



GRADUATE SCHOOL OF DEVELOPMENT STUDIES

The Dairy Sector and Poverty Reduction
in Pre and Post-Liberalization Era in Kenya:
The Case for Meru Central District

A RESEARCH PAPER PRESENTED BY

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(Kenya)

In partial fulfillment of the requirements for obtaining the degree of

MASTER OF ARTS IN DEVELOPMENT STUDIES
SPECIALIZATION: RURAL LIVELIHOODS AND GLOBAL CHANGE

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THE HAGUE, DECEMBER 2005

This document represents part of the author's study programme while at the Institute of Social Studies; the views stated therein are those of the author and not necessarily those of the Institute

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DEDICATION

I would like to dedicate this piece of work to my parents Esther and Erastus Mburu for their endurance during my absence for nearly sixteen months.

ACKNOWLEDGEMENTS

I wish to appreciate the inputs of all those who have made the completion of this work possible.

In particular, I would like to thank my supervisor, Prof. Marc Wuyts, for his commitment to guide me during the preparation of this paper. Despite his busy schedule, he managed to find time to read my scripts and offer useful comments without which the completion of this paper would not have been possible.

I would also like to offer my heartfelt thanks and appreciation to my second reader, Dr. Kristin Komives, for her interest in my topic and for her valuable comments. I was greatly informed by the useful suggestions she offered during my seminars. I cannot also forget my discussant, Supkar Rakesh for his insights and suggestions.

Special thanks goes to Mr. James Tendwa of the Ministry of Livestock and Mr. Julius Muriithi of the Ministry of Lands who took their time to send me documents all the way from Kenya.

My profound gratitude goes to all my good friends Lillian, Shem, Njui, Kimilu, Okubal and Alia who gave me moral support and inspiration during my stay at the ISS. My RLGC colleagues will remain memorable for the good social relations that we established with each other.

Lastly, I would like to recognize the support of the Royal Dutch Government who made my studies at the ISS possible by meeting all the necessary costs through the Netherlands Fellowship Programme.

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Acronyms and Abbreviations

AFC	Agricultural Finance Corporation
AI	Artificial Insemination
ASALs	Arid and Semi-Arid Lands
BoP	Balance of Payments
CBs	Commercial Banks
GDP	Gross Domestic Product
GoK	Government of Kenya
HH	Household
IFAD	International Fund for Agricultural Development
IMF	International Monetary Fund
ISS	Institute of Social Studies
KCC	Kenya Co-operative creameries
KDB	Kenya Dairy Board
Kshs	Kenya Shillings
LDCs	Least Developed Countries
NBFIs	Non-bank Financial Institutions
NGO	Non-Governmental Organization
NIE	New Institutional economics
PRSP	Poverty Reduction Strategy Paper
SACCOs	Savings and Credit Co-operatives
SAPs	Structural Adjustment Programmes

SUMMARY

The policies of structural adjustment and market liberalization introduced profound changes in Kenya's agricultural sector. Market liberalization was aimed at increasing farmers' access to markets and farmers therefore needed better access to market information and more adaptation to new technologies in order to seize opportunities provided by the free market environment. The structural adjustment policies, however, resulted in sharp reduction in public sector spending and withdrawal of much of the subsidies that farmers had enjoyed for a long time (Schreiber, 2002).

The focus of this research was to examine how economic reforms affected the role of dairy farming in poverty reduction. Using Kenya's experience in the dairy sector, the paper establishes a positive relationship between milk production and household welfare in terms of incomes and nutrition. The study found out that economic reforms increased the pace of commercialization of the dairy farming activities and incomes from milk sales became critical, especially due to declining incomes from traditional cash crops like coffee. As a result of this, the role of dairy farming in poverty reduction has shifted more towards being a source of income than being a source of subsistence.

Increased commercialization has necessarily led to more intensification of the dairy farming and adoption of new production techniques like the zero grazing. Drawing lessons from Meru Central District and other areas with similar characteristics, it was generally found that intensive dairy technology has increased the workload of women while at the same time shifting incomes from the sale of milk from women to men. Yet much of the literature reviewed suggested that incomes in the hands of women had more beneficial effects to the entire household members than when in the hands of their male counterparts (Reynolds et al, 1996). This paper therefore recommends the development and implementation of policies that promote dairy farming while at the same time increasing control of incomes by women. This, it appears, will make dairy farming have a more positive impact on poverty reduction. It is hoped that the analysis and conceptualization provided in this paper will have some important implications for 'pro-poor' policy formulation and planning in Kenya and will form an important basis for further research and action in the dairy sector.

CHAPTER ONE

1.0 Introduction

Kenya embarked on a series of economic reforms in the 1980s that virtually affected all sectors of the economy. Within the agricultural sector, the reforms took the form of removal of restrictions in areas of production, processing and marketing of agricultural products and inputs. In addition, much of the government support in agriculture was withdrawn paving way for the private sector to assume the roles formerly performed by the 'departing' public institutions (Owango and Lukuyu, 1998). These measures radically transformed Kenya's agricultural sector particularly in terms of farmers' access to services, inputs and marketing outlets. In the livestock sub sector, the level of government support in veterinary and artificial insemination (AI) services was drastically reduced or completely withdrawn in some areas. A notable observation is that the extent to which the private sector has filled the vacuum left by withdrawal of government services varies considerably among regions. The areas that are more remote and poorly served with physical infrastructure like roads have largely remained unattractive to the private sector and this could partly explain the absence of some services in some areas (IFAD, 2004). This is particularly true for the Arid and Semi-Arid areas (ASALs), which are generally remote and difficult to access.

During the period between the attainment of independence and before the onset of liberalization policies, most developing countries adopted food self-sufficiency as the overall goal of their food policy. As such, farmers were encouraged to produce enough food to meet their subsistence requirements and also realize a surplus for sale. In Kenya, this ambition was repeatedly echoed in the country's earlier development plans and other policy documents. As Winarto (1992) observes, the concept of food self-sufficiency was seen to be synonymous with the objective of food security and self-reliance against world food shortages. The objective of attaining self-sufficiency in milk production may therefore be used to explain the heavy government support in the dairy farming activities during the early stages of development.

Although milk production has a dual role as a source of nutrition as well as being an important source of incomes, this paper will argue that the initial promotion of dairy farming was intended

to largely meet the subsistence requirements for the participating households. However, with the emergence of economic reforms in the 1980s, many traditional cash crops like coffee have been experiencing fluctuating and falling prices and incomes to farmers from such crops have generally been on the decline. As a logical response, majority of the smallholder farmers have been diversifying into dairy production and this has led to a shift in the role of milk production from being a source of subsistence to being an important source of income (Ngigi, 2004).

The paper will further argue that economic reforms have increased the pace of market-oriented production within the agricultural sector. Farmers have increasingly shifted their production towards the more profitable activities. Dairy farming has claimed a niche in this respect. Due to high population growth and limited amount of arable land, most farmers have been adopting more intensified dairy production techniques like zero grazing, which have brought up new and gendered dimensions in the way in which household labour is used. A shift from more extensive to more intensive modes of dairy production has increased the work roles of women in feeding the dairy cows and this affects other subsistence production carried by women. Similarly, market-oriented dairy farming has affected ways in which income from the sale of milk is controlled and used. Such issues have obvious impacts on poverty and it is in the light of these developments that this study will attempt to establish the ways in which the economic reforms may have affected the role of dairy farming in poverty reduction.

The paper is divided into five chapters. The present chapter deals with the general introduction in which I give a brief background of dairy production in Kenya, the problem statement and the key questions to be investigated. Chapter two discusses the conceptual and the analytical framework while chapter three provides an analysis of how milk production was organized prior to and after the economic reforms giving special emphasis on household labour relations and interdependence between milk production and other farm production, all of which have an implication on poverty reduction. In chapter four I look at milk marketing and in particular focus on the emerging informal milk market and the related income effects associated with market-oriented dairy production. Chapter five provides a general conclusion and summarizes the answers to the research questions in addition to giving some policy recommendations that are considered relevant in harnessing dairy farming as means of poverty reduction.

1.1 Background

Dairy production in Kenya started in pre-colonial days in the early 1900s when the white settler farmers introduced exotic breeds in the high potential areas of Central and Rift Valley Provinces. During this period, dairy farming was carried out on large-scale basis and Africans were not allowed to keep dairy cows (Reynolds *et al*, 1996). The current structure dominated by smallholder farmers was laid in the 1950s when the Colonial Government allowed indigenous people to own dairy cattle and engage in smallholder agriculture (Ngigi, 2004). The land transformation that followed shortly after independence in 1963 in the form of land acquisition, sub-division and the re-distribution of the former large-scale white settler farms stimulated further growth of smallholder dairy farming. Milk production on large-scale farms dropped significantly and smallholders became more dominant. Presently, over 600,000 small-scale farmers produce over 60% of total milk in Kenya (KDB, 2005).

Compared to other countries in Sub-Saharan Africa, Kenya has a well-developed dairy sector and has broadly attained self-sufficiency in milk and milk products (Owango and Lukuyu, 1998). Milk production has increased from 1.3 billion litres in 1981 to 3.5 billion litres in 2004 (GoK, 1982; Gitonga & Ng'etich, 2005). The rapid growth of this sector was a deliberate effort by the Government to promote dairying activities by heavily subsidizing production costs. Subsidized inputs and animal health services together with guaranteed market spurred growth of the sector. In addition, Ngigi (2004) indicates that the growing cash incomes in the rural areas from cash crops production stimulated demand for milk and encouraged more production. But as will be described later in this paper, the poor performance of major farm enterprises like coffee production, particularly after economic liberalization, made most farmers to diversify into milk production as an alternative source of income and therefore encouraged further growth of dairying activities. By 2002, close to 70% of smallholder farmers were engaged in milk production and this had become their fastest growing source of income (*ibid*).

1.2 The agricultural sector and rural poverty in Kenya

Agriculture remains the dominant sector of the Kenyan economy in terms of its share of contribution to overall Gross Domestic Product (GDP) (Table 1)

Table 1: Average contribution of agriculture to GDP

Period	1964-74	1974-79	1980-89	1990-95
Contribution to GDP (%)	36.6	33.2	29.8	26.2

Source: National Development Plan (1997-2001)

Although agriculture's contribution to GDP has been declining, it still remains one of the most important sectors in driving Kenya's economic growth compared to other sectors. It accounts for about 60% of total exports and generates close to 45% of total government revenue. A large proportion of the country's labour force is employed in agriculture. The 1989 population census reveals that out of a total labour force of 9.3 million people, 7.6 million or nearly 82% were based in the rural areas and were engaged in agricultural production (GoK, 1997).

Kenya has a large livestock herd that is estimated to have stagnated at about 13 million cattle. Dairy cattle account for about 26% of the total cattle population (GoK, 1997). The livestock sector alone contributes about 11% of the country's GDP. The agricultural system of the country is divided into smallholder mixed farming in the high and medium potential areas and pastoralism in the arid and semi-arid lands (ASALs). The high potential land covers only 16% of the total land area but has the highest concentration of the human population and the country's economic activities, including dairy farming. The highland areas are particularly well endowed with good soils and suitable climate that allow for both food and cash crop production and intensified dairy farming. 80% of the dairy animals are found in these areas.

Like in many other developing countries, poverty in Kenya is largely driven by unequal distribution of productive assets like land and unavailability of economic opportunities (IFAD, 2004). In many parts of Kenya land has been sub-divided into smaller portions as a result of

tenure system related to inheritance. Many rural households own between two and five acres of land and production has shifted from extensive to more intensive systems. Dairy production has shown high degree of competitiveness since it can be profitably undertaken even in small farms of less than 1 ha.

1.3 Statement of the Problem

About 56% of Kenyan population live below the absolute poverty line and can not be able to meet their daily basic needs of food, shelter, clothing, health, education and other related social needs (GoK 2002a). The government has identified the agricultural sector as a means to raise the incomes for the rural poor, who are principally smallholder farmers. One of the areas with potential to meet this objective is the intensive dairy production.

As already indicated in section 1.1, economic reforms increased the pace of commercialization of dairying activities and farmers have been adopting more intensive modes of production that are aimed at increasing milk yields. In the light of this, many researchers have largely focused on how the economic reforms affected the access to livestock services, inputs and markets by the smallholder farmers. As such, there has been less attention on the extent to which the reforms have changed the role of dairy farming in poverty reduction. In addition, as pointed out by Tangka *et al* (1999), the consequences of adopting intensified modes of dairy production on different household members are not clearly understood. In particular, the relationship between women's labour input and income control from milk sales has not been adequately established.

While intensified smallholder dairying is largely celebrated for its potential to generate positive impacts on milk production and cash incomes, questions remain about the extent of the impact to which these incomes have on poverty reduction (Tangka, *et al* 2002). This concern is particularly relevant when considering how men and women use their incomes for household welfare and linking this with the ways in which incomes from market-oriented dairy production is shared between household members in relation to their labour input. Similarly, incomes of small farmers are constantly affected by problems of erratic payments; low farm-gate prices and low sales as a proportion of total production since much of the evening milk remain unsold. In

addition, they face limited access to organized and reliable markets, veterinary services, A.I services and credit, all of which are factors that impact negatively on the productivity and performance of the dairy sub-sector (Karanja, 2003).

Withdrawal of subsidies as a result of economic reforms implied that farmers had to sell their milk at higher prices in order to afford livestock services and inputs. The liberalization of the dairy sector in 1992 resulted in emergence of an informal market for milk that currently controls over 60% of the total marketed milk (Karanja, 2003, Ngigi, 2003, Omore *et al*, 2004). Although this new institutional arrangement in milk marketing enhanced competition and created new business opportunities in the dairy industry, it exposes the public to health and hygiene-related risks and undermines the growth of the formal milk sector. Karanja (2003) notes that out of the total installed processing capacity of 2.2 million litres per day, only 26% is utilized and this has inhibited value addition in the milk chain while at the same time contributing towards higher consumer prices for processed milk.

Liberalization occurred in a legal vacuum since the Dairy Act that regulates the sector was not reviewed to accommodate the new policy changes (Ngigi, 2003). More focus was directed towards the licensing of new processors but there was no explicit position on the sale of raw milk. In addition to this regulatory gap, the informal milk trade is largely excluded from policy and there is inadequate information on this market (Omore *et al*, 2004). In discouraging raw milk trade, national authorities therefore rely on milk handling models that are developed by industrialized countries and fail to consider the local realities and traditional practices on milk safety (*ibid*).

Raw milk trade is characterized with moral hazard of milk adulteration where some farmers and traders add water and margarine to increase milk volumes particularly during times of low production. The potential for adulteration exists because of the inherent informational problems and the fact that milk changes hands several times before reaching the final consumers (Ngigi, 2003). Traders also have a short-term view of the business and are not concerned about product and market development. The formal milk trade that would help solve the problems associated with raw milk by buying all milk from farmers is faced with high processing costs and collecting

small quantities of milk entails high transactions costs that are further compounded by the perishable nature of raw milk (ibid)

1.4 Justification of the Study

The justification of this study rests on the premise that economic reforms have many and diverse effects on the livelihoods of people especially the small farmers in the rural areas. Kenya is predominantly a rural economy with nearly 80% of the population living in the rural areas (GoK 2001). Out of this, the vast majority are smallholders engaged in agricultural production. Understanding the unfolding events associated with economic reforms will form an important contribution to the on-going debate on the role of dairy farming in poverty reduction and will open up some alternative entry points for policy, practice and further inquiry into this area.

The agricultural sector has undergone major changes since the onset of SAPs in the 1980s that resulted to a decline in Kenya's economic growth. The implementation of reforms under SAPs led to the collapse of State agricultural intermediaries and removal of subsidies. Liberalization became one of the government's policy thrusts that included decontrol of prices and marketing of agricultural products and privatization of agricultural services (IFAD, 2004). These reforms benefited some farmers who had access to markets and engaged in diversification and therefore raised their incomes. However, with the removal of subsidies on farm inputs and reduced government capacity to provide extension services, many rural smallholders are faced with high production costs leading to a decline in productivity and income levels (ibid).

The importance of the small-farm agriculture has well been emphasized in the planning of the national economy but there has not been adequate attention to the conditions of milk production, consumption and marketing at the household level. This study is timely and fundamental in identifying some of the conditions necessary for harnessing dairy farming as a means of poverty reduction.

1.5 Objectives of the Research

The overall objective of this study is to analyze the importance of dairy farming in poverty reduction. Specific objectives will be to:

- explore the organization of milk production and marketing before and after economic reforms
- discuss the opportunities and constraints faced by smallholder dairy farmers in the era of economic liberalization with special reference to the informal milk markets
- analyze the extent to which intensified market-oriented dairy production affects gender relations in terms of household labour and income control
- assess the interdependence of milk production with other farm production (both food and cash crops)

1.6 Research Questions

The research will focus on answering the question stated below:

How did the implementation of Structural Adjustment and Market Liberalization policies affect the role of dairy farming in poverty reduction?

Sub-Questions

- (i) How did economic reforms affect the production and marketing environment for Kenya's dairy sector?
- (ii) To what extent did milk production gain prominence as a source of income due to poor performance of the traditional cash crops associated with implementation of SAPs?
- (iii) How have the informal milk markets mitigated the marketing problems faced by the smallholder farmers?
- (iv) In what ways has market-oriented dairy production affected household labor relations and income control from the sale of milk?
- (v) To what extent is milk production interdependent with other farm production?

- (vi) How has the policy and institutional environment affected the role of dairy farming as a means of poverty reduction?

1.7 Research Hypotheses

In carrying out this research, I hypothesize that during the early stages of dairy development, milk was produced largely for household consumption. However, after the economic reforms, there has been a major shift towards market-oriented form of production and milk is mainly produced as a source of income. Assuming that the goal of the smallholder farmers is to maximize profits, there has been a tendency to adopt more intensive modes of production, which to a large extent have shifted the role of feeding the dairy cows from men to women. It is assumed that under extensive production, men were involved in the grazing of animals. Feeding the dairy animals under a zero grazing system is considered to increase the workload of women and thus affecting their involvement in other livelihood-sustaining activities related to providing for the welfare of the household.

In addition to the above assumption, it is further assumed that under traditional arrangements of milk production, women have more control of incomes from milk sales than under the more organized market-oriented production where the men become more attracted to the incomes from dairy farming. Such a shift in income control affects the way in which dairy production impacts on poverty reduction since women are assumed to be better managers of cash incomes than their male counterparts in terms of using the proceeds for the welfare of entire households.

1.8 Research methodology

This study largely involved desk study where qualitative data from both published and unpublished sources was analyzed. Where available, quantitative data (mainly descriptive statistics) was used to provide evidence. In order to examine the changing roles of dairy farming in poverty reduction, it was deemed necessary to create an understanding of how dairy farming was organized before and after the economic reforms. Although it was difficult to find relevant and accurate data as described in section 1.9, efforts were made to describe changes in

production and marketing that could be used to explain the shift towards market-oriented dairy production. Relevant books, journals and articles from the ISS library were reviewed. Selective use of information from the Internet and newspaper articles was applied. In order to check the accuracy of the claims presented, triangulation method was applied, in which, I examined studies carried out by different people at different times. However, there was heavy reliance of on a study carried by Ngigi (2003), which provided a better guide to make this research possible. This was supplemented by my personal experience as an employee of a rural sector Ministry dealing with livestock development in Kenya. To establish better understanding of the current issues, I made follow up contacts with relevant Ministry staff through email and telephone conversations.

Other key sources of information included the official documents of the Government of Kenya e.g. The National Development Plans, The Statistical Abstracts, The Household Budget Surveys, The PRSP and The Strategy for Revitalizing Agriculture. Where possible, lessons and evidence from other countries were incorporated.

1.9 Scope and Limitations of the Study

This paper addresses milk production from two perspectives; milk as a source of income and milk as food. Milk was thus seen as a commodity to be sold for cash income, which required increased productivity of the cow. The paper looked at the conditions that affect productivity including but not limited to acquisition of the high grade cow by the farmers, breeding programmes, animal health, feed availability, milk marketing, extension services and credit. The second element was more concerned with the role of milk in the daily diet of Kenyan population. No attempts were made to assess the proportion of income from the sale of milk that goes into meeting the nutritional requirements of households with dairy cattle.

A study of this nature would have benefited more from primary data but due to financial and time constraints, this was not possible. Data obtained from secondary sources that was gathered for different purposes was used and in some cases it was inconsistent, unreliable and incomprehensive. Of great concern was the fact that even some authoritative government documents like the Economic Surveys and the National Development Plans at times gave very

different data and contradicting interpretations. I also encountered serious problems in making clear comparisons where different units were used. For instance, as part of my methodology to show that marketed milk production was increasing, production figures were available in litres while marketing data was given in currency units. This made it difficult to compute the proportions of milk that goes to consumption and the proportion that is marketed. In addition, whereas relevant data was available at the national level, data at district level was difficult to get.

One of the areas where data was completely absent was in the sale of raw milk. Although this is a major source of income to many farmers and traders, most traders dealing with raw milk avoid registration as a way of evading taxation by the government. As a result, their activities are not well captured in the national records.

CHAPTER TWO

2.0 CONCEPTUAL AND ANALYTICAL FRAMEWORK

2.1 Introduction

This chapter sets out to discuss some recent debates on economic reforms in the light of their effects on economic activities carried out by smallholder farmers in the developing countries. It begins by looking at the forces behind the emergence of these reforms and the resultant call to 'role back the State' due to what many pro-market reformers have termed as its inappropriateness to 'provide' development. The chapter then reviews some theoretical arguments that champion the market forces as the desirable route to the attainment of development and poverty reduction. The narrow focus of the market-oriented reformers is, however, questioned leading the discussion towards the new institutionalism that goes beyond the price theory and introduces the concepts of transactions costs, the moral hazard and the need for institutions to deal with such costs. Kenya's dairy sector fits well within this framework. In the early phases of development, the government undertook to promote the dairy sector through provision of highly subsidized services and inputs to the dairy farmers (Ngigi, 2004). Later in the 1980s, this support was withdrawn and the private sector assumed the previous roles that were under the government. The chapter finally presents the analytical framework that will be used in the discussion for the remainder of the Paper.

2.2 Conceptual Framework

Until the 1980s, the idea of the State as the vehicle for changing the economy and society dominated the development agenda in what many writers have termed the 'developmental State'. Inspired by the desire to meet the expectations raised by independence movements and also mitigate the oil shock effects of 1973-74, many newly independent countries in the 1950s and 1960s resulted into heavy borrowing from the IMF and other financial institutions, a situation that culminated into a debt crisis in the early 1980s (Robinson, 2000). Sutton (1984) notes that the oil-importing LDCs found themselves in large disequilibria that prompted the IMF to favour stabilization programmes intended to address the imbalances. According to this author, macro-

economic disequilibria result from an imbalance between aggregate demand and aggregate supply that typically lead to undesirable trends in prices and the balance of payments (BoP). In eliminating the imbalances, Stewart (1995) suggest that sustainable and efficient development path would be attained and this would result to a positive impact on poverty reduction.

The recent debates have however, questioned the role of the State in economic development. Mackintosh (1992) has indicated that the ideology of 'developmentalism' and the concept of the interventionist state were rendered unpopular by the international politics of the 1980s and there has now been a paradigm shift to the other extreme. The state as Mackintosh observes came to be seen as the problem and other forces, particularly the market and non-governmental organizations (NGOs), were seen as better placed to take a lead role in economic development.

The neoliberal reformists have continued to 'attack' the State by describing it as unresponsive and inefficient (Mackintosh, 1992). Ellis (2000) compliments this position when he notes that many writers consider a market economy as offering a higher degree of flexibility and adaptability than one where the State engages in day-to-day economic decision-making. The market economy, he argues, has a built-in responsiveness by private producers to price changes than does the state. He concludes that the mode of operation of an unreformed State is riddled with aspects of corruption, patronage, rent-seeking, waste and inefficiency.

This critique culminated in the current dominance of the neoliberal agenda. Mackintosh (1992) provides a useful discussion that explains that abstract models were used to argue that the intervention by the state tended to worsen market functioning and that markets would operate efficiently if they were allowed to do so. Market deregulation and 'rolling back the state' thus became the dominant agenda in the 1980s. The dominance spread across many sectors including the agricultural sector, social sectors and in administration and formed the basis for the structural adjustment policies (SAPs). The package that came with SAPs mixes reducing the role of the state with liberalizing the domestic market as well as opening up national boundaries to international competition (Mackintosh, 1992).

The fundamental aim of the structural adjustments and market liberalization was to get the 'prices right' through a free market system that allowed market participants to respond freely to changes in supply and demand (Karanja, 2003). Similar arguments are echoed by Skarstein (2005) who suggests that the SAPs would result to 'appropriate pricing signals' that would ensure efficiency in the allocation of scarce resources. Within the agriculture sector, the adjustment policies were intended to achieve higher producer prices, improve access to agricultural inputs and increase efficiency in marketing. However, the abstract model provided by the neoclassical economists is limited as it is based on key assumptions of perfect and complete markets, absence of transactions costs and availability of information to all participants in the market (Karanja, 2003). Such conditions hardly exist in the real world and as Toye (1993) notes, individuals or agents incur transactions costs that include the cost of discovering what relevant prices are, costs of negotiating contracts and costs of monitoring and enforcing contracts *ex post*.

According to Karanja (2003), the limitations of the model provided by the market-oriented reformers have led to the current focus on the New Institutional Economics (NIE) that puts emphasis on market co-ordination and recognizes the importance of transactions costs in a given market structure. Coordination involves the linking of interdependent activities and decisions within a production chain. In an agricultural commodity system, the need for vertical coordination has become particularly important as it harmonizes the decisions and actions of farmers, suppliers of agricultural inputs, processors and traders in addition to facilitating smooth flow of information within the system. Effective vertical coordination is likely to enhance productivity and minimize transactions costs as well as marketing risks. In dairy production, vertical coordination has been practiced through formation of dairy co-operative societies.

As observed above, transactions costs and information flow are important elements in carrying out economic activities. Nabli and Nugent (1989) indicate that incomplete information and asymmetries in information are indeed considered as major sources of transactions costs. The problems of 'adverse selection' and 'moral hazard' also become relevant where asymmetries of information are present. These authors continue to argue that asymmetries of information are closely related to opportunistic behaviour and transactions cost. Karanja (2003) reaffirms this

position when he indicates that individuals incur transactions costs in order to overcome information asymmetries and opportunistic behaviour where some agents within a contract may engage in dishonest activities in order to increase their benefits at the expense of other parties. In a dairy commodity system, transactions costs are those associated with the buying and selling of dairy products and services. Such costs may have increased in the recent past as a result of liberalization of the dairy industry.

The theoretical ideas as discussed above remain relevant in Kenya's dairy sector. As already stated, the early stages of dairy development were characterized by direct government investment. This went on until the late 1980s when subsidies were gradually withdrawn leading to full liberalization of the dairy industry in 1992. Since then, new dimensions have emerged which include a thriving informal milk market where milk adulteration has increased as farmers and traders alike engage in dishonest behaviour in an attempt to make more profits from milk production and trade. At the same time transactions costs particularly by the processors and traders usually increase when dealing with many small-scale farmers.

2.3 The Analytical Framework

For this study, the framework illustrated by figure 1 below is developed to facilitate in the analysis of the structures of milk production and marketing that have characterized Kenya's dairy production. Like any other economic activity, dairy farming is an important undertaking among the smallholder farmers in their pursuit to improve their wellbeing. In more general terms, households diversify into dairy production as a source of milk for household consumption and as a source of cash income from the sale of milk. Ellis (1993) posits that farmers, like any other businesses, ascribe to the motivation of profit maximization and therefore aim at being efficient. However, the hypothesis of profit maximization does not necessarily mean profit in monetary terms but applies to physical terms as well.

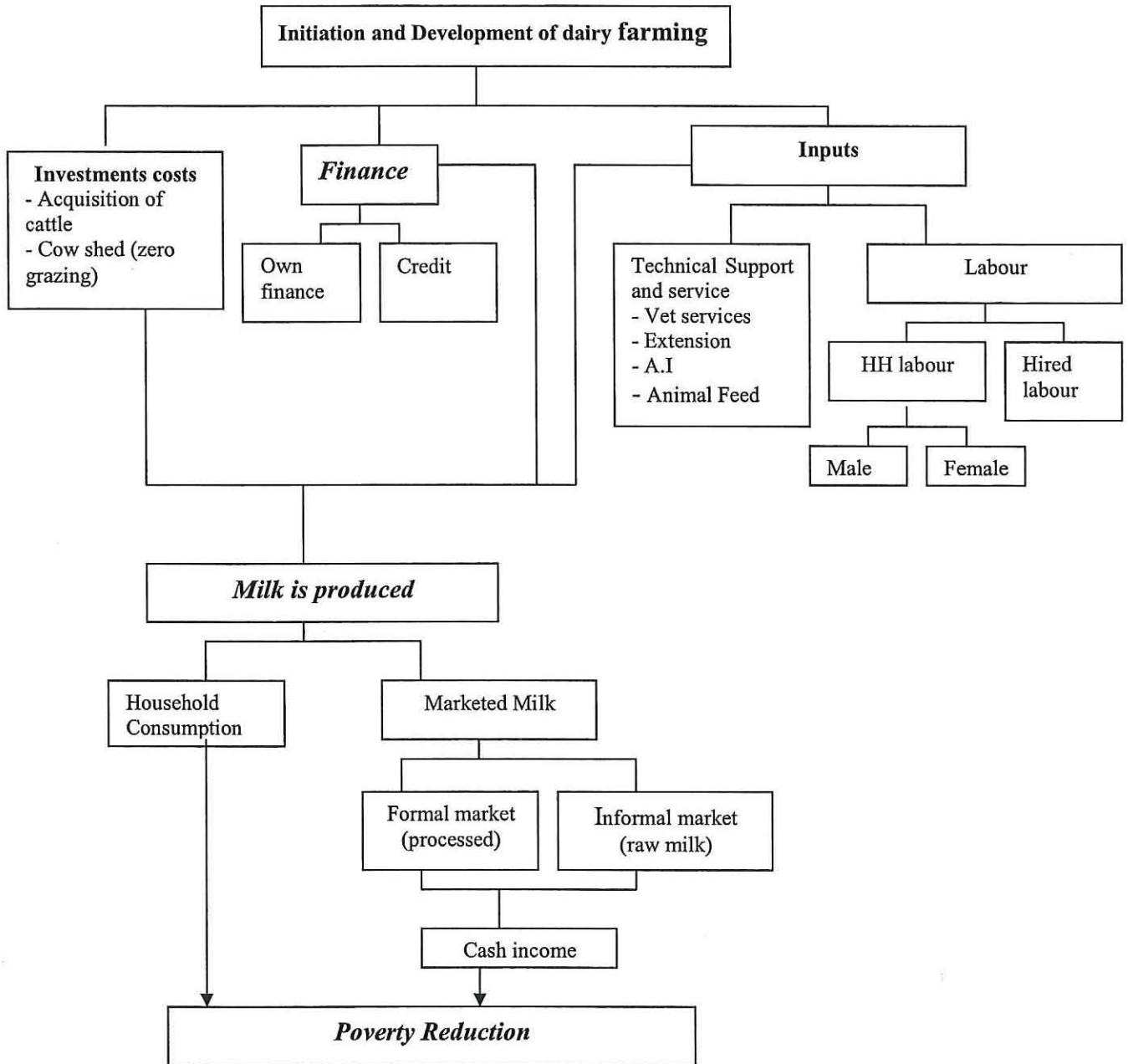
The element of livelihood strategies is viewed as critical in this discussion. Scoones (1998) identifies three main clusters of livelihood strategies that individual and households pursue to reduce rural poverty. They include agricultural intensification/extensification, livelihood

diversification and the option of migration. In most cases, households pursue a combination of these strategies. A crucial observation made by Ellis (2000) is that individuals and households pursue diversification either by choice or by necessity. Diversification by necessity is involuntary and results from distress reasons. On the other hand, diversification by choice is a product of voluntary and proactive reasons. Dairy farming will be addressed from this perspective where farmers are increasing their participation in dairy production as a way to compensate for income losses from their traditional cash crops like coffee. Diversification is however not always positive as will be seen in future sections of this paper where labour relations within a household are considered.

In examining how smallholder dairy farming can be harnessed as a means for poverty reduction, the framework singles out three main elements that will form the basis of the analysis. These include the investment costs, the sources of finance and other inputs like labour and technical support. The three elements, it is assumed, will determine the way in which farm production is organized and become particularly important when looked in the context of the goals and resource constraints of an individual farmer. In practice, Ellis (1993) notes that individual farm households have many goals, which include long-term income stability, family food security, attaining certain preferences in consumption and so on. The constraints that farmers face limit their capacity to vary the organization of their production.

It is important to clarify that this framework does not see participating in dairy farming as an end to poverty. Rather, it suggests that once the three elements are combined for purposes of carrying out a dairy activity, milk will be produced which can be used for home consumption or for sale. It is assumed that consumption of milk leads to improved health and thus addressing one aspect of poverty. Similarly, the incomes from milk sales may be seen as one way of improving the welfare of farmers. In this case, dairy farming is seen as a means to contribute towards poverty reduction.

Figure 1: A framework for analyzing smallholder dairy farming



Source: Developed by author

2.3.1 Investment costs:

Dairy farming is an economic activity that requires substantial capital investment. The investment costs are particularly high where the farmer buys exotic or crossbred heifers and where concrete based and metal-roofed cowshed is constructed (Upton, 2000). In societies where ownership of livestock is a measure of economic success, Ellis (2000) indicates that the poor are distinguished by low income from livestock and their capability to acquire livestock. This study takes a similar view and recognizes that cattle acquisition may be achieved through buying at spot cash depending on the ability of the farmer to pay or through credit arrangements such as the heifer in trust schemes that enable poor farmers to participate in dairy production. On the other hand, construction of the cowshed assumes that the technique of zero grazing will be applied. This is an important assumption because farmers are increasingly changing from extensive to more intensive forms of production.

2.3.2 Financial requirements:

Farmers usually require finances to buy recurrent farm inputs and to increase their investment in order to realize higher incomes (Ellis, 1992). Such finances are realized from their own savings or from borrowing. In most cases, resources owned by smallholder farmers are inadequate thus necessitating the need for credit. In the 1960s and 1970s, credit provision was a popular state intervention in the agricultural sector. But as Ellis (1992) notes the credit policy has considerably changed during the 1980s. With the dominance of neoliberal policies, the market for credit is treated like any other market where the forces of demand and supply determine the price i.e. the interest rate. Credit transactions are however not costless (Ellis, 1992). Participants face transactions costs, which have been described in an earlier section of this chapter.

2.3.3 Labour inputs and other technical services:

Besides investment costs and finances required to meet recurrent costs at the farm level, dairy farmers require other inputs in the form of technical support services and labour. Van Berg (1990) describes such inputs as the conditions necessary to stimulate milk production. He notes that the farmer mainly or exclusively controls some of these conditions while the government

and official authorities control others. The inputs include land, labour, animal feed, veterinary services, extension services, A.I services etc. With the implementation of structural adjustments, the government withdrew its subsidies to the dairy farmers and most of the functions were assumed by the private sector. This meant that farmers had to be efficient in order to remain in production.

Dairy farming is largely a labour-intensive activity and it is therefore necessary to include the work roles of men and women as an agenda for our analysis. Ellis (1993) has described women as invisible agricultural producers in many peasant societies. Besides supporting the livelihoods of households in many ways, their contribution in the physical work of farm production has continued to increase.

The concept of gender division of labour is important when discussing labour inputs in a dairy activity. Ellis (1993) defines this concept as 'the socially defined allocation of tasks between women and men in peasant households' The critical point in this definition is that division of labour between men and women is not natural but rather reflects social customs, norms and beliefs. Labour arrangements are expected to have changed over time. In the 1950s when smallholder dairy farming was introduced, population levels were low and there was adequate land for pasture. Men assumed the role of cattle grazing. With the introduction of intensified dairy farming, the role of cattle feeding has shifted to women and this has oftenly meant that women labour competes with other household activities such as domestic work and ensuring food security at household level. Dairy production therefore involves inputs in monetary terms and inputs in kind.

Milk is produced as a source of cash income and for household nutrition both of which contribute towards poverty reduction. The proportion of milk that is marketed may be processed or sold in its raw form. Because of its perishable nature, marketed milk requires a well-coordinated collection, handling, processing and marketing system in order to minimize the risks of contamination and spoilage. Such vertical coordination may be pursued through formation of co-operative societies. The processing and marketing structures that existed in the pre and post reform periods are discussed in the next chapter.

2.4 Definition of key concepts

2.4.1 The concept of poverty

Poverty has become one of the most widely used concepts in the world today. It is a multidimensional phenomenon that is manifested in various forms in different societies. So far, there seem to be a consensus by scholars to define poverty in both relative and absolute terms. One of the most comprehensive definitions is given by Gordon (2002) who defines poverty to include

“lack of income and productive resources sufficient to ensure sufficient livelihoods; hunger and malnutrition; ill health; limited or lack of access to education and other basic services; increased morbidity and mortality from illness; homelessness and inadequate housing; unsafe environments; and social discrimination and exclusion. It is also characterized by lack of participation in decision-making and in civil, social and cultural life. It occurs in all countries: as mass poverty in many developing countries, pockets of poverty amid wealth in developed countries, loss of livelihoods as a result of economic recession, sudden poverty as a result of disaster or conflict, the poverty of low wage workers, and utter destitution of people who fall outside family support systems, social institutions and safety nets”.

Although this definition has the advantage of taking on board the various aspects of poverty, this paper adopts a narrower definition to include income poverty and food poverty. It takes the view that other aspects of welfare such as literacy, good health, long life expectancy and self-esteem are largely dependent on income. Income in this case will be used to refer to all financial gains that accrue from dairy farming as a livelihood activity. On the other hand the milk consumed is assumed to address one aspect of food poverty i.e. meeting nutritional requirements for a given household.

2.4.2 Livelihood Diversification

Great attention has been diverted to the different ways in which rural households construct their livelihoods (Rakodi, 2002). Most rural households do not rely on a single income-generating

activity but have multiple income sources (Ellis, 2000). Such sources may include remittances from urban to rural areas, off-farm wage employment and engaging in rural non-farm activities. Diversification may occur as a deliberate strategy of the household or may be triggered as an involuntary response to crises (ibid). It may lead to new intra-household relations in terms of labour relations and how incomes are shared among the household members. The smallholder dairy farming will put into this context and as this paper will discuss, households that diversify into other sources of income like cash crops production or other off-farm employment are more likely to realize more successful dairy farming activity than those who do not.

2.4.3 The Vulnerability Context and need for Diversification

Most studies of poverty tend to dwell more on the measurable aspects of deprivation. Wuyts (1992) introduces the concepts of vulnerability and impoverishment in a rather interesting way. Citing the work by Chambers, he asserts that an asset may itself constitute an element of vulnerability. Since this research views the dairy cattle as an important productive asset to the smallholder farmer, it is important to explore this argument further. Wuyts suggests that households whose assets are mainly productive are particularly vulnerable to impoverishment because disposing them to meet a contingency reduces their earning capacity. Thus poverty in income may be reduced e.g. through sale of a cow while impoverishment is increased. This discussion directs us to the need for diversification into smaller stocks like goats, poultry etc which can be sold to mitigate risks without causing distress to households. Since an increase in income can be achieved hand-in-hand with an increase in vulnerability, Wuyts (1992) concludes that, 'what matters is not just the quantity of assets but also the ability of those assets to diversify the risks which face them'. Dairy farming in this study will be looked at in this context.

2.4.4 Livelihood Strategies and outcomes

Much of the attention directed to rural poverty revolves around the belief that households and individuals aim at secure livelihoods (Rakodi, 2002). In one way or another, these households have access to assets, which determines their capability to make use of the livelihood opportunities. Faced with life stress, shock and risk, Rakodi (2002) notes that individuals and households develop coping strategies to enable recovery and avoid chances of social

reproduction. The livelihoods approach is realistic because it recognizes the multiple activities that households engage in. In addition, the term 'strategy' as used here is crucial because it restores agency to the poor people rather than viewing them as defenseless victims (ibid).

Ellis (2000) complements this view by looking at livelihood strategies as a means of household survival. He identifies some natural and non-natural based activities that households engage in. The natural based resource activities include collection or gathering, food cultivation, livestock keeping and non-farm activities like brick making and weaving. The non-natural activities include rural trade, remittances and other transfers like pensions. All these strategies combined together generate livelihood outcomes in the form of higher incomes, reduced vulnerability etc.

2.4.5 Smallholder farmers

The concept of smallholder farmer may be defined differently depending on the issue being addressed. In this paper, smallholder farmer will be used to refer to farmers with a land holding of less than two acres of land. This as observed by IFAD (2004) is the average land size for majority of the farmers in the rural areas. Within a dairy-farming context, such farmers usually keep between one and three dairy cows.

Small farmers, both in the developed and developing world, share certain basic goals. They aim at increasing their security and incomes while at the same time retaining their independence as owners and operators of their own farm enterprises (Kemuma, 1998). Maintaining these goals is, however, becoming increasingly difficult in today's globalizing world where markets have pulled farmers into relationships beyond their local environment. Farmers are at times using inputs produced in external markets and are also involved in producing for other markets both locally and internationally. This is the way in which this paper conceptualizes the smallholder dairy farmers.

2.5 Conclusions

The conceptualization as discussed above gives some important ideas regarding the various trajectories towards eliminating poverty and achieving development. It may be argued that the

wellbeing of the poor, to a large extent, depends on the macro-policy changes that are implemented from time to time. The dominant model of the 1960s and 1970s in which the State spearheaded development may be a welcome idea by resource-constrained farmers since they could access some inputs that they probably could not 'afford'. But the question of the macro-impact of adjustment and stabilization policies introduced by market-oriented reformers in the 1980s and 1990s become even more important particularly when analysed in the context of their effects on income distribution and poverty reduction. This concern is widely informed by various discourses that have been undertaken since the 1980s. But it is suggestive that the call to 'role back' the state while at the same time calling for the same state to provide an 'enabling environment' for the private sector to operate shows a clear need for joint effort between the state and the market. The market alone is not adequately equipped to cope up with its own inefficiencies especially those that are inherent from the wide range of assumptions such as presence of perfect information and absence of transactions costs.

Having looked at the way in which dairy farming is conceptualized, the next chapter addresses how production was organized during the pre and post liberalization era. In particular, it analyzes the ways in which farmers accessed inputs during the era of state-led development and then highlights some of the strategies that were put in place to fill the gap of the 'departing' public subsidies. The chapter finally uses a case study of dairy development in Meru region in Kenya to show some effects of SAPs on production, income distribution and use of labour at household level, all of which are relevant in assessing the role of dairy farming in poverty reduction.

CHAPTER THREE

3.0 MILK PRODUCTION IN KENYA

3.1 Introduction:

Before the attainment of independence in 1963, commercial milk production was solely a preserve of the white settler farmers and was carried out purely on large-scale basis. Reynolds *et al* (1996) note that the smallholder farmers were not allowed to own dairy cattle until 1954 when the colonial government released what came to be known as the Swynnerton Plan that allowed indigenous people to keep their own cattle. In just over two decades later, Kenya became self sufficient in milk and milk products. Today, Kenya has one of the most developed dairy industries in the Sub-Saharan Africa (Muriuki, 2002). This is mainly attributed to the supportive government policies and subsidies that existed especially in the period after independence and prior to liberalization (Kiriro, 2001). As Ngigi (2003) observes, the development of Kenya's dairy sector is particularly noted for its smallholder base. Milk production is dominated by small farmers owning between one and three cows. The performance of smallholder agriculture has become a key determinant to the overall performance of the national economy especially when looking at the potential strategies intended to address rural poverty (Upton, 2000). With this realization in mind, this chapter examines the production systems that have characterized the production of milk in Kenya during the last four decades. The purpose is to identify some of the major turning points that have taken place within the dairy sector and try to develop an understanding of how these changes have impacted on the overall production and incomes of the smallholder farmers.

3.2 Phases in Kenya's dairy development

The dairy sector in Kenya has experienced major production and marketing changes over the years. These changes may be grouped into the following three distinctive phases.

3.2.1 The Colonial Era

Dairy development in Kenya traces its roots from the colonial era. During this period, a variety of economically important crops and animal species were introduced which, as Ngigi (2003) has noted, marked a revolution in Kenya's agriculture and have continued to shape the country's agricultural development. The period is significant for introducing high-yielding breeds of cattle that became the foundation for a dairying activity that has grown to become a major source of livelihood for many households in the rural areas. Another significant dimension is related to the institutional and organizational frameworks that emerged in areas such as milk production and marketing, delivery of animal health services, Artificial Insemination (A.I) services, tick control and so on. Although these structures were initially intended to serve the interests of large-scale white settler farmers, the small-scale farmers in the country later adopted them.

3.2.2 The Pre-reform Period (1963-1987)

The post-independence period was marked by direct government intervention in the production and marketing of the various agricultural products, including the dairy products. Ideally, the government hoped to achieve what was popularly regarded as self-sufficiency in agricultural production. Ngigi (2003) has indicated that on the attainment of political independence in 1963, the government regarded state control of dairy farming activities as central to the sector's development. It is, however, reasonable to assume that this position was not misplaced given the fact that the dominant development ideology at the time regarded the state as crucial in directing resources towards the achievement of both economic and social development.

The development of the dairy sector was largely supported by a state-run infrastructure for the provision of farm inputs, agricultural research, extension and other services as well as guaranteed market through the Kenya Co-operative Creameries (KCC) (Upton, 2000; Ngigi, 2003). One of the greatest concerns at the time was the productivity of the indigenous cattle breeds, which as Ngigi (2003) indicates, was a major hindrance towards the establishment of commercial-oriented dairy farming. To overcome this problem, cross breeding programmes were started with trials from exotic breeds such as the Guernsey, Friesians, jersey and Ayrshire. This became one of the dominant ways for farmers to acquire improved dairy cattle. However, there were a number of

challenges associated with this approach. First, the spread of venereal diseases was high and second; the emerging herd was more prone to livestock diseases than the local breeds, which were found to be more resistant to diseases (ibid). In order to address some of these problems, the government implemented a number of programmes, which are discussed below.

(a) Artificial Insemination (AI) Services

A significant development to overcome the problem of the spread of venereal diseases and poor quality herd was the introduction of AI services. This involved the introducing high milk-yielding traits from exotic breeds to local breeds (Ngigi, 2003). The government undertook to produce and supply the semen at subsidized rates while farmers were required to organize and finance field insemination services through cattle breeders associations. The table below shows the rates of charges to the farmers that were applicable for A.I services from 1980 to 1990.

Table 2: Trends in costs of AI services (Kshs)

Year	1980-81	1984-85	1986-87	1988-89	1989-90
Producer charges	1.00	1.00	1.20	10.20	14.80
Actual charges	5.20	8.40	12.80	14.20	14.80

Source: Ngigi (2003)

As can be seen from table 2 above, the government heavily subsidized the costs of AI services up to the late 1980s. However, as will be shown in section 3.2.3 the government subsidies became unsustainable and the policies under SAPs called for full cost recovery from the farmers. This is clearly represented for the year 1989-90 where the producer and actual charges are the same.

(b) Extension service

Extension services were provided by the government through the National Extension Programme that also received support from donor agencies (Ngigi, 2003). The main activities included extending research findings to dairy farmers and promoting intensified smallholder dairy farming through promotion of zero grazing technique. Farmers were introduced to better animal feeding practices through growing of napier grass and other leguminous fodder trees. In addition, the

government engaged in training of staff at certificate, diploma and university level who were later deployed to assist farmers through out the country. The overall objective of these initiatives was to increase milk production by smallholder farmers.

(c) *Clinical services*

Clinical services were introduced in 1974 and operated with strong state support until 1988. Ngigi (2003) observes that the service was provided by state-employed veterinarians who charged only a nominal fee for drugs. The government later divested from this activity and encouraged the private sector to take up the provision of the service. This resulted in increased costs to the farmers and there has been a tendency to have a concentration of the service in well to do areas while other areas have remained unattractive to the private sector.

(d) *Tick control*

The approach used for tick control involved the development of communal cattle dips that were managed by organized farmer groups. The government provided the acaracide but farmers were required to pay a subsidized fee each time they took their cattle for dipping.

From the above analysis, it may be concluded that the cost of milk production was not a response to the market forces of demand and supply. It is therefore logical to suppose that a shift from this system of subsidies would significantly impact on the performance of the dairying activities. If farmers are to continue ripping benefits from this sector, the revenues they get from milk sales should be sufficient to cover costs and realize surpluses that in the light of this paper would play a positive role in poverty reduction.

3.2.3 The post-reform period

The previous section has looked at dairy development from the perspective of developmental state in which government intervention was deemed necessary in the production and marketing of milk, which was considered as strategic in the overall development of the economy. This section describes the major turning point that emerged with the ideology of 'rolling' back the

state and focuses on the reforms that have been implemented in Kenya's dairy sector from 1987 to date. After many years of government involvement in the dairy sector, it became clear in the late 1970s that the strategy of government subsidies was not sustainable (Omiti and Muma, 2000).

The un-sustainability of the strategy as Ngigi (2003) observes became clear following the socio-economic crisis brought about by the oil crisis of the early 1970s and the severe drought that hit the country in 1984. At the same time, there was a global change that questioned the appropriateness of governments in controlling economic activities. At the centre of these changes were the World Bank and the IMF who introduced SAPs in most developing economies. The SAPs consisted of a package of economic reforms that were aimed at reducing the role of the state while at the same time stimulating growth of the private sector (Ngigi, 2003; Bird *et al*, 1984).

Kenya embarked on broad-based economic reforms in the mid 1980s. In the livestock sector, the reforms begun in 1987 with liberalization of the beef market and government withdrawal in providing the breeding (A.I) services (Kiriro, 2001). This was followed by withdrawal of clinical services in 1988 and the liberalization of livestock feed industry in 1989. Cattle dip management was also left to the farmers during the same period. The process was completed in 1992 when the dairy sector was fully liberalized through decontrolling of milk prices (Kiriro, 2001; Ngigi, 2003).

3.3 Effects of economic reforms on milk production

Milk production in Kenya is largely based on improved dairy herd whose population according to Omiti and Muma (2000) stood at close to 3.2 million in 1998/99 (Table 3). Although there is absence of reliable statistics on livestock population in Kenya, estimates suggest that the population of dairy cattle has tended to stagnate at 3.2 million. Majority of these cattle is found in the high and medium potential areas of Central, Rift Valley and Eastern provinces, which provide a more conducive environment to dairy production compared to other regions.

Table 3: Population of dairy cattle by Province ('000) – 1989 to 1999

Province	1989	1991	1993	1995	1997	1999
Rift Valley	1596.0	1665.7	1665.9	1934.4	1448.5	1631.0
Central	755.1	829.7	808.9	808.3	851.7	833.0
Eastern	260.4	281.2	273.6	311.8	351.7	344.1
Nyanza	219.0	131.3	150.1	145.1	150.5	150.7
Western	90.0	114.5	101.1	105.3	102.1	127.3
Coast	28.3	31.2	45.4	68.4	86.9	69.3
Nairobi	-	11.4	13.8	13.7	15.5	15.6
N/Eastern	8.7	0.2	0.2	0.15	0.15	0.15
Total	2961.7	3065.3	3059.3	3387.1	2933.8	3166.8

Source: Omiti and Muma (2000)

Following liberalization of the dairy sector in 1992, it was assumed that the private sector would emerge and take over the responsibilities that were previously performed by the government. However, since the private sector would not form instantaneously, Ngigi (2003) indicates that the government adopted an approach of gradually increasing the rate of cost recovery from the farmers while at the same time encouraging the establishment of private sector service providers. One of the obvious expectations of this strategy was that the staff already in the Government would voluntarily resign and engage in private practice. The government also started encouraging the dairy cooperative societies to start providing some of the services to their members. In most cases, the private veterinarians have tended to set up integrated businesses dealing with animal feeds and drugs as well as providing on-call veterinary and A.I service (Ngigi, 2003). But as Upton (2000) has noted, one of the immediate outcomes of this approach was that the private sector was only attracted to those areas that were easy to serve. As a result, there was a tendency of regional imbalance in the provision of animal health services that prompted the government to retain some limited service to hardship areas, mainly the ASALs.

The withdrawal of government support implied that farmers were to pay market rates for tick control, animal health and A.I services. Kiriro (2001) indicates that the costs of these services

increased considerably and farmers had therefore to sell their milk at higher prices in order to cover the increasing production costs. As part of coping strategy, most farmers started hand-spraying their cattle at home, a measure that was not only more expensive but also ineffective. In addition, many farmers switched to using of bulls in place of the AI services, which as Upton (2000) has noted resulted in long calving intervals and a general decline in the genetic make-up of the national dairy herd.

In a study carried out in Kiambu and Murang'a Districts in Central Kenya, Owango and Lukuyu (1998) found that liberalization increased the participation of dairy farmers' cooperatives in the provision of input services and milk marketing. The policy changes resulted in the emergence of unsatisfied demand and created some new incentives for the cooperatives to engage in service provision. The authors continue to observe that the co-operatives were favoured by their ability to combine milk collection with the provision of other services. Farmers in need of AI or other clinical services place their requests by submitting a note to the co-operative milk collectors in the morning who return it to the co-operative society's office. The society then sends a technician to the farmer the same day. This approach allows for credit service provision where the costs are recovered from milk sales. The non-members also benefit from the services but are required to pay some additional amount and must make their payments by cash (Owango and Lukuyu, 1998).

3.4 Access to Credit

Credit has been a major consideration in any thinking on agricultural development (Ellis, 1992). It is considered that credit provision will generate some positive impact in breaking the vicious circle of poverty by stimulating production and encouraging savings. In the context of recent liberalization of the dairy industry, farmers are in greater need for financial services since the subsidies previously provided by the state have since been withdrawn. For many years up to the mid 1980s, Ellis (1992) has noted that credit provision was largely supply-driven where governments and donors implemented credit programmes targeting the small farmers. It is reasonable to suppose that the small farmers formed the main target group due to their weak position in the credit market. Such farmers usually lack collateral to attract lending from the

mainstream-banking sector. In addition, they are more vulnerable to exploitation by the private moneylenders who charge higher interest for their money.

The main institutions offering credit to dairy farmers in Kenya include commercial banks (CBs), Non-bank financial institutions (NBFIs), Rural and Urban savings and credit co-operative societies (SACCOs), Agricultural finance co-operation (AFC) and Non governmental organizations (NGOs) (Omiti and Muma, 2000). According to Upton (2000), a survey on smallholder dairy farmers in Kenya in the 1990s showed that only 38% of farmers who wanted credit received loans from these intermediaries. Two thirds of these loans were provided through the co-operative societies. The loans taken by farmers are mainly used for buying a cow, building a cattle shed or for fencing. The co-operatives are popular to small farmers due to their flexibility on offering loan facilities. They sometimes offer manufactured animal feed and minerals on credit and recover the money at the time of making the payments from milk deliveries. Such service is however only available to the active members but may be viewed as one of the strategies that mitigates the access problems of credit facilities to smallholder farmers.

A general trend as noted by Omiti and Muma (2000) is that credit targeted for agricultural development has been on the decline since the 1980s. At the same time, there has been notable bias towards large-scale enterprises and lending to businesses in urban centres at the expense of rural enterprises. Many small farmers are finding it difficult to obtain finances to invest in development of dairy activities because the banking institutions find it risky and costly to lend to the small farmers. In addition, the high interest rates charged by these banks coupled with lack of collateral such as land title deeds impedes any efforts to provide credit to such group of farmers. In order to overcome some of these problems, farmers are being encouraged to form rural SACCOs and raise group funds, which can be used as collateral when they want to acquire loans.

3.5 Dairy Farming and rural livelihoods

Dairy farming has been known to produce mixed effects on smallholder farmers and local livelihoods, both directly and indirectly. Besides being an important source of nutrition, there have been cases of substantial increases in the incomes of small farmers, which can be attributed

to milk production. This is particularly evident from the rising business activities involving raw milk trade in virtually all major towns in the country. The need for cash incomes from milk could be more pressing due to lack of other sources of income. Households therefore result to selling more milk than they consume in order to meet more pressing needs like paying for school fees, clothing etc. Other effects are associated with the interdependences between dairy farming and other forms of production, mainly crop farming. These aspects are considered in details in the sections that follow.

3.5.1 Relationship between milk production and other farm production:

The economic importance of a cow is not only seen in terms of income from milk sales and the role of milk in the diet of households. There are a number of strong internal interdependencies between dairy farming and crop production that can be seen to have positive effects on poverty reduction. Ngigi (2003) notes that in the high potential areas, milk production has maintained its complementary role of sustaining soil fertility for sustainable agricultural production.

Considering the financial constraints of the small-scale farmers to purchase farm inputs and use hired labour, keeping of dairy cattle and other livestock has contributed towards provision of draft power and manure necessary for crop production. Due to absence of subsidies, most farmers cannot afford the high cost of fertilizer whose price increased significantly with the emergence of economic reforms. Application of manure has been one strategy adopted by farmers to increase yield in crop production. On the other hand, the crop-byproducts such as remains from harvested maize and peelings of various crops are important sources of animal feed (Ngigi, 2003). In addition, milk sales provide farmers with more regular cash income, which they can use to purchase other inputs to boost their production. Thus under the system of mixed livestock-crop production, animals and crops can be seen to reinforce each other in a way that increases farm productivity and therefore contributing towards poverty reduction (Bayer and Bayer, 1983; Upton, 2000; Ngigi 2003).

Besides using manure as a means of enhancing productivity, Muriuki (2002) has indicated that some smallholder farmers sell the manure to meet immediate cash requirements. In addition, his

findings further reveal that manure in some cases accounts for the profitability of dairying activities even in circumstances where dairy farming “appears to be a loss making enterprise”.

3.5.2 Labour input and income control in milk production

Economic reforms have increasingly continued to encourage market-oriented production. As a result, the production systems have changed towards more intensive dairy production. Tangka *et al* (2002) has noted that encouraging intensified dairy farming is one strategy to improve productivity of the dairy cattle and enable the resource-poor smallholder farmers to raise their incomes. However, although higher incomes are generally known to have a positive impact on poverty reduction, studies have shown that intensification of production systems results to new relationships between labour inputs and income control within a household. Such relationships become potential areas or catalyst for gender conflicts. In order to see clearly how these relationships emerge, this section uses the experience of dairy farming in the Meru Central District to analyze the changes in household labour relations and income control associated with market-oriented dairy production.

The Study Area:

The Meru Central District is situated some 280 km from Nairobi. The population according to 1999 census was 498,880 out of which close to 90% depend directly on agriculture (GoK, 1999). Meru region is agriculturally high potential with an annual rainfall of between 1250 mm and 2250 mm. Coffee, tea, pyrethrum and cotton are the main cash crops cultivated in the area while maize, bananas, cassava, sweet potato, millet, sorghum and pulses (peas, beans etc) comprise the main food crops. The Meru people also engage in non-food plants like tobacco and *miraa*. *Miraa* is a tree whose leaves are chewed for their narcotic effect (Launonen *et al*, 1985)

Milk production is in many ways combined with cultivation of other crops. However, animals were traditionally kept for social significance and were particularly important in payment of dowry for those who wanted to marry. Dowry was not accepted in any other form and the wealth of an individual was mainly measured in cattle units. The Meru Central District has high

potential for milk production and is indeed a milk surplus district. This potential is largely attributed to the poor performance of the coffee sector, which has encouraged most farmers to switch to dairy production (Mbwika, 2000). In addition, the competition introduced by market liberalization gave farmers more marketing options thus leading to increased participation in dairying activities.

According to the District Development Plan for the period 2002 –2008, average farm sizes for smallholder and large scale farmer is 1.1 Ha and 680 Ha respectively. Most farmers today practice zero grazing and this has tended to increase the level of milk production. The main livestock bred is cattle sheep and goats. Close to 240,000 people work in the livestock sector. There are currently 24 active dairy co-operatives with a membership of 29,657 people. These co-operatives have been serving farmers in various ways including offering a market outlet for raw milk, and providing animal feeds, IA services and animal treatment on credit to their members (Mbwika, 2000)

Poverty in the District is rampant with nearly 50% of the population being considered as poor. The main causes of poverty include: inadequate and unreliable rainfall, limited irrigation development, lack of employment opportunities, limited amount of land, poor performance of cotton and coffee sectors and lack of organized markets for agricultural produce. High cost of agricultural inputs, poor infrastructure and absence of credit facilities have also been identified among the major causes (GoK 2002b).

In carrying out this research, there was an attempt to consider dairy farming from a wider perspective of all Meru Districts. This was considered necessary because earlier studies had combined data across these districts which more or less share similar characteristics. The Meru districts comprise of Meru Central, Meru South, Tharaka and Nyambene. The four constituted what was formally the Meru District (Mbwika, 2000).

3.5.2.1 Labour relations in Milk Production

Like in most parts of the country, milk production in Meru is generally labour intensive. Two main kinds of labour may be distinguished; family labour and hired labour. In the traditional Meru society, Launonen *et al* (1985) found that men were herders and women were cultivators and gender roles were largely linked to this division of labour. Women used to prepare land, plant the crops, weed and perform the harvesting work while men were involved in grazing of animals, bush clearing and hunting. However, with the adoption of cash crop cultivation and commercial dairy production, this sexual division of labour has gradually changed. These findings compare to those found by Bulow and Sorensen (1988) who noted that modern agriculture has come to be associated with men rather than women and this is largely reinforced by the Government policies on extension service and development projects where men are seen as farmers while women are seen as family labour and housewives. There is therefore a tendency to ignore women's contribution in agriculture despite their role in both food and cash crops production.

During the early days when population pressure on land was small, cattle herding was the responsibility of men while women mainly participated in the milking and delivering the milk to co-operative societies and also collected the money from the sale of milk (Launonen *et al*, 1985). But with increasing population and introduction of technological innovations like zero grazing, division of labour has been changing within the major farm production while it has been maintained in other work especially in women's domestic work and child care. This has decisively increased women's labour input in relation to men's (Bulow and Sorensen, 1988). For example, in a study carried by Tangka *et al* (1999), it was found that intensive dairy farming translates into a system of cutting and carrying of fodder to stall-fed dairy animals; an activity which has effectively redefined cattle feeding as part of women's work. An important question is in the extent to which this increased workload affects the women's contribution to meeting household food security. These findings compares to those by Muriuki (2002) who found out that the women's workload has been increasing as they get more involved in activities such as collecting and processing of animal feed, feeding the animals, milking the cows, delivering milk to the markets and fetching adequate water for the animals.

Few households rely exclusively on family labour. Other sources of labour including child labour and hired labour become necessary in different times of the year. In most cases however, hired labour among the smallholder farmers will be sought where the man is engaged in wage employment. In this respect, hired labour intervenes in performing men's work while women's workload remains unchanged. Removing manure from the cowsheds is a case in point where if the male household head is away, hired labour will be sought since in most cases women are not involved in the cleaning of the sheds.

3.5.2.2 Income effects of commercial dairy production

Several studies have shown significant increases in incomes of households that engage in commercial milk production. Tangka *et al* (2002) raise an important question regarding whether the introduction of intensified dairy production makes women better or worse off. Under traditional dairy production practices, these authors argue that women retain higher proportions of incomes from milk sales. With intensification however, men's income from dairy farming have continued to increase. An explanation for this position is that most enterprises that deal with milk such as the co-operative societies require household heads (mostly men) to register as the sellers and therefore become entitled to collecting the cash incomes (Tangka *et al*, 2002). An important observation reached by Reynolds *et al* (1996) indicate that incomes in the hands of women have more beneficial effects to households than in circumstances where men control income. Women will more generally use the proceeds to buy household consumption items, which has a direct impact on poverty reduction unlike their male counter parts who will commonly use the incomes for leisure.

In one of the studies carried out under the smallholder dairy project which was implemented in the Kenyan highlands, Reynolds *et al* (1996) reveal that with increasing commercialization, the control of incomes from the sale of milk has shifted from women to men. Similar results were reached by Dolan (2002) who studied horticultural production in the Meru¹ region from 1994 to 1996. She found out that within the agricultural production, men control the vast majority of

¹ This study had collected data from 113 men and 94 women cultivating French beans

income despite the fact that women put in more labour in production (Table 7 and Table 8). These findings are complemented by Bulow and Sorensen (1988) who suggest that men have increasingly become interested in a range of activities including food crop production and have tended to be more involved in cash-generating activities.

Table 7: Average annual income control for horticultural crops in Meru region

Crop	Income control	
	Female (%)	Male (%)
Bananas	10.0	90.0
Beans	72.7	27.3
Cabbage	50.0	50.0
Carrots	53.6	46.4
Coffee	14.0	86.0
French beans	38.0	62.0
Maize	53.3	46.7
Mangetout	52.0	48.0
Onions	61.1	39.9
Potato	49.2	50.8
Passion fruits	90.0	10.0
Pyrethrum	0.0	100.0
Tea	6.7	93.3
Tomato	75.3	24.7
Wheat	0.0	100.0

Source: Adapted from Dolan (2002)

Table 8: Control of income over all crops versus labour performed

	Labour performed (%)	Control over income (%)
Men	18	66
Women	82	34

Source: Adapted from Dolan (2002).

As can be seen from the table above, there is an inverse relationship between women's labour input and income control over agricultural earnings. Such a relationship as observed above has significant implications in the ways in which various activities can contribute to poverty reduction.

3.6 Problems and Constraints of milk production

Although milk production has been seen to offer opportunities for increasing farmers' incomes and hence contribute towards poverty reduction, there are a number of constraints that have hindered the realization of full benefits from dairying activities. These constraints may broadly be viewed to relate to production, marketing and the gaps created by outdated regulations and policies in the livestock sector.

According to KDB (2005), one of the major constraints has been the rising cost of farm inputs that farmers were exposed to since liberalization of the dairy sector in 1987. The costs are largely incurred in areas such as disease control services, AI services and in the procurement of feed supplements. Access to such inputs and services has also been poor. Many farmers, for instance do not have access to AI services and thus depend on bulls for breeding. Such strategies have resulted to poor breeding stock. Farmers have a motivation to maintain good health for their animals in recognition of the benefits they get from them. Although there are efforts at national level to stop the spread of livestock diseases, farmers occasionally have to meet high costs for disease control services offered by the private sector. Besides, the decreasing farm sizes has made it difficult for farmers to produce enough fodder and they thus have to meet high costs of manufactured feed which is sometimes of low quality.

The poor state of infrastructure such as rural access roads, lack of cooling facilities, water and high cost of electricity has in many ways constrained milk production as they have a significant influence on the production and marketing efficiency (Muriuki, 2002). Lack of cooling facilities has, for example, resulted in significant loss of evening milk. It has been observed that most dealers collect milk from the farmers only in the morning. The poor state of rural roads in many milk producing areas increase the transactions costs of both farmers and traders. Other problems relate to limited access to affordable credit, delays in payments to farmers and a slow process in legal and policy reforms.

3.7 Conclusions

This chapter started by presenting the three phases of dairy development in Kenya; the colonial era, the pre-reform period and the post-reform era. The purpose was to trace the changes in how dairy farming was organized and to reflect on how the changes impacted on income distribution and poverty. The discussion supports the view that adjustment policies worsened income distribution and poverty situation in the sense that withdrawal of government subsidies required farmers to meet market rates for agricultural inputs and services, besides meeting other costs in accessing basic social services like education and health. Some areas were found to be largely unattractive to the private sector, particularly those with under-developed infrastructure like the rural access roads. This may be a justification to maintain public services in such areas.

The discussion has also identified some areas in which adjustment policies could be associated with worsening income distribution and poverty. Reforms encouraged an increase in market-oriented production, which resulted in new and gendered dimensions in the way in which income and family labour are used. Falling incomes from traditional cash crops like coffee encouraged farmers to diversify to dairy production as a strategy to increase their incomes. In order to increase milk yields, more intensive methods of production have been adopted that effectively increased the workload for women, as they have to feed and water the animals in the cowsheds. Men previously played this role when they participated in grazing the animals in open fields. Although in general incomes from milk production has been increasing, there is nevertheless a tendency to shift the gains from milk sales from women to men as dairy farming becomes more

organized and attractive. The incomes from milk production have particularly been on the increase since liberalization of the dairy sector in 1992 due to the numerous marketing outlets provided by the informal sector that offer better returns to milk producers. These are discussed in details in Chapter four.

CHAPTER FOUR

4.0 MILK MARKETING AND INSTITUTIONAL LINKAGES

4.1 Introduction

Milk forms an important part of many people's diet both in the urban and the rural areas. Substantial amounts of milk are consumed in all major towns with the highest demand being experienced in Nairobi. The perishable nature of milk and the distance between producers and consumers necessitates a well-coordinated marketing structure. Effective institutional linkages should result to better consumer satisfaction while at the same time ensuring that dairy farming remains a profitable undertaking to the producers. Although the institutions involved may have conflicting interests that result to some degree of ineffectiveness, they nevertheless play an important role in creating a link between producers and consumers. This chapter highlights the main features that characterize the milk marketing structures in Kenya before and after the economic reforms. A fundamental change that was brought about by liberalization was the shift from formal to informal milk markets (IFAD, 2004). More emphasis is therefore placed on the distinction between the formal and informal milk markets which, as other studies have shown, tend to offer different returns to milk producers in different parts of the country.

4.2 Milk Marketing before liberalization

From 1931 to 1992, Kenya's milk marketing was placed under the Kenya Co-operative Creameries (KCC); a nationwide dairy processing and marketing co-operative that was set up during the colonial days to assist in milk marketing for the white settler farmers (Mbogoh, 1990). This monopoly status was granted under the Dairy Industry Act (CAP 336, Laws of Kenya). As Ngigi (2004) observes, KCC tightly controlled the marketing of milk through a system of quotas and statutorily controlled milk prices. Other milk processors were not allowed to buy milk directly from the farmers but were required to place orders with KCC. Ideally, KCC was required to provide a guaranteed market outlet to all dairy producers. It was therefore obliged to accept all milk from farmers as long as the specified quality standards were met (Ngigi, 2003).

In order to meet the above objective, the KCC expanded its capacity for processing and marketing of milk. Until the early 1980s, Omiti and Muma (2000) indicate that KCC operated profitably and had achieved a national network of 11 processing plants and 11 milk-cooling centres with 26 sales depots. By 1991, it had an installed capacity of 1.2 million litres per day, processing and packaging various dairy products such as low and high fat fresh milk, ultra heat treated long-life milk, butter, milk powder, cheese and fermented milk (Ngigi, 2003).

Milk as mentioned above is a highly perishable commodity and a reliable market outlet is therefore very crucial to the farmers. The delivery of milk to KCC was organized through a network of producer co-operative societies, which were involved in milk bulking for pooled transportation to the processing and cooling plants (Mbogoh, 1990; Ngigi, 2003). Such an arrangement was important to the smallholder farmers particularly when viewed from the perspective of transactions costs. Handling small amounts of milk would in most cases entail higher transactions costs. Table 4 shows the number of dairy co-operative societies that were registered for the period 1993 to 2002. The trend shows an increase in the number of dairy co-operatives, which suggest that more farmers are getting involved in dairy production.

Table 4: Number of registered dairy co-operative societies

Year	1993	1994	1995	1996	1997	1999	2000	2001	2002
No. of societies	207	210	267	291	313	331	337	332	332

Source: Economic Surveys: 1998, 2003

Besides ensuring a ready market for milk produced by smallholder farmers, KCC offered a system that provided stable prices to milk producers thus cushioning them from fluctuations associated with a free market system (Ngigi, 2003). But due to absence of competition in milk procurement, the prices that farmers received tended to be somehow low.

Over the years, however, the government had realized that some areas were poorly served by the KCC and an alternative approach was necessary. Mbogoh (1990) indicates that the government, through the National Rural Dairy Development Programme, started encouraging the dairy co-operative societies to start up their own processing facilities in the early 1980s. The Programme, which was also assisted by a number of donors, targeted remote areas that were outside the catchment of any KCC dairy plants. This resulted in the establishment of two dairy processing plants by the Meru Central Farmers Co-operative Union and the Kitinda Dairy farmers' co-operative society in Bungoma District. However, these two dairy plants had only a limited effect on the role of KCC as the dominant player in milk processing and marketing. For instance, in 1988, the two plants had a combined milk intake of 2.4 million litres compared to an intake of about 340 million litres by KCC (Mbogoh, 1990).

Although KCC was formed as a private sector organization, Morton and Miheso (2000) note that it was "by all intents and purposes a parastatal with an official monopoly over milk marketing". Similar observations are reached by Ngigi (2003) who argues that KCC was implicitly identified as a public organization. Besides being a buyer of the last resort for all milk produced, it was entrusted with other social roles like maintaining strategic milk reserves and implementing a School Milk Program that was started under the Ministry of Education in 1979. The program aimed at supplying milk free to all pupils in primary schools through out the country (Launonen *et al*, 1985). KCC was thus receiving financial support from the government.

4.3 Milk marketing after liberalization

Liberalization introduced a number of new institutional changes in milk collection, processing and marketing (Karanja, 2003). To help in the description of these changes, it is important to have a clear understanding of the concepts of formal and informal milk markets.

4.3.1 Formal milk markets

According to Ngigi (2003), formal marketing channels refer to the sale of processed milk to final consumers. Mbogoh (1990) adds that the degree to which a market can be described as formal or informal depends on whether the milk dealers are licensed or not. Formal market in this case

refer to operators who have been issued with a license by the KBD or those acting as agents of licensed operators like the KCC. Until 1992, KCC enjoyed the monopoly of formal milk processing and marketing as already described in section 4.2. By 1999, 34² new processors had been licensed and were operational but have been processing small amounts of milk due to high operational costs (IFAD, 2004). The key players in the formal markets include the dairy farmers co-operative societies, organized self-help groups and other arrangements involving direct sales to milk processors. Milk collection is organized in such a way that farmers deliver their milk to some identified pick up points and the cooperative agents or other dealers transport the milk to the processing factories. In limited cases, the marketing agents may collect milk directly from the farms but this is usually possible with large-scale producers.

4.3.2 Informal milk markets:

The concept of informal milk market describes the marketing channels that are involved in the sale of unprocessed milk. Majority of the milk dealers in the informal market are not licensed. Mbogoh (1990) reports that producers or their agents engage in hawking milk from home to home. The most common form of this market is where the milk producers sell raw milk to their neighbours in the rural areas. However, with liberalization, the sale of unprocessed milk has significantly expanded even to urban areas making the informal channels more dominant in milk marketing (Table 5). Milk traders/hawkers and other brokers purchase milk from farmers for resale to consumers in the urban areas. Most consumers in Kenya have shown greater preference of raw milk as compared to processed milk. Although there is no reliable data on this type of market due to lack of registration, a study by IFAD (2004) indicates that close to 4,000 traders are involved in raw milk sales in Nairobi alone. It is estimated that the informal market accounts for over 70% of the total marketed milk (Karanja, 2003).

² Omiti and Muma (2000) puts this number at 45

Table 5: Milk marketing channels and prices they offer

Channel	Morning Milk		Evening milk		Average Price shs/lt)
	Average sales (lt)	%	Average sales (lt)	%	
Broker	8.1	6.5	6.9	3.1	15.10
Hawker	7.3	14.2	4.7	5.9	14.20
Self-hawking	5.5	11.2	3.0	7.0	19.50
Neighbours	2.7	39.1	2.5	72.0	22.90
Co-operative	6.7	12.6	3.1	.7	13.80
Self-help group	11.9	0.6	0	0	13.00
Processors	15.9	11.0	4.7	0.6	12.00
Other	3.8	4.7	3.8	7.6	19.00

Source: Adapted from Karanja (2003)

Among the most immediate impacts of liberalizing the dairy sector was the entering of new processors into the market that as has been described in section 4.2 was largely dominated by KCC. This was a significant change to the small farmers because it created more market outlets and introduced competition in the procurement of milk (Ngigi, 2004). This as shown in table 6 below resulted in a significant increase in milk producer prices from 1994.

Table 6: Average Gross milk prices (in Kshs) to farmers per 100 litres: (selected years)

Year	1988	1989	1990	1992	1993	1994	1997	2000	2002	2003	2004
Price	340	375	435	580	780	1,250	1,450	1,400	1,387	1,400	1,600

Source: Economic surveys; 1993, 1998, 2005

But despite the entrance of new processors into the market, majority of the farmers have preferred to market their milk through the informal channels. The dealers in the informal markets offer higher prices to the producers and in most cases make prompt payments to the farmers than does the participants in the formal channels. As a result, the dairy co-operatives that previously

formed an integral part of the formal milk market have been relegated to being buyers of the last resort³ (Karanja, 2003). In some cases, they have also engaged in the sale of raw milk to institutions such as schools and hotels in order to keep up with the pace of competition.

Although the informal milk markets have enhanced competition and increased business opportunities and employment, they nevertheless have resulted into new challenges to the overall development of the dairy sector. Farmers may be seen to lose all benefits associated with value addition that would be achieved by processing milk. A study by Ngigi (2003) has argued that the hawkers of raw milk are unlikely to have any long-term vision of the business since they are merely interested in selling raw milk for their survival and this limits the possibilities of product and market development.

Another major concern has been the manner in which raw milk is handled by the itinerant traders. Milk is usually brought to major towns using small trucks; bicycles or public transport using unsterilised plastic containers and is then distributed to consumers using polythene paper bags. In addition, some traders and farmers alike have been found to engage in dishonest behaviour. Ngigi (2003) has found that dealers in raw milk add water and margarine in order to increase the amount of milk for sale particularly during the drier months. The moral hazard of milk adulteration in raw milk trade is more likely due to the inherent informational problems and the fact that milk changes hands several times before reaching the intended final consumers. Similar findings are reached by Karanja (2003) who argues that the informal marketing channels have exposed the public to health and hygiene related risks in addition to stifling growth of the formal milk sector. As noted in chapter one section 1.3, only 26% of the installed processing capacity of 2.2 million litres per day is presently in use. However, the hygiene related concerns are not adequate to stop trade in raw milk since it is more affordable by many poor people in both urban and rural areas. Ngigi, (2003) observes, the repeat buyer–seller relationships that are typical of this trade may enhance the built up of social capital that somehow mitigates some of the problems related to moral hazard. Besides, most consumers in Kenya habitually boil their milk before consumption and this minimizes the risks of diseases.

³ Other studies have argued that co-operatives became more popular to small farmers after liberalization since they offered inputs on credit

4.4 Conclusions

The analysis provided above indicates how milk marketing was organized before and after the adjustment policies. Before the onset of SAPs, milk marketing was placed under KCC, which enjoyed a monopoly status in milk processing and marketing until 1992. KCC operated through a network of dairy co-operative societies, which engaged in collecting small quantities of milk from farmers and transport it to the cooling and processing facilities owned by KCC. Although this system did not provide higher returns to milk producers, it nevertheless offered a reliable marketing outlet and stable prices to the farmers. The single most important change brought about by economic reforms was the liberalization of milk marketing that introduced competition in buying of milk from farmers. An informal milk market emerged and has been offering higher prices and prompt payments to milk producers in addition to providing jobs to thousands of Kenyans. There is however opposition from milk processors who have faced stiff competition from this market. The formal processors have not been attractive to the farmers because they offer lower prices since they have to meet increased costs related to processing and packaging.

It is useful to note that although there have been calls to stop informal milk marketing due to purported public health risks, there seem to be some degree of ignorance about the nature of milk consumers in Kenya. In general, there is more preference towards unprocessed milk since it is affordable to most consumers and is assumed to be more nutritious. Kenyans habitually boil the milk before consumption and this minimizes the risks of disease outbreaks. Since there are no indications for a near end to informal milk markets, setting up of local standards for informal traders and training them on milk handling techniques would go a long way in safeguarding the many jobs that are currently been offered by the informal sector.

CHAPTER FIVE

5.0 CONCLUSIONS AND POLICY RECOMMENDATIONS

5.1 General Conclusions

This study was designed to examine how the implementation of economic reforms affected the role of dairy farming in poverty reduction. The main focus was on looking at milk production as a source of food and as a source of income. In more general terms milk production is considered an important activity as a means to reduce rural poverty in Kenya. It has the potential to contribute towards meeting household nutritional requirements and increasing incomes for smallholder farmers. Based on the lessons and evidence from the various parts of the country and in particular the wider Meru District the study has found that the implementation of economic reforms increased the level of commercialization of dairying activities and the role of milk production has gradually shifted from being more of a source of food to becoming an important source of incomes to the small farmers. Part of the reasons may be traced in the way in which the traditional cash crops like coffee have increasingly performed poorly as a source of income thus encouraging the small farmers to diversify to dairy farming which offers better opportunities as an income generating activity.

Market-oriented dairy production was found to have gendered dimensions in terms of household labour relations and changes in the control of income from the sale of milk. Due to decreasing land sizes, farmers are increasingly adopting more intensive ways of production like zero grazing so as to increase milk yields. The resultant effects are that women are contributing more labour in terms of feeding the animals in the sheds as well as in milking and delivering milk to the market. In the traditional forms of production, men assumed more roles in maintaining the animals since they participated in grazing. Despite the increased workload for women, commercial milk production has continued to attract men and there is a tendency to shift incomes from milk production from women to men. As observed in Chapter four, proceeds in the hands of women are likely to be used for the welfare of a household. Based on this results, policies that promote dairy farming while at the same time increasing the control of incomes by women will have more impact on poverty reduction. In the overall however, dairy farming creates

employment opportunities for rural communities and has become a source of regular incomes as well as contributing towards household dietary requirements.

Economic reforms in the livestock sector necessarily involved 'rolling back the state' in offering subsidized services and inputs to livestock producers. The consequent withdrawal by public institutions from providing subsidized services to the farmers created a vacuum that opened opportunities to the private sector and the dairy co-operatives to participate in service provision. However, the needs of farmers particularly in the remote areas have remained largely unmet due to their unattractiveness to the private sector. A significant change since liberalization of the dairy sector has involved a shift from formal to informal milk marketing. Although the informal markets are criticized on public health and moral hazard reasons, they nevertheless have shown great potential in terms of offering alternative market outlets and offering higher and prompt payments to the farmers.

The growth of commercial milk production may also be seen to be an important source of further differentiation of smallholder agriculture. Farmers who diversify towards market-oriented dairy farming are more likely to earn higher incomes forming a group of "progressive farmers" and hence improve their wellbeing. The pace of such differentiation will, however, depend on the factors that encourage or hinder the small-scale farmers to venture into commercial milk production. This paper has found out that although dairy farming has the potential to offer benefits to participating households, there are factors that limit the realization of full benefits. Such factors include high production and marketing costs, lack of affordable credit facilities and outdated policy and legal framework. With improved access to credit, farm inputs, market information and outlets, smallholder dairy farming has the potential to be more competitive and can therefore play a role in ensuring equitable distribution of incomes.

5.3 Policy recommendations

Considering that the majority of Kenyan population is rural based and is engaged in small-scale agriculture, development policies should be focused towards improving smallholder sub-sector for both food security and income/employment generation. Harnessing of dairy farming as a

strategy for poverty reduction should take into account a number of institutional and policy prerequisites. Small farmers are resource constrained and require a variety of services in order to increase their production. Such services include affordable credit, extension services, ready markets and a conducive policy and regulatory framework. The government has therefore a fundamental role in ensuring an environment that allows for the provision of such services. In addition, information flow should be enhanced if full potential of dairy farming is to be realized.

Given the declining role of the government in providing farmers with inputs and marketing services, a number of policy interventions are considered necessary to realization of full benefits by the dairy producers. Efforts should be directed towards improving rural access roads and communications network in order to ease milk collection and marketing. In addition, improving collection and dissemination of information is necessary in order to overcome some of the information asymmetries that may hinder fair trade in dairy products. There is also a need to put in place a legal mechanism that can ensure prompt payment to farmers. This suggests the need to increase the pace of reviewing the existing laws to make them more conducive to a liberalized market environment.

Although a number of dairy co-operative societies collapsed as a result of stiff competition introduced by liberalization, farmers should be encouraged to revive such societies and/or form new ones in order to collectively market their milk. Such an approach would greatly cut down on transactions costs. Cooling facilities should also be availed in strategic areas so as to minimize milk spoilage and improve collection of evening milk from farmers. Further to this, ways should be sort to improve access of affordable credit both to milk producers and milk traders.

Kenya has not had a livestock census for nearly three decades. As a result, cattle population and milk production is based on estimates, which in many ways are not realistic. This paper recommends a national livestock census in order to gather accurate and more reliable data that could be used for future planning in the livestock sector.

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