

**GENDER ANALYSIS ON MILK VALUE CHAIN: A CASE OF TANGA CITY  
AND IRINGA MUNICIPALITY**

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**A DISSERTATION SUBMITTED IN PARTIAL FULLFILLMENT OF THE  
REQUIREMENT FOR THE DEGREE OF MASTER OF ARTS IN RURAL  
DEVELOPMENT OF THE SOKOINE UNIVERSITY OF AGRICULTURE.  
MOROGORO, TANZANIA.**

## ABSTRACT

Gender-based inequality is a phenomenon that transcends the majority of the world's cultures, religions, nations and income groups. In most societies, the differences and inequalities are manifest in the responsibilities each are assigned, in the activities they undertake, in their access to and control over resources and in decision-making opportunities. A study of gender analysis on milk value chain was conducted in Tanga City and Iringa Municipality. The overall objective of this study was to examine gender relations that prevail in milk value chain activities in Tanga City and Iringa Municipality. Specifically the study intended to: identify roles played by different members of households in the milk value chain, to assess the gendered workload of actors in value chain, to determine gendered access to and control over dairy keeping resources, to assess gender decision making over resources in the household involved in the milk value chain. A cross-sectional research design was used in this study. A combined probability and non probability sampling was employed in this study. The data was analyzed using the Statistical Package for Social Sciences (SPSS) version 16.0 for windows. Results show that members of households play different roles in dairy keeping activities. Dairy keeping activities increased men's workload in Tanga City while increasing to women in the Iringa Municipality. Men and women have equal access to dairy farming resources but differ in control and decision making in the household. Gender education, improvement of extension services and financial institutions to give support to farmers was some of recommendations made for improvement of small scale dairy farmers involved in value chain activities.

## DECLARATION

I, **Evan Jeckonia Mvurungu**, do hereby declare to the Senate of Sokoine University of Agriculture that this dissertation is my own original work done within the period of registration and that it has neither been submitted nor being concurrently submitted in any other institution.

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Date

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## **ACKNOWLEDGEMENTS**

In the course of undertaking the study several individuals and institutions have contributed to the successful completion of the study. They are too many to mention by names, but their contribution is much appreciated. I owe my profound gratitude to my supervisors Dr. C Nombo and Prof. Z.S.K Mvena for their tireless guidance, patience, critical and fruitful suggestions, moral support and understanding from the initial stage of developing the proposal to the production of this dissertation. Words can't express my appreciation and respect, but let me say thank you.

It is my great pleasure to express my heartfelt gratitude to the International Development Research Centre (IDRC); MVC project for sponsoring the study without which its completion would not have been possible in such a successful way. I am also grateful to staff of the Development Studies Institute and my classmates for their cooperation and assistance and those who in one way or another, made the completion of this work possible.

Lastly I am deeply indebted to my family, my dear children, Jackson, Noel and Jeckonia for their love, prayers, encouragement, patience and perseverance during my stay away from home and while I was at home, as I didn't spend much time with them. They missed me a lot, but I believe that by God's grace they will be delighted to share the joy of this academic achievement.

**DEDICATION**

This work is dedicated to my wife Anastazia, M. Mpiti who carried all family responsibilities alone in my absence for the all period of my study.

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**LIST OF ABBREVIATIONS**

FAO	Food and Agriculture Organization of the United Nations
IDRC	International Development Research Centre
IFAD	International Fund for Agricultural Development
MALDO	Municipal Agricultural and Livestock Development Officer
MCC	Milk Collection Centres
MDGs	Millennium Development Goals
MVC	Milk value chain
NSGRP	National Strategy for Growth and Reduction of Poverty
SHDDP	Southern Highlands Dairy Development Project
SNAL	Sokoine National Agricultural Library
SPSS	Statistical Package for Social Science
SSDDP	Small Scale Dairy Development Project Strategy
TDCU	Tanga Dairy Cooperative Union
TFL	Tanga Fresh Limited
UN	United Nations
UNDP	United Nations Development Programme
URT	United Republic of Tanzania

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background information

Since the 1990s, policymakers and development practitioners have highlighted the critical importance of gender in the implementation, evaluation, and effectiveness of programs across a range of social and economic sectors (Peterman *et al.*, 2010). In recent years gender has picked attention never before has there been such momentum around the issue of gender parity on the global stage (Schwab and Zahidi, 2010). Apart from attention that gender is given still gender issues have remained unsolved and different governments through formulated policies and strategies are struggling to alleviate these gender differences. The Government of Tanzania has made a firm political commitment to support any initiatives that are focused at alleviating gender inequality in economic development, education, training and employment at all levels. The National Strategy for Gender Development is a step forward among other things towards laying foundation in promoting gender equality and equity in the country (URT, 2009).

In Tanzania like other countries gender is one among other issues that are termed as crosscutting issues. According to Haussmann *et al.*, (2006) gender-based inequality is a phenomenon that transcends the majority of the world's cultures, religions, nations and income groups. In most societies, the differences and inequalities are manifest in the responsibilities each are assigned, in the activities they undertake, in their access to and control over resources and in decision-making opportunities. Depending on how gender equality and 'empowerment' are conceptualized, gender is approached in markedly different ways in value chain interventions (Riigaard *et al.*, 2010). Most current value chain development has failed to integrate gender analysis. Value chain development

policies are often based on gender-blind or gender-discriminatory assumptions (Mayoux *et al.*, 2008).

Gender analysis is the process of analyzing information in order to ensure development benefits and resources are effectively and equitably targeted to all members of the society, and to successfully anticipate and avoid any negative impacts development interventions may have on gender relations (Overholt *et al.*, 1985). Gender analysis on milk value chain in Tanga City and Iringa Municipality therefore intends to evaluate gendered involvement (access to opportunities, control, and division of labour vis-à-vis workload) and distribution of gains among milk value chain actors.

## **1.2 Problem statement**

Gender issues fundamentally shape the totality of production, distribution, and consumption within an economy but have often been overlooked in value chain development (Rubin *et al.*, 2009). Although value chain approaches is widely adopted as strategy for enhancing economic growth and reduction of poverty, few have considered how gender issues affect value chain (USAID, 2010). Riisgaard *et al.* (2010) found that knowledge among practitioners and policy makers on the gender aspects of value chain interventions is still limited. Also it has been reported by Coles and Mitchell (2011) that little is known about gender in value chain and that there is insufficient evidence to make general statements about gender dynamics in different kinds of value chains. Therefore this study intends to disclose information concerning gender dynamics that exists in milk value chain.



### **1.3 Justification of the Study**

Men and Women in agricultural value chains are important actors but they face imbalance share of benefit from these activities. The efforts that the government and none Governmental Organizations have been putting to address it doesn't seem to end. Gender in different projects comes in as an entity not as focal problem. While removing constraints to women's productivity can be a good investment, attention to gender can improve project sustainability. There seems to be a lack of information concerning gender as an input to value chain. Therefore this study intends to disclose information concerning the relationship that exists among males, females, children and hired labour in milk value chain activities. The results of this study will inform the public on roles played by those actors in milk value chain, access to value chain resources, control of resources and benefits from milk value chain and decision making dynamics. This information will be useful to development practitioners involved in milk value chain and other agricultural value chain activities for planning best project interventions that are gender sensitive, also it will be an input to the government's effort to achieve the goal of creating more gender sensitive communities.

### **1.4 Objectives**

#### **1.4.1 General objective:**

The overall objective of this study was to examine gender relations that prevail in milk value chain activities in Tanga City and Iringa Municipality.

#### **1.4.2 Specific objectives.**

- (i) To identify roles played by different members of household in the milk value chain.

- (ii) To assess the gendered workload as the result of their involvement in milk value chain activities.
- (iii) To determine gendered access to dairy keeping resources.
- (iv) To assess gender decision making over resources in the household involved in the milk value chain.

### **1.5 Research questions**

- (i) What roles are played by different members of household in the milk value chain?
- (ii) What is the gendered distribution of workload in the household as the result of involvement in the milk value chain activities?
- (iii) What is the gendered access of different members of the household to dairy keeping resources?
- (iv) What is the decision making power of different members of household over resources involved in the milk value chain?

### **1.6 Conceptual Framework**

Gender is conceptualized as widely shared ideas and expectations (norms) about characteristics, abilities and expectations about how people should behave in various situations. These ideas and expectations are learned from families, friends, opinion leaders, religious and cultural institutions, schools, workplace and the media. They reflect and influence the different roles, social status, economic and political power of women and men in society. Therefore power of decision making and control over resources, benefits allocation and roles in milk value chain activities is expected to be influenced by gender.

## CHAPTER TWO

### 2.0 LITERATURE REVIEW

#### 2.1 Small scale urban and peri-urban dairy farmers

Urban livestock keeping is the type of farming that refers to keeping livestock (cattle, goats, poultry, pigs etc) in peripheries of urban centres. Urban livestock keeping is not only practised by the poor. Different social groups have different reasons to engage in urban livestock keeping. This farming is done for example by civil servants who need an additional source of income and food production to compensate for low wages. On the other hand the urban poor engage in urban livestock keeping as a response to limited alternative livelihood options and food insecurity therefore they find it as employment, source of income and food.

It is argued that urban agriculture has been the focus of increasing attention over the past two decades; however urban livestock keeping remains the area of agriculture that received less attention in literature (Fuller, 2003). Lupala (2003) for example argues that in 1991 there were sustainable agriculture projects in Dar es salaam resulting in a lot of studies; however the focus was on farms and not specifically on livestock keeping. A review of literature indicates that small scale urban dairy production is an important income generation activity and source of employment (Dugma *et al.*, 2011). There are many reasons why small scale urban dairy production is on the increase including high demand of milk in urban population (Habib *et al.*, 2007). The other reason is dairy production increases as sources of nutritious food to solve the problems of malnutrition as well as increasing household income and improve the quality of life of the farmer.

## **2.2 Gender roles in dairy activities**

Gender roles are shared cultural expectations which are performed by individuals based on their society identified gender (William *et al.*, 2009). According to Rubin *et al.* (2008) gender roles are behaviour tasks and responsibilities that are considered appropriate for women and men because of social cultural norms and beliefs. Culture, norms and beliefs of societies differ and this implies that no generalization can be made on gender roles. Roles played by men, women, male children, female children and hired labour cannot be generalized across different societies of dairy keepers. Moreover in other families dairy keeping is not the main economic activity. For example, in families where both husband and wives are civil servants it is obvious that what could have been done by them has to be done by hired labour and children instead.

Apart from cultural differences there are similarities of roles played. Abebe and Gamessa (2011) found that women were responsible for barn cleaning, milk selling and feeding. Njarui *et al.* (2012) reported that women played their roles with the assistance of children in milking, feeding and watering of animals. Men's roles were taking care of sick animals, fodder collection and storage. Wiley (1984) found that milking was the role that is shared between men and women, taking care of calves was women's roles, while fodder collection was men's roles.

To accomplish roles that different members of households are responsible to, resources are necessary. In this case gender roles played by different members of households have implications on access to resources. According to Terrillon (2010) gender roles assigned to men and women have impacts on their respective access to resources and the power to decide over benefits of using those resources.

### **2.3 Access to and control of dairy resources**

Access and control over assets such as land provide economic security, incentives for taking economic risks that lead to growth, and important economic returns including income. Yet, women in many countries are constrained ownership or control of important resources due to cultural beliefs (Letty and Bayer, 2010). Inequality in property rights contributes to women's generally low status and vulnerability to poverty compared with men.

FAO (2012) reported that in many African traditions, women and their belongings including cattle that they may have received from their parents or purchased themselves are the property of men. It has also been reported by Mbilinyi, (1997); Kinabo *et al.*, (1999); and Mattee, (1999) that, men have access and control to resources and other benefits than women despite their considerable labour input. Women were found to be excluded from decision making. Also they found that food crops are ones more controlled by women but once they gain commercial value men take over.

Participation in milk value chain has potential to benefit involved men, women and children in a number of ways like distribution of gains from value chain activities, decision on the use and benefit from recourses, and ownership or management of resources. However, the benefit accrued from participation in milk value chain depends on gendered relationship of involved actors at the household. As Coles and Mitchell (2011) highlight, gendered patterns of benefit distribution in the value chain does not always translate into gains to all individuals. In the same vein, non-participation in particular value chain does not equate to a lack of benefit. What matters is not simply the level of income derived from value chain activities, but a combination of factors related

to the perception of ownership or management of a particular commodity, the scheduling of payment, and the point of entry into the chain.

#### **2.4 Gender access to support services and information**

Livestock extension, input-delivery and financial services staff are usually dominated by men who are most likely to talk with male family members about, for example, how to improve livestock feeding and housing (Peterman *et al.*,2010). Women and girls who carry out dairy work as part of family labour receive the relevant information in most cases indirectly. Information and training that are often held for existing groups, such as dairy keeping associations or in farmer field school groups is not equally accessed as members tend to be composed mainly or purely of men. Apart from unequal access to training between men and women, the studies show that even the participation of poor urban livestock keepers in training courses and field days is very rare (Ishan *et al.*, 2002).

Letty and Bayer (2010) found that in some parts of the world, particularly in Moslem areas, there are cultural barriers to direct communication between male advisors and women, and as a result, women do not have the same access as men to information that could help increase their work efficiency and productivity. IFAD (2003) found out that in most African countries women's access to extension services, knowledge, credit and technologies is lower compared to men. Because of changing economic circumstances, women are taking on responsibilities for types of livestock that had traditionally been the realm of men, such as cattle. Therefore, livestock service providers are supposed to notice women's changing roles and give them enough technical, organizational and capacity-building support.

## **2.5 The value chain concept**

The value chain describes the full range of activities that are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), and delivery to final consumers (Kaplinsky and Morris, 2000). A value chain is a sequence of target-oriented combinations of production factors that create a marketable product or service from conception to the final consumption. In a value chain there are many actors who cooperate as the product move from one stage to the other. It is argued that actors who are involved in a value chain sometimes cooperate to bring the product to the final consumer although they may not know how they are linked up with upstream and downstream actors along the chain (Kaplinsky and Morris, 2000).

The activities that comprise the value chain can be contained within a single firm or divided among different firms, as well as within a single geographical location or spread over wider areas. Value chain can be simple or complex, which imply the number of actors and interactions involved. In general, the value chains of most agribusinesses have the following actors; input suppliers, producers, transporters, processors, whole sellers, distributors, retailers and final consumers. It is also common for one actor to be involved in more than one function in the value chain. There are also barriers to entry into some nodes of the value chains which may be more profitable, such barriers to entry may be gender based like the activities that are only done by men, women or children; the barrier may also be due to lack of skill or capital. Hence, it is important to conduct value chain analysis in order to understand gendered participation into particular value chain.

## **2.6 Dairy Value Chain**

A value chain in agriculture identifies the set of actors and activities that bring basic agricultural products from production in the field to final consumption, where at each stage value is added to the product (FAO, IFAD and ILO, 2010). The dairy value chain therefore starts with the raw product (milk supply) at the farm level and after passing at different stages where value is added ends with consumers who make the choice to buy, or not to buy, the finished product. According to Dillmann (2011) the dairy value chain has several links between the farm and the consumer: procurement, transportation, processing, commodity storage, conversion packaging, distribution, retailing, and food services. The dairy value chain encompasses six primary activities: feed inputs; production; collection; processing and manufacturing; marketing; transport and distribution, and consumption (Wamba and Wicks, 2010).

Different value chain activities that end up adding value to the products take place in different value chain nodes. These products with whatever value added to them has to be channelled to the markets. A value chain has basically two market channels; the informal raw/warm milk channel that is largely operated by small holder farmers and the formal/cold milk market channel that is largely dominated by large processors. Small holder dairy farmers of the study area use all the two mentioned milk channels.

## **2.7 Gender in milk value chain**

Milk production and sales are one sector where both men and women are involved, but it is important to note that gender biases remain prevalent in the dairy sector (WB, FAO and IFAD, 2008). Women, men, boys, and girls provide labour for different livestock-related tasks. However, gendered roles are not set in stone and are open to change for different social, economic and environmental related reasons. In Tanzania, most societies



show a clear division in gender roles. Yet in times of labour shortages, women could and do perform men's tasks, such as herding and making available drinking watering to the animals. On the other hand, men seldom performed women's tasks, except in cases where there is potential to gain control over assets (Hill, 2003). Although differences, exist within and between different livestock production systems and across regions, women are almost universally recognized for their role as the main actors in poultry, small ruminant, and micro livestock production as well as dairying, including the processing and marketing of milk and milk products (Njuki *et al.*, 2011)

## **2.8 Summary of literature review**

Review of various studies helped to give out a wider clarification of different study concepts for example value chain, urban livestock keeping, gender and dairy value chain. Also review of various studies gave the experience of different authors on gender issues of dairy value chain like roles played by different actors, access to resources, control, decision making and gendered distribution of gains of value chain. It was argued that gender issues are social construct and there is no enough evidence to generalise gender issues across societies and regions. This implies that gender issues are location specific and cultural setups of a particular community. Given this groom picture it is important to conduct location specific value chain analysis in order to understand the changes in gender role and its impacts on men, women and children on their specific areas.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Location of the study area**

The study was conducted in Tanga City and Iringa Municipality. In Tanga City livestock is kept because of its favourable weather, availability of compounded feeds, and grazing land around the City. The City has a population of about 16,000 cattle and more than one third (5,600) of the cattle are crossbreeds of indigenous Tanganyika short-horn Zebu with Friesian, Jersey, Ayrshire and Boran (Tanga City Council, 2007). On the other hand in Iringa Municipality according to URT (2007), urban farming is one of the key economic Sectors. It provides employment to over 40% of the labour force and contributes 40% of the food requirements for the Municipality. Iringa Municipality according to MALDO Reports (2011) has a population of about 5,610 cattle of which 2,623 is dairy cattle. Livestock keeping is mainly carried out in the outer wards such as Ruaha, Mkwawa, Mwangata, Gangilonga, Kihesa and Mtwivila. Dairy keeping is an important income generating activity from the sale of milk.

The two urban areas were selected with reason that they have characteristics that best represent situation of dairy farmers in the county. In Tanga city dairy farmers' groups are well developed. Most farmers sell milk in formal market through milk collection centres organized by farmers. In Iringa Municipality, dairy farmers groups are less developed. Most farmers sell milk in informal market to neighbours, restaurants or to milk vendors.

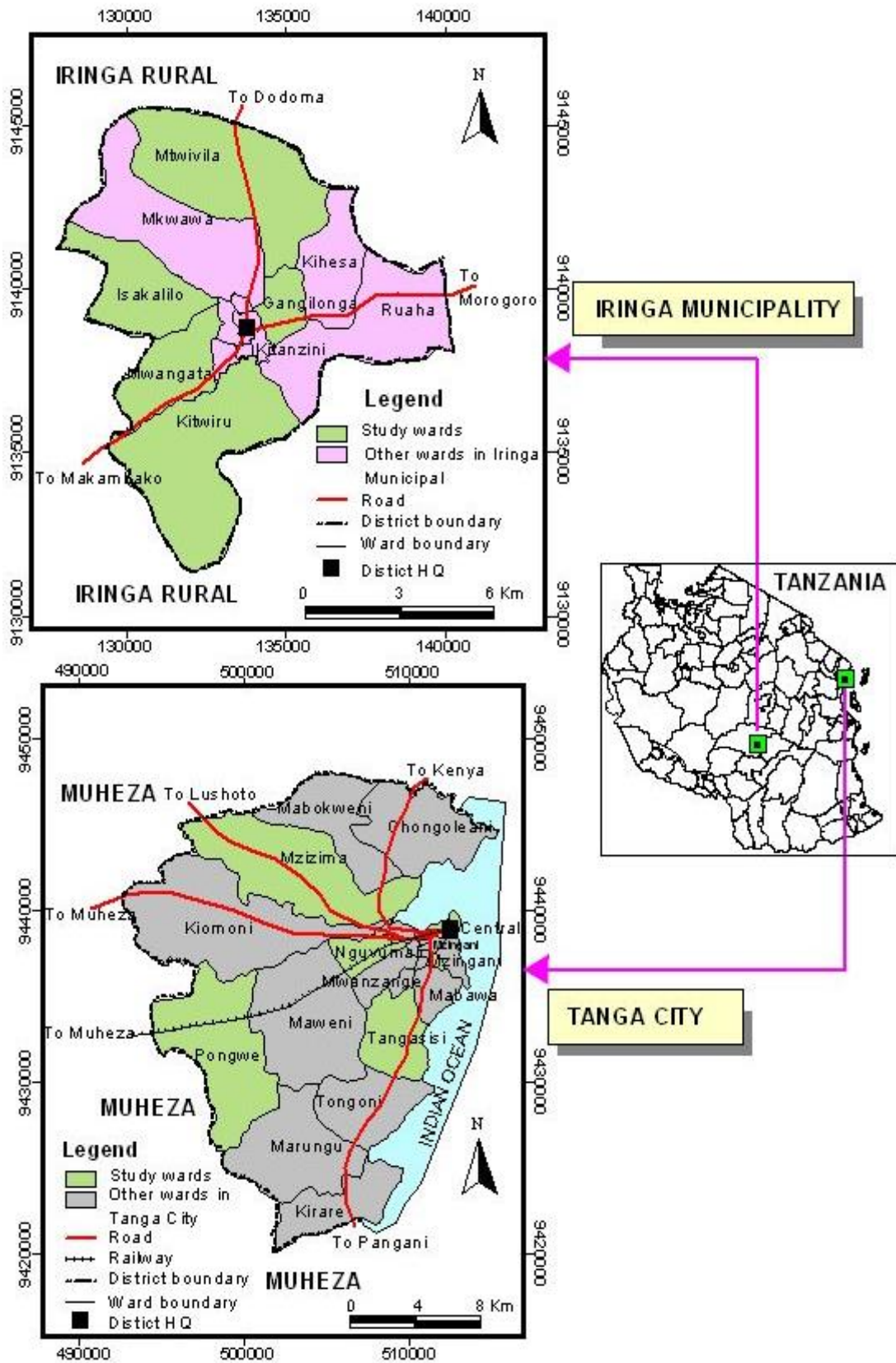


Figure 1: Map of the study area

### **3.2 Research design**

A cross-sectional research design was used in this study. The cross-sectional research design looks at the population or population sample at a single point in time. Data are collected at one point in time on several variables. According to Thisted (2006) the design is proper when time and money is the limiting factor, also according to this study cross-sectional research design was proper due to the same reason that time and money was the limiting factor as research training in masters programmes has time limits.

### **3.3 Sampling procedures**

#### **3.3.1 The population**

The study population was actors in the milk value chain involved in production, marketing and processing in Tanga City and Iringa Municipality.

#### **3.3.2 Sampling methods**

A combined probability and non probability sampling were employed. With the assistance of agricultural and livestock department staffs, purposive sampling was employed to get five wards out of 24 total wards of Tanga City. Based on presence of dairy keepers, five wards out of 14 total wards of Iringa Municipality were purposively selected. Systematic random sampling was employed to get respondents from the purposively selected wards. Farmers list comprising names of all dairy keepers in respective wards was used as sampling frame; this list was obtained from ward extension officers. Sampling intervals was obtained by dividing total number of dairy farmers in the ward by required sample size from each ward (N) a starting point was randomly selected, and then every  $n^{\text{th}}$  farmer in the list was selected until the required sample in the ward was completed

**Table 1: Distribution of livestock keepers' population and samples taken**

<b>District/ Ward</b>	<b>Livestock keepers Population</b>	<b>Sampling ratio</b>	<b>Samples taken</b>
<b>Tanga City</b>			
Nguvumali	127	13	10
Mzizima	232	15	15
Tangasisi	111	10	11
Pongwe	217	14	16
Makorora	109	16	7
<b>Iringa Municipality</b>			
Mtwivila	169	11	15
Gangilonga	117	10	12
Kitwilu	138	14	10
Mwangata	122	10	12
Isakalilo	172	17	10
<b>Total</b>	<b>1514</b>		<b>118</b>

### 3.3.3 Sample unit and Sample size

Individual actor in the household involved in dairy industry was the units of analysis and the sample size of the study was 118. The choice of this sample size was based on financial limitation and need to ensure that sufficient number of respondents is included for meaningful analysis.

## 3.4 Data collection methods

### 3.4.1 Primary data

The structured questionnaire with open and closed ended questions was used to collect information concerning roles played by women and men in milk value chain activities, access to value chain resources, control of resources and benefits from milk value chain and decision making dynamics.

Harvard gender analysis activity profile, access and control profile according to Overholt *et al.* (1984) was applied to collect information about gender roles, access to resources and control. Group discussions and case studies was used to obtain information

concerning cultural norms, ownerships of dairy resources, dairy keeping training opportunities, workload and roles played by men and women in dairy industry. A checklist was used as a guide in group discussions that involved participants in production and marketing of milk and milk products. Discussions were conducted in two sessions in each area of Tanga City and Iringa Municipality. Groups in session one were formed by seven females and in session two seven males.

Case study method was used to obtain information on the life experience of individual in the household so as to understand changes over time in their lives as the result of involving themselves in dairy keeping activities. Tanga Fresh Limited (TFL) was also selected as a case study to establish gender division of labour in processing industries.

#### **3.4.2 Secondary data**

Information concerning population of dairy keepers, dairy cattle distribution in the study area, other value chain research findings, MALDO's live stock reports, books and other publications concerning gender and value chain was obtained at Tanga City office, Iringa Municipality, Sokoine National Agriculture Library (SNAL) and from internet search.

#### **3.5 Data processing and analysis**

The collected survey data from small scale dairy farmers were prepared for analysis by editing and coding. Data analysis undertaken in this study involved descriptive statistics, cross tabs and chi-square tests. Descriptive statistics such as mean, frequencies, and percentages were used to present some aspects with respects to milk value chain of selected variables like age, marital status, education level, number of dairy cattle kept, access to and control of resources collected from wards in Tanga city and Iringa Municipality. Statistical Package for Social Sciences (SPSS) software was used in data analysis. Content analysis was employed to analyze qualitative data.

Chi-square Formula

$$X^2 = \sum \frac{(O-E)^2}{O}$$

Where  $x^2$  = Chi-square statistics

O = Observed value

E = Expected value

## CHAPTER FOUR

### 4.0 RESULTS AND DISCUSSIONS

#### 4.1 Demographic characteristics of respondents

This section gives a picture or characteristics of dairy farmers involved in the study. The section presents age characteristics of respondents, marital status, education level and other economic activities that dairy farmers do apart from dairy keeping.

##### 4.1.1 Age of respondents.

The study revealed that, of the 118 respondents, from Tanga City and Iringa Municipality, their ages ranged from 21 to 80 years. Most of interviewed respondents were distributed between ages of 36-60 years making 71.1% in Tanga City and 66.2% in Iringa Municipality.

**Table 2: Distribution of respondents according to age (n=118)**

Age group (years)	Tanga City		Iringa Municipality	
	Frequency	Percentage	Frequency	Percentage
21-35	13	22.1	10	20
36-60	42	71.1	39	66.2
>60	4	6.8	10	13
<b>Total</b>	<b>59</b>	<b>100</b>	<b>59</b>	<b>100</b>

Age is one of the household characteristics important to describe households' situation and can provide a clue on working ages of households. It is assumed that age would have a relationship with farmer's investment, gender roles and decisions on the value chains of dairy production. Few percents of youth and elderly people in both study areas were involved in dairy keeping. This situation might be caused by lack of capital to start enterprise as it was found out that in both study areas respondents started their enterprise by accumulated capital from different sources. Majority of respondents were found to be



in the middle age. The similar findings of age distributions were revealed by Chenyambuga *et al.* (2008) and Nenganjwa (2005). Similarities of these age intervals suggest that this is the most active working group.

#### 4.1.2 Marital status of Dairy farmers

Marital status of dairy actors in the study areas was one of the characteristics the study intended to find out. Findings revealed that 91.5% of respondents from both study areas were married, 5.9% single, 0.8% divorced and 1.7% widowed as shown in Table 3.

**Table 3: Distribution of respondents according to marital status (n=118)**

Status	Tanga City		Iringa Municipality	
	Frequency	Percent	Frequency	Percent
Married	54	91.5	54	91.5
Single	5	8.5	2	3.4
Divorced	0	0.0	1	1.7
Widowed	0	0.0	2	3.4
<b>Total</b>	<b>59</b>	<b>100</b>	<b>59</b>	<b>100</b>

It was found by this study that majority of respondents were married. Similar findings were obtained by Aksoy *et al.* (2011) and Lwelamila *et al.* (2011). Married people have more responsibility for their families compared to those who are single that make them involve in income generating activities to cover family requirements. These findings imply that involvement in dairy keeping has been in away influenced by the responsibility individual are shouldering in the family.

#### 4.1.3 Education level of respondents

Findings of this study revealed that 66% males and 66.6% females of Tanga City had attained primary level of education. In Iringa Municipality 36% of males had primary level of education and female 42.3% as shown in Table 4

**Table 4: Distribution of respondents according to education level (n =118)**

Education level	Tanga City				Iringa Municipality			
	Male		Female		Male		Female	
	No	%	No	%	No	%	No	%
No formal education	0	0.0	1	16.7	1	3	2	7.7
Primary education	35	66.0	4	66.6	12	36.4	11	42.3
Secondary	14	26.4	1	16.7	7	21.2	7	27
Certificate	0	0.0	0	0.0	1	3	1	3.8
Diploma & above	4	7.6	0	0.0	12	36.4	5	19.2
<b>Total</b>	<b>53</b>	<b>100</b>	<b>6</b>	<b>100</b>	<b>33</b>	<b>100</b>	<b>26</b>	<b>100</b>
Chi-square 5.558	df 4	Sign. 0.235						

This study finding as displayed in Table 4 show that majority of dairy farmer's education was in primary level. Findings that show the majority of respondents in primary education level was also reported by Chang'a *et al.*(2010), Omondi and Meindert (2011), Chagunda *et al.* (2010) and Ogola *et al.* (2010). From Table 4 it can also be seen that the proportion of males in diploma and above is bigger than females this means any innovation in value chain activities that need education should consider training as priority to females as it was found by Ekson *et al.* (2011) that education level affects adoption of innovations.

Comparing male and female level of education in general revealed differences. It was found that a greater proportion of females had low education compared to that of males. Similar findings were also reported by Kimolo (2011). Chi-square test to see whether there is association between sex and the level of education attained revealed no significant association (p value 0.235). This means education in study area is not given according to sex, the difference observed may be caused by difference on using educational opportunities available for both males and females.

#### 4.1.4 Economic activities of respondents

It was the interest of the study to find out other economic activities of dairy farmer as income from other economic activities could be the source of money to purchase cattle. Also involvement in other economic activities along side with dairy keeping would have influence on dairy farmers' workload.

The study found that of the 59 respondents in Tanga City, 48% were involved in farming, 32% in business and 20% civil servants or employees of different NGOs. While out of the 59 respondents from Iringa Municipality, 39% were involved in farming, 32% in business and 29% civil servants or employees of different NGOs as illustrated in Table 5.

**Table 5: Dairy farmers distribution according to economic activities (n=118)**

Economic activity	Tanga City		Iringa Municipality	
	Frequency	Percent	Frequency	Percent
Farming	28	48	23	39
Business	19	32	19	32
Employee (civil servant, NGOs)	12	20	17	29
<b>Total</b>	<b>59</b>	<b>100</b>	<b>59</b>	<b>100</b>

Apart from the fact that both study areas of Tanga City and Iringa Municipality are urban areas but still farming took a high percentage of respondent's involvement. Iringa Municipality economy according to URT (2008) is said to depend on agriculture and livestock, industry and commerce. Tanga City depends on farming and livestock keeping as a source of income while the informal sector micro trading, has become an important source of livelihood in the urban area(Tanga City council, 2007).

#### 4.2 Source of income to start dairy enterprise

Dairy enterprise needs initial capital that has to be invested on activities such as purchasing the animal, building sheds, buying feeds, and medical care expenses of the animal before the enterprise start producing the products. Thus the success of dairy

enterprise depends on source of income for investment especially money to purchase the first animal(s). The findings revealed that the majority of dairy keepers 77.4% and 50% male and female respectively for Tanga City started dairy keeping by their own efforts with accumulated money from different sources. In Iringa Municipality the percentages were 75.8% and 76.9% for male and female respectively. Few respondents from both study areas reported to have support from government and other financial institutions and projects as shown in Table 6.

**Table 6: Distribution of respondents according to source of money to start enterprise (n=118)**

	Tanga City				Iringa Municipality			
	Male		Female		Male		Female	
	No	%	No	%	No	%	No	%
Purchase from accumulated capital	41	77.4	3	50.0	25	75.8	20	76.9
Projects take heifer pay heifer	6	11.3	1	16.7	1	3.0	1	3.8
Government projects cost sharing	0	0.0	0	0.0	2	6.1	1	3.8
Borrowed money(friends, Banks ,SACCOs)	6	11.3	2	33.3	5	15.1	4	15.5
<b>Total</b>	<b>53</b>	<b>100</b>	<b>6</b>	<b>100</b>	<b>33</b>	<b>100</b>	<b>26</b>	<b>100</b>

Findings show that high percentage of farmers started their dairy keeping by purchasing animals with their own money. Similar findings were obtained by Bebel *et al.* (2000), Abebe and Galmessa (2011). In group discussions it was found that farmers face lack of/inadequate access to loans and credit from financial institutions, donors and cooperative societies as it was found by other researchers (UNDP, 2006; Rukonge *et al.*, 2008; Ellis *et al.*, 2007 and Land O'Lakes, 2007).

#### **4.2.1 Farmers' time (Years) spent in dairy keeping**

Experience in dairy keeping issues depends on how long a person has been in dairy keeping activities. The element of years of experience in dairy keeping was to see if the responses of respondents over different dairy keeping issues were based on accumulated

experiences on dairy sector over years. Results of the study revealed that Tanga City had number of respondents falling in 6-10 years with 38.98% followed by 1-5 years with 27.11% and the few with 3.38% falling in 26-30 years. On the other hand Iringa Municipality had 1-5 years as leading group with 38.98% followed by 6-10 years with 35.59 and 21-25 years with 5.05% being the last group. There was no respondent from Iringa Municipality in group of 26-30 years as shown in Table 7.

**Table 7: Distribution of respondents according to years spent in dairy keeping (n=118)**

Time(years)	Tanga City		Iringa Municipality	
	Frequency	Percentages	Frequency	Percentages
1-5	16	27.1	23	39.0
6-10	23	39.0	21	35.6
11-15	9	15.3	10	16.9
16-20	6	10.2	2	3.4
21-25	3	5.1	3	5.1
26-30	2	3.3	0	0.0
<b>Total</b>	<b>59</b>	<b>100</b>	<b>59</b>	<b>100</b>

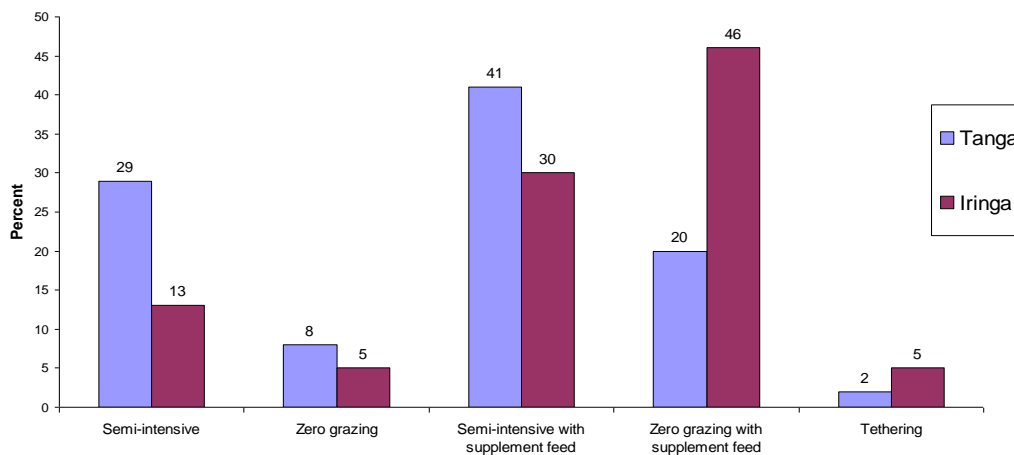
Findings revealed that years of experience in dairy keeping of respondents in the study areas differed between year 1-5 and 26-30. These differences reflect the time dairy development projects started to operate in study areas. Research findings of Mkenda – Mungitu (2003) and Kurwijira (2003) show that early dairy development project started in late 1970 s in the study areas.

The governments of Tanzania and Switzerland started Small Scale Dairy Development Project (SSDDP) that was followed by Southern Highlands Dairy Development Project (SHDDP) in 1996, projects that operated in Iringa and Mbeya. The Government of Tanzania and the Dutch government in 1985 started Tanga Small scale Dairy Development Projects. From this dairy keeping background of study areas it was expected to find majority of dairy farmers with more than 20 years of experience in dairy keeping. From the results obtained it can be implied that dairy farmers don't stay longer

in this enterprise as it was reported by Land O'Lakes (2008) that dairy production is characterized by easy entry and exit behaviour.

#### 4.2.2 Farmers choice on dairy cattle keeping systems

Farmers' choices to dairy keeping system depend very much on the circumstances in their areas: climate, type of vegetation, market for selling the product, availability of labour and local traditions (Bonnier *et al*, 2004). Findings from the study areas concerning feeding practices revealed 41% and 30% respondents of Tanga City and Iringa Municipality respectively practicing semi intensive with supplement feeds. Zero grazing with supplement feeds were 20% and 46% for Tanga City and Iringa Municipality respectively as illustrated in Figure 2.



**Figure 2: Distribution of respondents according to feeding practice**

It is expected that dairy keeping in urban areas should go with intensification as land for extensive keeping is scarce. Contrary to the expectation the result show only few percents 8 and 5 of respondents in intensive dairy keeping. Extensive dairy keeping system in urban areas where land is scarce is one reason among reasons for low milk production as it was reported by Baitenweck (2006) that increased the level of intensification results in

increased milk productivity. Also Bonnier *et al.* (2004) found that with intensification the potential production level rises and needs less land.

#### 4.2.3 Dairy Farmers milk production

Milk is the main product in dairy keeping and the money obtained from milk selling is the one supposed to run other dairy keeping costs. Therefore milk production is an important node for prosperity of dairy enterprise. Findings from study areas revealed 36% of dairy farmers reported to produce between 16-20 litres in high season for Tanga City and 34% from Iringa Municipality between 6-10 litres. In low season 49% of respondents from both study areas reported to produce 6-10 litres as shown in Table 8.

**Table 8: Dairy farmers distribution according to milk production (n=118)**

Production (Lts)	High season				Low season			
	Tanga		Iringa		Tanga		Iringa	
	No	%	No	%	No	%	No	%
0-5	2	3	17	29	3	5	20	34
6-10	16	27	20	34	29	49	29	49
11-15	20	34	16	27	18	31	7	12
16 -20	21	36	6	10	9	15	3	5
<b>Total</b>	<b>59</b>	<b>100</b>	<b>59</b>	<b>100</b>	<b>59</b>	<b>100</b>	<b>59</b>	<b>100</b>

The study revealed differences in milk production between high season and low season in both study areas. These differences are caused by availability of grass as high season of milk production is in rain season when pastures are available. Similar findings was obtained by Mtengeti and Urio (2006) who reported average of 6-7 litres in wet season and declining to nearly 3 litres in dry season. This level of milk production revealed in the study areas implies that few dairy keepers run their enterprise economically as it was reported by Mburu *et al.* (2007) that milk production below 12 to 15 litres of milk per day are not economically viable. Findings from group discussions revealed that farmers were aware that their milk production was low to meet feeds, drugs and other animal requirements. Reasons given by the farmers for the low production were; pasture problem

due to scarcity of grazing or growing pasture land, low price of milk that reduced purchasing power of supplement animal feed and that the animals didn't get required amount of other essential nutrients.

#### **4.2.4 Household members' roles in dairy keeping activities**

This section presents results concerning the question which asked the roles of father and mother, children, hired labour both male and female in dairy keeping activities (herding, cutting grass, giving drinking water, shed cleaning, milking, de-worming, purchase feeds, milk selling/taking to collection centres, keeping records, contractual agreement with milk buyers, and payment collection). The study intended to see whether the identified roles were the same across the study areas of Tanga City and Iringa Municipality. The findings are presented in three categories; Father and mother, children and hired labour.

The study found that in Tanga City, men reported to be involved in contractual agreement 62.7%, payment collection 54.2 % and purchasing feeds 50.8 %. Women were reported to be involved in selling milk 28.8% and feeding 18.6%. In Iringa Municipality, men reported to be involved in herding 37.3% and de-worming 37.3%. Women were reported to be involved in selling milk 40.7%, contractual agreements 28.8% and payment collection 28.8%.

The study revealed that children were involved in dairy keeping activities helping their parents and hired labour. Male children in Tanga City were found to be involved in milking 32.2% and shed cleaning 25.4%. Female children were involved in selling milk 6.8/% and feeding 5.1%. Male children in Iringa Municipality were reported to be involved in milking 27.1%, cutting grass 22% and shed cleaning 25.4%. Female children were found to be involved in giving cattle drinking water 15.3% and feeding 13.6%.



The study findings revealed that hired labour was important in dairy keeping activities in both study areas. It was found that in Tanga City male hired labour played great roles in shed cleaning 72.9% and milking 71.2%. In Iringa Municipality the percentage of hired male labour involvement were high on shed cleaning 78%, feeding 76.3%, giving animal drinking water 74.6%, milking 71.2% and cutting grass 66.1% as shown in Table 9.

**Table 9: Distribution of household members according to involvement in dairy activities (n=118)**

Activities	Tanga City					Iringa Municipality				
	M %	F %	MC%	FC%	HL%	M%	F%	MC%	FC%	HL%
Herding	35.6	13.6	13.6	1.7	59.3	37.3	11.9	8.3	0.0	47.5
Cutting grass	44.1	0.0	11.9	3.4	44.1	23.7	3.4	22.0	6.8	66.1
Feeding	22.0	18.6	20.3	5.1	50.8	13.6	23.7	13.6	11.9	76.3
Giving drinking water	20.3	15.3	22.0	5.1	54.2	10.2	21.1	16.9	15.3	74.6
Shed cleaning	30.5	11.7	25.4	3.4	72.9	18.6	20.3	25.4	6.8	78.0
Milking	42.4	15.3	32.2	3.4	71.2	20.3	16.9	27.1	5.1	71.2
De-worming	32.2	5.1	0.0	0.0	11.9	37.3	10.2	13.6	3.4	23.7
Purchase feeds	50.8	5.1	10.2	3.4	16.9	30.6	15.3	16.9	6.8	18.6
Selling milk	35.4	28.8	18.6	6.8	35.6	11.9	40.7	18.6	6.8	33.9
Record keeping	40.7	10.2	3.4	1.7	6.8	13.6	16.9	5.1	6.8	10.1
Contractual agreement	62.7	8.3	1.7	0.0	1.7	5.1	28.8	3.4	1.7	0.0
Payments collection	54.2	15.3	1.7	0.0	3.4	10.2	28.8	5.8	3.4	1.7

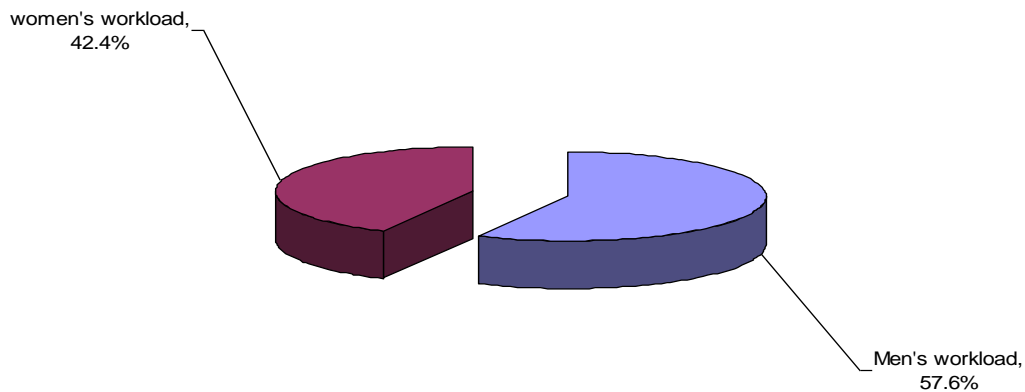
*N.B M=male, F=female, MC=male child, FC=female child, HL hired labour*

General observation as it is illustrated by Table 9 show that males in Tanga City were more involved in dairy keeping activities than their male counterparts from Iringa as the result of influence of cultural practice that confine female to activities that are done at home including housekeeping and taking care of children. In Iringa Municipality where female are not influenced by this cultural practice, it was revealed that they were involved in dairy keeping activities more than their female counterparts of Tanga City. It was further revealed that hired labour has high percentage of involvement in dairy keeping activities because some of dairy keepers were employees who didn't have much time to do dairy activities and depended much on hired labour. Hired labour involvement in most

dairy keeping activities was also found by Duguma *et al.* (2011). Findings by Abebe and Galmessa (2011) revealed hired labour involvement in different dairy activities less than 10%. These differences suggest that division of labour varies across regions, societies even within different households as it was reported by (Tangka *et al.*, 2000).

#### **4.4 Changes of workload as the results of dairy keeping activities**

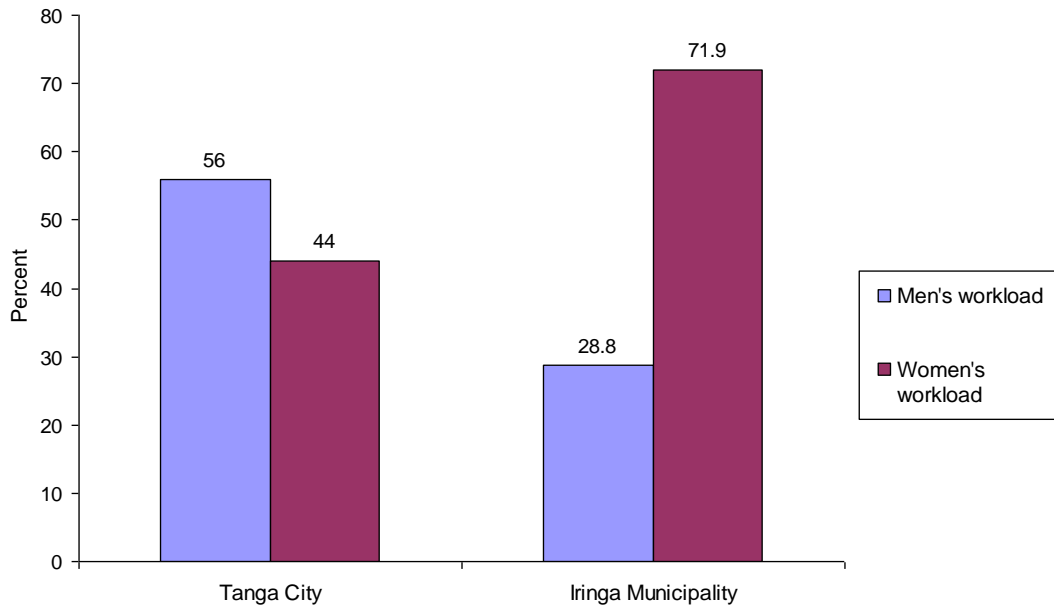
This section presents results from responses of dairy farmers to the question that asked whether there were any changes to the workload as the results of involvement in dairy keeping activities. It was revealed that of 118 respondents, majority (76.3%) reported workload to have increased. Reason given for the increase was that as respondents were previously involved in other economic activities, dairy keeping as the added economic activity also added the workload. Few respondents (22.9%) reported to have their workload decreased. Reasons given for the decrease of workload was that some money from dairy keeping was used to pay people who help to do other family activities while others said labour for dairy keeping activities is paid from dairy keeping money. When asked whose workload between men and women increased results indicated that 57.6% reported women to have workload increased as the result of their involvement in dairy activities alongside with housekeeping activities. Few respondents (42.4%) reported that workload increased to men.



**Figure 3: Respondents' response to increased workload between men and women in Tanga City and Iringa Municipality.**

Although Tanga City and Iringa Municipality's response to increased workload together revealed women to have workload increased compared to men, the result was different when Tanga City and Iringa Municipality responses were compared. It was revealed that workload increased to men in Tanga City and to women in Iringa Municipality. Concerning the increase of workload to men in Tanga City, two reasons were found to be the cause; first it was found out that the influence of Islamic religious teachings make husbands responsible to provide every requirements of the wife and that all economic activities that aim at contribution of family earnings is men's activities. The influence of Islamic teachings to men and women's roles is also reported by (Osman, 2008). Second the cultural practices of most coast areas that confines females to activities that are done at home including housekeeping and children care leaves most of other activities being done by men hence increasing workload to men. In Iringa Municipality workload increased to female this was also reported by (Mkenda-Mungitu, 2003). This imply that any program intended for dairy development in study areas would mean increased workload for men in Tanga City and women in Iringa Municipality.

The case study was conducted with aim of finding out how men and women participate in day to day family activities. A dairy farmer 70 years old from Mzizima ward in Tanga City who has been in dairy keeping activities for more than 20 years was selected for this study. The old man responding to how day to day economic activities is shared among members of the family he said; “It has been as culture of coast people that most economic activities are done by men and women being responsible for activities that is done at home including housekeeping and taking care of children”. Responding to whether religious teaching may have influence on how the activities are distributed among members of the family he said; “Religious teachings for example Muslims concerning issues of who has to do what in the family between men and their wives are explained clearly. All economic activities that contribute to the family income being it farming, livestock keeping or business are man’s activities”. Giving an example to emphasise his points he said; “ under normal circumstances you cannot find a woman in Islamic family with good income cutting grass, milking or cleaning animal shed those are men’s and cowboys’ activities”. This finding from case study gives reason to why it was found out that dairy keeping activities increased workload to men in Tanga City.



**Figure 4: Respondents' response to increased workload in Tanga City and Iringa Municipality**

The results that show differences on workload between men and women were also found by Mollel and Mtega (2000) and Yisehak (2008) who found that both men and women do many tasks related to animals with some degree of variation in involvement from district to district hence workload between men and women differing accordingly.

#### **4.5 Milk marketing in Tanga City and Iringa Municipality.**

This section discusses the situation of milk marketing which includes; where respondents sell their milk, reasons for their choice and gender aspects in milk marketing. The findings revealed that majority of respondents from Tanga City 71.2% sell their milk in the formal market to processors through milk collection centres (MCC) while in Iringa municipality 72.9% sell their milk in informal market as shown in Table 10 .

**Table 10: Distribution of respondents according to milk marketing channel (n=118)**

Milk markets	Tanga		Iringa	
	Frequency	Percent	Frequency	Percent
Neighbours and restaurants	7	11.9	18	30.5
Milk vendors/hawkers	10	16.9	25	42.4
Milk collection centres (processors)	42	71.2	16	27.1
<b>Total</b>	<b>59</b>	<b>100</b>	<b>59</b>	<b>100</b>

The difference in milk marketing channels between Tanga City and Iringa Municipality reflects the situation that exist in these study areas concerning milk production and dairy farmer's organization. In Tanga City milk production is relatively higher compared to Iringa Municipality and farmers are organized in primary societies and they possess some milk collection centres. The high percentage of respondents' use of informal market as their milk channel that was found in Iringa Municipality was also reported by Knips (2006). He found that 60% of respondents sold their milk through informal markets. Respondents were asked to give reason for their selection of milk market channel. The findings revealed that respondents selected their milk marketing channels according to reliability of markets and the price as shown in Table 11.

**Table 11: Distribution of respondents according to reason given for the selection of market channel (n=118)**

Reasons	Tanga		Iringa	
	Frequency	Percent	Frequency	Percent
Reliability of the market	32	54.2	18	30.5
Relatively high price	9	15.3	20	33
Low milk production	7	11.9	5	8.5
Inability to reach places with high price	11	18.6	16	27.1
<b>Total</b>	<b>59</b>	<b>100</b>	<b>59</b>	<b>100</b>

Price and reliability of the markets are important factors that producers consider before supplying their products to the market. Farmers from Tanga City 54.2% were attracted to sell their milk due to reliability of markets while 33% of farmers from Iringa

Municipality sold their milk to the selected markets due to the price given. These findings from Iringa Municipality were also reported by Kurwijira (1990) and Ngigwana (1990) that farmers find it more profitable to sell their milk to middlemen or direct to consumer due to difference of price offered between formal and informal market channels.

In Tanga City the case was different. Respondents were ready to sell to processors that offered lower price for reliability of their markets. These markets assured farmers to absorb all milk produced especially in wet season when farmers have more milk as it was reported by Mburu *et al.* (2007) that farmers selling their milk to cooperatives are likely to have excess milk, and additional milk produced requires reliable market outlet that is only offered by cooperatives.

#### **4.5.1 Gender roles on milk marketing**

This section discusses the situation of gender in milk marketing showing roles played by males and females in milk marketing as vendors/hawkers. Findings from study areas revealed that 35.4% female and 11.9% male were involved in milk selling activities for Tanga City and Iringa Municipality respectively while 28.8% and 40.7% female from Tanga City and Iringa Municipality respectively was involved.

The difference in milk selling activity for male and female in Tanga City and Iringa Municipality was due to the difference in market channels opted by farmers. In Tanga City most farmers sold their milk through formal market at collection centres. Some farmers' residences are situated far from collection centres the situation that compel farmers to use bicycles, animal carts and other means of transportation to take milk to the collection centres and because this is outdoors activities that is mostly done by men in coast areas that is why men in Tanga City were more involved than women.

Although the majority of livestock keepers do not keep livestock as a purely commercial activity, the selling of products is part of their livelihood strategy. In Iringa Municipality, more farmers sell their milk in informal markets and the larger share of products is sold at farm gate or to neighbours. Their customers in these informal markets who are neighbours, restaurants owners and hawkers purchase milk at farmers' residences and because at farmers' residence women are the ones that serve them this make more women to be involved in milk marketing at Iringa Municipality.

Milk hawkers in Tanga City were found to be both male and higher proportion female compared to Iringa Municipality. The reason was that both could easily purchase milk from collection centres. Some milk collection centres do not take all the collected milk to processors. They set aside some milk collected to be sold to community around collection centres. It is from these collection centres hawkers male and female easily purchased milk. Also milk sold at collection centres were reported to be source of income to cover other cost incurred. At collection centres milk is collected at the price of 560/= Tsh and sold for 700/= Tsh per litter. Big proportion of milk hawkers in Iringa Municipality was found to be men. Landscape of Iringa Municipality that is mountainous and the type of transport (mainly bicycles) reduced the number of females in Iringa Municipality doing milk hawking.

#### **4.6 Dairy farmer access to services**

The study also intended to find out dairy farmers access to services in Tanga City and Iringa Municipality in the year 2011 and the proportions of accessibility between men and women in the study area. The findings show that male respondents in Tanga City accesses animal disease treatments 72.9%, market support 66.1% and input supply 52.5%. Females accessed training with 6.8%. In Iringa Municipality male accessed



animal disease treatments 50.8% and 49.1% input supply. Females in Iringa Municipality accessed input supply 42.4% and animal disease treatments 49% as shown in Table 12

**Table 12: Distribution of dairy farmers according to access to services (n=118)**

Services	Tanga City				Iringa Municipality			
	Male		Female		Male		Female	
	No	%	No	%	No	%	No	%
Training	30	50.8	4	6.8	8	13.5	6	10.1
Financial	5	8.4	0	0.0	2	3.4	3	5.1
Market support	39	66.1	4	6.8	16	27.1	18	30.5
Animal disease treatments	43	72.9	3	5.1	30	50.8	23	39.0
Artificial insemination	24	40.7	4	6.8	9	15.2	7	11.9
Heifer supply	2	3.4	0	0.0	4	6.8	1	1.7
Input supply	31	52.5	4	6.8	29	49.1	25	42.4

The study revealed that in all dairy keeping services accessed (training financial, market support, animal disease treatment, artificial insemination, heifer supply and input supply) males from both study areas accessed services more than females. The fact that apart from females' involvement in dairy keeping activities they also carry other housekeeping and child care can be reason for few females accessing services. Combining dairy keeping activities and other family activities reduce females' free time that could be used to seek dairy services. The findings imply that if there is any intervention that aim at giving different services to dairy farmers in the study areas service providers should consider the best way to provide services that can be equally accessed by both male and females. It was reported by Land O'Lakes (2008) that although women do most of activities involved in dairy production, extension and training target men. Lemlem *et al.* (2010) found that wealth status and gender difference influence the kind of knowledge and source of skills for the farmers. Male famers access formal sources to improve their knowledge and skills, even in areas where women do most of the activities.

#### 4.6.1 Challenges facing dairy keeping services

The study found main challenges that limited small-holders dairy keepers to access their services to be scarcity of extension workers, high cost of veterinary services, high price of animal drugs, extension workers not responding to calls on time, high and un reliable cost of artificial insemination Table 13

**Table 13: Distribution of respondents according to dairy keeping challenges (n=118)**

Challenges	Tanga City		Iringa Municipality		X <sup>2</sup> -value	Sign
	Male%	Female%	Male%	Female%		
Scarcity of extension workers	60.9	25.0	39.1	75.0	3.058	0.08
High cost of veterinary services	50.0	33.3	50.0	66.7	0.489	0.484
High price of animal drugs	70.6	12.5	29.4	87.5	7.354	0.007
Extension workers not responding to calls on time	46.2	16.7	83.3	63.2	1.534	0.216
Cost of artificial insemination is high and un reliable	81.2	0.0	18.8	100.0	7.719	0.005

Study results in Tanga City revealed high percentage of challenges for males on cost of artificial insemination with 81.2%, and 70.6% on high price of animal drugs while for females high percent was 33.3% on high cost of veterinary services. Study results in Iringa Municipality revealed high percentage of challenges for males on extension workers not responding to calls on time with 83.3% while for females high percent was 100% on high cost and unreliable artificial insemination, high price of animal drugs 87.5% and scarcity of extension workers. Chi-square test result revealed that there was significant difference between males and females challenges on high price of animal drugs and high cost of artificial insemination with p values of 0.007 and 0.005 respectively while on other reasons given as challenges there were no significant difference. Challenges on high price of animal drugs and high price and unreliable services of artificial insemination showed significant different between males. In Tanga

City men showed high response to this challenge while in Iringa Municipality women showed high response and. Similarly Duguma *et al.* (2011) reported dairy farmers to have scarcity of extension workers and lack of artificial insemination as their main challenges.

The case study was conducted with aim of finding out whether male and females face dairy keeping challenges differently. A female dairy farmer 40 years old from Gangilonga ward in Iringa Municipality who has been in dairy keeping activities for more than 10 years was selected for this study. “Why do you ask women’s and men’s challenges they face in dairy keeping services?” The female responded. ‘In my opinion, there are no men’s challenges or women’s challenges. If there is any challenge that should be our challenge. We used to say that dairy cattle belong to the man although nowadays no wonder any one man or woman can own cattle. Apart from who own cattle, money earned from dairy cattle is used for family requirements like foods, school fees for our children these cattle in one way or another is ours. Therefore if there is scarcity of veterinary officers to attend our animals, this will affect both men and women. For example the way price of animal drugs is high, problems of artificial insemination, low price of milk we can’t say that cannot be problems for men. Everything nowadays is money not being a man or woman. If you have money and you are seeking service you will get it as man with money would get’. Findings from this case show that males and females face dairy keeping challenges in the same way though they differ in income.

#### **4.7 Farmers access to dairy keeping technologies**

Technologies play great part in simplifying work; again with technology it is observed that activities that are termed to be women’s or men’s can easily be performed by either sex without feeling differently. The study intended to establish dairy keepers’ access to technologies specifically technologies that would simplify milking, grass cutting, shed

cleaning, ticks control and that which would simplify carrying things like pastures, milk and concentrates for example maize bran and cotton or sunflower seed cakes.

**Table 14: Dairy farmers distribution according to technologies used (n=118)**

Ticks control	Tanga City		Iringa Municipality	
	No	%	No	%
Knapsacks	30	50.8	34	57.6
Hand sprayer	25	42.4	22	37.3
Cattle dips	4	6.8	3	5.1
<b>Carrying loads</b>				
Bicycles	37	75.5	35	58.3
Carts	5	8.5	8	13.6
Wheelbarrows	1	1.7	2	3.4
Motorcycles	6	10.2	1	1.7
Car and Tricycles	5	8.5	10	16.9
<b>Other technologies</b>				
Milking	0	0.0	0	0.0
Grass chopping	0	0.0	1	1.7

Findings revealed that respondents from both study areas used Knapsacks, hand sprayers and cattle dips as technologies for ticks' control 91.5% and 94.9% for Tanga City and Iringa Municipality respectively. Respondents from Tanga City, 75.1% used bicycles for carrying and 58.3% in Iringa Municipality. While only 1.7% had equipments that simplify grass chopping activities. There was no respondent reported to have technologies to simplify milking.

Study findings concerning technological use as shown in Table 14 show low technological use in both study areas of Tanga City and Iringa Municipality. Technological use would solve the problem of increasing workload and also solve unequal distribution of workload between males and females. The use of technologies would help these activities to be done easily and fast to save time for other activities. Also activities that are perceived as being males' or females' when are performed using technology, that perception of being males' or females' is reduced and males or females can do it without feeling differently.

The same findings of respondents having low technological use were reported by (Kivaira *et al.*, 2006). It was found that the reason of respondents missing technology for milking for example was too high price of milking machine for small scale dairy farmer to afford. Land O'Lakes (2007) in its study it was reported that although dairy farmers were in desperate need of equipments which are relatively expensive, no company offered/leasing financial assistance for equipment.

#### 4.7.1 Technological challenges facing dairy keepers

Technologies in dairy keeping activities are important as it helps to simplify work and time is saved for other activities to be done. Findings from study areas show farmers in both study areas to have technological challenges. In Tanga City 52.5% of men reported to face high cost of buying equipments and 35.6% for Iringa Municipality. Also they faced running cost of technologies 44.1% for Tanga City and 25% Iringa Municipality. Women apart from mentioning cost of buying and running technologies, they also reported to have problems with some technologies like carts and wheelbarrows that need more energy to carry loads 76.3% for Tanga City, 49.2% Iringa municipality Table 15.

**Table 15: Distribution of farmers' technological challenges according to sex (n=118)**

Challenges	Tanga City		Iringa Municipality	
	Males	Females	Males	Females
	Percentage	Percentage	Percentage	Percentage
Purchasing cost	52.5	11.9	35.6	27.1
Running cost	44.1	5.1	25.4	10.2
Some technologies need big force to run	0.0	76.3	0.0	49.2
Poison contact without protective gears	0.0	6.8	0.0	13.6

The study found that dairy keepers from both areas experienced similar technological challenges. It was further found that women face technological challenges differently from men as illustrated by Table 15. For example the way lactating mother face challenge

of poison contact without protective gears has different effect to men also the way females face challenges of some technologies that need big force to run is different due to the fact that men are on average much stronger than women. Therefore to solve technological challenges in the study areas given this picture, any intervention should take into consideration some sex specific solutions.

#### 4.8 Dairy farmers access to resources

Performance of dairy keeping industry depends on dairy keepers' access to dairy cattle, equipments, labour, credit and income from dairy keeping activities. The survey results on the mentioned resources revealed that from both study area of Tanga City and Iringa Municipality men and women showed no difference in accessing resources (Table 16).

**Table 16: Distribution of dairy farmers according to access to resources (n=118)**

Resources	Tanga City			Iringa Municipality		
	Male %	Female%	Both%	Male %	Female%	Both%
Land	5.4	0.0	94.6	6.8	5.1	88.1
Dairy cattle	5.1	1.7	93.2	1.7	5.1	93.2
Equipments	8.5	0.0	91.5	3.4	3.4	93.2
Labour	10.2	1.7	88.1	1.7	1.7	96.6
Credits	8.5	0.0	91.5	5.1	3.4	91.5
Income from dairy cattle	5.1	3.4	91.5	6.8	3.4	89.8

Study findings as displayed in Table 16 show that in both study areas male and females individually accessing resources had differences especially in Tanga City where women's access is far less compared to men. Further it indicates that only slightly difference is shown for both accessing dairy resources. In Tanga City and Iringa Municipality 88.1% to 94.6% both men and women reported to have equal access to resources. These results justify the conclusion that the state of being man or woman did not constrain respondents' access to dairy resources although this access does not mean they have control over decisions regarding its allocation and use. Therefore development planers in

these areas should still consider the way to change the balance of power between men and women regarding access to resources. Similarly it was reported by Land O'Lakes (2008) that men have full access to land, cattle, labour, credit, income and equipment. Women have full access to land, cattle and labour while having partial access to credit, income and dairy equipments.

#### 4.8.1 Dairy farmers' decision making in the household over resources

Study findings concerning decision making in the household over resources revealed that men in Tanga City dominate decisions over cattle 50.8%, equipment 66.2%, and credit 72.8%. Decision making was found to be done jointly over income 71.2%. In Iringa Municipality decision making was found to be done jointly over labour 53%, credit 56% and income 67.8% as shown in Table 17.

**Table 17: Distribution of farmers according to decision making over resources in the household (n=118)**

Resources	Tanga City			Male %	Iringa Municipality	
	Male %	Female %	Both %		Female %	Both %
Cattle	50.8	5.1	44.0	40.6	18.6	40.6
Equipments	66.2	3.4	30.6	39.0	15.2	45.8
Labour	49.6	5.2	44.4	32.4	15.2	53.0
Credit	72.8	5.1	22.0	30.6	13.6	56.0
Income	20.4	8.5	71.2	17.0	15.2	67.8

The decision making over resources revealed in the study areas show that in Tanga City decision over resources was male dominant except decision over income that 71.2% of respondents reported to be done jointly. In Iringa Municipality decision making over all resources cattle, equipments, labour, credits and income was found to be done jointly. This difference between Tanga City and Iringa Municipality was influenced by religious teachings and cultures of the coast people that economic activities and resources belongs to men and are the ones to decide over the use. This imply that any project interventions

that aim at empowering women by provision of resources like cattle or credits in Tanga City must find away to involve men as they influence decisions.

Although causes of difference in decision making may differ from place to place, findings from Tanga City agree with findings by East Africa Dairy Development (2009) that women had lower or joint decision making in dairy issues. Krisjanson *et al.* (2010) reported that in spite their central role they play in small scale dairy farming women are limited in their ability to make decision regarding dairy enterprise. Lemlem *et al.*(2010) reported men controlling decision making but concluded that, although men appear to be in control of decision making they usually consult their wives and that women have strong influence in the outcome.

#### **4.8.2 Causes of differences in decision making power between men and women**

The cause of decision making power difference was important in this study in order to find out reasons behind differences in decision making power in the household member of Tanga City and Iringa Municipality. It was revealed that the reasons given were the same; culture does not make women final decision makers, low knowledge of animal husbandry of women compared to men, the difference in contribution to family income and that religious teaching make father the head of the family and decision maker. The only difference observed was number of response obtained by each given reason as shown in Table 18.



**Table 18: Distribution of respondents according to reasons for power differences (n=78)**

Reasons	Tanga City		Iringa Municipality	
	Male%	Female%	Male%	Female%
Culture does not put women as final decision maker	28.6	20.0	71.4	80.0
Low knowledge of animal husbandry of women compared to men	81.2	40.0	18.8	60.0
Differences in contribution to family income	62.5	0.0	37.5	100.0
Religious teachings that put father the head of the family women assistants.	100.0	0.0	0.0	100.0

It was found that in Tanga City males reported main reasons for power differences as low knowledge of women towards animal husbandry compared to men with 81.2% and religious teachings that put father the head of the family and women assistants 100%. Females reported the main reason for the power difference as low knowledge towards animal husbandry compared to men with 40%. In Iringa Municipality 71.4% of males reported culture as the main cause of decision making power differences. Females in Iringa Municipality reported differences in contribution to family income between males and females and religious teachings as reasons for power differences all two reasons with 100% of response. Similar findings were reported by Arshad *et al.* (2010) who found reason for power difference to be traditional belief systems, lack of awareness, education and the main cause being misinterpretation of religious teachings (62.5%) and cultural norms (55.8%).

Group discussion results from study areas concerning decision making power difference revealed that the problems are on how societies understand gender issues and that gender issues have a deep root in the way people behave in their societies starting at the family level to the institutional level. At the family level the society believes that the man is the head of the family and is the one who is supposed to make all key decisions. That was the

reason when a woman takes this role everybody around that family feel that the man has failed to take the lead. Surrounding community is made to believe that the man is weak and they call him *Msogose* (Hehe word that means a man whose all key decisions in the household is made by his wife). It is from this fact that men who just believe without reasoning become violent to their wives so as to maintain male chauvinism.

Religious beliefs were also mentioned as main factor contributing to decision making power difference in the household as one of group discussant pointed out; *“We understand what all religions say about men’s role and woman in the society. What we are told in the churches and mosques is that man is the head, leader the owner of the family and woman being just a helper”* Apart from religious teachings, established traditions that require woman to be submissive to men were found to be the cause of power differences. It was found that society for a long time has placed woman as second from men therefore this has been a challenge to make the society believe in different way when it comes to key decision making in the household. Therefore any interventions that are aiming at bringing changes in value chain activities to benefit actors both males and females must also involve strategies to reduce this gap of power differences.

#### **4.9 Milk processors the case of Tanga Fresh Limited**

Milk processing involves transforming fresh milk into other products like yoghurt, cream, ghee, cheese butter etc. Milk processors are in two groups, large scale and small scale milk processors. Tanga Fresh Limited was picked as it is found in the study areas as a case study representing other processors to assess gender situations that prevailing in milk processing nodes

#### 4.9.1 Gender in milk processing industry

This section discusses the situation of gender in processing node showing positions held by males and females in milk processing industry. TFL employees at headquarters were 79 in total excluding casual labourers. Of those 79 workers, 62 were male making 78.5% of all workers and the remaining 17 being women making 21.5% of total TFL workers

**Table 19: Distribution of Tanga Fresh Limited workers at headquarter (n=79)**

Positions	Number of employees	Male		Female	
		No	Percentage	No	Percentage
Administration	3	3	100.0	0	0.0
Accounts	13	8	61.5	5	38.5
Sales/Marketing	18	14	77.8	4	22.2
Human Resource management	2	0	0.0	2	100
Production	36	30	83.3	6	16.7
Technicians	7	7	100.0	0	0.0

Gender imbalance was observed in all positions of processing industry except the position of human resource. For the positions of technicians all seven workers were men and the reason given was that every time when there is vacant position to be filled that need technicians, qualified women does not appear to contest. Production position that involved several sections with 36 workers, men held 83.3% of all workers with reason that the sections in production involved long working hours of eight to twelve and that it is only few women that manage due to the fact that women has other responsibilities that is their biological roles.

#### 4.10 Summary of research findings

This chapter explained demographic characteristics of dairy farmers undertaking dairy farming in the study areas. Generally it is noted that there are variations between age, marital status and education level of respondents participating in dairy farming. The

findings revealed that most of farmers are married, the most have primary level of education and most dairy farmers are distributed between ages 30-60 years.

The findings revealed that family members take part in dairy activities but roles they play differs. It was revealed in general that hired labourers play great roles in dairy keeping activities. Involvement in dairy keeping activities increased workload to men in Tanga City but to women in Iringa Municipality. Members of household involved in dairy keeping activities have access to resources but differs control over them. There is variation of decision making in the household between male and female over resources but generally male dominate decision making. The reason given as causes of difference in decision making power were; culture does not make women final decision makers, low knowledge of animal husbandry of women compared to men, difference in contribution to family income and that religious teaching make father the head of the family and decision maker.

## **CHAPTER FIVE**

### **5.0 CONCLUSIONS AND RECOMMENDATIONS**

The general objective of this study was to examine gender relations that prevail in milk value chain activities in Tanga City and Iringa Municipality. Specific objectives of the study included: (i) To identify roles played by different members of household in the milk value chain. (ii) To assess the gendered workload as the result of their involvement in milk value chain activities. (iii) To determine gendered access to dairy keeping resources. (iv) To assess gender decision making over resources in the household involved in the milk value chain. The motive behind this study was to provide information that would be useful to dairy farmers, Government, NGOs, development partners, researchers and other stakeholders aiming at improving gender relation in agricultural value chains and related activities. Based on findings presented and discussed in chapter four, a number of conclusions and recommendations can be drawn. This chapter therefore briefly highlights these conclusions and recommendations.

### **5.1 Conclusions**

Based on revealed findings from the study areas of Tanga City and Iringa Municipality it can be concluded that; Dairy keeping activities in the study areas of Tanga City and Iringa Municipality involve members of household. Roles played by men, women, male children, female children and hired labour differs. The difference that exists between men's or women's roles in the study areas reflects cultural differences. Dairy keeping activities increased men's workload in Tanga City while in the Iringa Municipality workload increased to women. This means introducing any dairy project to the study areas as intervention would mean increasing workload to men in Tanga City and to women in Iringa Municipality. For higher production and productivity in dairy value

chain that benefit all actors, roles played by different members of the family have to be gender sensitive with a situation where men and women consider themselves to be equal partners in their dairy enterprise.

Men and women have equal access to dairy farming resources but concerning control over resources women have lower or joint control over resources. Men and women differ on the way they access dairy services. It was found that men have more access to training and financial services than women although in general findings it was revealed that in both study areas few accessed financial services, artificial insemination and heifer supply services. Different access to training, dairy services, financial services and difference in controlling resources that exists between men and women imply that women in dairy value chain has low opportunity of prospering compared to their fellow men.

Decision-making over resources in the household in both study areas between men and women was found to be different with men having power than women. Low knowledge of animal husbandry for women compared to men, differences between men and women in contribution to family income, cultural beliefs and religious teaching were the reason found to cause power difference on decision making in the household. This implies that any intervention in the study areas that target improvement of women dairy keepers in the study areas should take into consideration how this decision making in the household should affect the interventions. It was revealed in this study that both study areas of Tanga City and Iringa Municipality dairy farmers had low use of technologies. It was found that to some activities like milking and cutting grass in both study areas no respondent reported to use technology. Low use of technologies in value chain activities imply that more time is spent as there is no means to simplify work and this leads to increasing workload to actors involved in different activities.

## **5.2 Recommendations**

The study found out that most of dairy farmers in the study areas have low level of education, but comparing females and males level of education it was found that males have relatively higher education than females. It is recommended that any innovation brought to improve value chain activities in the study areas should consider training as priority to females.

The study found out that dairy farmers in study areas have problems in accessing dairy services and that men have more access to services compared with women. It is recommended that the government at all levels from ministry to local government authorities, NGOs and other development partners should improve or modernize the existing government veterinary clinics/extension services so that they provide more services and put strategies that will help more female dairy farmers to access services.

Decision making over resources in the household was found to be male dominant although in Iringa Municipality decision was done jointly over some resources. It is recommended that the government at all levels from ministry to local government authorities, community itself in their development groups, traditional leaders and NGOs should provide gender education that will assist to narrow the gap of male and female decision power over resources and benefits. Also through economic empowerment, women's status will improve and they will gain greater control over resources.

It was found out that farmers in study areas have low use of technology as they couldn't afford buying the required equipments and be able to run them. It is recommended that Government and nongovernmental financial institutions should consider Provision loans with affordable condition to small-scale dairy farmers to support them with capital. The

capital should be directed towards improving technologies that will help to reduce dairy keeping workload also improving dairy breeds by buying good quality heifers.

It was found out that women have low knowledge specifically to animal husbandry compared to men and that was mentioned as reason reducing women's power of decision making concerning animals in the household. It is recommended that the government and NGOs involved in livestock keeping increase provision dairy husbandry trainings to small-scale farmers while giving high priority to women.

### **5.3 Suggestions for further Research**

The study covered some of the milk value chain nodes; production, marketing and processing concerning gender roles, access to resources control of dairy resources and decision making in the household. It is suggested that further research be conducted on other nodes and other gender issues of urban and peri-urban dairy farming.



**REFERENCES**

- Abebe, W. and Galmessa, U.(2011). Gender roles in peri- urban dairy production system of Ambo town, Ethiopia. *Journal of Agricultural Extension and Rural Development* Vol. 3(13): 224-228.
- AgriGender (2011). Gender and livestock value chain in Kenya and Tanzania. In: *Gender and Market Oriented Agriculture Workshop*, Addis Ababa, Ethiopia, 31 January, to 2 February, 2011.10pp.
- Aksoy,A. Kulekci,M and Yavuz, F.(2011). Analysis of the factors affecting the adoption of innovations in dairy farms in Erzurum Province, Turkey. *African Journal of Agricultural Research* Vol. 6(13): 2966-2970
- Arshad, S., Ashfaq, M., Saghir, A., Ashraf, M., Lodhi, M. A., Tabassum, H. and Ali, A. (2010). Gender and decision making process in livestock management. *Sarhad Journal of Agriculture*. 26(4): 693-696
- Bebe, O.B., Thorpe, W., Udo, H.M.J and Mlinge,W.(2000). Breed preferences and breeding practices in smallholder dairy systems of the central highlands of Kenya. [[http://www.smallholderdairy.org/publications/Conference/Bebe et al-2000-Breed preferences](http://www.smallholderdairy.org/publications/Conference/Bebe_et_al-2000-Breed_preferences/)]. Site visited on 12 July 2012
- Bhattarai, B. and Ludec, B. (2009). Engendering value chain development: The case of community based bay leaf enterprise in Nepal. [[http:// www.icimond.org/v2/bull3/index.php/cms2/ajax/resource/](http://www.icimond.org/v2/bull3/index.php/cms2/ajax/resource/)].Site visited on 5 July, 2011.

- Bonnier, P., Maas, A. and Rijks, (2004). *Dairy cattle husbandry*. Disgrafi, Wagenigen 84pp.
- Chagunda, M. G .G., Msiska, A. C. M., Wollny, C. B. A., Tchale, H and Banda, J .W. (2006). An analysis of smallholder farmers' willingness to adopt dairy performance recording in Malawi. [<http://www.lrrd.org/lrrd18/5 /chag18066 .htm>]. Site visited on 29August, 2012.
- Chang'a, J.S., Mdegela, R.H., Ryoba, R. Loken, T. and Reksen, O. (2010). Calves health and management in smallholder dairy farms in Tanzania. *Tropical animal health production* Vol. 42(8): 1669–1676.
- Chaya, K., Dhaka, B., Suwalk, R. (2010). Analysis of work performed by women in agriculture: *Humanity and social journal* 5(1) pp 68-72
- Childress, M. and Lastarria, S. (2009). Gender issue in land policy and administration. In: *Gender in Agriculture Source book*. (Edited by Rygestand, H. And Ratta, A) World Bank, Washington. pp. 125-171
- Campbell, R. (2007). Strengthening Value chain to Promote Economic Opportunities [<http://www.acdivoca.org/site/Lookup/WRFall06-Page4 Value Chains Introduction>]. Site visited on 12 September, 2012.

Coles, C. and Mitchell, J. (2011). Gender and agricultural value chains: A review of current knowledge and practice and their policy implications. ESA Working Paper No. 11-05. FAO.[<http://www.fao.org/docrep/013/am310e/am310e00>]. Site visited on 5 November, 2011.

Danish Institute of Human Rights (2006). Tanzania human right commitments. [[Http//humanright.inforce.dk/international/geographical+region/Africa/count ries/Tanzania](http://humanright.inforce.dk/international/geographical+region/Africa/count%20ries/Tanzania)]. Site visited on 05July, 2011.

Dillmann,A. (2011).Dairy value chain [[http://www.tzdpg.or.tz/uploads/media/dairy\\_VCD\\_final\\_version.pdf](http://www.tzdpg.or.tz/uploads/media/dairy_VCD_final_version.pdf)]. Site visited on 21 October, 2012

Duguma, B., Kechero, Y. and Janssen, G.P.J. (2011) Analysis of Constraints Facing Urban Dairy Farmers and Gender Responsibility in Animal Management in Jimma Town. *Libyan Agriculture Research Center Journal International* 2 (4): 155-160.

East Africa Dairy Development Project (2009). Strategy for Integrating Gender in East Africa Dairy Development. [<http://mahider.ilri.org/bitstream/handle>] Site visited on 2September, 2012.

Ellis, A., Blackden, M., Cutura, J., Mac Culloch, F. and Seebens, H. (2007). Gender and Economic Growth in Tanzania. World Bank Washington D.C.pp164

- FAO (2010). FAO Gender Programmes: Food and Agriculture Organization of the United Nations. [<http://www.fao.org/gender-home/gender-programme/gender-livestock/jp/>]. Site visited on 20 August, 2012.
- FAO (2011). Notes on Livestock, Food Security and Gender Equity. Animal Production and Health Working Paper. No. 3. Rome 40pp.
- Fussi, J. (2010). Strategies to increase milk deliveries to the Tanzanian milk processing industry. Dissertation for award of MSc. Degree at Wageningen University, Netherlands, 64pp.
- Gravo, D. and MacMillan, S. (2010). *Livestock and Women's Livelihoods: A Review of the Recent Evidence*. Discussion Paper No. 20. International Livestock Research Institute Nairobi, Kenya. 34pp.
- Hausmann, R. Tyson, D. and Zahid, S. (2006). *The Global Gender Gap Report 2006*. The World Economic Forum, Geneva. 152 pp.
- Kivaria, F.M., Noordhuizen, J.P.T.M. and Kapaga, A.M. (2006). Prospects and Constraints of Smallholder Dairy Husbandry in Dar es Salaam Region, Tanzania. [<http://igitur-archive.library.uu.nl/dissertations>]. Site visited on 3september, 2012.

- Knips, V. (2006). Developing countries and the Global Dairy sector part II: Countries case studies. [<http://www.fao.org/ag/againfo/programmes/en/ppipi/docarc/wp31.pdf>]. Site visited on 15, August, 2012.
- Kristjanson, P., Waters-Bayer, A., Johnson, N., Tipilda, A., Njuki, J., Baltenweck, I., Kurwijila, L. R. and Boki, K. J. (2003). A Review Of The Small Scale Dairy Sector – Tanzania. Milk and Dairy Products, Post-harvest Losses and Food Safety in Sub-Saharan Africa and the Near East. [<http://www.fao.org/ag/againfo/thems/en/dairy/pfl/docs/plassessmenttanzan.pdf>]. Site visited on 8 September, 2012.
- Kurwijila, R.L. (1990). Dairy technology appropriate to rural smallholder production: The Tanzanian experience. In: *Proceedings of a symposium Dairy marketing in sub-Saharan Africa*. (Edited by Brokken, R. F. and Seyoum, S.) November 1990, Addis Ababa, Ethiopia. 135-146pp.
- Land O'Lakes (2007). Tanzania dairy enterprise initiatives. [[http://pdf.usaid.gov/pdf\\_docs/PDACI870.pdf](http://pdf.usaid.gov/pdf_docs/PDACI870.pdf)]. Site visited on 22 August, 2012
- Lemlem, A., Bishop-Sambrook, C., Puskur, R. and Ephrem, T. (2010). *Opportunities for promoting gender equality in rural Ethiopia through the commercialization of agriculture*. IPMS (Improving Productivity and Market Success) of Ethiopian Farmers Project Working Paper 18. ILRI (International Livestock Research Institute), Nairobi, Kenya. 84 pp.

- Lwelamira, J., Binamungu, H.K. and Njau, F. B. (2010). Contribution of small scale dairy farming under zero-grazing in improving household welfare in Kayanga ward, Karagwe District, Tanzania [<http://www.lrrd.org/lrrd22/2/lwel22031.htm>]. Site visited on 22 August, 2012
- Mayoux, L. and Mackie, G. (2008). *A practical guide to mainstreaming gender analysis in value chain development*. International Labour Office, Addis Ababa. 113pp.
- Mbiru, S. and Baltenweck, I. (2006). Dairy farming in Uganda: production efficiency and soil management strategies under different production systems. [<http://www.ugandadairy.dk/files/042006UgandaDairyPolicyBrief1.pdf>]. Site visited on 6 September, 2012.
- Mburu, L M., Wakhungu, J. W and Gitu, K. W. ( 2007) Determinants of smallholder dairy farmers' adoption of various milk marketing channels in Kenya highlands. *Livestock Research for Rural Development. Volume 19, Article No 134*. [<http://www.lrrd.org/lrrd19/9/mbur19134.htm>]. Site visited on 6 September, 2012.
- Mtenga, N. and Mollel, M. (2000). Gender roles in Livestock production: The case of Tchenzema ward in the western Uluguguru highlands - Morogoro - Tanzania *South Africa Journal of Agricultural Extension* Vol. 29 (2000): 47-57
- Mtengeti, E. J. and Urio, N.A. (2006). Feeding strategies for dry season: A case of silage and hay making by smallholder dairy farmers in Tanzania. In: *Proceedings of the 6th National Dairy Development Conference*. (Edited by Msangi, B.S.J.) 2 June, 2006, Morogoro, Tanzania. 72-99 pp.

- Nenganjwa, B. (2005). Gender relation in livestock production and ownership: Implication for household food security in Teso farming system, Makerere University, 92 pp.
- Ngigwan, L.L. (1990). Dairy imports and their influence on domestic dairy marketing, with particular reference to Tanzania. In: *Proceedings of a symposium Dairy marketing in sub-Saharan Africa*. (Edited by Brokken, R. F and Seyoum, S.) 26-30 November 1990, Addis Ababa, Ethiopia. 119-126pp.
- Niamir-Fuller, M. (1994). Women Livestock Managers in the Third World: A Focus on Technical Issues Related to Gender Roles in Livestock Production. [[http://www.ifad.org/gender/thematic/livestock/live\\_toc.htm](http://www.ifad.org/gender/thematic/livestock/live_toc.htm)]. Site visited on 10 June, 2011.
- Njarui, D .M. G., Kabirizi, J .M, Itabari, J .K., Gatheru , M., Nakiganda A and Mugerwa, S. (2012). Production characteristics and gender roles in dairy farming in peri-urban areas of Eastern and Central Africa. *Livestock Research for Rural Development. Volume 24, Article No 122* from [<http://www.lrrd.org/lrrd24/7/njar24122.htm>]. Site visited on 17 September, 2012,
- Omondi, S.P.W and Meinderts, J. (2011). The status of good dairy farming practices on small-scale farms in central highlands of Kenya. [<http://www.kari.org/biennialconference/conference12/docs.pdf>]. Site visited on 27 August, 2012.

Osman, M.F., (2008 ). Muslim Women The family and the society [[http://www.usc.edu/schools/college/crcc/private/cmje/issues/muslim\\_women.pdf](http://www.usc.edu/schools/college/crcc/private/cmje/issues/muslim_women.pdf)]. Site visited on 11November, 2012

Peterman, A., Behrman, J., Quisumbing, A. (2010). A Review of Empirical Evidence on Gender Differences in Non land Agricultural Inputs, Technology, and Services in Developing Countries. [<http://www.ifpri.org/sites/default/files/publications/ifpridp00975.pdf>]. Site visited on 17 September, 2012,

Quaedackers, P. (2010). Developing market linkages for smallholder farmers. Dissertation for Award of MSc Degree at Copenhagen Business School, Copenhagen, Netherlands, 110pp

Riisgaard, L., Fibla, E.M.A., Ponte, S. (2010). *Gender and Value Chain Development*. The Danish Institute for International Studies Global economy, regulation and development Copenhagen, Denmark. 77pp

Rubin, D. and Missokia, E. (2006). *Gender audit/Tanzania*. United state agency for international development. Washington DC. 53pp.

Rubin, D. Manfre, C and Barret, K. (2009). *Promoting gender equitable opportunities in Agriculture value chain*. U.S Agency for international development, Washington DC. 141 pp.



- Rubin, D., Manfre, C. and Barrett, N. (2009). *Promoting Gender Equitable in Agricultural value chain*. United State Agency for International development, Washington D.C. 141 pp.
- Rukonge, A., Msuya, M., Ndamgoba, I. and Wanga, G. (2008). Responding to marginalized farmers: Review of selected Agricultural Development Plans in Tanzania. Concern Worldwide [[http://www.agriculture and food for development of Tanzania](http://www.agricultureandfoodfordevelopmentofTanzania.org)]. Site visited on 20 June 2012.
- Singleton, R. (1993). *Approaches to Social Research*. Oxford University press New York. 572 pp.
- Tanga City Council (2007). Investment profile for Tanga City Council [[http://tanga city.go.tz/page/investment profile](http://tanga-city.go.tz/page/investment-profile)]. Site visited on 2 September, 2012
- Third World Resurgence (2011). Closing the gender gap in agriculture. [<http://www.twinside.org.sg/title2/resurgence/2011/247/cover06.htm>]. Site visited 15 June, 2011.
- Tibbo, M. Abdelali, M., Martini, Rischkowsky, B. and Aw-Hassan, A. (2009). Gender sensitive research enhances agricultural employment in conservative societies: the case of women livelihoods and dairy goat programme in Afghanistan and Pakistan. International Centre for Agricultural Research in the Dry Areas (ICARDA), Syria [[http://www.fao-ilo.org/fileadmin/user \\_upload/fao\\_ilo/pdf/](http://www.fao-ilo.org/fileadmin/user_upload/fao_ilo/pdf/)]. Site visited on 3 september, 2012.

UN (1995). *World Development Report*. Oxford University Press, New York. 228pp.

UNDP (2006). Value-chain analysis and Socio-economic assessment of the dairy industry in Tanzania. In: *Proceedings of the 6th National Dairy Development Conference*. (Edited by Msangi, B.S.J. ), 2 June, 2006, Morogoro, Tanzania. 14-25pp.

URT (2009). *National strategy for gender development*. Ministry of Community development Gender and Children, Dar es salaam, Tanzania. 76pp.

URT (2010). *National Strategy for Growth and Reduction of Poverty (NSGRP)*. Ministry of Finance and Economic Affairs, Government printer, Dar es Salaam. 184pp.

URT (2007). *Iringa region socio-economic Profile* Ministry of planning, Economy and Empowerment. Government printer, Dar -es -salaam. 264pp.

USAID (2010). Guide to Gender integration and analysis [<http://www.usaid.gov/policy/ads/200/201sab.pdf>]. Site visited on 4 October, 2011.

USAID Women development, (2009). *Promoting Gender Equitable opportunities in Agriculture value chain*. U.S Agency for international Development, Washington. 620 pp.

Vidya, P., C. Manivannan, and Sudeep Kumar, N.K. (2010). Effectiveness of an Educational Interactive Video-DVD on Dairy Health Management Practices in Terms of Knowledge Gain among Dairy Farmers. *Online Journal of Rural Research and Policy* 5.7 (2010): 1- 17.

Webbe, M. and Labaste, P. (2010). *Building competitiveness in Africa's agriculture: a guide to value chain concepts and applications*. World Bank, Washington DC.169 pp.

Weitzenegger, (2007). Value chain development report. [[Http://Weitnezegger .de/new/value chains.html](http://Weitnezegger.de/new/value_chains.html)]. Site visited on 3 June, 2011

Williams, D., Consalvo, M., Caplan, S., Yee, N. (2009). Looking for Gender: Gender Roles and Behaviors Among Online Gamers. *Journal of Communication* (59): 700–725.

## APPENDICES

### Appendix 1: SMALL HOLDER DAIRY FARMER INTERVIEW SCHEDULE GENDER ANALYSIS ON MILK VALUE CHAIN: A CASE OF TANGA CITY AND IRINGA MUNICIPALITY

Name of enumerator.....Date.....

#### Location

District.....

Division.....

Ward.....

Village/street.....

#### Part 1 Household demographic information

1. Name.....

2. Sex..... 1=Male, 2= Female

3. Marital status.....

1= Married

2= Single

3= Divorced

4= Widowed

4. Household composition

Age of respondent	Education level	Religion of respondent	No of children	No of working age		No of dependants	
				Male	Female	Male	Female

Note: - working age means between 14 and 64 years of age inclusive.

Dependant means below the age of 14 and above the age of 64.

Code 1 education: 1=No formal education 2= Primary education 3= Secondary education  
4=Certificate level 5= Diploma and above

Code 2 religion: 1= Orthodox 2= Muslim 3=Catholic 4=Protestants 5=No religion

5. What other economic activities are you involved in apart from dairy keeping?  
.....

1= Farming

2= Business/pet business/Self employed

3= Civil servant/employed

6. How long have you been in dairy keeping enterprise? .....years

7. How did you get the first animal (s) to start your enterprise? .....

1= Purchased from accumulated capital from deferent sources

2= from the project Take heifer pay heifer

3=Government projects cost sharing

4=Purchased using borrowed money (friends, Banks, SACCOS)

8. What is dairy herd size per category?

<b>Age category</b>	<b>Males</b>	<b>Females</b>	<b>Total</b>
Calves (Less than 8 weeks			
Wieners (8 weeks-14 weeks)			
Heifers			
Adult cows			

9. How do you feed your animals? .....

1= Semi-intensive

2=Zero grazing

3=Semi-intensive with supplement feeding

4=Zero grazing with supplement feeding

## Part 2 Roles of women and men in dairy keeping

10. Who undertakes the following dairy activities?

S/ N	Activities	Person responsible					
		Father	Mother	Children		Hired Labour	
				Boys	Girls	Male	Female
1	Herding						
2	Glass cutting						
3	Feeding						
4	Giving animals drinking water						
5	Shed cleaning						
6	Milking						
7	Deworming						
8	Purchasing of feeds						
9	Milk delivery to collection centres/buyers						
10	Record keeping						
11	Contractual agreements with buyers						
12	Payment collection						

**Part 3 Milk marketing**

11. What is the average milk production per day in high and low season?

High season.....Lts

Low season.....Lts

12. Where do you sell your milk?

.....

- 1. Neighbours and restaurants
- 2. Milk collection centres (To processors)
- 3. Milk vendors/hawkers

13. What reason do you give to the choice of selling milk as you responded to the previous question? .....

- 1. Reliability of the market
- 2. Relatively high price
- 3. Low production for other market channel
- 4. Inability to transport milk to places with high price

**Part 4 Workload for participating in milk value chain**

14. It is obvious that participation in milk value chain change the regular activities that you used to do, has it increased or decreased your work load? .....

1=increased 2= Decreased

Can you explain how?

.....

.....

.....

.....  
.....

**15.** Between men and women participating in milk value chain whose work load has increased?

.....

1= Men 2= women

**16.** Do you have access to any kind of technology that is used to simplify the day to day dairy keeping activities? .....

1= Yes 2= No

**17.** What technologies that are used to simplify the following milk value chain activities:

i. Milking

Technologies.....  
.....

ii. Cutting glass

Technologies.....  
.....

iii. Shed cleaning

Technologies.....  
.....

iv. Ticks control

Technologies.....  
.....

v. Carrying feeds, hay bales, Water and other heavy loads

Technologies.....  
.....

vi. Preserving feeds for dry season e.g. bailing hay



Technologies.....  
.....

**18.** Are the technologies equally accessed by both men and women?

.....

1= yes 2= No

**19.** What are the challenges women faces in using or accessing these technologies?

.....  
.....  
.....  
.....  
.....

**20.** What are the challenges men faces in using or accessing these technologies?

.....  
.....  
.....  
.....  
.....

**21.** What solutions do you suggest to solve these challenges? (Men and women's solutions)

Men.....  
.....  
.....  
.....

Women.....  
.....

.....  
.....  
**Part 5 Access to information, services and benefits**

**22.** How did you get knowledge of keeping dairy cattle?

.....  
1= through training and learning from neighbours

2= from Agriculture and live stock officers and NGOs

3= from neighbours and friends

**23.** In which aspects do you have better access to information?

.....  
1=Management of dairy cattle

2= Input use and availability (drugs, feed, heifer)

3= Market information

4= Improved breeds of dairy cattle

**24.** How do you access this information?

.....  
1=Extension agents

2=Training

3= Radio

4= Field day

5= Neighbours and friends

6= Posters

25. Have you ever had access to the following services in the year 2011 from January to date?

Services	Yes	No	If yes how many times?
Dairy keeping Training			
Financial (credit, insurance)			
Market support (information, linkages, price)			
Veterinary services (vaccinations, de-worming)			
Artificial insemination			
Heifer supply			
Input supply (feeds, drugs, minerals)			

26. What challenges women face when seeking dairy keeping services?

.....

.....

.....

.....

.....

27. What challenges men face when seeking dairy keeping services?

.....

.....

.....

.....

### Part 6 Decision making power

28. Provide information with respect to access and control of the following resources

Resource	Access (right to use)		Control (decision power)	
	Male	Female	Male	Female
Land				
Dairy cattle				
Equipments(eg.Milking machine, milk can ,wheelballow)				
Labour				
Income from dairy keeping				
Credit from (banks, SACCOS )				

29. Are men and women having equal power on decision making over income from dairy keeping? .....

1= yes 2= no

30. If the differences exist what are the reasons for the differences?

.....

.....

.....

.....

31. What do you suggest as a solution to alleviate these decision-making power differences?

.....

.....

.....

.....

**THANK YOU VERY MUCH FOR YOUR TIME AND COOPERATION**

**Appendix 2: CHECKLIST FOR EXTENSION STAFFS**

1. Have you conducted any seminar, training, or public meeting to dairy keepers this year 2011?
2. Do men and women have equal access to seminar, training or public meeting?
3. Are there any cultural norms that hinder equal participation between men and women in dairy keeping activities?
4. What is the situation of ownership of resources concerning dairy keeping between men and women in this area?
5. What are men and women's role in milk value chain in this area?
6. Where is the raw milk market of your farmers (processors, restaurants and neighbours, milk vendors/hawker)
7. What is the situation of men and women in milk marketing as vendors/hawkers this area and why?

**Appendix 3: CHECKLIST FOR MILK PROCESSORS**

1. What is the processing capacity of industry per day?
2. What are the sources of milk for this industry?
3. Do you get enough milk as per capacity of industry?
4. What are the processed products?
5. How many people does your business employ?
6. Out of those employees how many are men and how many are women?
7. What roles are played by men and women in different milk processing units/sections?

**Appendix 4: CHECKLIST FOR MILK VENDORS**

1. To whom do you usually sell milk?
2. How long do you travel to purchase and sell milk/or how much time does it take?
3. Considering time and distance you travel to sell milk can this activity equally be done by both men and women?
4. Why milk producers sell milk to you not to cooperatives, processors or direct to consumer?
5. In order to make sure that your milk is not rejected by processors or consumer how do you control quality of your milk