goat project entailed doing all tasks/activities to ensure numbers increase to keep the income and nutrition benefits flowing.

5.4 Conclusions

Based on the findings of the study, it can be concluded that the farmers in the study area were fully involved during the initiation of the dairy goat project through barazas/meetings which were well attended to inform them on the exotic dairy goat breed which was to be introduced to upgrade their local goats. Majority of the farmers were allowed to give their opinions about the dairy goat project while very few meetings were required before the start of the project. This allowed them to make the decision to keep the dairy goats for their own benefits and had the sense of ownership which is fundamental to the sustainability of the dairy goat project.

Funding of the dairy goat project was found by a majority of the respondents to be adequate during the six years of implementing the dairy goat project and also after the donor pulled out, but continuity was ascertained by other donors coming to assist and dairy goat group members contributing to support their activities. From the perspective of funding presently, half of the dairy goat group officials reported other donors supporting the dairy goat groups while half were supported by the group members'

contributions to guarantee continuity of the dairy goat project and sustainability of the project.

On the German Alpine dairy goat breed introduced by the project to upgrade the local goats, the study found out that they were prolific and the beneficiaries gained by getting more offsprings through twinning which led to an increase in the upgraded dairy goats. In the study also, the respondents reported an increase in milk production which could lead to improved nutrition to the dairy goat farmers. From the study therefore, conclusion can be drawn that the dairy goat breed introduced by the project was of good quality as it increased the number of dairy goats and milk production in the study area which could lead to sustainability of the dairy goat project.

On the management of the dairy goat project, the study established that majority of the dairy goat group officials had group management skills impacted on them during the group dynamic training, making them involve all the dairy goat group members in decision making which resulted to group cohesiveness. The study also established that all the dairy goat groups were meeting regularly i.e. monthly resulting to well managed dairy goat groups with fewer incidences of diseases and more upgraded dairy goats sold per year per group culminating to an increase in income to the dairy goat farmers. From the study therefore, it can be concluded that the dairy goat project in Mukurweini District was beneficial to the farmers in terms of increase in income through sale of the offsprings and improved nutrition due to the increased in milk production which could lead to poverty alleviation in the study area and sustainability of the dairy goat project in

the long run. Based on the foregoing, conclusions can be arrived at to the effect that when the four variables are applied appropriately, then project sustainability could be guaranteed.

5.5 Recommendations

Based on the findings of the study the following recommendations were made:

1. There is need to adequately prepare the beneficiaries of a project before embarking on the implementation by informing them through barazas and meetings inorder for them to accept the responsibility of managing their own enterprise for their benefits. This should be done by first conducting a thorough assessment of the beneficiaries to know their needs and their ability inorder to get groups who are homogenous and interested with that particular enterprise. This should be done during stakeholder analysis stage at project planning.
2. Project funding is very crucial for running the project and should be planned from the initiation stage so that all project activities are incorporated and budgeted for to ensure adequacy throughout the implementation period. The project managers should carry the responsibility of ascertaining continuity by forming farmer organizations which could continue to run the project after the donor pulls out. The government on the other hand should support such farmer organization by providing grants and even seconding technical officers to such farmer organizations inorder for project sustainability to be realized.
3. Breed choice for livestock projects is very important and farmers should not be

left alone to purchase the breeds since they are very expensive. In this case the government should be able to import the best breeds from reputable countries and keep the standards as required in the animal breeding policy. The government should also be able to provide technical backup to farmer organizations so that the animals are kept with the standards required to produce more offsprings and increase income.

4. There should be continuous training to ensure dairy goat group officials are well equipped with group managerial skills since farmer groups are dynamic and are likely to have different people at different times in management. The District Livestock Production Officers are best suited to carry out this function and should be funded adequately to undertake these tasks.

5.6 Areas for Further Research

1. There is need to do similar research in other successful dairy goat development projects in the country to get more insight on the best practices resulting to sustainability.
2. There could also be need for a study in areas where dairy goat projects have failed to establish the causes of failure.
3. Another area of research could be to establish the economic viability of smallholder dairy goat farming as an enterprise.

REFERENCES

Ahuya, C.O., (1987). *Estimates of direct additive, Maternal Additive Heterosis and Maternal Heterotic Effects from crossbreeding goats in Kenya.* Unpublished Msc Thesis, Texas A&M University, USA.

Ahuya, C.O., (1997). *Community Based Goat Improvement Project in Meru Central and South Districts: The FARM- Africa experiences.* Paper presented at the Proceedings of Goat Development in Eastern Africa, Workshop, 8-11 December, 1997, Izaak Walton Inn, Embu, Kenya.

Ahuya, C.O., Okeyo, A.M.., Hendy, C., (2001). *Community-based Livestock Improvement: a Case Study of the FARM-Africa's Goat Improvement Project I Meru, Kenya.* Paper presented at the Proceedings of the Twenty Eighth Scientific Conference, Tanzania Society of Animal Production (TSAP),7-9 August, 2001, Morogoro, Tanzania, pp. 93-109.

Ahuya, C.O., Okeyo, A.M., Kitalyi, A., Mutia, P., Muriithi, F.M., (2003*). FARM-Africa dairy Goat and animal healthcare project: a successful case of agricultural research and sustainable development partnership.* Paper presented at the Proceedings of the Global Forum on Agricultural Research (GFAR) Conference, 22-24 May, 2003, Dakar Senegal.

Ahuya, C. O. Okeyo, A. M. & Muriithi, F. M. (2004). *Productivity of cross-bred goats under Smallholder production systems in the Eastern highlands of Kenya.* Paper Presented in proceeding of a Workshop on Enhancing the Contribution of

Small Livestock to the Livelihoods of Resource Poor Communities. Masaka, Uganda, 15-19th November, 2004. pp. 54-61.

Ahuya, C.O., Okeyo, A.M.,Mwangi Njuru., Peacock, C., (2005). Development challenges and opportunities in the goat industry: The Kenya experience.*Journal of Small Ruminants,* Res.60, 1997-2006.

Ayalew, W., Rishkowsky, B., King, J.M., Bruns. (2003a*). Crossbreds did not generate more benefits than indigenous goats in Ethiopian smallholdings.* Agric.Sys.76, 1137-1156. Empirical findings from the highlands of Central Kenya. CAPRI Working Paper 25.

Ayalew, W., King, J.M., Bruns, E., Rishkowsky, B., (2003b). Economic evaluation of Smallholder subsistence livestock production: Lesson from an Ethiopian goat development programme. *Journal of Eçological Economics* Vol. 45(3): 473-485.

Burke, R., (2006). *Project Management. Planning and Control Techniques*, 4th Eds. West Sussex, England.

Carles A.B., Mukhebi A.W., Okeyo, A. M., (1991). *Design of SR-CRSP Component.* Consultant Report.

Cochran, W. G., (1977). "*Sampling Techniques.*" 3rd Edition. John Wiley & sons, Inc: New York.

Devendra, C. & Mcleroy,G.B., (1987). *Goat and Sheep Production in the Tropics.* Longman Group UK LTD 1982.

FAO, (1995). Food and Agriculture Organization. World Agriculture: Towards 2010, *In: Alexandratos, N. (Ed), A FAO Study.* Wiley and sons, England.

Gichohi, C.M., (1997). *Overview of the Dairy Industry in Kenya: Strategies and way forward.* Paper presented at the Goat Development in East Africa, Proceedings of a Workshop held in Embu, Kenya. 7-11 December, 1997. pp.11-14.

Hetherington. L. (1982).*All About Goats*, Farming Press Limited, Wharfedale Road, Ipswich, Suffolk. Institute. Washington, DC: CGIAR Systemwide Program on Collective Action and Property.

Khan, A. M., (2000). *Planning for and Monitoring of Project Sustainability*: A Guideline on Concepts issues and Tools. UNDP, Washington D.C. 2000.

Kosgey, I. S. (2004). Breeding Objectives and Breeding Strategies for Small Ruminants in the Tropics. *PhD Thesis.* Wageningen University, Netherlands.

Kosgey, I.S., Baker, R.L., Udo, H.M.J., van Arendonk, J.A.M., (2006). Successes and Failures of Small Ruminant Breeding Programmes in the Tropics: *Journal of Small Ruminants. Res.*61, 13-28.

Kothari, C.R., (2004): *Research Methodology; Methods and Techniques*, New Delhi: New Age International (P) Limited, Publishers: Second Revised Edition: 2004.

Mcglone, P., Dobson, B., Dowler, E., Nelson, M., (1999). *Food Projects and how they Work*: A Joseph Rowntree Foundation Publication, March, 1999.

Mugenda, O. M. & Mugenda, A. G., (1999). *Research Methods*: *Quantitative and Qualitative Approaches*: Acts Press, Nairobi.

Mugenda, A. G., (2008). *Social Science Research: Theory and Principles*: Acts Press, Nairobi.

Mulwa, F. (2008).*Demystifying Participatory Community Development.* Nairobi, Kenya.

Munyua, S. J., (1997). *The Role of Breed Societies and Associations in Dairy Goat Development and Improvement: A case Study of the Dairy Goat Association of Kenya.* Paper presented at the Goat Development in East Africa, Proceedings of a Workshop held in Embu, Kenya. 7-11 December, 1997. pp.67-70.

Mwandotto, B.A.J., Taylor, J.F., Ruvuna, F., Ahuya, C., (1992). *Current Status of the Kenya Dual Purpose Goat (KDPG) breeding project at Naivasha.* Paper presented at the Proceedings of the 10th Small Ruminant-CRSP Scientific Workshop, 26-27 February 1992, Nairobi, Kenya.

Nachmias, C.F. & Nachmias, D., (2005) *Research Methods in Social Sciences*, St. Martin's Press, Inc., London.

Okeyo, A.M., (1997). *Challenges in goat improvement in developing rural economies of Eastern Africa with special reference to Kenya.* In Ahuya, C.O., van Houten (Eds.). Paper presented at the Proceedings of the Goat Development in Eastern Africa Workshop, 8-11 December, 1997, Izaac Walton Inn, Embu, Kenya, pp.55-66.

Orodho, J. A., (2003). *Essentials of educational and social science research methods.* Masola Publishers, Nairobi.

Owade, J., (2006). *Enhancing Goat Development for Poverty Alleviation and improved Livelihoods.* Paper presented at the Eastern Africa Goat Development Network (EAGODEN). In: Proceedings of the 6th Eastern Africa Workshop Goat

Development Network (EAGODEN) Biennial Conference held in Mt. Elgon Hotel, Mbale, and Uganda.6-8 November 2006. pp.105-112.

Peacock, C.P., (1996). *Improving Goat Production in the Tropics*. A Manual for Development Workers. Oxfam/FARM-Africa, Oxford, UK.

Peacock, C.P., (2005). *Goats unlocking their potential for Africa's farmers*. Paper presented at the Proceedings of the Seventh Conference of Ministers Responsible for Animal Resources, 31 October- 4 November, 2005, Kigali, Rwanda, pp.1-23.

Peters, K.J.,(1991). *Principles in Evaluation of Goat Populations in Tropical and Sub-Tropical Environments.* Consultant report, Addis Ababa: ILCA.

Philipsson, J., Rege J.E., and Okeyo, A.M., (2006). *Sustainable breeding programmes for tropical farming systems.* In: Ojango, J.M., Malmfors, B., and Okeyo, A.M., (Eds.), Animal Genetics Training Resources, Version 2. International Livestock Research Institute, Nairobi Kenya and Swedish University of Agricultural Sciences, Uppsala, Sweden, 2006.

Place, F., Kariuki, G., Wangila, J., Kristjanson, P., Makauki, A., and Ndubi, J., (2002). *Assessing the factors underlying differences in group performance*: Methodological issues and empirical findings from the highlands of Central Kenya. CAPRI Working Paper 25.

Proasne, T. (2005) Project sustainability, *http://sustainability.net/htm,* 10th March 2010.

Rege, J. O., (2002). *Cattle and Goat Breeding Policy in East Africa.* Paper Presented at the Proceedings of the Regional Consultative Workshop,

United Kenya Club, Nairobi, Kenya. April 15-17, 2002.

Republic of Kenya, (1990). *Annual Report-1990.* Department of Livestock Production. Nairobi, Kenya.

Republic of Kenya, (1992). *Annual Report-1992.* Department of Livestock Production. Nairobi, Kenya.

Republic of Kenya, (1997). *Annual Report-1997.* Department of Livestock Production Nairobi, Kenya.

Republic of Kenya, (1998). *Annual Report-1998.* Department of Livestock Production Nairobi, Kenya.

Republic of Kenya, (2007). *Annual Report-2007.* Ministry of Livestock Development. Nairobi, Kenya.

Republic of Kenya, (2008). *Annual Report-2008,* Ministry of Livestock Development. Nairobi, Kenya.

Republic of Kenya, (2008) *Strategic Plan 2008-2012*, Government Press, Ministry of Livestock Development, Nairobi, Kenya.

Rory, B., (2006) *Project Management Planning and Control Techniques,* John Wiley & Sons Ltd, UK.

Stanley B. (2003). *Sustainability through participation, Resource Problems, Priorities and Policies Programme*. Nairobi: Masola Publishers.

Stringfellow, R., Coulter, J., Lucey, T., McKone, C. & Hussain, A. (1997). *Improving the access of smallholders to agricultural services in sub-Saharan Africa:* Farmer cooperation and the role of the donor community. Natural Resource Perspectives Issue, 20. Overseas Development.

Verhagen, K. (1985). *The promotion of Small Farmer Cooperative Action and Organization.* Royal Tropical Institute. Netherlands. Amsterdam.

Winrock International, (1983). *Sheep and Goats in Developing Countries: Their Present and Potential Role.* The International Bank for Reconstruction, Washington, D.C.

LIST OF APPENDICES

Appendix I: Letter of Transmittal

Alice Murugi Mbacho,

University of Nairobi,

College of Extra Mural Studies,

School of Continuing and Distance Education.

The Chairman,

Dairy Goat Group,

Box.....

Mukurweini District.

Dear Sir/Madam.

RE: ACADEMIC RESEARCH.

I am a student of University of Nairobi pursuing a Masters Degree in Project Planning and Management. I am conducting an academic research on factors influencing Sustainability of Integrated Small Livestock Project, German Alpine Dairy Goat in Mukurweini District.

Your group has been chosen to provide information relating to issues of sustainability of the dairy goat project. Your identity will be treated confidentially and the information you give will be used for academic purposes only.

Yours faithfully,

Alice Mbacho.

Appendix II: Questionnaire for Chairman, Secretary and Committee Member

Introduction

This questionnaire is intended to collect data on the factors influencing sustainability of ISLP, German Alpine dairy goat project. Your identity will be treated confidentially and the information you give will be used for academic purposes only. Kindly respond to all the questions in the questionnaire as honestly as possible.

Instructions

Please answer these questions to the best of your knowledge.

Write your responses in the spaces provided.

Please put a tick [√] where appropriate.

Section A: Background Information

1. Gender Male [ ] Female [ ]

2. What leadership position do you hold in the dairy goat group?

Chairman [ ] Secretary [ ] Committee Member [ ]

3. How long have you been in the position?

a) Less than one year. ☐ b) 1 to 5years ☐

c) 6- 10 years ☐ d) Over 10 years ☐

4. Age.

a) Under 30 years ☐ b) 30 –40 years ☐

c) 40- 50 years ☐ d) Over 50 years. ☐

5. Education level.

Primary ☐ Secondary ☐

College ☐ University ☐

6. How long have the dairy goat farmer group been in operation?

a) Less than five (5) years. ☐ b) 6 to 11 years ☐

c) 12- 22 years ☐ d) Over 23 years ☐

Section B: Involvement of Goat Farmers in Project Initiation

7. How did you come to know about the dairy goat project in your area?

a) Through a baraza ☐ b) Announced in Church ☐

c) Through a Friend ☐ d) Market place ☐

8. Were you allowed to give your opinion about the dairy got project?

Yes [ ] No [ ]

9. How many meetings or barazas were held in your area before the initiation of the dairy goat project?

a) Less than five (5) meetings/barazas ☐ b) 6-11 meetings/barazas ☐

c) 12-17 meetings/barazas ☐ d) Over 18 meetings/ barazas ☐

10. a) In your opinion was the project appropriate for the area?

Yes [ ] No [ ]

b) If yes, why? .....

c) If no, why?.....

Section C: Funding of Dairy Goat Project

11. In your opinion indicate how the funding of the dairy goat project was during the implementation years.

a) Excellent ☐ b) Good ☐

c) Moderate ☐ d) Poor ☐

12 a) Does your group have a bank account? Yes [ ] No [ ]

b) Have your group ever received support from other donors?

Yes [ ] No [ ]

c) If the answer to a) above is yes who are the financiers?.....

d) If the answer to a) above is no who supports the group?.....

13. Who are the current financiers of your dairy goat group currently?

a) GOK/CDF/NMK b) DGAK/GTZ c) IFAD/CKDAP d) Others.....

Section D: German Alpine Dairy Goat Breed

14. How many offsprings did the members of your dairy goat farmer group have at the end of the first year of the project?

a) Less than 10 offsprings ☐ b) 11-21 offsprings ☐

c) 22-32 offsprings ☐ d) Over 33 offsprings ☐

15. How many twinning were recorded by your dairy goat farmer group at the end of first year of dairy goat project?

a) Less than 10% twinning ☐ b) 11-21% twinning ☐

c) 22-32% twinning ☐ d) Over 33% twinning ☐

16. During the project period of six (6) years, did the members of the dairy goat farmer group record an increase in milk production?

Yes [ ] No [ ]

17. If the answer to (18) is yes, how many litres of milk were produced by one upgraded female goat on average per day?

Less than one [ ] One to two [ ] More than two [ ]

Section E: Management of Dairy Goat Project

18. (a) As a dairy goat farmer group official have you ever been trained on group dynamics?

Yes [ ] No [ ]

(b) If yes in which areas.....

19. How often does your dairy goat farmer group meet?

a) Hardly ever meet [ ] b) Monthly [ ]

c) Quarterly [ ] d) When need arises [ ]

20. How are the decisions about the dairy goat farmer group arrived at?

a) Through consulting with members [ ] b) Through voting [ ]

c) Chairman ruling [ ] d) Others specify.....

21. How often are the incidences of diseases among the members' dairy goats?

More frequent [ ] Less frequent [ ] Handily ever [ ]

22. How many upgraded dairy goats does your group sell on average per year?

a) Less than 10 goats ☐ b) 11-21 goats ☐

c) 22-32 goats ☐ d) Over 33 goats ☐

23. In your opinion have the income of the members of your dairy goat group increased due to the sale of the upgraded dairy goats? Yes [ ] No [ ]

The end;

Thank you.

Appendix III: Questionnaire for Divisional Livestock Extension Officer

Introduction

This questionnaire is intended to collect data on the factors influencing sustainability of ISLP, German Alpine dairy goat. Your identity will be treated confidentially and the information you give will be used for academic purposes only. Kindly respond to all the questions in the questionnaire as honestly as possible.

Instructions

Please put a tick [√] where appropriate

Use the space provided to fill in your answers.

Section A: Background Information

1. Gender Male [ ] Female [ ]

2. How long have you been in the division?

a) Less than one year [ ] b) One to 5years [ ]

c) 6-10 years [ ] d) Over 10 years [ ]

3. Age.

a) Under 25 years [ ] b) 25-30 years [ ]

c) 30-35 years [ ] d) over 40 years [ ]

4. How many dairy goat groups are in your division?

a) one to 5 [ ] b) 6-11 [ ]

c) 12-17 [ ] d) Over 18 [ ]

Section B: Involvement of Goat Farmers in Project Initiation

5. What method was used to involve the beneficiaries in the initiation of the dairy goat project?

a) Barazas [ ] b) Meetings [ ] c) Churches [ ] d) Others, Specify.....

6. How was the attendance of the barazas/meetings?

a) Very well attended [ ] b) Well attended [ ]

c) Poorly attended [ ] c) Very poorly attended [ ]

7. a) In your opinion was the project appropriate for the Division?

Yes [ ] No [ ]

b) If yes, why? .....

c) If no, why? .....

Section C: Funding of Dairy Goat Project

8. In your opinion indicate how the funding of the dairy goat project was during the implementation years.

a) Excellent ☐ b) Good ☐

c) Moderate ☐ d) Poor ☐

Section D: German Alpine Dairy Goat Breed

9. How many offsprings on average did the members of the dairy goat farmer groups in your Division have at the end of the first year of the project?

a) Less than 10 offsprings ☐ b) 11-21 offsprings ☐

c) 22-32 offsprings ☐ d) Over 33 offsprings ☐

10. How many twinning were recorded by the dairy goat farmer groups in your Division in the first year of the dairy goat project?

a) Less than 10% twinning ☐ b) 11-21% twinning ☐

c) 22-32% twinning ☐ d) Over 33% twinning ☐

11. During the project period of six (6) years, did the members of the dairy goat farmer groups record an increase in milk production?

Yes [ ] No [ ]

12. If the answer to (14) is yes, how many litres of milk were produced by one upgraded female goat on average per day?

Less than one [ ] One to two [ ] More than two [ ]

Section E: Management of Dairy Goat Project

13. In your opinion, how often do you think dairy goat groups meet?

a) Hardly ever meet [ ] b) Fortnightly [ ]

c) Monthly [ ] d) When need arises [ ]

14. a) As a divisional livestock extension officer do you ever organize for trainings targeting dairy goat groups? Yes [ ] No [ ]

b) If yes in which areas.....

The end;

Thank you.

Appendix IV: Questionnaire for the Opinion Leaders-Chief

Introduction

This questionnaire is intended to collect data on the factors influencing sustainability of ISLP, German Alpine dairy goat. Your identity will be treated confidentially and the information you give will be used for academic purposes only. Kindly respond to all the questions in the questionnaire as honestly as possible.

Instructions

Please put a tick [√] where appropriate

Use the space provided to fill in your answers.

Section A: Background Information

1. What is your gender?

Male [ ] Female [ ]

2. How long have you been in your position?

a) Less than one year [ ] b) One to 5years [ ]

c) 6-10 years [ ] d) Over 10 years [ ]

3. Please indicate your age.

a) Under 25 years [ ] b) 25-30 years [ ]

c) 30-35 years [ ] d) over 40 years [ ]

Section B: Involvement of Goat Farmers in Project Initiation

4.a) Were there chiefs barazas held during the initiation of the dairy goat Project? Yes [ ] No [ ]

b) How was the attendance of the barazas/meetings?

a) Very well attended [ ] b) Well attended [ ]

c) Poorly attended [ ] c) Very poorly attended [ ]

5.a) In your opinion was the project appropriate for your Location?

Yes [ ] No [ ]

(b) If yes, why? .....

c) If no, why?.....

Section C: Funding of Dairy Goat Project

6. In your opinion indicate how the funding of the dairy goat project was during the implementation years.

a) Excellent ☐ b) Good ☐

c) Moderate ☐ d) Poor ☐

Section D: German Alpine Dairy Goat Breed

7. To what extent do you agree with the statement that "upgraded dairy goats produce more milk than indigenous goats"?

a) Strongly agree [ ] b) Agree [ ] c) Don't Know [ ]

d) Disagree [ ] e) Strongly disagree [ ]

Section E: Management of Dairy Goat Project

8. In your opinion, how often do you think dairy goat groups meet?

a) Hardly ever meet [ ] b) Fortnightly [ ]

c) Monthly [ ] d) When need arises [ ]

9. In your opinion are the dairy goat groups cohesive?

a) Very cohesive [ ] b) Moderately cohesive [ ]

c) Poorly cohesive [ ] d) Not cohesive [ ]

10. How in your opinion are dairy goat group decisions arrived at?

a) Through consultations with members [ ] b) Through voting [ ]

c) Chairman ruling [ ] d) Others specify.....

The end;

Thank you.

Appendix V: Administration Units of Mukurweini District

DIVISIONS	LOCATIONS
Mukurweini East	Gathuitu
	Gikondi
	Thanu
Mukurweini West	Gakindu-ini
	Ruthanji
Mukurweini South	Giathugu
	Muthambi
	Rutune
	Mutundu
Mukurweini Central	Muyu
	Muhito
	Githi

Area of Mukurweini District – 179 Km^2 (Source: District Livestock Office, 2010)

PAGE 2

THIS IS TO CERTIFY THAT:

Prof./Dr./Mr./Mrs./Miss ALICE MURUGI MBACHO

of (Address) UNIVERSITY OF NAIROBI BOX 30197 NAIROBI

has been permitted to conduct research in .....Location, MUKURUENI .....District, CENTRAL .....Province,

on the topic FACTORS INFLUENCING SUSTAINABILITY OF DAIRY GOAT PROJECTS: A CASE OF THE INTEGRATED SMALL LIVESTOCK PROJECT GERMAN ALPINE DAIRY GOAT IN MUKURWEINI DISTRICT, CENTRAL PROVINCE KENYA.

for a period ending.....31ST JULY.....20..11...

PAGE 3

Research Permit No. NCST/RRI/12/1/SS-011/773

Date of Issue 15/6/2011

Fee received KSHS.1000

Applicant's Signature

Secretary National Council for Science and Technology

CONDITIONS

1. You must report to the District Commissioner and the District Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit
2. Government Officers will not be interviewed with-out prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2)/four(4) bound copies of your final report for Kenyans and non-Kenyans respectively.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice

REPUBLIC OF KENYA

RESEARCH CLEARANCE PERMIT

GPK6055(3mt)10/2011

(CONDITIONS— see back page)

UNIVERSITY OF NAIROBI
P.O. BOX 30197-00100,
NAIROBI,
3/02/2011.

DIRECTOR OF LIVESTOCK PRODUCTION,
DEPARTMENT OF LIVESTOCK PRODUCTION,
HILL-PLAZA,
NGONG ROAD,
P.O.BOX 34188-00100,
NAIROBI.

DIRECTOR LIVESTOCK PRODUCTION
P. O. Box 34188
NAIROBI

Approved
4/2/11

Dear Sir,

AUTHORITY

I am seeking authority to collect data and also gather information from the District Livestock Office and smallholder dairy goat farmers in Mukurueini District for my Research Project in Master of Arts Degree in Project Planning and Management University of Nairobi.

This is part of my Masters Degree programme requirement where I am supposed to successfully complete and submit a research project before the award of the degree.

I will undertake a research project on the factors influencing sustainability of dairy goat projects in Kenya, a case of Mukurueini District, Central Province.

Your granting of the above sort authority will be highly appreciated.

I remain,

Yours faithfully,

Ms.Alice Murugi Mbacho

Reg. No. L50/72603/2008

PPM-STUDENT-UON

REPUBLIC OF KENYA

MINISTRY OF LIVESTOCK DEVELOPMENT
Department of Livestock Production

Telegrams "MINAG"
Telephone: 2722601/2, 2722637
Fax : 2721007
When Replying Please Quote

Hill Plaza
Ngong Road
P. O. Box 34188
NAIROBI

Ref.No:- MLD/RES/5/22

Date: 9th February 2011

PROVINCIAL DIRECTOR OF LIVESTOCK PRODUCTION,
CENTRAL PROVINCE,
P.O. BOX 2324.
NYERI.

RE: ACADEMIC RESEARCH:

Ms. Alice Mbacho, SADLP is carrying out an academic research on the factors influencing sustainability of dairy goat projects. Her interest is to collect data and gather information from the District Livestock Office, smallholder dairy goat farmers and the chiefs of Mukurueini District.

This letter requests your office to accord her the necessary support, to administer questionnaires for the collection of information.

Vincent Githinji
FOR: DIRECTOR OF LIVESTOCK PRODUCTION

Cc: DLPO – Mukurueini District

REPUBLIC OF KENYA

MINISTRY OF LIVESTOCK DEVELOPMENT
Department of Livestock Production

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Hill Plaza
Ngong Road
P. O. Box 34188
NAIROBI

Ref.No:- MLD/RES/5/21

Date: 9th February 2011

THE DISTRICT COMMISSIONER,
MUKURUEINI DISTRICT,
P.O. 32.
NYERI.

RE: ACADEMIC RESEARCH:

Ms. Alice Mbacho, SADLP is carrying out an academic research on the factors influencing sustainability of dairy goat projects. Her interest is to collect data and gather information from the District Livestock Office, smallholder dairy goat farmers and the chiefs of Mukurueini District.

This letter requests your office to accord her the necessary support, to administer questionnaires for the collection of information.

Vincent Githinji
FOR: DIRECTOR OF LIVESTOCK PRODUCTION