

ST. MARY'S UNIVERSITY SCHOOL OF GRADUATE STUDIES



ASSESSMENT OF THE CONTRIBUTION OF ENHANCED DAIRY SECTOR GROWTH PROJECT IN ETHIOPIA (EDGET) AND SATISFACTION OF ITS BENEFICIARIES: The case of Amhara, Oromia and SNNPRs regions

By: Yohannes Tesfu

Advisor: Dr Workneh Kassa

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Addis Ababa

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**A Thesis Submitted to the School of Graduate Studies of ST.
Mary's University in Partial Fulfilment of the Requirements
for the Master of Business Administration (MBA) in Project
Management**

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MBA in Project Management thesis
By: Yohannes Tesfu

APPROVED BY BOARD OF EXAMINERS

Dean, Graduate Studies

Signature

Advisor

Signature

External Examiner

Signature

Internal Examiner

Signature

Declaration

I, the undersigned, declare that this thesis is my original work, prepared under the guidance of Dr Workneh Kassa. All sources of materials used for the thesis have been duly acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for the purpose of earning any degree.

Name

ST. Mary's University School of graduate studies, Addis Ababa

Signature

June 2017

ENDORSEMENT

This thesis has been submitted to ST. Mary's University School of Graduate Studies for the examination with my approval as a University advisor.

Dr Workneh Kassa

Advisor
St Mary's University School of graduate studies, Addis Ababa

Signature
June 2017

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Acronyms

AI	Artificial Insemination
ATA	Agricultural Transformation Agency
BOAM	Business Organisation their Access to Market project
DA	Development agent
DFID	Department for International Developmental
EDB	Ethiopian Dairy Board
ENA	Ethiopian News Agency
ETB	Ethiopian Birr
FAO	Food and Agricultural Organisation
FAOSTAT	Food and Agricultural Organisation Statistics
FO	Farmers Organizations
GTP	Growth and transformation plan
HH	Household
ILRI	International Livestock Research Institute
MoA	Ministry of Agriculture
MRS	Highland mixed crop-livestock rainfall sufficient zone
MTS	Milking transporting and storage plastic
SNV	Netherlands developmental organisation
SPSS	Statistical package for social scientists
SNNPRs	Southern Nation and Nationality Regional state
ToT	Trainers of the trainee
UNICEF	United Nation International Children's Emergency Fund
USAID	United State Agency for International Development
VC	Value chain
WASH	Water And Sanitation for Health
WUR	Wageningen University and Research Centre; Netherlands

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Abstract

The objective of the study was to assess farmers' assessment of the contribution of enhanced dairy sector growth project in Ethiopia (EDGET) and satisfaction of its beneficiaries. The study used descriptive statistics research with qualitative data. The sample frame was from the selected two kebeles (one from well performing and one from poor performing kebele in livestock extension activities) of each regions of the Amhara, Oromia and SNNPRs. The selection was based on the consultation and recommendation of regional livestock experts and Enhanced Dairy sector Growth in Ethiopia project regional managers. The sample was taken from each kebele stratified as female and male headed household. The data from the beneficiary dairy farmers were analysed by using descriptive statistics on the variables: dairy beneficiary farmers satisfaction on milk production by the EDGET project support, on the intervention of the EDGET project for an increase on milk consumption specially for children (under two years old and women (pregnant and lactating) through awareness creation, on an increase in income of the dairy beneficiary farmers from dairy related activity, on the process of EDGET project extension support to beneficiary farmers. Whereas the data collected from the government livestock bureau on the contribution of the EDGET project to the sector: EDGET project contribution to the sector, the level of the project objective alignment to the government office objectives, assessment of EDGET project activity, and evaluation of the EDGET project beneficiary with non-beneficiary farmers by the government livestock staffs. The result showed that the beneficiary farmers were satisfied in the milk production per cow per day and obtaining additional income from the dairy business except the female headed households of the poor performing kebele with 3.4 to 3.9 (between neutral and agreed point in the Likert scale). In all region, the female headed households were less satisfied as compare to the male headed household in the EDGET project extension supports. The government livestock expert staffs agreed with more than 4 point in Likert scale for the EDGET project is positive contribution to the sector. Finally, the government livestock expert staffs had shown that EDGET project beneficiary dairy farmers had positive difference on the milk production, on the milk hygienically handling and overall cow as well as calf management practices with respect to the non-beneficiary farmers. Therefore, the study result revealed that EDGET project satisfied to the beneficiary farmers and also contributed to the dairy sector except on the awareness creation for the improvement on the milk consumption. Hence the study recommend to get experience or align this activity with ministry of health through the health extension workers and voluntary community health workers.

Key Words: Household farmers, extension, forage development, intervention, dairy,

CHAPTER I

INTRODUCTION

This chapter provides a brief overview of the study by introducing the key concepts that will be used throughout the paper. It offers the background section followed by problem statement, research objective, significance of the research, as well as the limitations of the research.

1.1 Background of the study

Livestock is vital to the economics of Ethiopia in providing protein for human diet, income, employment and foreign exchange. According to WoldeMicheal (2014) livestock served as the storing of wealth, draught power, fuel, prestige and the source of organic fertilizer. In Livestock sector, cattle population count for 69.5% and from which female and milking cow are 55% and 20% respectively (MoA, 2011). According to FAOSTAT (2013), from the total of 10.67 million milking cows, 2.94 million tons of milk is produced per annum in Ethiopia.

However, Ethiopia, regardless of its largest dairy cattle population, is not among the four largest milk producing countries in Africa i.e. Egypt, Kenya, South Africa and Sudan (FAO, 2010). Even if the milk production in Ethiopia tends to have increased during the last two decades at the national level, the per capital consumption has decreased from 26 litre per annum in 1980 to 22 litre in 1993, 19 litre in 2000, 16 litre in 2009 and 19 litre in 2013. With total domestic consumption of 893,699 tons of milk, Ethiopia remains to be the lowest compared to total domestic milk consumption of 2,212,323 tons of milk in Kenya and 2, 753, 129 tons of milk in Sudan (FAOSTAT 2013). Moreover, Ethiopia has remained to be a net importer of dairy products with import values significantly exceeding export values. The three regions of Ethiopia (Amhara, Oromia and Southern Nations and Nationalities and People's Region) put together account for 89.94% of the total cattle population and 89.55 % of the total milking cows in Ethiopia (Yilma et al., 2011).

Therefore, the Enhanced Dairy Sector Growth in Ethiopia Project (EDGET) has been introduced to solve the above sectorial problem. This project is implemented by Netherlands Developmental Organisation (SNV). The Netherlands Developmental

Organisation has experience in implementation of the dairy projects locally like BOAM (Business Organization Access to Market) project from 2006 to 2011, as a consortium for the dairy sector on the Livestock Market Development Project 2012 to 2016, Survey on the dairy greening value chain for the Ethiopian Agricultural Transformation Agency (ATA). So, SNV having looked the dairy sector, tries to implement the EDGET project on the small holders farmers (pro poor development project model in the sector) or at the lower level of the dairy value chain from 2013 to 2017. The EDGET project is funded by the Embassy of the Kingdom of the Netherlands. The project budget is 13 million Euro. The project implementation is in three regions (Amhara, Oromia and SNNPRS) of the selected milk shed areas. The selection of the woreda livestock office, regional livestock office and SNV is based on their potential for the milk production. In addition to this the selection of the beneficiary farmers were done by the woreda live stock office and SNV dairy extension officers. The project has an intention to expand to other regions and other woredas of these three regions after completing EDGET Project I based on the donor interest.

The EDGET project has the main office in Addis Ababa and satellite offices in Bahir Dar and Hawassa. The EDGET project has totally 76 staff in all the three regions. The programme manager is the leader and there are board members of the EDGET project from the federal livestock, regional livestock country director of the SNV, Embassy of the kingdom of Netherlands (EKN), and programme manager (PM) of the SNV. There are three regional managers at each three regions, one monitoring and evaluation specialist, one private sector and institutional development specialist, one dairy product and nutritional specialist and one finance and operation manager directly report to the programme manager. There are four drivers and one grant manager reporting to finance and operation manager. There are 51 woreda dairy extension promotor and 10 zonal dairy community mobilizer. The project operates 15 woredas in Amhara region and 22 woredas in Oromia region and 14 woredas in SNNPRS region aiming to reach 65,000 farmers (beneficiaries). The project operates in 10 zones 4 zones in Amhara region (south Gondor zone, Awi zone, West Gojam zone, and East Gojam zone), in Oromia region the project operate in 4 zones (North Shewa zone, East Shewa zone, Arsi zone and West Arsi Zone), and in SNNPR the project operates in two zones (Sidama zone and Gedio Zones). There are also three dairy business experts supporting these regional managers at each region.

The overall goal of the EDGET Project is to improve household income and nutritional status of children through increased dairy production and enhanced dairy processing & marketing. The EDGET project aims at two targets. The first one is to enable 65,000 households to achieve a 100% increase of income from dairy activities within 5 years of project period and the second one is to improve the nutritional status of children, through increased consumption of dairy based nutritional products.

This increase in milk production will be achieved by exploiting the genetic potential of more than 50,000 new cross bred dairy calves and cows. SNV is funding and managing a small holder training and advisory service in the 51 target districts. The training and advisory service will focus on women in the target households as they dominate small holder dairy activities. SNV Dairy will also work to significantly expand local fodder production and also incentivise a district level agricultural dealer network to facilitate commercial feed distribution.

The objectives of the EDGET project are to double the income of the dairy farmers (beneficiaries) from the base line data taken at 2014 through the dairy activity.

So, there is a need to study the performance of the project on the beneficiary farmers' perspective since a lot of resources and efforts has been applied. It will also help to draw a lesson and perform well on the rest project time.

1.2 Statement of Problem

Ethiopia have endowed with a number of dairy cows with a total of 10.67 million milking cows, and 2.94 million tons of milk was produced per annum in Ethiopia (FAOSTAT, 2013). In contrary, Ethiopia imported 1,829 MT milk and dairy products in 2011 (USAID AGP LMD, 2015). So, EDGET project intervene to increase productivity of the dairy farmers to produce more. This paper then were used to know the status of the dairy farmers which were supported by EDGET project.

The Ethiopian daily milk production per cow is very low. According to Bereda et al., (2014) the overall average daily milk production per cow per household, lactation length and calving interval were 1.83 ± 0.08 litre, $10.6.87\pm 0.2$ months and 24.03 ± 0.4 months, respectively. Cows in other countries like Israel and United States of America give up to 28 litres per day (FAOSTAT, 2012). Since SNV EDGET has made many

support to the dairy farmers and wants to know the status of the outputs like the milk consumption increment by the household (SNV Ethiopia annual report, 2015).

The EDGET project has made many supports to the dairy farmers in the selected Amhara, Oromia and SNNPRS regions like provision of training on forage development, dairy cow management, calf feed usage and follow up, milk quality and hygienically handling, and dairy processing and marketing. According to SNV EDGET project proposal (2013), the EDGET project also provides inputs like forage seeds (Oats, Dismodium, Rodus grass, Treelusen, Alfalfa), and splits like Elephant grass and Dasho grass, calf feed (industrial processed products for calf with appropriate proportion of minerals, salt, wheat bran, oil cake, molasses, milk transportation and storage plastic (MTS) for milking and keeping the milk hygienically, training materials like brochure, and set of full package of dairy processing materials for the cooperatives. The project has also established the agro-dealers to supply inputs for the dairy farmers nearby at perspective woredas. Therefore EDGET has invested a lot of money and effort to the farmers and there is a need to make assessment on the support of the dairy farmers. So far there is a gap by the EDGET project that there is no assessment for the dairy beneficiary farmers' satisfaction on the EDGET project performance. Off course there will be Monitoring and evaluation report after the project closure.

Since the EDGET project was lately started in its operation for many reasons like staff recruiting was late and there was disagreement and disengagement with the implementing partner called Wageningen University (Wur) for the introduction of technology like fortification of skimmed milk with the vegetable oil. In addition to this, there was non-implementation period of the project due to the security problem in Oromia, Amhara and SNNPRS region to implement the project smoothly in 2016. Therefore, due to all the above reasons there is a need to assess the actual activities performance and make the quick-win plan to recap some of the EDGET project activities for the rest periods or to request possible extension for the project after the end of 2017.

There is also need for the next phase of EDGET II project or for any other dairy based developmental project to get input and do better in the future.

At the end of 2015, there were the structuring of the livestock and fishery as separate ministry from the Ministry of Agricultural. So, the planned midterm EDGET project

performance review together with the livestock office and other stallholders hasn't been done due to the staffing of livestock office and other reasons. So, there is a need to know the status of the EDGET project

Therefore the paper will help understand the effectiveness and success of the project with the purpose of drawing important lessons for immediate beneficiaries, stakeholders and developmental projects in general.

The following are the research questions of the study.

- i) What is the satisfaction level of the beneficiary's (dairy farmers) on the EDGET project activity?
- ii) What is the contribution of EDGET project to the dairy sector of the country?

1.3 Objectives of the study

1.3.1 General objectives of the study

The objective of this paper is to assess the EDGET project main activities from the beneficiary dairy farmers' perspective.

1.3.2 Specific objectives of the study

The specific objectives of the study are to:

- a) Investigate the beneficiary's (dairy farmers) satisfaction level on the EDGET project activity.
- b) Assess the contribution of EDGET project to the dairy sector of the country.
- c) Evaluate the dairy practices of the EDGET project beneficiary farmers as compared to the non- beneficiary dairy farmers.

1.4 Significance of the study

The outcome of the paper may help the project to make many adjustments by allowing SNV EDGET project to get lesson from the study as an input in crafting other new dairy development projects.

It is also significant for other implementing agencies that work on the dairy sector development projects. Currently such developmental organizations like USAID, DFID, SDI-VOCA are operating on dairy projects in Ethiopia. Since the EDGET project is working on the Ethiopian dairy sector, any assessment and lesson learned will help the interested local professionals in the sector and the government to get information on such useful projects.

1.5 Scope and Limitations of the study

1.5.1 Scope of the study

The study investigates the EDGET project activity on the EDGET project beneficiaries.

The activities of the project on which the study is focussed are listed below

- i. Forage development (capacity development and provision of forage seeds)
- ii. Calf feed (provision of formulated Nutritious concentrate specific for calf)
- iii. Cow housing management (provision of capacity development and advise)
- iv. Dairy processing and marketing (provision of capacity development, facilitate the formation of formal group, establishment of service provider and provision of dairy processing equipment)
- v. Gender and youth participation (capacity development, ensure women participation from the beneficiary selection and dairy cooperative leadership)
- vi. Institutional support (supporting the livestock on breeding material and capacity development)
- vii. Awareness creation from the consumption of dairy based Nutritional products.

The study assessed based on the EDGET project scope which was limited to the smallholder dairy farmers in all dairy value chains except the veterinary service and breeding services.

1.5.2 Limitations of the study

This research has been constrained by shortage of time and budget to cover all the woredas of EDGET project in the Amhara, Oromia and SNNPRs regions. Due to the constraint of time study also weren't checking the milk quality test at laboratory for looking the milk quality and hygiene of the smallholder dairy farmers.

CHAPTER II

LITERATURE REVIEW

2.1 Introduction

This chapter presents the review of literature on the opportunities and challenges in the Ethiopian dairy sector, Ethiopian dairy sector policies, gender and dairy as well as the SNV EDGET project activities, outputs and expected impacts.

2.2 Global performance of the dairy sector

According to Morgan (2015), globally particularly in Asia, agriculture provides a livelihood for more people than any other industry either it is primary or secondary, while dairy farming is one of the major agricultural activities. The Food and Agriculture Organization (FAO) estimated that the world's milk production in 2012 stood at 754 billion tonnes. Hemme and Otto, (2010), estimated that 12–14% of the world's population (or a total of 750–900 million people) live on dairy farms or are within dairy farming households. Livestock provide over half the value of global agricultural output and one third of the value of agricultural output in developing countries Morgan, (2015). Milk is nature's most complete food and dairy farming represents one of the fastest returns for livestock keepers in the developing world.

The world dairy production has socio-economic importance. According to FAO, (2011) in Morocco, the dairy chain provides jobs for 770 000 people, about 10 percent of agricultural jobs. In addition to the employment opportunity in the dairy sector, the dairy sector improves the food and nutritional security of the poor if more dairy products were added to their diet since milk is a complex food containing numerous nutrients.

In most developing countries the smallholder farmers contribute a lot to the dairy sector. According to Mbogoh, (1984) over 95% of the milk produced in West Africa was derived from the traditional livestock sector. The dairy herds are kept primarily in smallholder's households, where milk is processed before selling. Milk production, processing and marketing are thus combined within numerous small independent dairy "units".

When we see dairy sector regionally in East African countries, Bebe *et al.*, (2003), showed that the smallholder dairy farming contribute a lot to the economies. For example In Kenya, 80% of the three million dairy cattle population is in the hands of smallholders and help in milk production depend on small holders. In Uganda dairy sub sector accounts for about 67 percent of value of output from the livestock sector (Grimand *et al.*, 2007). According to Feleke and Geda, (2001 as cited *Alejandro et al.*, 2008), agriculture in Ethiopia contributed about 45% of national GDP while the livestock sector contributed about 40% of agricultural GDP (18% national GDP) and 30% of agricultural employment. Dairy output accounted for about half of livestock output.

World Bank, (2008) showed that East African countries like Ethiopia, Kenya, Tanzania and Uganda are characterized as “agriculture-based,” that is, agriculture is the backbone of these economies. Agriculture in this region characterized as dominate smallholder farmers who occupy the majority of land and produce most of the crop and livestock products FAO, (2009).

2.3 The Dairy sector in Ethiopia

Ethiopia, one of the tropical and subtropical countries in Sub Saharan Africa, has about 53.9 million cattle, 25.4 million sheep, 24.06 million goats and 0.9 million camels on which dairy production is based (CSA 2012/13) excluding the livestock population of the three zones of Afar and six zones of Somali regions. According to Workneh, (2015), cattle’s produce 83 % of the total milk production in Ethiopia and among which 97% of this cow milk comes from the indigenous breeds.

According to Felleke, (2009), although the Ethiopian livestock population is the highest in African continent and many efforts have been exerted to develop the sector, the expected outcome is insignificant. The disposable income from the dairy sector for house hold dairy farmers have not yet improved. Yilma *et al.*, (2011), argue that Ethiopia is endowed with the largest livestock population in Africa and give justification as most of the cattle breed are not improved breed. According to CSA, (2010) the indigenous breeds accounted for 99.19 percent, while the hybrids and pure exotic breeds were represented by 0.72 and 0.09 percent, respectively. This in turn is related to the low performance of the milk production. According to the Tsehay (2002),

as cited by Nigusu, (2014), the 2014 milk production was very low and estimated as 3.2 million ton. While the growing rate of the indigenous cattle is only 1.2% where as that of the improved breed is 3.5 %.

Some scholars try to identify the cause of the above low milk production performance of the local breed cattle. According to the Mukasa-Mugerawa, (1989), and Yoseph et al, (2003), as cited in Nigusu, (2014), this low milk production performance is due to reduced lactating length, extended calf interval, late age at first calving, poor genetic makeup. In addition to the above causes of low milk production (Ahmed et al, 2010) shortage of livestock feeds both in quantity and quality especially at dry season accounts for the low productivity.

One of the dairy development in Ethiopia is the dairy marketing. Dairy products are channelled through both formal and informal dairy marketing systems. A 2010 study reported that 98% of milk in Ethiopia is marketed through the informal market channels or is consumed in the household USAID, (2010). The informal market involves direct delivery of fresh milk by producers to consumers in the immediate neighbourhood or sale to itinerant traders or individuals in nearby towns. In the informal market, milk may pass from producers to consumers directly or through two or more market agents. The informal system is characterized by no licensing requirement to operate, low cost of operations, high producer price compared to formal market and no regulation of operations. Formal milk markets are particularly limited to peri-urban areas and Addis Ababa. Therefore, both production and marketing problems must be addressed; if dairying is to realise its full potential to provide food and stimulate broad-based agricultural and economic development.

2.4 Dairy sector opportunities and challenges in Ethiopia

2.4.1 Opportunities of the dairy sector in Ethiopia

The Dairy sector in Ethiopia has potential to grow since the climate condition and the number of livestock population (cattle population) are conducive for its growth. According to Zelalem, (2011), the government has development interventions in the various components (breeding, animal health, feeding, milk collection, storage, processing and distribution). In this regard, it is essential to encourage the involvement of the private sector in the dairy value chain, and put an efficient and operational coordination system in place that connects the various actors in the dairy sector. The

Ethiopian Dairy Board (EDB), which is under establishment, is a good initiative. This will elevate the existing subsistent type of milk production to commercial levels to the benefit of all the actors involved ranging from the individual producer and consumer to the country level.

Currently, the Federal Democratic Republic of Ethiopia has made some structural amendment to the livestock sector to have better development in the livestock sector. This structural amendment has made the Livestock and Fishery Ministry as a separate Ministry from the former Agricultural Minister. This will help to make more focus and use the endowed resource in the area. The government has assigned veterinary experts at woreda level and the breed as well as the animal science experts at kebele level. In addition to these the GTP2 (the Growth and Transformation Plan II) of Ethiopia has identified many focus areas to improve and transform the dairy sector with innovation and strengthening the Ethiopian meat and dairy institute.

2.4.2 Challenges of the dairy sector in Ethiopia

According to Zelalem, (2011), the dairy sector in Ethiopia has the following constraints that account for the poor development of the sector.

- Lack of market outlets for milk and milk products;
- Inefficient and untimely artificial insemination (AI) services and poor semen quality;
- Lack of crossbreed heifers;
- Shortage of feeds especially agro-industrial by-products;
- Shortage of water and
- Inefficient and inadequate milk processing technologies.

Post-harvest milk loss is high due to the highly perishable nature of milk coupled with mishandling practices from production up to the consumption stage. The amount produced is usually subject to high post-harvest losses. According to Felleke, (2003), as cited in Zelalem, (2011), estimated post-harvest losses of up to 40 percent of milk and its derivatives have been reported from milking to consumption. Post-harvest losses and quality deterioration are mainly attributed to mishandling in the dairy chain from farm grass to glass. These include:

- Contamination during milking and further handling coupled with storage time and temperature before consumption;
- Deliberate adulteration of milk;

- Substandard handling, transportation and distribution systems;
- Inefficient processing technologies;
- Inadequate fresh milk outlet and
- Spillage losses during milking.

According to FAO (ENA, 2004), the value of annual milk and dairy product losses due mainly to mishandling across five African and the Middle East countries (Kenya, Tanzania, Uganda, Ethiopia and Syria) was over US \$90 million. Reducing such losses and improving quality are effective ways of making more and safer milk available. This helps to improve the welfare of resource-poor dairy producers and low income consumers through increased supply in terms of volume and geographical distribution and marketing of safe and better quality milk and milk products.

2.5 Dairy sector policy in Ethiopia

The Federal Government of Ethiopia (GoE) has a livestock policy that include policies for poultry, red meat-milk, and crossbred dairy cows. The GoE currently has prioritized the transformation of the agricultural sector (Getachew et al, 2015). This approach has been adopted in the 2010–2015 Growth and Transformation Plan (GTP I) and its successor, the 2015–2020 GTP II. Yet, the absence of clear roadmaps to develop the livestock sector has persistently hindered successful implementation of these previous investment plans. Detailed inter-disciplinary research has revealed the potential benefits of a comprehensive livestock master plan (LMP) in Ethiopia.

According to Getachew et al, (2015) the expected projection of an increase in national cow milk production, as a result of the proposed interventions, during these GTP II period (2015–2020) is 93%, a surplus of 2501 million litres over projected domestic consumption requirements. This production increase would make it possible to meet the milk production targets in the GTP II phase, exceeding the growing domestic demand for milk by 47%. This surplus of milk could then be substituted for imported milk products and used domestically for new or additional industrial uses (e.g. in the baking industry), or exported as milk powder or UHT to raise foreign exchange earnings.

Priority investment interventions

Various combinations of the three standard types of livestock technology interventions are needed to generate higher incomes and animal productivity, and to lead to the achievement of the GTP II development objectives: improved genetics, health and feed. Shapiro et al., (2015) shows that appropriate combinations, depending upon the biophysical, agro-ecological and market conditions facing livestock in the three production typology zones in Ethiopia, include:

- Improvement of cattle dairy through breeding interventions, combining artificial insemination using exotic semen with oestrus synchronization in **MRS** dairy systems and in peri-urban milk sheds throughout Ethiopia;
- Improvement of productivity of local breed animals (cattle, sheep, goats, and camels) for meat and milk through investments in genetic selection (recording schemes, etc.) and in animal health to reduce young and adult stock mortality, and by implementing critical vaccinations and parasite control programs;
- Increase of public investment in rehabilitating range and pasture lands to improve feeding and animal management to complement genetic and health improvements;
- Promotion of the importation and dissemination of improved semi-scavenging poultry breeds by the private sector and/or through public-private partnerships, combined with the improved capacity of private animal health services to provide critical vaccines, in tandem with the continued promotion by the GoE extension services of improved feeding; and
- Increase of specialized commercial production units and—where conducive agro-ecological and market conditions prevail—consequent increases in animal numbers for all three commodities, and the adoption of appropriate genetic, health and feed technologies.

In general policies and strategies aimed at creating enabling environment for investments in the dairy development in Ethiopia are part and parcel of the Ethiopian rural development policy. As referred in several documents MoFED, (2005) and Demise et al, (2009) as cited by Getachew et al, (2015) the Ethiopian Rural Development policy, based on the principles of promotion of labor-based technologies and land capitalization is the governing policy for agricultural and livestock development in general dairy development included in livestock. The strategy is basically aimed at increasing agricultural production for both domestic and

international markets; the enhancement of which is believed to serve as the catalyst for economic growth and could therefore contribute significantly to achieving food security, creating employment and reducing poverty at the national and household levels.

2.6 Gender in milk value chain

According to FAO *et al.* (2010) the Milk production and marketing are one of the areas where both men and women are involved, however we need to take remark on the gender biases remain prevalent in the dairy sector. In this regard, 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. According to Kristjanson (2003) in Tanzania, even if there is clear division of labour and business activity the society use the women labour at times where shortage of labour to perform men's tasks, such as herding and making available drinking watering to the animals. Even though there exist difference between regions on livestock production system, 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).

Ethiopia has adopted a range of sectoral and general policies that emphasize the critical role of gender, including:

- The National Policy of Ethiopian Women (1993)
- The Development and Social Welfare Policy
- National Action Plan on Gender and Development (2006-2010)
- Growth and Transformation Plan (GTP) (2010-2015)
- Development Plan for Women and Children (2011-2028).

2.7 SNV EDGET Project Dairy Activity

The EDGET project has many activities to support beneficiary dairy farmers in Amhara, Oromia and SNNPRs regions (SNV EDGET project proposal, 2013). The overall objective (impact level results of the EDGET project) of the EDGET project is to increase dairy income of 65,000 farmers' households by 100% and to improved nutritional status of the children and lactating women through increasing consumption of the dairy products. The objectives of the EDGET project are stated as:

1. To enhance sustainable dairy production and productivity, input supply and related services
2. To increase processing and marketing of dairy products
3. To contribute to development of regional institutions and to dairy sector-wide initiatives
4. To develop a knowledge base on dairy related issues and
5. To improve nutritional statuses of children and women through dairy consumption

The project outcome level results are:-

- Volume and quality of milk marketed by targeted farmers increased;
- Diversity and volume of processed dairy products increased;
- Regional Dairy sector & institutional issues better addressed;
- Women & youth participation in dairy farmer organizations and enterprises Increased;
- Project experiences and knowledge base are known and used by Ethiopian dairy sector and beyond;
- Utilization of dairy products increased;
- Increased volume & quality of Milk Produced;
- Improved technologies, strategies, and assets of VC actors;
- Improved coordination and capacity of key regional Dairy sector Institutions;
- Increased use of improved inputs and services by targeted farmers and VC actors;
- Improved awareness of value of dairy products [for children].

At the level of output, the EDGET project interventions has the following expected result, indicators and planned targets in the table 2.1.

Table 2.1 Expected outputs of the EDGET project.

	Areas of Intervention	Expected Outputs	Indicators	Targets
1.	Milk production, input supply and related services	Dairy Farmer Groups promoting milk production and marketing organized and strengthened	Number of dairy farmer groups organized and strengthened	800
			Number of dairy HHs who received training and extension support on dairy development	20,000
		Better quality inputs & services to targeted farmers and VC actors available	Number of Dairy HHs benefited from input supply scheme	20,000
			Number of Input suppliers and dealers supported	15
2.	Milk collection, processing, marketing and related services	Milk collection and cooperative enterprise processing centres established	Number of milk collection and cooperative enterprise processing centres established	160
		Development of Technologies & strategies in processing and marketing supported	Number of dairy farmer groups/FOs received processing and marketing technology support	164 [160+4]
		Business relationships & investments in production, processing and marketing supported	Proportion of business linkages strengthened and supported	To be determined later
3	Sector and Institutional Development/Enabling Environment	Dairy sector stakeholders that address critical constraints for the dairy sector development specifically in the region supported	Number of dairy sector stakeholders supported	To be determined later
4.	Women and Youth Entrepreneurship	Women & youth dairy enterprises established	Number of women & youth dairy FOs and enterprise established	To be determined later
		Women & youth participation in and leadership of farmer organizations and enterprises promoted	% of women and youth who have leadership role in FO's	To be determined later
			% of women and youth who have leadership role in enterprises	To be determined later
			% of women and youth who are members of target FO and Enterprises	To be determined later
5.	Knowledge and Learning	Knowledge base of "best practices" in dairy production, processing and marketing developed and disseminated	Number of knowledge materials developed and disseminated	To be determined later
			Number of knowledge/best practice sharing events organized	68[60+8]
			Number of dairy HHs participated in experience sharing visits	800

Continued

	Areas of Intervention	Expected Outputs	Indicators	Targets
6.	Nutrition	Awareness raising events/campaigns on value of dairy products for child nutrition organized	Number of events organized in the regions	45
			Number of people addressed through awareness raising events/campaigns	To be determined later
		Affordable & accessible dairy products targeting children developed	Number of affordable & accessible dairy products targeting children	To be determined later
			Number of events organized in the regions	45

(Source: SNV EDGET project proposal, 2013)

The key strategies of the EDGET Project

The EDGET project has set the following strategies SNV EDGET project proposal, (2013),

- To work primarily with households (HHs), who gain their first cross bred dairy calf/heifer and pregnant cow resulting from the GoE AI activities and female headed HH who has potential local breed with good condition to be linked the HH with GoE AI service, to increase milk production;
- To work primarily with women who have prime responsibility for calf rearing and dairy activities and to give special priority to female headed households for participation in the project;
- To accelerate the adoption of commercial supplemental feed and production of fodder crops by making available risk sharing discount vouchers to qualified participants;
- To promote hygienic collection and safe transportation of milk by the introduction across Ethiopia of a milking and milk transportation product developed by Global Good, a Division of Intellectual Ventures of Seattle, Washington, USA.
- To promote dairy processing businesses in “rural centres” when farmers are interested to form informal co-operatives (“Pre-coops”) to carry out in-packet milk pasteurisation and improve efficiency in butter, yogurt and cheese making;
- To promote local business initiatives, particularly involving unemployed young people, for local and regional dairy product marketing;
- To ensure the establishment of one agricultural inputs dealership in each woreda stocking, selling and advising on calf and cow supplemental feed, veterinary

medicines and dairy related inputs and equipment. Where feasible the tested practice of advancing inputs against future milk sales (the check-off system) will be developed by linking input dealers to milk collection centres;

- To promote dairy as an outstanding child nutrition product, in part by developing new fortified and flavoured, long shelf life yogurt-based drinks targeted at children in their first 1000 days;
- To link dairy farmers & dairy farmer groups to formal and/or semiformal markets as appropriate through appropriate private sector actors and promote access to microfinance funds and credit schemes when appropriate and possible;
- To contribute to regional institutional and dairy sector wide development through a planned and disciplined organisation development approach, led by a senior project staff;
- To collect and disseminate experience and learning from the project to other actors in the sector.

According to the SNV EDGET project proposal, (2013), the EDGET project contributes to the sector by introducing new innovations like the milking, transporting and storage plastic Jerican to maintain the milk hygiene and safety.

CHAPTER III

RESEARCH METHODOLOGY

This chapter presents the research methodology adopted in conducting in order to achieve the study's objectives. The chapter is thus structured into research design, sample size and sampling procedure, data sources and data collection methods and finally data analyses.

3.1 Research design and approach

The research approach used in this study was qualitative. The data were collected both from the beneficiary dairy farmers and government livestock expert staffs using the questionnaire, observation and discussion. The research design was descriptive in type. This research used Likert scale on identifying whether the EDGET project objectives were met by satisfying the beneficiary dairy farmers. The interventions were related to the forage development, calf feed, milking and transporting storage plastic equipment, agro dealers' establishment for the input supplying and the establishment of the dairy processing cooperatives. The research used primary data by structured interview and questionnaire were developed to the beneficiary dairy farmers and the woreda livestock experts. The research also used secondary data sources which were extracted from the literature like articles, journals and books.

3.2 Sample size and sampling procedure

The EDGET project has operated in the three regions of Amhara, Oromia and SNNPRS and in the selected 51 woredas. The project supported totally 65, 000 small holder dairy farmers. The numbers of household farmers differ from woreda to woreda. The selection of the household farmers was done by the project with the selection criteria like:

- The dairy small householder farmers should be in the EDGET project area;
- The dairy farmers should have milking cows not more than three by the time of selected;
- The priority has been given for those who are female headed house hold dairy farmers;
- Priority has been given to those dairy farmers who have cross breed cow;

- The small holder dairy farmers should be willing to adopt the training practices on his farm;
- The selected farmers need to attend the training packages provided by the project;
- The selected dairy farmers should be willing to form groups for experience sharing at kebele level or cooperative for milk processing and marketing;
- The female headed small holder dairy beneficiary farmer will be selected even if they have local breed cow with good cattle management.

The EDGET project main stakeholder, has participated along with the perspective woreda administrative and EDGET project regional managers at each region who coordinated and managed the EDGET project activity in the field.

The research used as a target population a total of 65,000 smallholder beneficiary dairy farmers of the EDGET project. The Amhara region has a total of 20,000 beneficiary dairy farmers in the East Gojam, West Gojam, Awi and South Gondor Zones, whereas the Oromia region has totally 30,000 beneficiary dairy farmers in East Shewa (4,300 beneficiary), North Shewa (9,500 beneficiary), Arsi (8,200 beneficiary) and West Arsi Zones (8,000 beneficiary). The SNNPR has 15,000 beneficiary dairy farmers in Sidama (11,000 beneficiary) and Gedio (4,000 beneficiary) zones.

The study also obtained some information from the EDGET project staff through structured interview. Information from the woreda livestock office experts of the EDGET project operational 51 woredas (15 woredas in Amhara region, 22 woredas in Oromia region and 14 woredas in SNNPRS region) were also collected to countercheck the information obtained from the EDGET project office. This information also was gathered through structured interview and observation.

The research was also designed by taking one strong and one weak performing woredas in terms of such criteria as forage development, the number of cross breed cow, based on the activity on extension services, milk production and the quick adoption of new technology. The selection was done by consulting the perspective woreda and zonal livestock bureau heads as well as the SNV EDGET regional managers in Amhara, Oromia and SNNPRS regions. Based on the experts' recommendation in Amhara region, Girargie Kebele in Dangla woreda and Weynima Kebele in Jabithenan woreda are selected as strong

performing and weak performing Kebeles in overall extension respectively. Similarly Anokerie kebele Degem woreda and Merko kebele in Boset woreda of the Oromia region were selected as strong performing and weak performing kebeles on extension, respectively. From SNNPR Gediebo kebele in Aleta Wondo woreda and Bunno kebele in Kocherie woreda were selected as strong performing and weak performing kebeles on extension, respectively. The research used the cluster of male headed and female headed house hold per each category (strong or weak performing kebeles) on their perspective regions.

Therefore, the total sample size is 275 HH and the sample size per region, is 92 HH in Amhara, 93 HH in Oromia and 90 HH in SNNPR. The research used the 95 % confidence interval since the sample beneficiary HH are selected based on some criteria and most of the HH comply at least the minimum requirement stated in chapter II.

The sample size was determined by using formula Yemane (1967:886) as shown below.

$$n = \frac{\left(\frac{pqZ^2}{e^2}\right)}{1 + \frac{\left(\frac{pqZ^2}{e^2} + 1\right)}{N}}$$

Where P = estimated proportion of an attribute that is present in the population, 0.5 is taken in this research.

q = (1-p), it will be 1-0.5=0.5

Z = is abscissa of the normal curve that cuts off an area α at tails (1- α equals the desired confidence interval in this context 95%. Z will be 1.96

e = is the desired level of precision, in this research it is 5%.

N = population size

In this research the p (the estimate proportion of attribute that present in the population) is 0.5. The q (failure of the estimate proportion attribute to population) is 0.5. The desired level of precision taken in this research is 5%. Z value is 1.96 (which is the area of the normal curve where is the confidence interval 95%). N is the sample frame and differs from kebele to kebele and shown in table 3. The sample size has also increased by 10% to compensate to the non –respondent due to many reasons.

Table 3.1 Sample size for male and female headed HH from both strong and weak performing woredas

No	SNV EDGET project operational Regions	Number of household dairy farmers in Strong performing kebele				Number of household dairy farmers in Weak performing kebele				Total sample frame of HH per region
		Male headed HH		Female headed HH		Male headed HH		Female headed HH		
		Sample frame	Sample size	Sample frame	Sample size	Sample frame	Sample size	Sample frame	Sample size	
1	Amhara	Girarge kebele in Dangla woreda (strong performing)				Weynima kebele in Jabithenam woreda (Weak performing)				92 HH
		40 HH	36 HH	10 HH	10HH	35 HH	32HH	10 HH	10HH	
2	Oromia	Ano Kerie kebele in Degem Woreda (strong performing)				Merko kebele in Boset Woreda (Weak performing)				93 HH
		48 HH	43 HH	15 HH	14HH	22 HH	21HH	8 HH	8 HH	
3	SNNPRs	Gedibo kebele in Aleta Wondo Woreda (strong performing)				Bunno kebele in Kocherie Woreda (Weak performing)				90 HH
		30 HH	28 HH	22 HH	21HH	27 HH	25HH	11 HH	11HH	

Therefore, 46 samples of questionnaires were taken from beneficiary HH in Girarge kebele and 42 sample in Weynima kebele of the Amhara region. Similarly 57 samples of questionnaires from beneficiary HH in Ano Kerie kebele and 29 sample in Merko kebele of the Oromia region as well as 49 samples of questionnaires from beneficiary HH in Gedibo kebele and 36 sample in Bunno kebele of the SNNPRs region were collected.

Another questionnaire has also been distributed to each kebele DAs (Girarge and Woyanima kebele from the Amhara region, Ano Kerie and Merko kebele from Oromia region, and Gedibo and Bunno kebele from SNNPRs region). At each kebele the government employs three livestock DAs (one on breed, one on forage and the other

will supervise the two). In addition to this, four questionnaire has been distributed to each woreda livestock office experts. Each woreda livestock staffs have seven expert staffs (one head and one staff from breed, one from veterinary, and forage development).

3.3 Data sources and data collection method

The primary data were collected mainly through questionnaires as well as through interviewing of the woreda livestock experts in the EDGET project areas and the EDGET project team members. The secondary data source is extracted from books, Journals, articles and literatures on the subject matter.

The research collect sample randomly from stratified strong performing and weak performing kebeles in extension services from both male headed HH and female headed HH beneficiary dairy farmers.

3.4 Methods of Data analysis

The qualitative data were collected from the respondents through questionnaires were analysed and interpreted by the descriptive analysis of the Statistical Package for Social Sciences (SPSS) Version 16 and Microsoft Excel) software. Likert scale were also used to analyse the respondent beneficiary dairy farmers satisfaction on the EDGET project support. The qualitative data were also be gathered from another questionnaire and interviews to the perspective woredas to see the contribution of EDGET project to the dairy sector. The qualitative data were further organized and presented to respond appropriately on the research questions and draw conclusion as well as recommendations.

The data gathered through the document review like the monthly, bi-annual and annual EDGET project report were analysed and interpreted by comparing with the standard literature review to draw appropriate findings about the research study areas, conclusion and provide recommendations for the better performance of the EDGET project as well as other similar projects in the subject matter.

3.5 Reliability test

Research should always be based on absolutely correct, less defect and errorless measuring instruments, tools or procedures of measurement. For this purpose the acceptability of a measuring instrument should be tested on the principles of adherence to the standards of perfect reliability.

Reliability is the degree to which the measures are free from error and can yield consistent results. It is concerned with the internal consistency of the items. The Cronbach's α measure the consistency with which participants answers items within a scale. According to George and Mallery (2003) the Cronbach's α measure results greater than 0.9 has excellent consistency; greater than 0.8 is Good; greater than 0.7 is acceptable; greater than 0.6 is questionable; greater than 0.5 is Poor; and less than 0.5 is unacceptable. SPSS version 20 has used to produce the values for Cronbach's α .

Table 3.2 Reliability test for each kebele beneficiary farmers of the three regions

No	Regions	Kebele	Cronbach's α
1	Amhara	Male headed household in Giragrie kebele	0.670
		Female headed household in Giragrie kebele	0.710
		Male headed household in Weynima kebele	0.727
		Female headed household in Weynima kebele	0.810
2	Oromia	Male headed household in Ano Kerie kebele	0.740
		Female headed household in Ano Kerie kebele	0.850
		Male headed household in Merko kebele	0.640
		Female headed household in Merko kebele	0.560
3	SNNPRs	Male headed household in Gidibo kebele	0.730
		Female headed household in Gidibo kebele	0.810
		Male headed household in Bunno kebele	0.650
		Female headed household in Bunno kebele	0.560

CHAPTER IV RESULTS AND DISCUSSIONS

4.1 Introduction

The results of the study were classified as per the regions and their categories on the strong performing and weak in performing the woredas in the dairy extension and specific kebeles' in the woredas. In addition to this, the obtained results from the questionnaire were both the beneficiary households and government livestock bureau. The obtained result showed the level of satisfaction of the beneficiary farmers on the EDGET project activity and deliverables and also the contribution of the EDGET project to the dairy sectors.

4.2 Results obtained and discussions from the male and female headed Beneficiary Dairy Farmers of EDGET project

The response collected from the sample beneficiary farmers classified as the general information, satisfaction of the beneficiary farmers on different variable related to the EDGET project goals like beneficiary farmers satisfaction on milk production by the EDGET project support, on the intervention of the EDGET project for an increase on milk consumption specially for children (under two years old and women (pregnant and lactating women) through awareness creation, on the increase in income of the dairy beneficiary farmers from dairy related activity, on the process of EDGET project support on extension and the comparison of the dairy beneficiary farmers dairying practice and neighbouring non-beneficiary dairy farmers..

The questionnaires data were collected from the three regions on both the Strong performing in dairy extension Kebeles and weak performing in dairy extension Kebele.

The questionnaires data were collected from the dairy beneficiary farmers of Amhara region Dangla Woreda (Strong performing in dairy extension at Girargie Kebele) and Jabithenan woreda (weak performing in dairy extension at Weynima Kebele). From the Girargie Kebele, totally 46 questionnaire has been collected (36 male beneficiary dairy farmers and 10 female beneficiary dairy farmers) whereas from the Woynima Kebele, totally 42 questionnaire has been collected (32 male beneficiary dairy farmers and 10 female beneficiary dairy farmers). Similarly, the questionnaire data were collected from the Oromia region data were collected at Degem Woreda (Strong performing in dairy extension at Ano Kerie Kebele) and Boset woreda (weak performing in dairy extension at Merko Kebele).

From the Ano Kerie Kebele, totally 57 questionnaire has been collected (43 male beneficiary dairy farmers and 14 female beneficiary dairy farmers) whereas from the Merko Kebele, totally 29 questionnaire has been collected (21 male beneficiary dairy farmers and 8 female beneficiary dairy farmers). Finally, in SNNPRs region Aleta Wondo Woreda (Strong performing in dairy extension at Gedibo Kebele) and Kocherie woreda (weak performing in dairy extension at Bunno Kebele). From the Gedibo Kebele, totally 49 questionnaire has been collected (28 male beneficiary dairy farmers and 21 female beneficiary dairy farmers). Similarly from the Bunno Kebele, totally 36 questionnaire has been collected (25 male beneficiary dairy farmers and 11 female beneficiary dairy farmers).

The general information were pertinent to the study about the beneficiary dairy farmers on the dairy development activities of the EDGET project. This general information were gender of the beneficiary, the number of dairy cows, the breeding status, the milk yield per cow per day, the percentage of milk consumption at the household level, the land allocation for forage development and concerning different supports from the EDGET project.

4.2.1 General information on dairy beneficiary farmers response in Amhara, Oromia and SNNPRs regions

The results of the general information about the beneficiary farmers was collected through the questionnaire were analysed using the percentage and frequency on the variables as shown below.

Table 4.1. Percentage and frequency of data from the dairy beneficiaries’ response from Amhara, Oromia and SNNPRs regions

No	Variables	Choices for variables for response	Girargie Kebele		Wovnima Kebele		Ano Kerie kebele		Merko kebele		Gedibo kebele		Bunno kebele	
			Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Gender of the Head of ...	Male headed	36	78.3	31	73.8	43	75.4	21	72.4	28	57.1	25	69.4
		Female Headed	10	21.7	11	26.2	14	24.6	8	27.6	21	42.9	11	30.6
2	Number of dairy cows	1 dairy cow	1	2.17	8	19	4	7	5	17.2	13	26.5	9	25
		2 dairy cows	21	45.7	19	45.2	7	12.3	11	37.9	30	61.2	23	63.9
		3 dairy cows	18	39.1	10	23.8	34	59.6	4	13.8	6	12.2	4	11.1
		More than 3 dairy cows	6	13	5	11.9	12	21.1	9	31				
3	Milk yield per cow before EDGET intervention	From 0 up to 2 litre												
		above 2 litre to 3 litre	28	60.9	16	38.1	1	1.8	20	69	30	61.2	24	66.7
		above 3 litre to 4 litre	19	39.1	26	61.9	56	98.2	8	27.6	19	38.8	12	33.3
		Above 4 litre to 5 litre							1	3.4				
4	Milk yield per cow after EDGET intervention	From 0 up to 3 litre												
		above 3 litre to 4 litre	5	10.9	14	33.3	1	1.8	20	69	27	55.1	24	66.7
		Above 4 litre to 5 litre	25	54.3	22	52.4	18	31.6	6	20.7	22	44.9	9	25
		above 5 litre	16	34.8	6	14.3	38	66.7	3	10.3			3	8.3
5	Number of cross breed cows	No cross breed	5	10.9	19	45.2	3	5.3	13	44.8	22	44.9	15	41.7
		One dairy cow	32	69.6	22	52.4	12	21.1	12	41.4	27	55.1	21	58.3
		2 dairv cows	9	19.6	1	2.4	32	56.1	4	13.8				
		3 dairy cows and more					10	17.5						

Continued

No	Variables	Choices for variables for response	Girargie		Woynima		Ano Kerie		Merko kebele		Gedibo kebele		Bunno kebele	
			Freq.	%	Freq	%	Freq.	%	Freq.	%	Freq.	%	Freq	%
6	Number cross breed calves or Heifer	No cross breed	2	4.3	19	45.2	3	5.3	19	65.5	43	87.8	24	66.7
		One dairy calf/Heifer	36	78.3	23	54.8	41	71.9	10	34.5	6	12.2	12	33.3
		2 dairy calves	8	17.4			13	22.9						
		3 dairy calves and more												
7	Percentage of Land allocation for the forage	No land allocation for forage/ mixed	1	2	10	23.8			1	3.4	31	63.3	27	75
		5% and less	19	38	23	54.8	5	8.8	8	27.6	16	32.7	6	16.7
		More than 5% up to less than 10 %	21	42	9	21.4	33	57.9	10	34.5	2	4.1	3	8.3
		More than 10% up to less than 20 %	5	10			15	26.3	9	31				
		More than 20%					4	7	1	3.4				
8	Household satisfaction on	Yes, satisfied	14	30.4	7	16.7	25	43.9	8	27.6	5	10.2	6	16.7
		No, I am not satisfied	32	69.6	35	83.3	32	56.1	21	72.4	44	89.6	30	83.3
9	Percentage of HH income from dairy	From Zero percent to 5%	3	6	20	47.6	2	3.5	12	41.4	25	51		
		More than 5% up to less than 10	27	54	18	42.9	13	24.6	8	27.6	24	49	23	63.9
		More than 10% up to less than 20	12	26.1	4	9.5	22	38.6	9	31			13	36.1
		More than 20% up to less than 40	4	8.7			15	26.3						
		More than 40%					4	7						
10	Percentage of milk consumed at dairy farmers household level	5% and less	1	2.2	28	66.7	11	19.3	16	55.2	6	12.2	2	5.6
		More than 5% up to 10 %	39	89.8	14	33.3	38	66.7	12	41.4	7	14.3	7	19.4
		More than 10% up to 20 %	5	9			8	14	1	3.4	9	18.4	11	30.4
		More than 20%	1	2.2							27	55.1	16	44.4

Discussion

The percentage of women headed household being considered in the beneficiary farmers were less than 30% except at Gidibo and Bunno kebeles which is 42% and 30.6% respectively.

When we looked the general information about the household, the number of cows per household was more in Oromia region at Ano Kerie Kebele. In this Kebele the more than 80% of the dairy beneficiaries of the EDGET project had 3 and more cows. In contrast, in SNNPRs region the Gidibo and Bunno kebele had 6% and 4% of their dairy beneficiaries of the EDGET project had 3 cows per household respectively which was quiet low.

In all study kebeles of the three regions, almost all beneficiary dairy farmers produced milk less than or equal to 4 litres of milk per cow per day before the EDGET project interventions. But after the EDGET project interventions more than 66% of the beneficiary dairy farmers produced more than 4 litres of milk per cow per day except in Merko kebele of the Oromia region and both kebeles of the SNNPRs regions (Gidibo and Bunno kebeles) where more than 31% of the beneficiary farmers in these kebeles produced more than 4 litres of the milk per cow per day. According to FAO (2011), in the year 2010, the average daily milk production was 1.69 litres with average lactation length of about 180 days and mean annual milk yield per cow of 305 litres. So, the intervention of the EDGET project showed significant change on the improvement of milk yield per cow.

Except the Girargie kebele in Amhara region and Ano Kerie kebeles in Oromia region the rest kebeles had more than 40% non-cross breed cow. Whereas the Girargie kebele and Ano Kerie kebeles showed 10.9% and 5.3 % non-cross breed respectively. This showed the breeding of the local cow need a lot of attention. Similarly, when we looked the cross breed calves and heifers, except the Girargie kebele in Amhara region and Ano Kerie kebele in Oromia region, the others had more than 45% non- cross bred calves and heifers. This bred condition indicated that the future potential milk production in this area hasn't improved much whatever effort has been done on the forage and calf feed. According to Land O'lake Inc, and USAID (2010), the smallholder milk producers in Ethiopia do not practice the use of breeding records, and there is the possibility of in-breeding. The government provides semen and AI services at a subsidized cost. But the

success rate or pregnancy rate was not satisfactory as per the response from the beneficiary dairy farmers.

The land allocation for forage development showed that more than 63% of the dairy beneficiary farmers in both Kebeles of SNNPRs region was not allocate land for forage development. But most of these farmers develop forage with limited variety on mixed farm like coffee and 'Chat'. The project also trained farmers to use the crop residue by improving the nutrient with ingredients. According to MoA (1999), the land usage for forage was only 39.4 hectare in the country as a whole. This was quiet low as compare to the large population of cattle in the country (54 million cattle population).

In all kebeles the more than 56% of the beneficiary dairy farmers were not satisfaction from the breeding service. This service was agreed initially on the signed project charter document to be fully carried out by the regional livestock and fishery office of the government. The EDGET project has support for the Woreda livestock office after discussion the AI equipment.

The percentage of income for the households were quiet low from the dairy and dairy related activities. Except the Ano Kerie woreda in Oromia region, 60% of the beneficiary farmers in other kebeles got less than 10% of household income from dairy. This showed that the dairy farmers focus was on the other income generation activity and gave less attention to the dairy or didn't consider dairy as a business. According to Yilma (2011), the Ethiopian majority of smallholders milk producers marketing system was not well developed, had limited access to the market and even showed less than seven percent of the annual milk production was estimated to be marketed at national level in 2010. When we looked the other angle, like the consumption of dairy product by households, 90% of the beneficiary farmers wasn't consume more than 10% of their dairy products at household level.

4.2.2 Results and discussion on the satisfaction of the dairy beneficiary farmers that relate to the EDGET project goals in Amhara, Oromia, and SNNPRs region

The beneficiary dairy farmers satisfaction on different variable related to the EDGET project goals were classified to three categories. These variables were checked on both female and male headed dairy beneficiary household farmers.

- i. On milk production by the EDGET project support,
- ii. On the intervention of the EDGET project for an increase on milk consumption specially for children (under two years old and women (pregnant and lactating women) through awareness creation,
- iii. On the increase in income of the dairy beneficiary farmers from dairy related activity,

After analysing these three variables, the following result has been obtained. The obtained result then discussed well in relation to the beneficiary dairy farmers.

Table 4.2 Descriptive statistics of the variable related to EDGET project goal on the satisfaction of beneficiary farmers in Amhara region

No	Region	Kebel e	Head of Househ old	Variables related to the project goal	Descriptive Statistics				
					Sample size	Range Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic
1	Amhara	Girar gie	Male	Milk consumption increment as the result of EDGET project awareness creation events	32	2.00	2.00	4.00	2.78
				Additional income from Dairy after EDGET	32	1.00	4.00	5.00	4.65
				Milk production increment	32	1.00	4.00	5.00	4.62
				EDGET project over all support process	32	.36	4.36	4.73	4.53
			Female	Milk consumption increment as the result of EDGET project awareness creation events	14	1.00	2.00	3.00	2.71
				Additional income from Dairy after EDGET	14	1.00	4.00	5.00	4.14
				Milk production increment	14	1.00	4.00	5.00	4.21
				EDGET project over all support process	14	.36	3.73	4.09	3.95
		Weyn ima Kebel e	Male	Milk consumption increment as the result of EDGET project awareness creation events	32	2.00	2.00	4.00	2.81
				Additional income from Dairy after EDGET	32	.00	4.00	4.00	4.00
				Milk production increment after EDGET	32	1.00	4.00	5.00	4.03
				EDGET project over all support process	32	.27	4.00	4.27	4.16
			Female	Milk consumption increment as the result of EDGET project awareness creation events	10	2.00	2.00	4.00	3.40
				Additional income from Dairy after EDGET	10	1.00	3.00	4.00	3.80
				Milk production increment after EDGET	10	2.00	3.00	5.00	3.90
				EDGET project over all support process	10	.09	3.82	3.91	3.90

Discussion on Income from dairy and Milk production

In both Kebeles of the Amhara region the beneficiary farmers were satisfied with the income and milk production after the EDGET project intervention except at Weynima kebele's of female headed household. As per discussions made with the beneficiary farmers, they have said that these was due to the draught in the area coupling with less extension support process of the EDGET project to accommodate the female headed households' convenient time and place to attend the training and other extension support.

In all the cases, the female headed household got less satisfaction in terms of the milk production as the result from EDGET project intervention, and on additional income obtained from Dairy after EDGET project interventions as compare to the perspective male headed household beneficiary farmers. For instance, these had been seen on the Girargie Kebele where the male headed household beneficiary farmers showed above 4.5 in the Likert scale mean value as compare to the female headed household (got below 4.2 in the Likert scale).

Discussion on EDGET project support process

In both kebeles of the Amhara region, female headed households showed comparatively less satisfaction as compare to the perspective kebele male headed counter parts on the EDGET project supports processes for the dairy extension and input supply. For instance the mean value for the beneficiary farmers satisfaction on the EDGET project support on the dairy extension was 4.5 for the male headed household while the female head household satisfaction level on the likers scale was 3.9 for Giragie Kebele whereas 4.1 and 3.9 for the male and female headed household respectively for the Weynima kebele. These was due to lack of support for the women headed households while they were trying to attend the trainings, experience sharing event or any field events or the convenience the these sessions for the female headed households. The difference in the extension led to the difference in the milk production and additional income from dairy specially for the male headed households.

Discussion on EDGET project support to increase milk consumption

In both kebeles of the study areas of the Amhara region, both the female headed and the male headed household was not satisfied (with less than 3 point except for Weynima Kebele female headed household with 3.4 point in the Likert scale) on the EDGET project intervention on the milk consumption increment on awareness creation events to improve milk consumption to HH level specifically to children and women (pregnant and lactating). According to the MoA (2012), the per capita consumption of milk was estimated to 19.2 kg/year in Ethiopia which was lower than the African per capita averages consumption of 27 kg/year. This intervention were not done in depth by the EDGET project except intervening on the milk day event on some woredas like Dangla woreda. But there were an intention that after the beneficiary got an increase in milk production they were focusing on the milk marketing and got income. Therefore the project intervened on an increase of the milk consumption by the farmers from their increased milk production specially to children under two years old and women (lactating and pregnant). This required the assessment of the suitable ways and communication channel to aware on the increase of milk consumption to children under two years old and women (lactating and pregnant) than using the milk day once per year.

Table 4.3 Descriptive statistics of the variable related to EDGET project goal on the satisfaction of beneficiary farmers in Oromia region

No	Region	Kebele	Head of Household	Variables related to the project goal	Descriptive Statistics				
					Sample size	Range Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic
1	Oromia	Ano Kerie Kebele	Male	Milk consumption increment as the result of EDGET project awareness creation events	43	3.00	2.00	5.00	2.77
				Additional income from Dairy after EDGET	43	1.00	4.00	5.00	4.55
				Milk production increment	43	1.00	4.00	5.00	4.53
				EDGET project over all support process	43	.64	4.18	4.82	4.60
			Female	Milk consumption increment as the result of EDGET project awareness creation events	14	2.00	2.00	4.00	3.07
				Additional income from Dairy after EDGET	14	1.00	4.00	5.00	4.07
				Milk production increment	14	1.00	4.00	5.00	4.07
				EDGET project over all support process	14	.55	3.64	4.18	3.85
		Merk o Kebele	Male	Milk consumption increment as the result of EDGET project awareness creation events	21	2.00	2.00	4.00	3.24
				Additional income from Dairy after EDGET	21	1.00	4.00	5.00	4.10
				Milk production increment	21	1.00	4.00	5.00	4.10
				EDGET project over all support process	21	3.91	3.45	7.36	4.09
			Female	Milk consumption increment as the result of EDGET project awareness creation events	8	1.00	2.00	3.00	2.88
				Additional income from Dairy after EDGET	8	1.00	3.00	4.00	3.63
				Milk production increment	8	1.00	3.00	4.00	3.63
				EDGET project over all support process	8	.64	3.45	4.09	3.86

Discussion on Income from dairy and Milk production

From the above table, in both Kebeles of the Oromia region the farmers were satisfied with the income and milk production after the EDGET project intervention except at Marko kebele female headed household. These female headed household said that the draught in the area as well as the inconvenience of the extension support led to the lesser milk production and income from dairy. Their forage development was also only limited to backyard system where they were capable of managing the back yard farm to feed their cows.

In all the cases, the female headed house hold showed comparatively less satisfaction in terms of the milk production as the result from EDGET project intervention, and on additional income obtained from Dairy after EDGET project interventions as compare to the perspective male headed household beneficiary farmers. For instance, in Ano-Kerie Kebele where the male headed household beneficiary farmers showed above 4.5 in the Likert scale mean value as compare to the female headed household (got below 4.1 in the Likert scale).

Discussion on EDGET project support process

The EDGET project support processes like the training, experience sharing, input supply and extension services was not convenient for female headed household as compare to the male headed household. This was shown in the Ano Kerie Kebele where the male headed households got more than 4.5 point on the satisfaction of the EDGET project support process as compare to the female headed household with less than 4 point (agreed point). Along with other inputs, these led to an increase of milk production as well as an increase income from dairy as we observed in Table 4.3 with above 4.5 for the male headed household and 4.1 for the female headed household of the Ano kerie kebele.

From the above table 4.3, we observed that there was a difference in the extension service support of the EDGET project between these two kebeles' of the Oromia region. These in turned to the difference in the milk production and income from dairy specially for the male headed household. In addition to the less extension support in the Merko Kebele, draught had affected the forage development and crop residue sources.

Discussion on EDGET project support to increase milk consumption

Similar to the Amhara region, both the female headed and the male headed household was not satisfied on the EDGET project intervention on the milk consumption increment on awareness creation events to improve milk consumption to HH level specifically to children and pregnant women. The above table showed that the farmer satisfaction level on the milk consumption increment on awareness creation events to improve milk consumption to HH level was less (with less than 3 point in the Likert scale) except for the Merko kebele female headed household with 3.4 point in the Likert scale (just above neutral). Although there were different extension material on different packages like on forage development, milk hygiene, cow management, feed management, etc., they didn't have any extension material how the hygienically handled milk consumption help to all human being and specifically to children, lactating and pregnant women.

Table 4.4. Descriptive statistics of variable related to EDGET project goal on the satisfaction of beneficiary farmers in SNNPRS region

No	Region	Kebele	Head of Household	Variables related to the project goal	Descriptive Statistics				
					Sample size	Range Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic
1	SNNPRS	Gidibo Kebele	Male	Milk consumption increment as the result of EDGET project awareness creation events	28	2.00	1.00	3.00	2.57
				Additional income from Dairy after EDGET	28	1.00	4.00	5.00	4.50
				Milk production increment	28	1.00	4.00	5.00	4.54
				EDGET project over all support process	28	.36	4.36	4.73	4.57
			Female	Milk consumption increment as the result of EDGET project awareness creation events	21	1.00	2.00	3.00	2.95
				Additional income from Dairy after EDGET	21	1.00	4.00	5.00	4.14
				Milk production increment	21	1.00	4.00	5.00	4.10
				EDGET project over all support process	21	.91	3.18	4.09	3.62
		Bunno Kebele	Male	Milk consumption increment as the result of EDGET project awareness creation events	25	2.00	2.00	4.00	2.92
				Additional income from Dairy after EDGET	25	2.00	3.00	5.00	4.00
				Milk production increment	25	2.00	3.00	5.00	4.08
				EDGET project over all support process	25	.73	3.45	4.18	3.92
			Female	Milk consumption increment as the result of EDGET project awareness creation events	11	1.00	2.00	3.00	2.91
				Additional income from Dairy after EDGET	11	1.00	3.00	4.00	3.45
				Milk production increment	11	1.00	3.00	4.00	3.82
				EDGET project over all support process	11	.55	3.18	3.73	3.43

Discussion on Income from dairy and Milk production

From the above table 8, in both Kebeles of the SNNPRs region the farmers were satisfied (with the above 4 point) on the income from dairy and milk production increment after the EDGET project intervention except at Bunno kebele female headed household. In addition to the weak support in extension service, the female headed household said that their forage development was also only limited to backyard system where they were capable of managing the backyard farm to feed their cows. The male headed house hold showed comparatively more satisfaction in terms of income from dairy and increment of the milk production with 4.5 and around 4.1 in the Gidibo kebele while 4.0 and around 3.8 in Bunno kebele for male headed and female headed household respectively.

Discussion on EDGET project support process

Similar to other regions of the study areas, the female headed household showed less satisfaction on the EDGET project supports on the extension services and input supply as compared to the male headed households. This has been shown with the 4.5 point for male and less than 3.7 for female in Gidibo kebele whereas the 3.9 and 3.4 for the male and female headed household in Bunno kebele respectively. Up on the discussion with the female headed dairy farmers, they have said that the training time and place were unsuitable for them to attend fully. But they had said that the kebele dairy farmers group formation for experience sharing, and extension services through this group.

From the above table 4.4, we can observe that there was a difference in the extension service support of the EDGET project between these two kebeles' of the SNNPRs region. These in turns to the difference in the income from dairy specially for the male headed household. In addition to the less extension support in the Bunno Kebele, flood and draught had affected the forage development and crop residue sources. According to Felleke (2001), most of the grazing land was over grazed and no care for the soil erosion. These led to the lower yield of forage and crop.

Discussion on EDGET project support to increase milk consumption

Similarly, both the female headed and the male headed household was not satisfied on the EDGET project intervention on the milk consumption increment on awareness creation events to improve milk consumption to HH level specifically to children and women (pregnant and lactating). The above table 4.4 showed that the farmer satisfaction level on the milk consumption increment on awareness creation events to improve milk consumption to HH level was less (with less than 3 point in the Likert scale which was below neutral).

Most of the beneficiary farmers were satisfied with the following support from EDGET project:

1. Establishment of agro input dealer in each woreda
2. Milking, transporting and storage (MTS) plastic support for maintaining milk hygiene.
3. Calf feed support (help for their calves to grow healthy and show early heating)
4. Dairy processing cooperative establishment
5. Dairy products marketing support
6. New trainings like cow signal training, milk hygiene and cow management.
7. Extension support, supervision and experience sharing events.

4.2.3 Results on the comparison of EDGET Project Beneficiaries change with respect to non-beneficiary

The selected dairy beneficiary farmers at perspective kebele were supported by EDGET project. The data were collected from the perspective government livestock expert staffs about the dairy beneficiary farmers with respect to their neighbour non-beneficiary dairy farmers. This variables were analysed with the descriptive statistics and shown in the table below.

Table 4.5 Descriptive statistics of the variables on difference of the EDGET project beneficiary with the neighbour non-beneficiary on milk production, on milk hygienically handling and overall cow management

No	Region	Kebele	Variables	Descriptive Statistics				
				Sample size	Range Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic
1	Amhara	Girargie	The difference of the EDGET project beneficiary with the neighbour non beneficiary on milk production, on milk hygienically handling and overall cow management	9	.67	4.00	4.67	4.37
		Weyni ma Kebel	The difference of the EDGET project beneficiary with the neighbour non beneficiary on milk production, on milk hygienically handling and overall cow management	9	1.33	3.00	4.33	3.89
2	Oromia	Ano Kerie	The difference of the EDGET project beneficiary with the neighbour non beneficiary on milk production, on milk hygienically handling and overall cow management	9	0.67	4.00	4.67	4.44
		Merko Kebele	The difference of the EDGET project beneficiary with the neighbour non beneficiary on milk production, on milk hygienically handling and overall cow management	9	1.00	3.33	4.33	3.93
3	SNNPRs	Aleta Wondo	The difference of the EDGET project beneficiary with the neighbour non beneficiary on milk production, on milk hygienically handling and overall cow management	9	1.00	4.00	5.00	4.48
		Bunno Kebele	The difference of the EDGET project beneficiary with the neighbour non beneficiary on milk production, on milk hygienically handling and overall cow management	9	1.33	3.33	4.67	4.15

Discussion

- The result showed that all except Weynima woreda livestock experts agreed on the positive difference of the EDGET project beneficiary farmers and the neighbour non-beneficiary dairy farmers with the result of the likert scale more than 4 (the average point of the likers scale between 4.14 to 4.48). The Weynima woreda even also was closer to point 4 from neutral (which is 3.92 point). This improvement in milk yield were due to the forage development (with different forage seeds), use of the crop residue effect, calf management and overall cow management led to an increase in the milk yield per cow per day as compared to the neighbour dairy farmers. According to Yilma (2011), cultivation of improved forage crops suitable for the different agro-ecological zones and farming systems with accompanied technologies resulted in nutritionally superior and more yield biomass per unit area as compared to tropical natural pasture led to an increase dairy farm income through increased milk yield. But some of the forage don't sustain the weather and got somewhat lower result of satisfaction. Since the most farmers were mixed farmers with the crop and animal husbandry in the EDGET project beneficiary farmers, they had many crop residue for their animal feed. But since crop residue missed the mineral and nutrient, the EDGET project train the farmers how to improve it with the minerals and provide the inputs required through agro dealers.
- In addition to the milk yield increment per cow per day, the EDGET project dairy farmers had an improvement in hygienically milk handling. This was due to training, extension services and the (MTS) Milking, transporting and storage plastic Jerican provided by the EDGET project. This MTS plastic Jerian not only reduced the chance of milk contamination through usage of different equipment for milking, storing and transporting of milk but also helped to identify the Mastitis disease on the tits and go for the treatment.

4.3 Results obtained from the Livestock office Experts on the contribution of EDGET project to Dairy sector

The data were collected through questionnaire from livestock development and fishers Bureau of the perspective region woredas'. The questionnaires were distributed all livestock expert staffs (one to the woreda live stock head, two for each of the forage expert, breed expert, veterinary experts, and for the kebele agricultural experts and one for the DA) of each woreda and obtained 9 response from each kebeles. The questionnaire were classified in to three parts. The first part was about the general information about the EDGET project and the government support to the dairy farmers. The second part focused on the EDGET project contribution to the sector, the level of the project objective alignment to the government office objectives and assessment of EDGET project activity by the government livestock office. Finally the evaluation of the EDGET project beneficiary with the neighbour non-beneficiary farmers by the government livestock staffs.

4.3.1 General information obtained from the government livestock experts on the EDGET Project contribution to the dairy sector

The results of the general information collected from the government offices through the questionnaire were analysed using the percentage and frequency on the variables as shown below.

Table 4.6 Percentage and frequency of data from the government offices (livestock and fishery bureau) response from Amhara, Oromia and SNNPRs regions

No	Variables	Choices for variables for response	Girargie Kebele		Woynima Kebele		Ano Kerie Kebele		Merko kebele		Gedibo kebele		Bunno kebele	
			Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Work experience in this sector (livestock or dairy sector)	1 year and below 1 year			3	33.3			3	33.3			3	33.3
		1-2 year	1	11.1	2	22.2	1	11.1	4	44.4	1	11.1	4	44.4
		3-4 year	6	66.7	3	33.3	6	66.7	1	11.1	3	33.3	1	11.1
		4 years and above	2	22.2	1	11.1	2	22.2	1	11.1	5	55.6	1	11.1
2	EDGET support To Institutions	Yes	7	77.8	6	66.7	7	77.8	6	66.7	7	77.8	6	66.7
		No	2	22.2	3	33.3	2	22.2	3	33.3	2	22.2	3	33.3
3	EDGET change To Sector	Yes	7	77.8	8	88.9	8	88.9	7	77.8	8	88.9	6	66.7
		No	2	22.2	1	11.1	1	11.1	2	22.2	1	11.1	3	33.3
4	Risk management of the EDGET project	Strongly disagreed												
		Disagreed	4	44.4	5	66.7	4	44.4	5	55.6	4	44.4	6	66.7
		Neutral	3	33.3	3	33.3	4	44.4	3	33.3	3	33.3	2	22.2
		Agreed	2	22.2	1	11.1	1	11.1	1	11.1	2	22.2	1	11.1
		Strongly agreed												
5	Livestock Breed Service To Dairy Farmer	Yes	5	55.6	3	33.3	5	55.6	4	44.4	5	55.6	2	22.2
		No	4	44.4	6	66.7	4	44.4	5	55.5	4	44.4	7	77.8
6	Livestock Veterinary Service To Dairy Farmer	Yes	7	77.8	3	33.3	7	77.8	3	33.3	7	77.8	3	33.3
		No	2	22.2	6	66.7	2	22.2	6	66.7	2	22.2	6	66.7
7	Livestock Forage Seed Supply To Dairy Farmer	Yes	2	22.2	3	33.3	2	22.2	4	44.4	2	22.2	4	44.4
		No	7	77.8	6	66.7	7	77.8	5	55.5	7	77.8	5	55.5
8	Livestock Support On Milk Marketing To Dairy	Yes			3	33.3			2	22.2			3	33.3
		No	9	100	6	66.7	9	100	7	77.8	9	100	6	66.7
9	Livestock Support On Milk Processing To Dairy Farmer	Yes												
		No	9	100	9	100	9	100	9	100	9	100	9	100

Discussion

In the three region of the study areas of the EDGET project, more than 55% of government livestock office expert staffs were having less than 3 years of experience for those woredas performing weak in the dairy extension. On the other hand, more than 88 % of the government livestock office expert staffs were having more than 3 years of experience for those woredas performing well in the dairy extension. This was the gap for the experts to support the dairy farmers on cow management, breeding, veterinary and forage.

Most of the government office staffs in the three regions of the study areas (more than 66.7%) said that the EDGET project had given great support to the livestock institutions. Most of the government staffs also said the EDGET project made a change to the dairy sector specially on the milk quality and hygiene by provision of MTS plastic and calve feed.

Since the breeding service was not within the scope of EDGET project, this research tried to get response from the government staffs. The government livestock experts of the three regions showed that more than half of the weak performing kebeles (55.6%) were not satisfied with the breeding services they were providing. Even in well performing in extension kebele only 55.6 % of the government staffs were satisfied with the pregnancy rate of the breed service. Up on the discussion with the government staffs, they said that they need proper breeding material and logistic to provide timely service to the dairy farmers.

Similarly, the most of the government livestock expert staffs of the three regions (more than 55.5%) showed their dissatisfaction with their service on the forage development to the dairy farmers. These was mainly due to budget constraint to buy different forage seeds and logistic arrangement for the training and extension.

The majority of the government livestock expert staffs (more than 66%) said that their support on milk marketing service to the dairy farmers was quiet low. All the government livestock expert staffs also said that their support to the dairy farmers on the milk processing was not yet started. This was due to the limited knowledge in the area of dairy processing (specially on the mainainance and training of the dairy processing operators|), on the

leadership and on the marketing and also lack of coordination of the activity with the other government agency called cooperative agency.

In all the three regions of study area most of the government livestock expert staffs (more than 77.8 % staffs) said that the risks of the EDGET project was not well managed. Up on the discussion with the government livestock staffs, they said that the project didn't consider the drought and frost for forage development and couple the water harvest or irrigation along with the other activities.

Figure 4.1. In Amhara Dangla woreda livestock experts on the EDGET project risk management

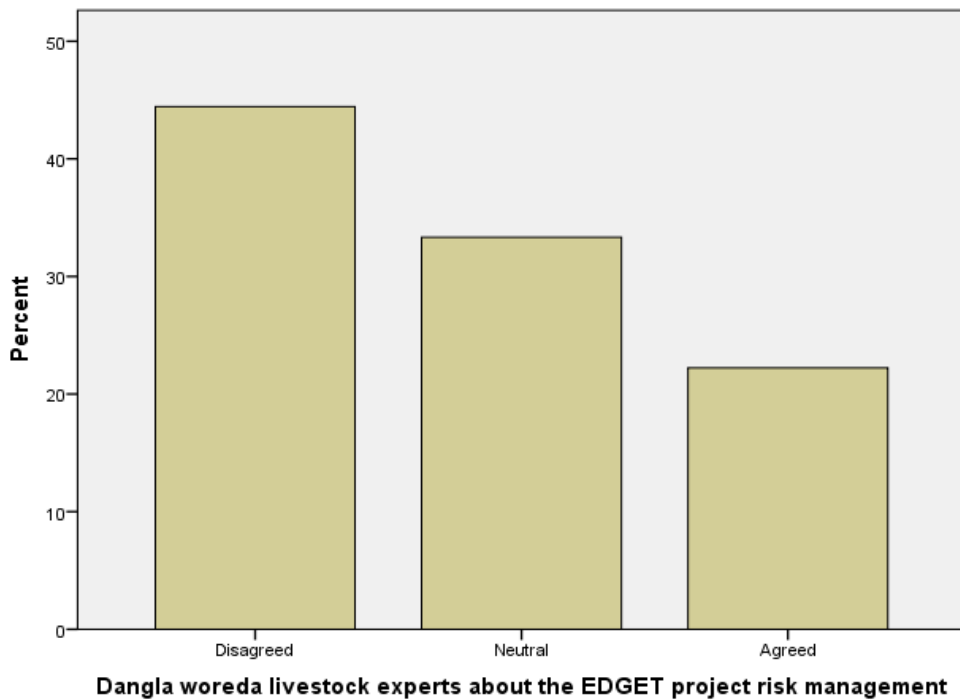


Figure 4.2 In Amhara region Jabithenan woreda livestock experts on the EDGET project risk management

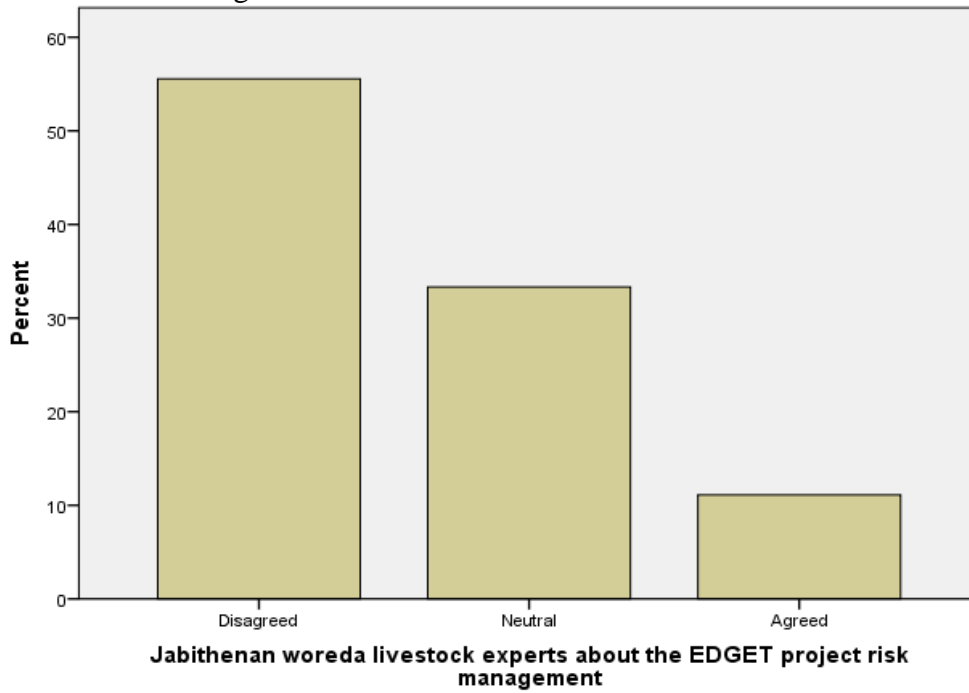


Figure 4.3 In Oromia Dangla woreda livestock experts on the EDGET project risk management

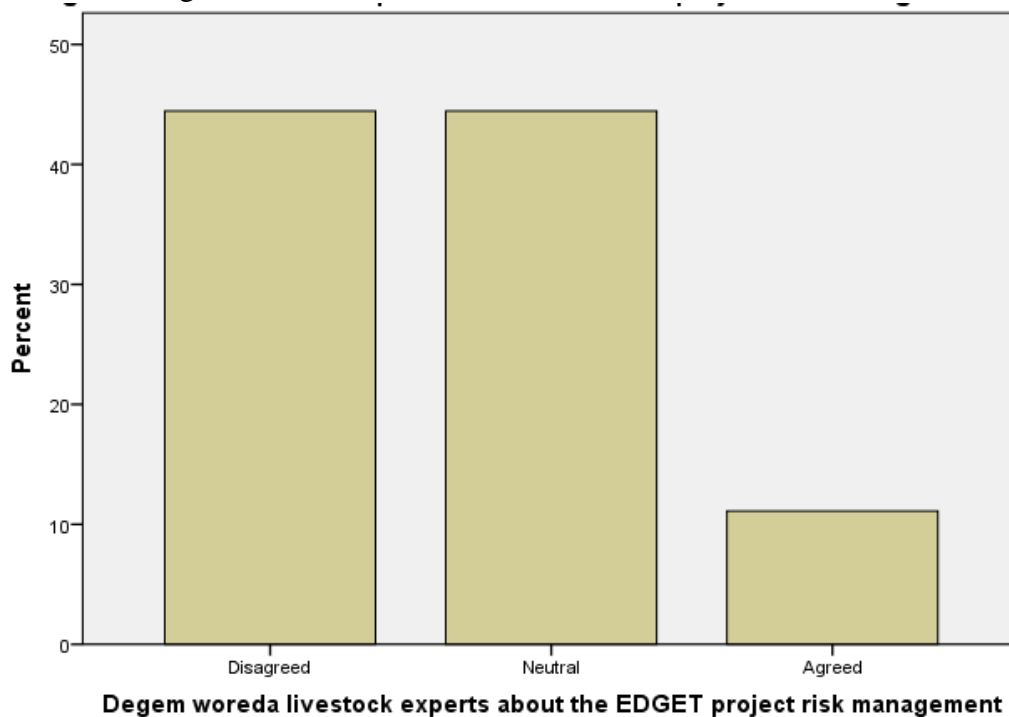


Figure 4.4 In Oromia Boset woreda livestock experts on the EDGET project risk management

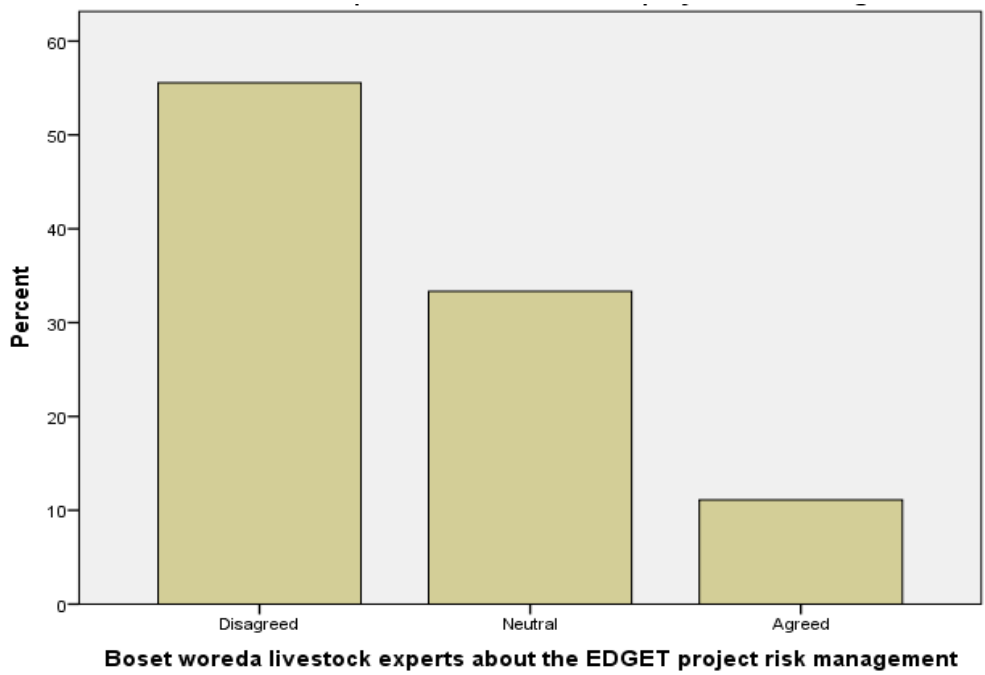


Figure 4.5 In SNNPRs region Aleta Wondo woreda livestock experts on the EDGET project risk management

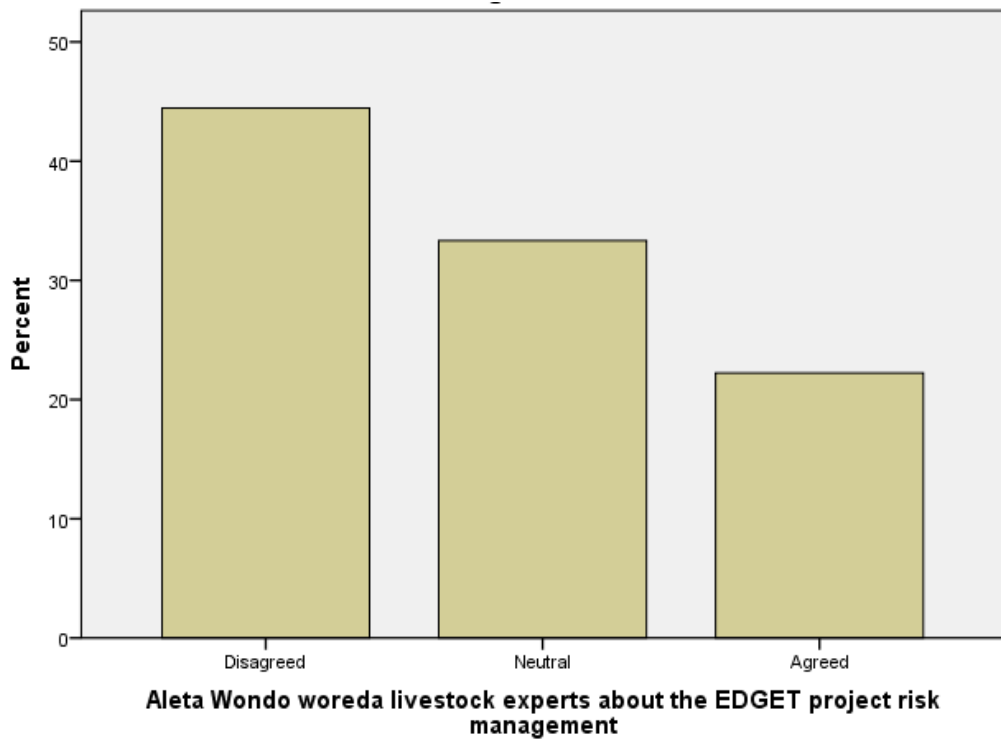
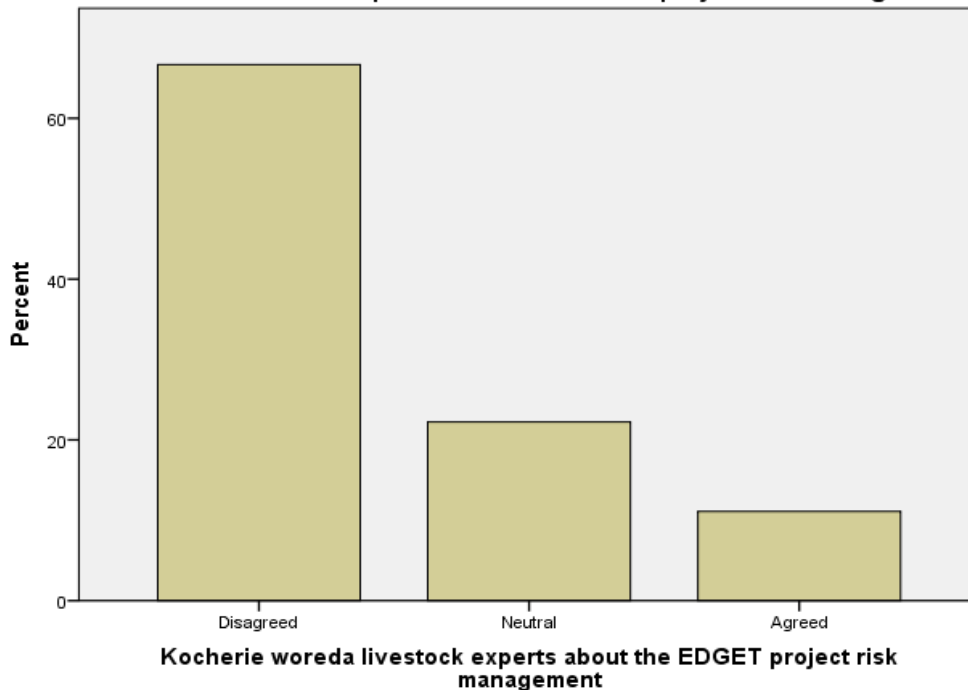


Figure 4.6 In SNNPRs region Kocherie woreda livestock experts on the EDGET project risk management



Discussion

In Amhara region both the Dangla and Jabithenan woreda livestock experts showed their disagreement on the well risk management of EDGET project on the Figure 4.1 (with more than 50% of the livestock experts disagreement) and also on Figure 4.2 (with more than 40% of the livestock experts disagreement) respectively. They were explaining on the discussion that the EDGET project miss to manage the risk related to the draught for the forage development, considering the frost resisting forage type for the high land areas, and the delayence due to the lack of foreign currency to import the materials and machinery for the MTS plastic Jerican. But quiet few livestock expert staffs were agreed on the risk management of the EDGET project for both Dangla and Jabithenan woredas with slightly above 20% and slightly above 10% respectively.

Similarly, in Oromia region both the Dagem and Boset woredas livestock experts showed their disagreement on the well risk management of EDGET project on the Figure 4.3 (with more than 40% of the livestock experts disagreement) and Figure 4.4 (with more than 50% of the livestock experts disagreement) respectively. In both Kebeles the slightly more than

10% of the livestock expert staffs agreed on the well management risks of the EDGET project.

In SNNPRs region both the Aleta Wondo and Kocherie woredas livestock experts showed their disagreement on the well risk management of EDGET project on the Figure 4.5 (with more than 40% of the livestock experts disagreement) and Figure 4.6 (with more than 60% of the livestock experts disagreement) respectively. Only slightly above 20% of the livestock expert staffs from the Aleta Wondo woreda agreed on the well management risks of the EDGET project whereas below 20% of the livestock expert staffs from the Kocherie woreda agreed on the well management risks of the EDGET project.

4.3.2 Results and discussion on the EDGET Project alignment with the government plan and contribution to dairy sector

The collected data from the government office has been analysed with the descriptive statistics from the three regions Amhara, Oromia, and SNNPRs on the EDGET project contribution for the dairy sector. This analysis had three variables namely contribution of EDGET project to the sector, alignment of the EDGET project with the growth and transformation plan of the country, and finally the assessment of the overall EDGET project activity by the government livestock office. The result of the analysis has been shown below.

Table 4.7 Descriptive statistics of variables on the EDGET Project contribution to dairy sector and alignment with the government plan

No	Region	Kebele	Variables	Descriptive Statistics				
				Sample size	Range Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic
1	Amhara	Girargie	Assessment of the EDGET project contribution to the sector by livestock government bureau	9	1.50	3.50	5.00	4.42
			Assessment of the livestock office plan and activities alignment with the EDGET project support to the beneficiary dairy farmers	9	.83	4.00	4.83	4.26
			Assessment of the EDGET project support to the beneficiary by government livestock staffs	9	1.00	3.67	4.67	4.33
		Weynima Kebele	Assessment of the EDGET project contribution to the sector by livestock government bureau	9	1.33	3.33	4.67	3.96
			Assessment of the livestock office plan and activities alignment with the EDGET project support to the beneficiary dairy farmers	9	.67	4.00	4.67	4.33
			Assessment of the EDGET project support to the beneficiary by government livestock staffs	9	1.00	3.75	4.75	4.25
2	Oromia	Ano Kerie	Assessment of the EDGET project contribution to the sector by livestock government bureau	9	1.00	3.67	4.67	4.30
			Assessment of the livestock office plan and activities alignment with the EDGET project support to the beneficiary dairy farmers	9	1.17	3.50	4.67	4.09
			Assessment of the EDGET project support to the beneficiary by government livestock staffs	9	1.00	3.75	4.75	4.50

Continued

No	Region	Kebele	Variables	Descriptive Statistics				
				Sample size	Range Statistic	Minimum	Maximum	Mean
	Oromia	Merko Kebele	Assessment of the EDGET project contribution to the sector by livestock government bureau	9	1.33	3.33	4.67	3.96
			Assessment of the livestock office plan and activities alignment with the EDGET project support to the beneficiary dairy farmers	9	.67	4.00	4.67	4.33
			Assessment of the EDGET project support to the beneficiary by government livestock staffs	9	1.00	3.75	4.75	4.25
3	SNNPRS	Aleta Wondo	Assessment of the EDGET project contribution to the sector by livestock government bureau	9	.67	4.00	4.67	4.33
			Assessment of the livestock office plan and activities alignment with the EDGET project support to the beneficiary dairy farmers	9	1.00	3.83	4.83	4.19
			Assessment of the EDGET project support to the beneficiary by government livestock staffs	9	1.00	3.50	4.50	4.36
		Bunno Kebele	Assessment of the EDGET project contribution to the sector by livestock government bureau	9	1.0	3.7	4.7	4.33
			Assessment of the livestock office plan and activities alignment with the EDGET project support to the beneficiary dairy farmers	9	1.17	3.67	4.83	4.17
			Assessment of the EDGET project support to the beneficiary by government livestock staffs	9	.75	4.00	4.75	4.44

Discussion

- The result showed that all except Woynima and Merko woredas agreed the about contribution of the EDGET project to the sector with the result of the Likert scale more than 4 (the average point of the likers scale between 4 to 4.83). The Weynima and Merko woredas even also was closer to point 4 from neutral (which is 3.96 point). According to FAO (ENA, 2004), the value of annual milk and dairy product losses due mainly to mishandling across five African and the Middle East countries (Kenya, Tanzania, Uganda, Ethiopia and Syria) was over US \$90 million. Therefore, a lot has to be done to reduce such losses and improving quality were effective ways of making more and safer milk available. Most of the woredas said that the milking transportation and storage (MTS) equipment contributes a lot for post-harvest losses and maintaining the milk hygiene from the dairy producers' households (by reducing chance of contamination by bacteria through the usage of different equipment with the dairy value chain). This material helped to the farmers to identify the tits problem like mastitis at early stage. This milking transportation and storage (MTS) were used for milking, transporting, storing and even don't need any measuring plastic can to measure milk while selling the milk since it has already been graduated.
- Beside to the MTS, most of them were happy on different training package (specially cow signal and dairy as a business) and the calf feed supplement to calve with different formula. They were also said that the EDGET project changed the awarance of the farmers to allocate land for forage development. Some of the beneficiary farmers were shifting some of the crop land for forage development after analyzing the benefit from dairy product yield. After identifying the demand for the forage seed, some of the dairy beneficiary farmers were even engage on the forage seed multiplication and sale to other farmers and institutions.
- The EDGET project were also develop the training material for the different packages. These training materials were forage development, calf management, cow management, milk quality and hygienically processing, dairy business management, cooperative leadership, farm economics.

- Most of the government livestock bureau experts said that the cow signal training were new to most of the expert to the dairy sector. The training was provided by the EDGET project with the trainer from the Wageningen University livestock experts. The EDGET project has also bought the books from the Wageningen University and distribute to the three regions.

- Similarly, when the EDGET project support to the beneficiary dairy farmers were evaluated by government livestock expert staffs as well as EDGET project activity evaluated on the alignment with the livestock office plan, the average result of the Likert scale showed above 4 or agreed result in both variables (between 4.09 to 4.5). According to the MoA and ILRI (2015), indicated the plan to increase the availability of forage feeds by improving forage feed production as well as marketing, and improve the breeding service and to achieve the result of an increase of 93% national cattle milk production over the GTP II period (from 4132 in 2015 to 7967 liters in 2020); an increase in the contribution of cow milk to the national GDP from ETB 28 billion in 2014/15 to ETB 52.9 billion in 2019/20; and finally to over projected domestic consumption requirements by 2020 from the surplus of milk production of 2501 million liters of milk.

CHAPTER V

SUMMARY OF FINDING, CONCLUSION AND RECOMMENDATION

The study was conducted to assessment of the contribution of enhanced dairy sector growth project to farmers in the Amhara, Oromia and SNNPRs regions. This chapter offers summary of the major findings of the study, the conclusion drawn and the recommendations pertinent to the study.

5.1 Summary of finding

This summary of finding section had three parts on the EDGET project beneficiary dairy farmers satisfaction, on the contribution of the EDGET project to the sector and on the on the EDGET project beneficiary dairy farmers difference on milk yield and dairy practice with the neighbour non-beneficiary dairy farmers

5.1.1 Summary of findings on the EDGET project beneficiary dairy farmers satisfaction

The major finding showed that in all the three regions the EDGET project dairy beneficiary farmers were satisfied (with more than 4 or agreed point in the Likert scale) in terms of the milk production and an additional income obtained from Dairy after EDGET project interventions except female headed households of Weynima, Merko and Bunno kebeles' (closer to 4 point in the Likert scale). This was due to the inconvenience of the extension supports time and place for the female headed households coupling with the draught as well as flood in these kebeles.

The female headed households were less satisfaction as compare to male headed households in terms of EDGET project extension support process. Since these female headed households were tied more on household activities, they weren't able to take training, experience sharing events and any extension service supports from farmers training support.

In contrary to milk production and income from dairy, all of the beneficiary dairy farmers in all the study areas, were not satisfied on the EDGET project intervention on the increment of dairy products consumption habit through awareness creation events to HH level specifically to children, lactating and pregnant women. These was summarized with dissatisfaction of average result above the disagreement and below the neutral point (2 or

dissatisfaction to 3 or neutral point in the Likert scale) result except the female headed household of Weynima and Merko kebeles as well as the Male headed household of the Ano-kerie kebeles that showed slightly above neutral on the average Likert scale (slightly above 3 point).

The major finding on the breeding service showed that in all the study areas except the Girargie kebele in Amhara region and Ano Kerie kebeles in Oromia region the percentage of non-cross breed cow was more than 40%. This was mainly due to lack of experienced and logistic service avail for the experts. According to Yilma (2011), the indigenous breed in Ethiopia accounted for 99.19 percent, whereas the hybrids and pure exotic breeds were represented by 0.72 and 0.09 percent, respectively.

The study summarized that most of the Amhara and Oromia region dairy beneficiary farmers has allocated land for forage development. But in both kebeles in the SNNPRS region majority of the dairy beneficiary farmers didn't allocate land for forage.

The major finding of the study indicated that before EDGET project intervention the milk yield per cow per day for all beneficiary dairy farmers were less than 4 litre per cow per day while after the intervention of the EDGET project, majority of the dairy beneficiary farmers (more than 66%) in all region produced more than 4 litre per cow per day.

The Study indicated that the percentage of women headed household being considered in the beneficiary farmers were less than 30% except at Gidibo and Bunno kebeles which is 42% and 30.6% respectively. This should be improved by through looking the beneficiary selection process.

5.1.2 Summary of findings on the EDGET project contribution to the dairy sector

The major findings on the contribution of the EDGET project to the dairy sector revealed that the EDGET project contributed for the dairy sector with average Likert scale point ranging from 4 to 4.5 point except the Merko and Weynima kebeles with the average point of 3.96 which was above neutral and closer to agreed point.

The EDGET project activities was summarized by government livestock expert staffs on the support to the dairy beneficiary farmers and also on the alignment of the EDGET project activity with the government livestock master plan and showed the agreed result on the average point ranging from 4.09 to 4.5 point.

The study showed that the livestock expert staffs of the weak performing kebeles in the livestock extension was characterized by less experienced in their expert as compared to the well performing kebele, less participation of the livestock staffs on the EDGET project launching or review sessions, even most of their staffs didn't read the EDGET project document and with respect to the breeding success was even worse in the weak performing in extension kebele as compared to well performing kebeles. Whereas, the beneficiary farmers of the weak performing kebeles in the livestock extension was characterized by most of their dairy beneficiary farmers stay lesser time with the EDGET project support as compare to well performing kebele, and even most of the beneficiary farmers had less number of cows as compare to well performing kebele, and also less number of crossbred cows as well as calves as compare to well performing kebele except for the SNNPRS region.

The study revealed that all of the dairy farmers had shown better result from the introduction of calf feed (special concentrate formula feed for calves) support and follow up from EDGET project to grow fast their calf well at healthy condition. This calves showed heat (maturity) early and gave more volume of milk. They said that they haven't got such extension support in mass before.

The study revealed that the risk management of the EDGET project was not well managed properly as 77% of the livestock expert staffs showed their dissatisfaction. Their disappointment was focused on the draught, forest, lack of consideration of the delayance of the procurement that come from aboard and flood.

The major finding of the study showed that majority of the government livestock experts (more than 66%) expressed their limited support to the dairy farmers on the milk processing and marketing. This was mainly due to lack of depth knowledge in the areas and lack of coordination of effort with government cooperative agency Bureau.

5.1.3 Summary of findings on the EDGET project beneficiary dairy farmers

difference on milk yield and dairy practice with the neighbor non-beneficiary dairy farmers

In all the study kebeles the government livestock expert staffs showed their agreement with average point of above 4 with the range of 4.18 to 4.48 point that the EDGET project beneficiary dairy farmers made difference on the improvement with respect to the neighbour dairy beneficiary farmers on the increment of the milk production per cow per day, on milk

hygiene, on forage development and over all cow management except the Weynima kebele with the average point of 3.92 which is closer to 4.

5.2 Conclusion

The study showed that the breeding service was not effective to obtain the intended result of high number of crossbred calves. According to the scholars Yilma (2011), the indigenous breeds which was characterized by the low productivity as they produced 400–680 kg of milk/cow per lactation period while that of the crossbreed animals that had a potential to produce 1120–2500 litres over 279 days lactation period. This result implied that the other efforts to get higher milk yield per cow like forage development, cow and calf management, concentrate feed and calf feed supply, cow health services etc. would have been given far more better result than if all the above efforts were coupled with the effective breeding service to have more number of crossbred cows. Therefore, the government livestock must assess thoroughly the core problem in the breeding for the better success on the improvement of milk production.

Generally, most of the EDGET project the dairy beneficiary farmers were satisfied on the variables related to EDGET project goal like an increment of the milk production per cow per day and obtaining additional income from the dairy business (with more 4 point in the Likert scale except the female headed households of Weynima, Merko and Bunno kebeles' were comparatively less satisfied with closer to 4 point in the Likert scale). The reason for this was due to the inconvenience of the extension support time and place for this female headed household along with the draught. According to FAO, (2017) Women and Men face different challenges in the dairy sector. In contrary to milk production, almost all of the EDGET project beneficiary dairy farmers weren't satisfied on the awareness creation intervention to increase the milk consumption habit to children and women (lactating and pregnant women) at the household level. This result implies that the EDGET project success will not be completed unless there is advocation on the health benefit of dairy product consumption their children and women (pregnant and lactating). In addition to these, it will also create demand for milk in the local area. Such awarance would also create a condition that the dairy farmers give more care and focus for the dairy business.

When we see the EDGET project risk management activity, most of the government livestock staffs didn't agree on the proper management of risk related to draught, flood,

forest and delayance of the input that were procured from abroad. This implies that some of the activities were affected since there were less preparations and response. Therefore the EDGET project must update the list of the risk registry document and use the project risk management steps like risk identification, planning, measuring, analysis (both qualitative and quantitative), response, audit and document.

As most of the government livestock expert staffs were animal science, veterinary, breeding and animal nutrition and forage experts by profession, the EDGET project need to provide the dairy processing, cooperative leadership and marketing training to the government livestock expert staffs. This will help for the suitability of the dairy processing cooperatives and milk collection centres to function properly. Such support is highly important since milk is perishable product unlike other crops, needs processing (high valued dairy product like butter and cheese) and cooling equipment to prolong its shelf life and get time to transport to market area. This implies the farmers will get better income from their dairy product through the access to the market at rural area, get dividend and also will have better bargaining power with bulk dairy products.

Since most of the beneficiary farmers of the weak performing kebeles in the livestock extension was characterized by staying lesser time with the EDGET project support as compare to well performing kebeles. The EDGET project need to work with stalkholders on the commitment of the dairy farmers while selecting the beneficiary dairy farmers. This therefore help the EDGET project to track the progress of these beneficiary farmers throughout the project period of time.

As the government livestock expert staffs in the perspective area confirmed that the EDGET project had contributed to the dairy sector with different activities, the government and other stalkholders working in the dairy sector need to replicate this to other areas of the country. This will lead to the better improvement in the dairy sector.

Since the government staffs indicated that the EDGET project activities showed important support to the dairy beneficiary farmers, this support resulted in creating significant difference on the improvement with respect to the neighbour dairy beneficiary farmers on the increment of the milk production per cow per day, on milk hygiene, on forage development and over all cow management. Therefore, this led to better result.

The EDGET project activities were alignment with the government livestock master plan and GTP II on the milk yield increment, on forage development, cow management, capacity building and on milk hygiene, the government livestock institution working on the dairy development and other developmental agents need to take the lesson and knowledges from the EDGET project. This led to the government staffs to review and coordinate their activities with the EDGET project.

Since the percentage of the female headed house hold was less than 30% all the study areas except in the Gidibo and Bunno kebeles, both the EDGET project and government livestock Bureau should review the criteria for more participation of female headed household. This implies for the female headed household to get more support and get better income from dairy.

5.3 Recommendation

The extension support process of the EDGET project need to accommodate the female headed household's convenience in terms of time and place so that they could participate well.

Even if the there was no draught in the some of the EDGET project areas, the success of the forage development depends up on the water availability in the area. Hence, the study recommends for other developmental projects or if the EDGET project had budget to implement the irrigation or use of the available water source like using the simple rope pump in case the underground water table is closer for the better success of the forage throughout the year. In addition to this this will help in draught season for their crop and forage development. In addition to this, it is better for the EDGET project and the government livestock ministry to aware for the farmers that some of the forage help for the soil conservation in case of erosion from flood along with the other soil conservation methods and introduction of the frost resistance forages for the frost affected areas. Since some of the farmers use rotation to recover the soil mineral, it would have been better to aware the dairy farmers to plant the legumes forage that fix nitrogen from air for the soil while using the growing forage for their cattle.

Since there were dissatisfaction on the EDGET project advocation on the intervention of the EDGET project for an increase on milk consumption specially for children (under two years old and women (pregnant and lactating women) through awareness creation), the study

recommends to get experience with the Ministry of Health related activity through the use of the healthy extension workers and community healthy voluntary workers.

Since there was some delayance of the EDGET project activities while procuring the inputs like ingredient for the MTS making, and dairy processing equipment from the abroad, therefore the study recommend to make request ahead considering many delayance factors.

The EDGET project had perform many activities to satisfy the dairy beneficiary farmers like provision of the training to the end user farmers and ToT training for the government staffs for sustainability of the activity. But there was no evaluation of the training after training was conducted. Therefore, the study recommend the EDGET project to perform post training evaluation whether the provided training hit the intended target or not. Some of the dairy beneficiary farmers said that the convenience of the training time and place need to be arranged with the consultation of the farmers group the woreda experts, since they would have been busy in some seasons not to be late or miss for the incoming rain or sometimes the harvest time.

Since most of the government livestock staffs were agreed on the contribution of the EDGET project to the dairy sector, the study will recommend for the government livestock institutions on the disseminate or replicate of these contribution for the other areas of the country.

The study also recommend to strengthen the private agro dealers in the EDGET project areas and to establish others outside the EDGET project areas for better provision of input in their local area with easy ways to dissemination the MTS and calf feed to the dairy farmers.

Since one approach can't fit to all models, the study recommends the EDGET project to use different approach by reducing the forage development focus to the areas where the land is comparatively more scarce by more advocation of the concentrate and calf feed along with the efficient use of the crop residue through the improvement of the nutritional value of the forage with different ingredients like molasses, salt and some minerals. In addition to this, the farmers need to use the forage withed with crops (mixed with crops by consultation to the crop experts). Up on the data collection the research have seen the Dasho grass and elephant grass planted on the coffee and 'Chat' farm in SNNPRs region.

As most of the government like stock expert staffs had limited knowledge on the areas of the dairy processing (specially on the mainainance and training of the dairy processing

operators), on the leadership and on the marketing of the dairy products, the study recommends the EDGET project or the government livestock office to organize the ToT training in the area so that the dairy processing cooperatives get better support to sustain their business and get better income from the dairy product. In the dairy processing and marketing area, the study found out that there was lack of coordination between the other government cooperative agency and government livestock ministry. Therefore, the study recommends that these both these institutions and other stakeholders in the area need to come together and coordinate their activities by planning together, implementing and evaluating the activities.

Similarly, since most of the breeding experts lack the practical experience, the study recommends provision of the practical training and follow up along with the organizing the experience sharing on the best practices. Beside to these, there should be meeting to thoroughly discussion and with the EDGET project stakeholders, researchers in the animal breeding area, the government livestock experts and others and identify the root cause and solve the problem.

Since the dairy issues are concerned by different institutions like ministry of industry, ministry of livestock and fishery, Ethiopian food, medicine and environmental health administration and control authority, Ethiopian standard agency, consumer association, Milk processing associations, dairy farmers association, Ethiopian conformity assessment enterprise, Ethiopian meat development and dairy institute, the study recommend one body to coordinate the activity may be called the Ethiopian dairy board. These body will coordinate the activities of different stakeholders throughout the dairy value chain and propose the policy issues in the area at country level. The study also recommend for these new dairy board to coordinate the implementation of quality base payment by looking Kenya experience in this aspect since the issue of milk quality and hygiene has to be improved with awarance and reward to the milk producer along with the punishment through the regulation. In addition to these, the study recommend that this body also propose the regulatory body a policy to use efficiently the communal land for grazing.

The study also recommend for any upcoming dairy development project to include biogas from the manure (since available in bulk) for the energy source for the farmers (residue the disafforestation with efficient use of resource) and for their use of natural fertilizer from it. Specially the farmers were not able to use the cow dung at rainy season where they can't

able to make it dry and use it as fire wood. If the farmers use the cut and carry system, they will more dung (including day time dung) for their biogas.

Since there was times that the EDGET project was not implementing due to the security issues, draught, flood and due to delayance happen while the Ministry of Agriculture was restructured to Ministry of livestock development and fishery, the EDGET project need to implement faster to recap the activities that need to be performed at that time or as extension of the project time with no cost.

Since the livestock expert staffs of the weak performing kebeles in the livestock extension had characterized by less experience staffs and most of them didn't read the EDGET project document, the EDGET project must make available the project document at easily available place to be read by those livestock expert staffs of the weak performing kebeles in the livestock extension who didn't know the EDGET project objective and participate on the EDGET project activities. In addition to this, EDGET project must coordinate the experience sharing as well as practical training with the follow up for the livestock expert staffs of the weak performing kebeles in the livestock extension who had less practical experience in such experts. Otherwise, this will lead to the misunderstanding and less coordination of the activities with government livestock staffs. This will also help the EDGET project success.

Since milk production is a business to get income daily (short return) unlike the other crops harvesting as well as also help for the small household dairy farmers not only to maintain the food security but also the nutritional security since milk has better nutrient as compare to the other crops where most farmers consume similar one or two types of food at that harvest time with limited nutrient, the study recommends for the dairy farmers to focus on the dairy and get income while consuming enough of these dairy products. Milk is the healthy food we all know next to our mother breast that we need to keep on consuming.

For Future researcher

As the MTS plastic Jerican equipment reduces the milk chance of contamination and helps to identify the mastitis problem on their Tits, the study recommend the interested professional in the area to make research that show the difference in the bacterial count and the milk hygiene condition on both the current situation or status quo condition and the use of the MTS. This will help to identify quantitatively the extent of these MTS plastic Jerian to maintain the milk hygiene from these smallholder household dairy farmers.

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Annexes

Annex I. Questionnaire to be filled by beneficiary farmers of the EDGET project.

St Mary University School of Graduate Studies, MBA in Project Management Program

Dear Respondent,

The purpose of this questionnaire is to collect primary data for conducting a study on the topic, “Assessment of the contribution of enhanced dairy sector to growth project to farmers and to the sector: The case of Amhara, Oromia and SNNPR region “as partial fulfilment of the requirements of Masters in Business Administration (MBA) specialized in the Project management at St Mary University, School of Graduate Studies. The information acquired through this questionnaire will be kept confidential and is purely used for academic purposes. I would like to thank in advance for devoting your time to complete this questionnaires.

Please note that you are not required to give your name; give your answer by putting a tick mark “√” or in writing your answers as appropriate. In case you have ambiguities on any of the questions, please do not hesitate to contact me through phone with 0915739955.

Part I. General information about the beneficiary farmers

1. Gender: Male Female
2. Number of dairy cows of your own: a. 1 dairy cow b. 2 dairy cows
c. 3 dairy cows d. more than 3 dairy cows
3. How long have you been the EDGET project beneficiary household (HH)?
a. 1 year and below b. above 1 year to 2 years
c. above 2 year to 3 years d. more than 3 year
4. How much of your cows are crossbred? a.No cross bred cow b One dairy cow
c. 2 dairy cows d. 3 dairy cowse. More than 3 dairy cows
5. How much of your heifer and calves are crossbred? a. No cross breed calf
b. One dairy calf/Heifer c. 2 dairy calves d. 3 dairy calves
e. More than 3 dairy calves
6. Do you satisfy the breeding service by Woreda livestock? a. Yes b. No
7. Do you satisfy the veterinary service by Woreda livestock? a. Yes b. No

8. How much of your farm land do you allocate for forage development?
- a. No land allocation for forage or mixed on crop b. 5% and less
- c. More than 5% up to less than10 %
- d. More than 10% up to less than20 % e. More than 20%
9. How much percentage of your milk consumed at home (in average term)?
- a. 5% and less b. More than 5% up to less than10 %
- c. More than 10% up to less than20 % d. More than 20%
10. Average milk production per cow per day before EDGET project intervention?
- a. 1 litre and below b. above 1 litre to 2 litre c. above 2 litre to 3 litre
- d. above 3 litre to 4 litre e. Above 4 litre to 5 litre f. above 5 litre
11. Average milk production per cow per day after EDGET project intervention?
- a. 1 litre and below b. above 1 litre to 2 litre c. above 2 litre to 3 litre
- d. above 3 litre to 4 litre e. Above 4 litre to 5 litre f. above 5 litre
12. How much percent of HH income will be obtained from dairy and related activity?
- a. from Zero up to 5%percent
- b. more than 5 up to 10% c. More than 10% up to less than 20 %
- d. More than 20% up to less than40 % e. More than 40%

Part II. Questions on the support to beneficiary farmers by EDGET project

13. Assessment of the beneficiary dairy farmers satisfaction level by the EDGET project process

No	Questions	Strongly disagreed (1)	Disagreed (2)	Neutral (3)	Agreed (4)	Strongly agreed (5)
1	Adequacy of the training on dairy production packages by EDGET project.					
2	Adequacy of the forage seeds and splits from the EDGET project.					
3	Supervision support and extension service from the EDGET project.					
4	Adequacy of calf feeds from the EDGET project.					
5	Provision service of the milk transport and storage (MTS) jericans from the EDGET project.					
6	Satisfaction from MTS equipment service on solving milk hygiene problem and milk reduce loss.					
7	EDGET Training condition on new ideas or technology.					

No	Questions	Strongly disagreed (1)	Disagreed (2)	Neutral (3)	Agreed (4)	Strongly agreed (5)
8	Applicability of the training's idea or technology.					
9	Convenience of the training time/season to attend.					
10	Satisfaction of the Agro input dealers (service provider at local level) established at each woreda by the EDGET project.					
11	Provision of support on the milk processing equipment and marketing through dairy processing cooperatives of the EDGET project.					
12	Satisfaction of experience sharing from the lead farmers/good operating dairy processing cooperatives by EDGET project.					
13	Satisfaction of EDGET project support on formalizing the farmers group to solve common problems (like processing, marketing and input supply).					
14	An improved service provided from the EDGET project as compared to the gov't livestock office.					

14. Assessment of the beneficiary dairy farmers satisfaction on the outcome of milk production by the EDGET project intervention

No	Questions	Strongly disagreed (1)	Disagreed (2)	Neutral (3)	Agreed (4)	Strongly agreed (5)
1	Satisfaction on milk production after EDGET project intervention.					

15. Assessment of the beneficiary dairy farmers satisfaction on the forage development and calf supply by the EDGET project intervention

No	Questions	Strongly disagreed (1)	Disagreed (2)	Neutral (3)	Agreed (4)	Strongly agreed (5)
1	Satisfaction on the result of forage development to get better milk production per cow.					
2	Satisfaction on the result of calf growth from forage development and calf feed support from the EDGET project.					

16. Assessment of the beneficiary dairy farmers satisfaction on the outcome of additional income by the EDGET project intervention

No	Questions	Strongly disagreed (1)	Disagreed (2)	Neutral (3)	Agreed (4)	Strongly agreed (5)
1	An additional income from dairy product /dairy activity after EDGET project intervention.					

17. Assessment of the beneficiary dairy farmers' satisfaction on the outcome of increasing milk consumption at HH level by the EDGET project intervention

No	Questions	Strongly disagreed (1)	Disagreed (2)	Neutral (3)	Agreed (4)	Strongly agreed (5)
1	An increment of milk consumption specially for children (less than 2 year old) and pregnant women at HH level after the EDGET project intervention through awareness creation.					

18. What do you recommend for the project to do other than the current interventions?

19. In your opinion, which of the following problem/s is/are the major constraint/s or problems for your dairy production, processing and marketing activities? (you can specify more than one problem and please rate them as 1st, 2nd and 3rd in the spaced provided)

- a. Forage seed supply
- b. Calf feed/ concentrate feed
- c. Breed service
- d. Veterinary service
- e. Milk marketing
- f. Milk processing
- g. water supply for irrigation
- h. Others, specify

20. Which EDGET project intervention impressed you most? Why?

Thank you for your kind cooperation!

Annex II. Questionnaire to be filled by woreda livestock office staffs of the EDGET project areas.

St Mary University School of Graduate Studies, MBA in Project Management Program

Dear Respondent,

The purpose of this questionnaire is to collect primary data for conducting a study on the topic, “**Assessment of the contribution of enhanced dairy sector to growth project to farmers and to the sector: The case of Amhara, Oromia and SNNPR region**” as partial fulfilment of the requirements of Masters in Business Administration (MBA) specialized in the Project management at St Mary University, School of Graduate Studies. The information acquired through this questionnaire will be kept confidential and is purely used for academic purposes. I would like to thank in advance for devoting your valuable time in filling this form. If you are not able to read and write, I will support you in this regard.

Please note that you are not required to give your name; give your answer by putting “√” mark or in writing wherever appropriate. In case you have ambiguities on any of the questions, please do not hesitate to contact me through phone with 0915739955.

Part I. General information

1. **Name of the woreda _____ . Position in the woreda livestock office _____ .**
2. **How long have you been in the woreda livestock Office?**
a. less than one year b. 1-3 year c. 3- 4 year d. 4 year and above
3. **Do you participate in the EDGET project launching, evaluation, or review session?** a. Yes b. No
4. **Have you read the EDGET project document?** a. Yes b. No
5. **Do you see the EDGET project activity on the field?** a. Yes b. No
6. **Do you take training from EDGET project?** a. Yes b. No
7. **Does the EDGET project support the institution?** a. Yes b. No
If yes, specify _____
8. **Does the EDGET project made change to the dairy sector?** a. Yes b. No

9. Is there any difference between EDGET project beneficiary dairy farmers and their neighbour farmers? a. Yes b. No
10. Do you provide the breeding service at satisfactory level? a. Yes b. No
11. Do you provide the veterinary service at satisfactory level? a. Yes b. No
12. Do you provide the forage seed to the farmers at satisfactory level?
a. Yes b. No
13. Do you support the dairy farmers on marketing their dairy products?
a. Yes b. No
14. Do you support dairy farmers technically on the processing of milk and maintenance of dairy processing machines? a. Yes b. No
15. Does the EDGET project manage the risk well? a. Strongly disagree
b. Disagree c. Neutral d. Agree e. Strongly agreed

Part II. Questions on the EDGET project contribution to the dairy sector

16. Assessment of the EDGET project contribution to the sector by livestock government bureau.

No	Questions	Strongly agreed (1)	Disagreed (2)	Neutral (3)	Agreed (4)	Strongly agreed (5)
1	Contribution of the EDGET project to the dairy sector in general on the improved practices of capacity development and provision of extension manual as well as material.					
2	Introduction of MTS plastic can for standard way of maintaining milk quality and safety at house hold level on milking, transportation and storage equipment.					
3	Introduction of calf feed (special nutrient formula) to the dairy sector contribution.					
4	Contribution of the voucher system to link the dairy beneficiaries with the established agro dealer al local level (local service provider).					

17. Assessment of the EDGET project support to the beneficiary by livestock staffs

No	Questions	Strongly agreed (1)	Disagreed (2)	Neutral (3)	Agreed (4)	Strongly agreed (5)
1	Adequacy of the supervision to the dairy beneficiary farmers EDGET project.					
2	Satisfaction on provision of capacity development support to beneficiary dairy farmers by EDGET project.					
3	Satisfaction on provision of extension service support to beneficiary dairy farmers by EDGET project.					
4	Satisfaction on provision of calf feed support to beneficiary dairy farmers by EDGET project.					
5	Satisfaction on provision of dairy processing equipment to beneficiary dairy farmers by EDGET project.					
6	Satisfaction on provision of forage seed support to beneficiary dairy farmers by EDGET project.					

18. Assessment of EDGET project beneficiaries with Neighbour farmers by Livestock office

No	Questions	Strongly agreed (1)	Disagreed (2)	Neutral (3)	Agreed (4)	Strongly agreed (5)
1	Difference in milk production between EDGET project beneficiaries and other farmers.					
2	Difference in overall cow management b/n EDGET project beneficiaries and other farmers.					
3	Difference in hygienically handling milk between EDGET project beneficiaries and other farmers.					

19. Assessment of the livestock office plan and activities alignment with the EDGET project support to the beneficiary dairy farmers

No	Questions	Strongly agreed (1)	Disagreed (2)	Neutral (3)	Agreed (4)	Strongly agreed (5)
1	Avoidance of the duplication of effort to the dairy beneficiary farmers by EDGET project and gov't livestock activities.					
2	Satisfaction on communication of the gov't livestock office expert staffs and EDGET project staffs.					
3	Link of EDGET project activity with the gov't livestock office goal.					

20. What do you recommend for the project to do other than the current interventions?

21. In your opinion, which of the following problem/s is/are the major constraint/s or problems for your forage development, cow management, hygienically dairy production, processing and marketing activities? (you can specify more than one and please rate them as 1st, 2nd and 3rd)

- a. Forage seed supply
- b. Calf feed/ concentrate feed
- c. Breed service
- d. Veterinary service
- e. Milk marketing
- f. Milk processing
- g. water supply for irrigation
- h. Others, specify

22. Which EDGET project intervention impressed you most? Why?

23. In your opinion, what intervention need the EDGET project include?

24. If you observe difference on EDGET project beneficiaries and other nearby dairy farmers, please specify it,

25. Do you have any information about the average percentage of income that comes from the dairy/dairy related activity? Please state the information if you have any.

Thank you for your kind cooperation!