

# Impact of the Livestock Development Project on Smallholder livestock (Sheep) Chain in the Kintampo District of Ghana: The Case of Two Credit Schemes.

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**A Research Project Submitted to Van Hall Larenstein University of Applied Sciences (Part of Wageningen UR) in Partial Fulfilment of the Requirements for the Degree of Master in Agricultural Production Chain management specializing in livestock production chains**

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## **DEDICATION**

I dedicate this paper to my late father John Kobina Ampiah who passed away during the course of my study. My mom, sisters; Esi and Cynthia who kept encouraging me in difficult times to press on towards the goal; this paper is dedicated to you all.

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## GLOSSARY

**Sustainability:** The continuity of a project activity or intervention with positive environmental, economic and equitable (social) benefits.

**Continuity:** Sustainability in terms of how it will continue to revolve and continue in creating jobs, increasing farmers' livelihood (revenue creation) and protecting the environment.

**Impact:** The observable changes on a target group due to a project activity or intervention

**Changes:** Both negative and positive influence

**Does:** Adult female goats

**Ewes:** Adult female sheep

**Gimmers:** Young female goats/ sheep

**Buck:** Male goat

**Ram:** Male sheep

**Weaner:** A young sheep/goat at age 4months been separated from the mother.

**Resource poor:** Lacking in a specified resource or quality (capital, knowledge) although they have some level of skill.

## LIST OF ABBRIVATIONS

**ADB** - Agriculture Development Bank

**AfDB** - African Development Bank

**AEA** – Agricultural Extension Agents (Officers)

**CLW** - Community Livestock Workers

**DADU**- District Agriculture Development Unit

**EPA** - Environmental Protection Agency

**FASDEP** – Food and Agricultural Sector Development Policy

**GOG** - Government of Ghana

**IFAD**- International Fund for Agricultural Development

**LDP** - Livestock Development Project

**RCB** - Rural and Community Banks

**WIAD** - Women in Agricultural Development

## ABSTRACT

Livestock play multiple roles in the livelihoods of people in developing communities, especially the poor. They provide food and nutrition, work, economic and social status, and ensure environmental sustainability. Unfortunately the Ghanaian livestock sector in general is poorly organised and specifically small ruminant (sheep and goats). These farmers are only smallholders and resource poor; because of this it is difficult if not impossible for them to access credit. This study was carried out to assess the impact of the credit component of the Livestock Development Project (the case of the two credit schemes) which gave smallholder livestock farmers access to credit in order to improve their income.

A desk study was first done to review literature then a field study was done through the use of questionnaire and interviews. Although the initial field study was set to issue out questionnaire to 45 credit beneficiaries from both credit in cash (cash credit) and credit in-kind the sample size for the cash credit reduced to 37 (82%). This was because beneficiaries from the cash credit were indisposed at the time of data collection. 3 individuals from the credit in-kind beneficiaries were interviewed also were the 3 chairmen and/or secretaries of the credit in cash beneficiary groups; then the livestock specialist was also interviewed. Also questionnaire was administered to the credit officer of Agricultural Development Bank.

From the study it was realised that the credit in cash implemented in 2005 failed as a revolving fund and in reducing poverty. The default percentage was about 38% as the interest rate for the credit was 20% (as quoted by beneficiaries) and the repayment period was 15month. Notwithstanding these the only female group among the 14 groups (91beneficiaries) in Kintampo enjoyed the revolving nature of the cash credit as they received a second credit after paying the first one. From the credit in-kind scheme 120 individuals benefited from sheep credit within different period. There were significant difference in the number of deaths between the 1<sup>st</sup> and 3<sup>rd</sup> batches  $P=0.016$ ,  $P<0.05$ . There was also significant difference between principal worker(s) on the farm and the number of animals that died  $P=0.015$ ,  $P<0.05$ . Also  $P=0.05$  for the number of deaths and sex (gender), nevertheless there was a connection between males (self) been the principal worker(s) on their farm and the number of deaths. It was found out that there was a significant correlation between the impact of training which improved management approach and number of animals left (ewe and their offspring)  $P=0.04$ ,  $P<0.05$ .

LDP gave smallholder livestock farmers the opportunity to access credit but this opportunity also brought burden on beneficiaries. As there were defaulters in the cash credit, the credit in-kind also caused smallholder farmers to spend their limited resources (money) in treating sick and weak animals they received for credit. Nevertheless most respondent (78%) from this research still prefer the credit in-cash if all the anomalies are corrected. Although the number of female beneficiaries was small their performance was encouraging and will encourage other women to desire to join the credit in-kind which has greater chances of continuity. Also the criteria set for selection in both credit schemes increased construction of livestock pen. It can be concluded that the credit in-kind as a revolving fund will be sustainable as subsequent beneficiaries will have healthy animals with better adaptability. The credit in-kind as a value chain finance innovation will bring improvement in the livestock value chain and the multifunctional role of livestock will be felt among smallholder resource poor.



# Chapter 1 Introduction

## 1.1 Background of the study

Livestock production accounts for an estimated 7% of the agricultural GDP of Ghana which is 28.3% despite the country's vast resources of forage ( The World Factbook, 2012). Agriculture plays a crucial role in the economy with 56% of the labour force in agriculture (mostly crop farming).

According to African Development Fund, (2001) despite the country's vast resources of forage, and cheap labour the livestock population remains low with about 1.3 million cattle, 2.5 million sheep, 2.7 million goats, over 10 million poultry, including guinea fowl, and 0.37 million pigs. Most of the livestock farmers are smallholder farmers. The per capita consumption of livestock products in Ghana is 1.08 kg for beef, 0.70 kg per small ruminants and poultry meat, 0.49 kg of pig meat, 1.46 litres of milk and 18.9 eggs per year. These levels of consumption are only 6.7% of the averages for Africa and only 2% of the FAO recommended levels (African Development Fund, 2001).

The Animal Production Directorate (APD) of the Ministry of Food and Agriculture (MOFA), donors and the government of Ghana view value chains as vital instruments for achieving the millennium development goals i.e. through production, trade and market-related interventions. Many efforts and initiatives in terms of projects have been undertaken by these stakeholders to boost livestock production and improve the value chains. The countries readily available market offer rapid growth opportunities for the livestock sector. The potential to increase feed production is high and the technology for controlling diseases and improving productivity is available (African Development Fund, 2001).

Efforts to improve productivity along the livestock value chain saw the introduction of projects like the National Livestock Services Project (1992 to 1999) and the recently phased out Livestock development Project (2002 to 2010) funded by the African Development Bank. Each individual project had its specific objective but their common goal was to accelerate agricultural growth and increase the income levels of smallholder farmers through improvements in productivity and diversification, supported by the improvement of small rural infrastructure.

The Livestock Development Project (LDP) was focused on livestock chain development with a specific objective to increase incomes of smallholder livestock and dairy farmers, processors and traders in the project area. LDP's credit component incorporates into one of the strategic thrusts of MOFA which is access to financial services that can translate into the poverty reduction, increased employment and income through sustainable agricultural development. By enhancing input supply and distribution, raw materials for industry, commodities for export, output processing and marketing, food security. The project was to be implemented over a period of six to 8 years (2002 to 2010). The overall implementation of the project activities was the responsibility of the Ministry of Food and Agriculture through its Animal Production and Veterinary Services Directorates.

## 1.2 Need for Study

Agriculture remains an important means of reducing poverty, but the lack of financial support and funding can hinder its development. Moreover, it has become increasingly difficult for smallholder farmers to access credit. Agriculture is evolving towards a global system requiring high-quality, competitive products, and is organized in value chains which often exclude smallholders. Technological upgrading and organisation of value chains can be enhanced through adequate value chain financing in agriculture. This will offer an opportunity to increase profitability, reduce cost and proper risk management. It can also help value chains to be more inclusive, by making resources available for smallholders to be integrated

into higher value market opportunities. The Livestock Development Project which phased out in December, 2010 performed a role in value chain finance among others which includes i) Development of Animal Production, ii) Development of Animal Health, iii) Credit provision, iv) Capacity Building, and v) Project Management. The project had two different credit schemes;

- 1) **The cash credit:** This was the original value chain finance approach; where farmers were given credit in form of cash but this credit scheme was changed and in 2010 a new credit scheme was instituted.
- 2) **The credit in kind:** This scheme was instituted in 2010 where small ruminant farmers received 10 small ruminants.

To better understand the credit component of LDP, this thesis analysed the two credit schemes and their sustainable impact. The thesis researched assessed:

- ▶ The Livestock Development Project ability in meeting its specific objective of increasing incomes of smallholder livestock farmers, processors and traders in the project districts (Kintampo).
- ▶ The benefits, challenges and its sustainability of the two credit schemes (cash credit and the credit-in-kind).
- ▶ Successes and the driving forces in these successes to enhance sustainability and submit the finding and recommendations to the directorate to help in planning.

### 1.2.1 Research Project Area

Kintampo has a surface area of 7,162 square kilometres which is 18.1% of the total land area of the region. Its strategic location makes it the geographical centre of Ghana. The vegetation is mainly of the forest-savannah transition type. The district has an estimated population of 96,358 comprising female population of 49,137 (representing 50.9%) and 47,401 Male, (representing 49.1%) (Kintampo North Municipal Assembly, 2006). Kintampo was selected as the research project area because it is easily accessible to the researcher. The researcher was also involved in the implementation phase of the credit schemes by providing trainings to farmers and other actors along the value chain.

In addition, Kintampo is a touristic centre and a transit between Ghana, Burkina and Mali where livestock trade is very common. There is however a large immigrant population from the three Northern Regions (Dagaaba, Dagomba and Konkomba) who are generally farmers. This is because the climatic condition in Kintampo is more favourable for farming than the Northern regions are much harsher (Ministry of Local Government and Rural Development, 2006). Kintampo also has a very big yam market with other economic activities taking place every week. Almost all crop farmers in this area are involved in small ruminants farming activities to compensate for less crop yield during erratic rainfalls (crop are rainfall dependent). Smallholder sheep and goat farmers in Kintampo district (35 LDP project district) benefited from both credit in cash and the credit in-kind scheme



Figure 1 Map of Ghana showing Kintampo District

### 1.3 Problem statement

A thriving livestock sector requires an effective coordination and interrelation between the actors of the chain and all stakeholders involved. The absence of an effectively coordinated livestock value chain in Ghana has left the sector wanting. The farmers are only smallholders and resource poor. Due to this negative backdrop the farmers have limited access credit. Almost every household in the country own Sheep and/or goats; which is the next highest (6,152,000 in population) to poultry (24,251,000) in terms of population (FAO, 2005a). Due to the poor coordination and interrelation in the sheep and goat value chain the following problems existed:

- Smallholder farmers do not get access to credit
- There are no cooperatives/groups of smallholder to have group solidarity (so they cannot access credit)
- Poor quality systems and checks at all levels along the chain
- No linkage and partnership between stakeholders

The introduction of the Livestock Development Project (LDP) a project funded by the Africa Development Bank (AfDB) and operated by the Animal Production Directorate in partnership with the Veterinary services Department in collaboration with Ghana Health service brought hope to the smallholder livestock farmers. This project had five main components, which are i) Development of Animal Production, ii) Development of Animal Health, iii) Credit provision, iv) Capacity Building, and v) Project Management. The credit provision made provision for smallholder livestock farmers' access credit. The main activities of LDP included Animal Breeding, Control of Major Animal Diseases, and Improve Animal Husbandry through the provision of short- and medium-term credits for financing production, processing and marketing activities as well as training of staff, farmers and entrepreneurs. The project also made provision for HIV/AIDS, Guinea worm, and Malaria prevention campaigns. In 2010 the project phased out; but before it phase out it had instituted 2 types of credit schemes cash credit and credit in kind under the credit component.

Now that the project has phased out it is expected that with the activities organised under the LDP the chain actors as well as stakeholder (final beneficiaries and target groups) have enough resources to ensure continuity of the project objective. More importantly beneficiaries of the credit-in-kind scheme are expected to start paying back their credit this year (2012). This credit when recovered will be given to different set of farmers so that the fund keeps revolving fund. The problem now lies in how to get the expected number of animals as loan payment for the next batch of beneficiaries. Is it going to face the challenge of default or it is going to have complete credit recovery? Were there measures put in place to ensure that there is continuity of this revolving fund? All these remains issues to be looked into to ensure that the specific objective of the project (LDP) which is to increase incomes of smallholder livestock and dairy farmers, processors and traders in the project area is achieved.

## 1.4 Problem Owner

The problem owner is Animal Production Directorate (APD) of Ministry of Food and Agriculture (MOFA). The mission of APD is to develop, promote and sustain poultry and livestock production for food security, employment creation and income generation through research, effective technical support, extension services, agro-business and industry, whilst ensuring that gender and environmental issues are adequately addressed. The goal of the livestock sector is to reduce poverty, improve food security and reduce imports in an environmentally sustainable manner. Thus this makes the issue of smallholder ruminant improvement and sustainability through value chain finance their main concern

## 1.5 Objectives

The objective of this project is to measure the sustainable impact of Livestock Development Projects credit component with emphasis on the credit provision and make suitable recommendations to improve future livestock projects.

## 1.6 Research Questions

1. In which ways has credit and similar projects' credit schemes impacted smallholders farmers
  - How were these projects appraised by beneficiaries?
  - In which ways were these projects impact sustainable?
2. In which ways did the Livestock Development Project (LDP) credit provision influence the livestock (sheep) value chain in the district?
  - What was the relation and coordination of the livestock (sheep) value chain before the LDP?
  - In which ways did the credit in cash operate and how did it bring changes and/or improvements in the value chain?
  - In which ways did the credit-in kind-scheme operate and how did it bring changes and/or improvements in the value chain?
3. In which ways did LDP make provisions for continuity in the livestock chain improvement?
  - What role did gender play in continuity of both credit schemes?
  - What went wrong in the credit in cash scheme for it to be terminated?
  - What were the criteria for the structural adjustment within the credit component formulated and implemented to ensure the revolving nature of the "fund"?
  - What were the impact roles of Animal Production Directorate, Veterinary Services Department and Ghana Health Services in relation to continuity of the credit component of LDP?

## 1.6 Limitations of the study

The study faced some challenges during the data collection process. It was realised that most of the beneficiaries who benefited from the credit in cash have moved from the district especially those who were prosecuted in the court because of the default; it became impossible to reach them. Also, some beneficiaries of the cash credit were willing to cooperate only through interview of the whole group. Thus the method of this data collection for majority of the credit in cash was by interview of the whole which was then processed into answers from the questionnaire. Data collection became cumbersome as individual beneficiaries kept avoiding being interviewed by not making themselves available during scheduled appointment time and date. Furthermore some of the member of the groups had passed away. Due to the challenges stated above instead of 45 respondents 37 respondents from the cash credit scheme participated in the research.

Adding up to the challenge the Credit officer at the Agricultural Development Bank where the loan was issued had been transferred without a replacement and the manager had also

being replaced at the time of data collection was only a week at post. Nevertheless non-structured questionnaire was administered instead of an interview upon request of the current manager. Unfortunately the manager at the last minute refused to participate so the livestock schedule officer had to come in to request for the cooperation of an office at the banks head office before some information was released. Then the project- LDP schedule officer gave the rest of the information needed.

## Chapter 2 Literature Review

### 1.1 Livestock Production and its Socio economic Development

The global livestock sector is rapidly changing in response to globalization and growing demand for animal-sourced foods, driven by population growth and increasing wealth in much of the developing world. Domestic production of livestock has increased slowly but steadily over the last decade: Between 1991 and 2000 production levels increased by 13% for beef, 26% for sheep, 35% for goats and 21% for pork (African Development Fund, 2001). But there are vast differences in the ways in which livestock are kept and what their roles are. There is the need to develop a good understanding of the differences among production systems to be able to help poor livestock keepers take advantage of the rising demand for animal-sourced foods, help livestock keepers adapt to a changing and more erratic weather; minimize the risk of disease emergence and spread (Robinson, et al., 2011). The estimates for households engaged in raising livestock show that chicken is the most commonly reared animal with about 1,652,820 households involved. About 1,038,167 households raise goats, a little over half a million (607,174) households raise sheep, and 201,538 households keep other poultry including duck, turkey and guinea fowl. Much smaller numbers of households raise, pigs, draught animals, (such as donkeys, horses and bullocks) and rabbits (Brown, et al., 2008).

**Table 1 Locality in livestock keeping and the percentage of women involved in agriculture**

Locality	Households owning or operating a farm or keeping livestock		Proportion of women engaged in agricultural activities (%)
	Percentage	Estimated Total number	
Urban	28.2	675,087	34.9
Accra	3.4	27,334	14.6
Other Urban	40.6	647,754	35.7
Rural	85.0	2,675,336	38.6
Rural Coastal	73.2	493,858	43.6
Rural Forest	86.1	1,309,382	43.6
Rural Savannah	91.7	872,096	28.5
Ghana	60.5	3,350,423	37.9

**Source: Ghana Statistical Services, GLSS5, 2008.**

The three (3) Northern regions, account for about 75% of the cattle population in Ghana. The relatively dry coastal savannah in the south accounts for about 15%. The remaining transitional and humid forest zones are sparsely populated with cattle due to the prevalence of tsetse flies, which transmits the killer disease, trypanosomiasis. Small ruminants and poultry are more evenly distributed throughout the country, where pigs are more concentrated in the forest belt and around urban centres. Mixed farming is predominantly practised in Ghana with a few pure livestock farming. The Government of Ghana has six livestock breeding stations with each specialising in different species (Ministry of Food and Agriculture, 2011).

Livestock sector plays a multi-faceted role in socio-economic development of rural households as in the raising income and improving human nutrition. They also have an important integrative function in farming systems. Livestock rearing has significant positive impact on the rural population where livestock is predominant in terms of employment, emergency cash requirements, and manure as fuel for cooking and for crops, draught power for farming then poverty reduction (Walli, et al., 2012). Small ruminant keeping/rearing in Ghana is a form of risk reduction strategy especially for crop farmers who depend on rain-fed agriculture with about 85% of farmers being smallholders. Empowering smallholder sheep and goat (livestock) farmer through credit provision and capacity-building will help in

sustainable livestock production as livestock provides about 30% of the Ghanaian protein intake (Breisinger, et al., 2008). Ms Riikka Rajalahti of the Agriculture and Rural Development at the World Bank said Ghana was particularly faced with financing difficulties and called for well organised small holder farmer groups to facilitate access to finance in agriculture (Ghana News Agency (GNA), 2009).

According to Delgado, et al., (2008) livestock is among the few commodities those smallholders farmers widely produce that are growing rapidly in demand, and thus the interest for poverty alleviation is strong. He stated that, there are signs those smallholders may ultimately be displaced from this source of livelihood by competition from large-scale farms. The good part is individual livestock farmers in Ghanaians do not have as of now large scale livestock farm in respect to ruminants and pigs except for the government farms and some individual large scale poultry farms (Breisinger, et al., 2008). Livestock production offers rapid growth opportunities as the internal market exists due to the deficit in meat products that is been compensated for by importation of about 50% of its livestock consumption (African Development Fund, 2001). The livestock sector in Ghanaian general is poorly organised and specifically the small ruminant (sheep and goats), because of this it is difficult if not impossible for smallholder farmers to access credit.

Almost every household in the country own Sheep and/or goats; which is the next highest (6,152,000 in population) to poultry (24,251,000) in terms of population (FAO, 2005a) yet tonnes of crop residues are left in the fields to waste or burnt which also causes environmental pollution and degradation of soil fertility (Walli, et al., 2012). These crop residues and other non-conventional feed that are in abundance serve as feed ingredients for livestock. These feed and feed ingredients range from grass (e.g. Guinea grass and Napier grass), kitchen waste ranging from cassava peels, plantain peels, yam peels to agro by-products. There is very minimal supplementary feeding of ruminants in Ghana and most part of the tropics so ruminants do not compete with humans for staple crop like maize which is also the major feed ingredient for poultry and pigs (Okai & Boateng, 2007). The potential for increased production of feed is high and technology for controlling diseases and improving productivity is available. This therefore calls for the up-scaling of the smallholder ruminant farms because of the existing demand and the convenience in production. The absence of unpleasant smell from rearing animals such as pigs, less use of land in terms of housing, abundant feed resource, regional acceptance and other added advantage makes rearing of sheep more advantageous to pigs or poultry (African Development Fund, 2001).

The ratio of veterinarians and agricultural extension workers to farmers is low and stands at 1:1500 with as low as 2 veterinary officers per district (Duo & Bruening, 2007). In addition to the low staff-to-farmer ratio, there is inadequate training of extension personnel, and to a large extent, extension workers have very little impact on agricultural development. Thus there is limitation in information dissemination and knowledge transfer to farmers. Aside this challenge of human resource development is also the challenge of smallholder farmers not being able to access credit to increase their production and influence the chain. According to the Ghana Living Standards survey organised in January 2010 among 32% of rural household who received any form of credit only 8% of them reported receiving credit for agricultural purposes. Looking into the sources of rural credit (table 1) between 53% and 55% of rural house borrow from relatives and friends for agricultural and non-agricultural purposes, followed by rural households taking credit from traders, as against formal sources of credit. Obtaining credits from traders is the second most important source for agricultural credit in the rural areas. Traders may lend to households who need money to pay for inputs, such as hired labour or fertilizer, prior to harvest in return for their products, e.g., maize or yam. It can be observed that the data was on crop with no information on livestock but because most farmers in Ghana practice mixed farming it influence livestock production as livestock is a form of collateral for crop production.



**Table 2 Type and source of rural household credit in Ghana**

	<b>Agricultural credit</b>		<b>Agricultural Credit for input</b>		<b>Non-Agricultural credit</b>		<b>Other types of credit</b>	
Source	Number of rural households	% of Rural Total	Number of rural households	% of Rural Totals	Number of rural households	% of Rural Total	Number of rural households	% of rural Total
State Bank	46	11	28	11	69	6	108	7
Private Bank	22	6	10	5	59	5	78	5
Cooperative	34	9	24	9	41	3	68	4
Government agencies	16	4	9	4	18	1	32	2
NGO	11	2	7	3	16	1	27	1
Business Firm	4	1	2	1	6	0	9	1
Employer	0	0	0	0	12	1	12	1
Money Lender	10	3	7	3	46	4	53	4
Trader	53	12	35	14	214	17	255	16
Farmer	22	5	12	4	34	3	52	3
Relative, Friend, etc.	189	53	119	53	672	55	827	54
Other	11	3	5	2	111	10	120	8
Rural Total	382	100	241	100	1209	100	1547	100

**Source: GLSS5, 2011**

## **2.2 Dealing with limitation in accessing credit**

Financial constraint in agriculture remains pervasive, and they are costly and inequitably distributed severely limiting the smallholders' ability to compete; yet agriculture continues to be the fundamental instrument for sustainable development and poverty reduction ( World Bank, 2008). As stated earlier in this chapter smallholder livestock farmers' access to credit is one of the major challenges facing the livestock sector. Thus there is the need for provision of finance/credit which is a scarce commodity for these smallholder livestock keepers to increase production to meet demand and improve the sheep and/or goat value chain. FASDEP emphasises the optimum and sustainable utilisation of all resources and commercialisation of the sector with market-driven growth in mind (Ministry of Food and Agriculture, 2002). Value chain finance according Miller & Jones, 2010 is any or all financial services, products and support services flowing to and/or through a value chain to address the needs and constraints of those involved in that chain, be it a need to access finance, secure sales, procure products, reduce risk and/or improve efficiency within the chain.

Under LDP, both internal and external value chain finance came to play with the two credit schemes. The internal value chain finance came to play where sheep were credited to farmers in a form of input supply. An example is the case of input supplier credit in Myanmar where agro-input retailers offer deferred payment sales to smallholder (Myint, 2007). External value chain finance was under the LDP credit in cash which was issued by the Agricultural development Bank at Techiman to smallholder actors in the livestock value chain under contract. Also an example of external value chain finance is the case where small fruit and vegetable growers were able to access bank finance for agro-chemical by their exporters in Kenya (Marangu, 2007).



### **2.2.1 Value Chain and Finance Innovation as a Solution**

Value chain finance needs to be seen in a broader context, not only to the value chains but also to the business environment of the country as this impacts the financial system (Miller & Jones, 2010). Despite this the typical demand for financial products and services for agriculture and rural production has been deficient and not particularly innovative; especially smallholders in the rural areas are underserved. The need for financial innovation as part of value chain finance can improve livestock growth in the country, make it food secure and increase the income of smallholder in a way of poverty alleviation as is the overall national goal of the country. For the financing of a value chain to be more efficient and effective there should be an enabling environment. Availability of appropriate services and inputs from technology to raw materials to meet, changing market demand is important (Miller & Jones, 2010). Also the combined approach of producer group formation, association development, stakeholder mediation, lobbying and advocacy along with fundamental service development such as extension services, trainings, input supplies, transportation, market information and so on as in value chain development will help make effective and efficient value chain finance with regards to recovery of funds or revolving of funds (Miller & Jones, 2010). Financial institutions have to be able to determine the clients' trustworthiness especially in the case of cash credits. According to Miller and Jones, 2010 it is expedient for financiers to look at new ways to supporting smallholder farmers as in the non-conventional funding (example input supplying and payment done in same input supplied). This non-conventional funding was realised in the credit in-kind scheme under the Livestock Development Project which supplied 120 farmers in Kintampo District with sheep for a period of time. The payment will be in sheep as it was in the input supplied (credit).

### **2.3 Livestock Development Project Concept and Rationale**

The Livestock Development Project was focused on reducing poverty and contributing to food security. The specific objective of LDP was to increase incomes of smallholder livestock and dairy farmers, processors and traders in the project area. To attain this goal, the project proposed to intervene in livestock production and processing since they were predominantly income-generating activities carried out by poor smallholder operators in rural areas (African Development Fund, 2001). The criteria for selecting target areas, included consideration for districts where poverty was relatively severe and where the poor are concentrated. These areas are predominantly in the northern regions hence 60% of the areas under the project are in these regions. By investing in the livestock sub-sector the Government of Ghana was addressing one of the fundamental elements of its Vision 2020, to channel its limited investment resources to areas with high potential, encouraging a balanced regional development and targeting poorer segments of the population. Increased domestic livestock production will reduce the expenditure on livestock imports, which are currently at 50% of the national supply (Breisinger, et al., 2008). In this regard investment in the sub-sector among smallholder farmers will enhance food security and increase household incomes of the poor (African Development Fund, 2001).

The project was designed to promote livestock development while maintaining the mixed farming system that is predominant in Ghana, by focussing on the four main types of animals raised by smallholder farmers. This approach was to ensure that the wholesome predominant feature of the mixed farming system (comprising 98% of smallholder farms) was maintained (African Development Fund, 2001). Considering mixed farming system is well adapted to Ghana, the project was to have a higher rate of farmer participation during implementation. To adequately address the constraints to the livestock sub-sector, support to livestock health, was a component of the project. In order for smallholders to attain significant increase in livestock production and processing, the project was to develop their skills in improved methods of animal husbandry and in basic management of their resources and enterprises. Small Scale farmers face diseconomies of scale in accessing inputs, credit, and markets for their output (African Development Fund, 2001).

Farmer mobilisation and training in group management was to ensure high level of participation in the economic development of communities and the collective implementation of project activities. Since significant livestock production and processing require capital investment, which is limited in Ghana, credit resources was to be provided under the project. The demand for credit among livestock farmers in Ghana is high, as demonstrated under the 3-year Fourth Line of Credit, where six months into the implementation of the project, the resource allocation to livestock were fully utilised (African Development Fund, 2001).

### **2.3.1 Project sustainability**

A key strategy to ensure the sustainability of project activities was the participation of stakeholders in the design and implementation of the project. During preparation and appraisal, extensive consultations were held with farmer groups, Government ministries, Environmental Protection Agency (EPA) at the Headquarters as well as during the implementation of these consultations were to continue through national and district steering committees (at which all stakeholders are represented) as well as with beneficiary groups. Through this approach, stakeholders were involved in the definition, and implementation of development strategies in their communities as well as in the implementation of the activities of the project, which will ensure ownership hence a high degree of sustainability. But a sense of ownership is only realised when beneficiaries' needs are met

Women assume about 70% of the care of the small ruminants, pigs and poultry (Brown, et al., 2008). Project beneficiaries comprised of an estimated 19,000 small-scale livestock farmers and processors of whom 45% were to be women. A total of 10,800 of the project livestock beneficiaries were to be owners of small ruminants, animals with which women have the most experience. An estimated 1,800 farmers were to be cattle and dairy farmers. Women were to constitute about 80% of the 175 processors and traders who benefited from the different activities in the project. Agriculture in low income communities has an exceptional high impact in terms of its potential to reduce poverty. Thus addressing issues of gender disparities supported in agricultural growth to fulfil its full potential (The World Bank, 2012). It is estimated that 600million livestock owners in the world are women. Yet they own less than a hundredth of the world's property and earn only a tenth of the world's income although they contribute up to half of the world's food and perform two-thirds of the world's work (Swanepoel, et al., 2010).

### **2.3.2 Capacity Development**

Training was to be given to producers, processors and to service providers. Under the component, limited support to key institutions involved in animal production and disease control with necessary rehabilitation of essential buildings, as well as provision of equipment and motorcycles. Training activities included: i) livestock farmers' group formation and training in group management (2,500 farmers); ii) producers, meat and milk processors, and traders; iii) Agricultural Extension Agents (AEA), Subject Matter Specialists (SMS), Managers of technical Directorates & Breeding Stations (50) in financial and administrative management (African Development Fund, 2001).

Training was carried out using consultancy services, and also MOFA staff conducted the training programs. Subject Matter Specialists trained 750 AEAs (Agricultural Extension Agents/Officers), while AEAs were to train 60 Community Livestock Workers CLW in animal health care and production. The CLW received starter kits of medication and equipment for injecting animals and bicycles to enable them cover large areas on credit. Gender grouping was structured on the basis of preferences of beneficiaries from participants and to ensure active participation of all members. Training programs included topics in participatory rapid rural appraisal, animal breeding, animal husbandry & health, range management, improved pasture, seed production & multiplication, dairy production & processing & marketing, water facilities maintenance, tsetse control methods, and gender-consciousness awareness (African Development Fund, 2001). The detailed training programs were prepared by the

implementing agency and approved by the bank at the start of the implementation of project activities (African Development Fund, 2001).

## **2.4 Credit Provision**

The project made provision for a credit facility to enable livestock farmers, processors and traders to access short-term loans (6-12 months) for animal feed, drugs and veterinary services. Short-term loans were also to be available to Community Livestock Workers (CLW) for maintaining continuous supply of animal drugs and equipment for administering medication. Medium term loans was available (up to 3 years) for construction of storage facilities for animal feed, animal housing, purchase of livestock, purchase of milk processing equipment or marketing activities (African Development Fund, 2001). At community level, medium term credit was available to communities in the project area for activities, to reduce domestic labour such as the purchase of grain grinding mills, means for transporting animals and crop residuals (e.g. small trailers and bicycles with large carrying boxes). At least 30% of credit funds were to be allocated to activities for women. The ADB managed the credit fund and charged prevailing market interest rates to farmers' groups or individual farmers as agreed by the Government of Ghana. Credit provision had to continue throughout the project period and thereafter on a sustainable basis since the loan repayments had to be kept in a revolving fund for the livestock sub-sector (African Development Fund, 2001).

### **2.4.1 Credit in cash**

Cash credits in agriculture can aid in improving the agricultural value chain and reducing poverty. Value chain finance according to Miller & Jones, (2010) offers an opportunity for resources to be made available to smallholders.

#### **2.4.1.1 LDP Credit in cash scheme**

The credit in cash scheme which was part of LPD component saw the issuing of cash to some livestock value chain actors (farmer groups, processors and traders) in 25 districts initially but upon the creation of new districts the projects grew to become 35 districts from 7 regions in Ghana with which Kintampo district was part. According to District Agricultural Development Unit, DADU- Kintampo annual report all beneficiary groups received their loan in 2005 between the month of May and September after the project had commenced activity in 2002. A total of 15 groups were vetted by DADU Kintampo and presented to the Agricultural Development Bank Branch at Techiman. The bank had the prerogative to issue out the credit according to their terms and conditions. This scheme was to serve as a revolving fund where beneficiaries could receive another credit after they have paid back their loan. In addition there would have been continuous credit for new beneficiary groups.

#### **2.4.1.2 MASLOC credit in cash (Funding Agriculture)**

Microfinance and Small Loans Centre (MASLOC) is a micro finance apex body responsible for implementing the Government of Ghana's (GOG) microfinance programmes targeted at reducing poverty, creating jobs and wealth (MASLOC - Microfinance and Small Loans Centre, 2010). MASLOC is not only serving as a microfinance institution that disburses micro and small loans to the identified poor in the various sectors of the Ghanaian economy, but also provides business advisory services, training and capacity building for small and medium scale enterprises (SMEs) as well as collaborating with institutions, to provide them with the required skills and knowledge in managing their businesses efficiently and effectively (MASLOC - Microfinance and Small Loans Centre, 2010). They give all sorts of loans from micro-credit or group loan to wholesale lending to microfinance institutions of on-lending to productive poor. These beneficiary groups have their group solidarity guarantee as their tangle security to apply for credit. Established in 2006 by the Government of Ghana, MASLOC also more importantly provide funding to the agricultural sector. They have targeted increase funding to the agricultural sector with the following economic activities

qualifying for funding; production of food crops, agro-processing, poultry, marketing of foodstuffs such as maize, yams, tomatoes, local rice, cold-storage and livestock; and also production of non-conventional animals production like bee-keeping and grasscutter rearing (GNA, 2010). MASLOC being a governmental organisation is not free from politics and government interests in the execution of their activities. Although they are doing their best to support the agricultural sector their policy will not favour much the livestock production actors in the chain since loan is for a period of 12month but it takes about 2years to get small ruminants that has reached its reproductive age to reproduce and have the young reach a marketable age if one wants to maximise income. Nevertheless it can be of help to other livestock chain actors like traders and processors who buy and sell animals instead of rearing them. But the question still remains how sustainable can this trading and processing in livestock be if there is no production of livestock.

## **2.5 Financial Institution financing Agriculture (LDP)**

The Agricultural Development Bank (ADB) is currently the main source of finance for the agricultural sector, particularly for the smallholder rural operators. Rural and Community Banks (RCBs) and other rural based commercial banks are also a major source of financing for smallholder operators. RCBs are currently undergoing comprehensive capacity development under another Bank Group project co-financed by the World Bank, IFAD-International Fund for Agricultural Development and the Rural Financial Services. It is envisaged that at the end of this project, RCBs will assist in channelling credit to the rural communities. Established in 1965, ADB has been the major channel for bilateral and multilateral credit schemes to agricultural production and to livestock sub-sector, specifically. It has a wide geographical coverage with 42 branches located in all ten regions and in most districts of the country. The bank lends to farmers directly or uses intermediaries to reach smallholder clients.

ADB also uses group lending and lending to Farmers' Associations, to broaden outreach. Interest rates charged to farmers include 5% administrative costs, 5% profit margin, provision for bad debts and inflation. The return on capital has also followed the same trend. At present, the lending rate to the agricultural sector varies between 39% and 42% with the average lending rate being 40%. Recovery rates from its agricultural sector clientele fell from 72% in 1998 to 58% in 1999, due to floods which led to the poor performance of the sector in 1999. Recovery rates have since picked up again to 86% in 2000 (African Development Fund, 2001). The bank was responsible for their loan recovery program and under LDP it had 100% risk loan recovery cost (Livestock Development Project Team, 2008).

## **2.7 Livestock Development Project Review (2008)**

The National Livestock Services Project (NLSP) funded by the World Bank was instituted to give producers improved access to livestock health services, water and forage resources, improved breeding stock, improved animal production technology and markets through a combination of institutional and policy reforms and investment (The World Bank, 2012). There was no provision for value chain finance. Thus LDP been first of the kind to have a go into livestock value chain finance a review to evaluate the projects performance was important. It was realised that only 31.47% of the project funds had been disbursed (Livestock Development Project Team, 2008). The cash credit disbursement was the responsibility of ADB and MOFA was to complement efforts. The cost of travelling to process loan documents put a strain on already poor farmers; also the interest rate was high. The initial 27% interest rate was too high and had to be slashed down to 15% upon negotiation between MOFA and ADB. The number of beneficiaries was not encouraging with women beneficiaries been on a lower side as compared to the recommended 45% women participation in the LDP Appraisal report of 2001 (Livestock Development Project Team, 2008). Issues of livestock as a business was not emphasised so farmers had the perception



that the credit was their share of the national cake from the government. There was also the issue of little value addition within the project districts in general. There was provision of vaccines (PPR, CBPP etc) to the Veterinary Services Directorate. According to (Koney, 2004) smaller ruminants need to be vaccinated against PPR at least ones a year. Under the midterm review of LDP the cash credit was declared a failure and the credit in-kind scheme was recommended for the extended 2years of the project (Livestock Development Project Team, 2008).

### **2.7.1 Credit in-kind**

Credit in kind and innovative value chain finance gives input to smallholder farmers and beneficiaries instead of cash credit. According to Miller & Jones it is important to have innovative value chain finance than just value chain finance. It is important to give inputs that will meet the farmers need than finance in the form of cash that can be a burden to beneficiaries.

#### **2.7.1.1 LDP credit in-kind scheme**

The credit in-kind scheme which was instituted in 2010 at the end of the final phase of the additional 2 years of the project saw some beneficiary farmers in the Kintampo North District receiving credit in form of sheep (District Agriculture Development Unit, 2011). This scheme was instituted after the credit in cash was declared a failure at the 2008 mid-term review of LDP. Beneficiaries entered into an agreement with MOFA by signing a contract (Annex 4). Unlike the credit in cash scheme beneficiaries were to receive same number of sheep or goats (20) and given a total of 24months for loan repayment (District Agriculture Development Unit, 2011). Beneficiaries had to meet some set criteria even before they were shortlisted and allowed to sign the contract. The criteria from the then Director of Animal Production Directorate each individual smallholder farmer was to receive 20 small ruminants and sensitisation was to begin by AEA in their operational areas (Annex 4). Nevertheless, the total number of small ruminants farmers receive changed and they signed the new contract before they received the animals. There were a total of 3 batches of beneficiaries who received a maximum of ten sheep (either 10 females or 9 females and 1 male) (DADU Annual Report, 2010). This credit scheme is also another revolving fund just that this time it was not cash but animals (in-kind).

#### **2.7.1.2 Heifer Internationals' Pass on the Gift scheme**

Heifer international is an international nonprofit and non-governmental organization that supports poor communities to meet their basic social need. Heifer's Pass on the Gift project supports smallholder farmers in developing countries like Asia and Africa with a gift of animals whose offspring are passed on to other farmers in the community (Heifer International, 2011). This is an innovation to value chain finance as stated by Miller & Jones, 2010. They said governments and ministries have adjusted their program to enhance value chain development in the context of value chain finance as it was the case of Costa Rica, India and also Kenya (Miller & Jones, 2010). Heifer projects are neither bank financed nor microfinanced part of the value chain but beneficiaries' share mutual accountability and cooperation to pass on the gift they received in the community. Animals are chosen based largely on how appropriate they are for the local environment and the family in order to keep the animals productive and healthy (Heifer International, 2011). Project participants are given training on animal health and husbandry practices integration of livestock into the ecosystem and improvement of the environment during the entire first year of a 5year Heifer project. Just LDP, Heifer also trains community animal health workers who can administer vaccinations and other medicines to keep gift animals healthy.

Heifer recipients enjoy improved diets and finances through the consumption of gifts products such as milk and egg. An example is the receipt of 15 pregnant heifers during autumn by 15 new families in Armavir region and one family is already getting milk for sale and for the family (Heifer International, 2011). Also Heifer International in 2007 embarked on an

ambitious dairy program, and shipped 140 Jersey cows to Accra the capital of Ghana. The milk from the cow, two to three gallons a day, provided a steady source of income for the beneficiary family who also receive training (Heifer International, 2011). Heifer calls everyone to table to contribute ideas and experiences, especially women living in cultures where they have traditionally been excluded or undervalued; gender equity is central to success. Also, women are more likely to share the fruits of their education and success with their families (Heifer International, 2011). But as it is seen, where women are the majority of smallholder farmers, failure to release their full potential in agriculture becomes a contributing factor to low growth and food insecurity (The World Bank, 2012).

## Chapter 3 Research Methodology

### 3.1 Research Strategy

Two types of data were collected for this thesis, primary and secondary data. First the secondary data gathered through desk study started with collection of information on smallholder sheep and goat chain, innovations and sustainability from various countries from literature to get an authentic base for discussions for the credit schemes. Also literatures on livestock production and on value chain finance and value chain development were read to have rich discussion on the Livestock Development Project strategy and other innovations and findings in literature. Then information from the LDP appraisal report was collected for a clear rationale and strategy and implementation of the credit schemes. Similar projects especially the Heifer International Pass on the Gift Project was specifically used to know their intervention and sustainable impact and then to make comparison and contrast to LDP's credit in-kind scheme whilst MASLOC was used to raise arguments and discussions in the cash credit. Prior to the data collection the Schedule Officer for the Livestock Development Project was connected for confirmation on using the LDP credit scheme as thesis topic since it was a national project. The District director of MOFA - Kintampo was officially informed of the choice of his the area of jurisdiction for study on the LDP's credit component for research.

Then plans were made to start with the primary data where survey in the form of questionnaire and interviews with checklist were used. The district capital Kintampo was chosen as most of the credit beneficiaries in both credit schemes were allocated. Also most of the other areas were not readily accessible as vehicles ply the area ones weekly. The first week of data collection was for introduction of the research and identification of their location by the district livestock specialist. This was because it was difficult to locate the houses credit beneficiaries if given the direction (there are no maps giving directions). Also beneficiaries were sceptical speaking to strangers about the credit scheme because they were afraid to be prosecuted because they defaulted or didn't want to have anything to do with the agric officers once they have paid off the cash credit. Most individual beneficiaries from the credit in cash scheme were not willing to answer questionnaires as individuals. So their request to come together as a group at a neutral place which was not their house was accepted to get them to feel free to participate in answering of the questionnaire. This was because they wanted to feel secured and more confident to speak. After most data had been collected from credit beneficiaries the ADB's Branch Manager and finally the livestock specialist who played both parts as the animal production officer as well as the animal health officer were contacted to ensure that there was no biasness on the part of the researcher during the gathering of information from credit beneficiaries. Unfortunately the Branch Manager at the last minute refused to cooperate so the Schedule Officer for the Livestock Development Project had to be contacted to request the officer at ADB head office to give some of the information then he filled-in the missing information that was needed in an interview.

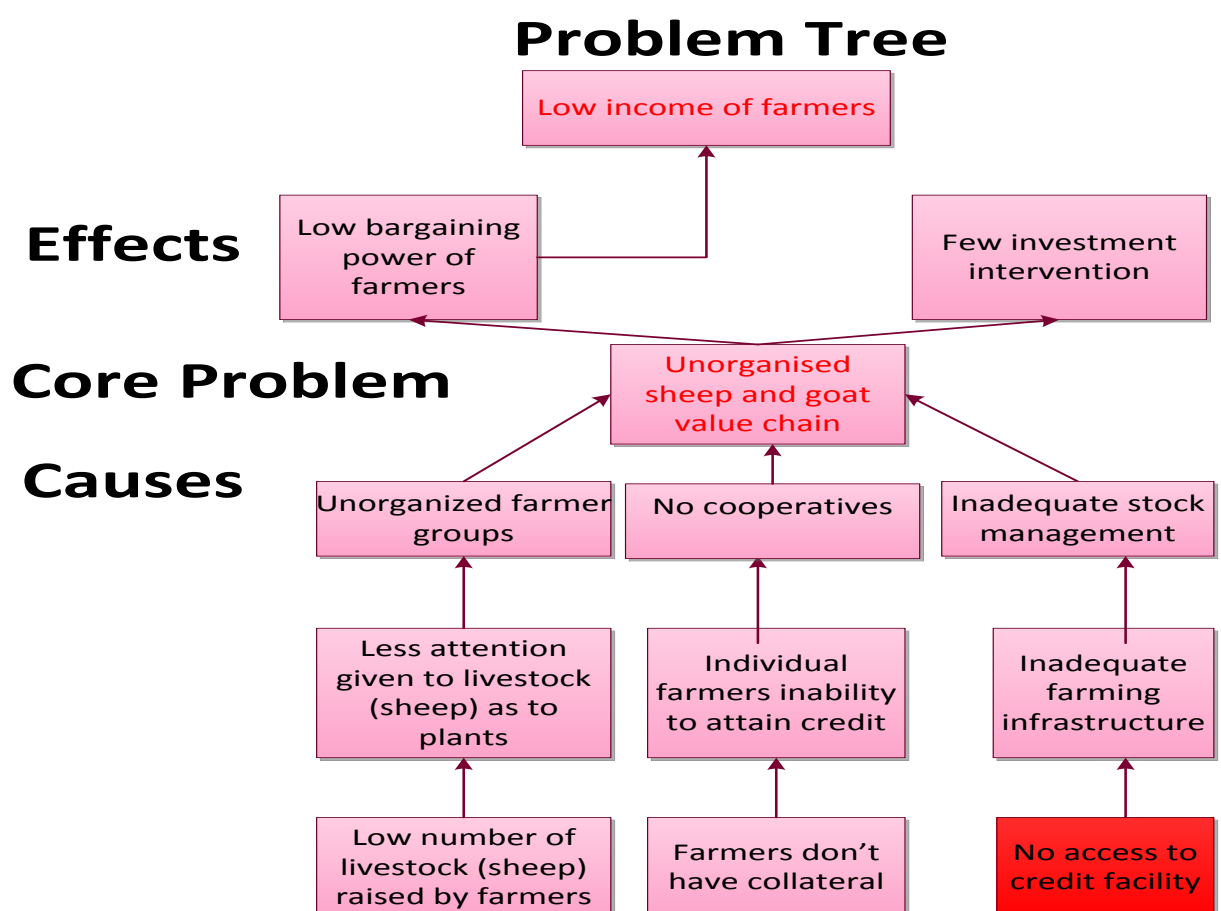
### 3.2 Research Design

The primary data was done by administering semi-structured questionnaire to 45 smallholder sheep farmers from the credit in-kind beneficiaries and 37 individuals from six livestock beneficiaries groups from the credit in cash scheme in the Kintampo North Districts of the Brong –Ahafo region of Ghana. The survey was conducted by administering questionnaire gave a total of 82 respondents for both credit schemes. The credit in-kind had 15 beneficiaries selected randomly from each of the 3 batches of the credit in-kind scheme. This was because there were 3 batches of delivery of animals at different times for the year at different seasons. Three individual beneficiary groups' chairmen and/or secretaries from cash credit and also 3 individual beneficiary farmers from the credit in kind scheme (one from each batch) were interviewed. Each beneficiary livestock group was made up of 5 to 10 individual and the selected group was no more by random selection but by willingness of beneficiaries to participate in the information sharing. Although the first and third batch of the

credit in-kind scheme had more beneficiaries the second batch only had 20 beneficiaries out of the 120 beneficiaries thus the 15 beneficiaries from each batch. This was to avoid biasness in the results. The credit officer of the Agricultural Development Bank, Techiman was no more interviewed instead structured questionnaire was administered on the credit in cash disbursement and repayment in the Kintampo district. There was no ADB branch in Kintampo district it was only in Techiman the nearest town to Kintampo district. Also that was where the credit was processed and issued out to beneficiaries. Then finally the livestock specialist APD and the Schedule Officer for the Livestock Development Project were interviewed. All interviews were conducted using check list to get a detailed report because the sample size was smaller (8) whilst the survey used for easy data compilation and analysis.

### 3.3 Conceptual Framework

The livestock sector was faced with a lot of challenges and this framework (figure 1 and 2) were used as part of the methodology in showing the challenges before the commencement of the Livestock Development Project. The problem tree and chain map were used in assessing the impact of the project on the sheep chain in discussion. The problem tree shows the existing challenges in the livestock change and the areas that need to be intervention



**NB:** The red shade is the main topic of concern in this thesis



Figure 2 Problem tree of the existed livestock sector

## Livestock value chain in Kintampo

Smallholder livestock farmers had no access to credit facilities. Due to this the number of animals that they kept was low (average of 4 animals). The cash credit gave beneficiaries the opportunity to buy more animals, drugs and feed. Also the credit in-kind increases the livestock population to an additional 1200 sheep (excluding animals that died) in Kintampo district alone.

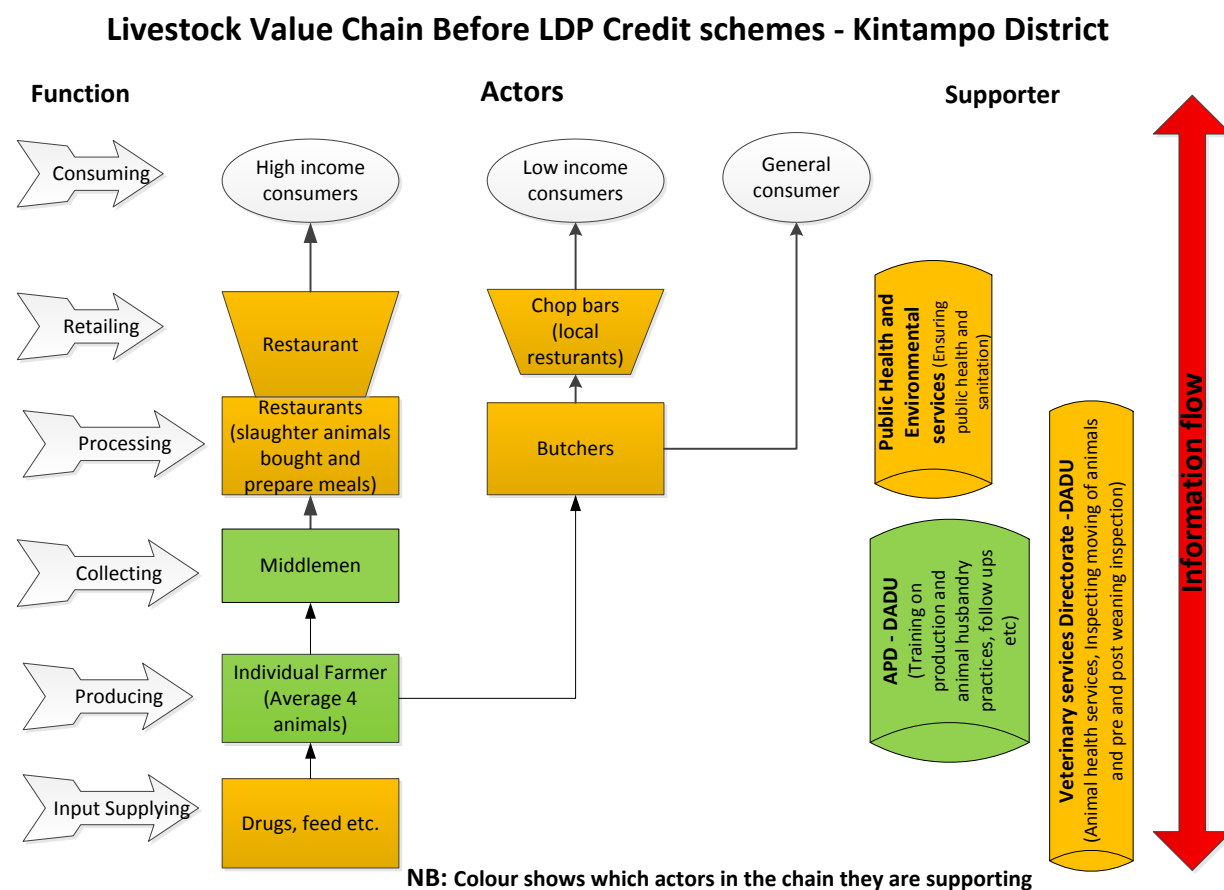


Figure 3 Livestock Value Chain before LPD Credit Scheme

### 3.4 Method of Data Analysis

The quantitative data compiled from the questionnaire was analysed using SPSS statistical tool. The nominal variables were analysed using Chi square and graphs, the ordinal variables were analysed using Mann Whitney test and T-test and Anova test used for the scale variables. Also bars, frequencies tables and excel were used to interpret response from questionnaire to make easy compilation of the descriptive statistics which were used in analysis where there was no valid statistical explanation for the test used. Correlation was used in the analyses of the cause and effects (relations) of a few variables.

Data analysis was done in categories, first with analysis of the credit in-kind scheme using chi square, one-way Anova, T-tests and correlation. Second analysis of the credit in cash scheme where more of excel and frequencies were used. Then analysis of both credit in-kind and credit in cash schemes using the same chi square, one-way Anova and T-tests and

Mann Whitney test also bars, frequencies and excel. Finally the main thesis hypothesis was drawn. There was an impact of the Livestock Development Project's credit component in livestock value chain finance and development. This hypothesis will be answered in the results/findings and discussed further in chapter 5 (discussion).

## Chapter 4 Results

These were the results from the questionnaires administered to 82 credit beneficiaries in both credit in cash and credit in-kind scheme and also the interviews conducted were processed into reports.

### 4.1 Kintampo value chain after LDP intervention (Credit scheme)

The livestock value chain after the intervention of LDP realised an increase in the livestock figure to approximate 1200 more sheep in Kintampo district. Beneficiary farmers from both from the credit schemes were selling their animals to the general consumer/ open market as shown in violet in the consumer circle of Figure 6 below. The role stakeholders are showed on the value chain map.

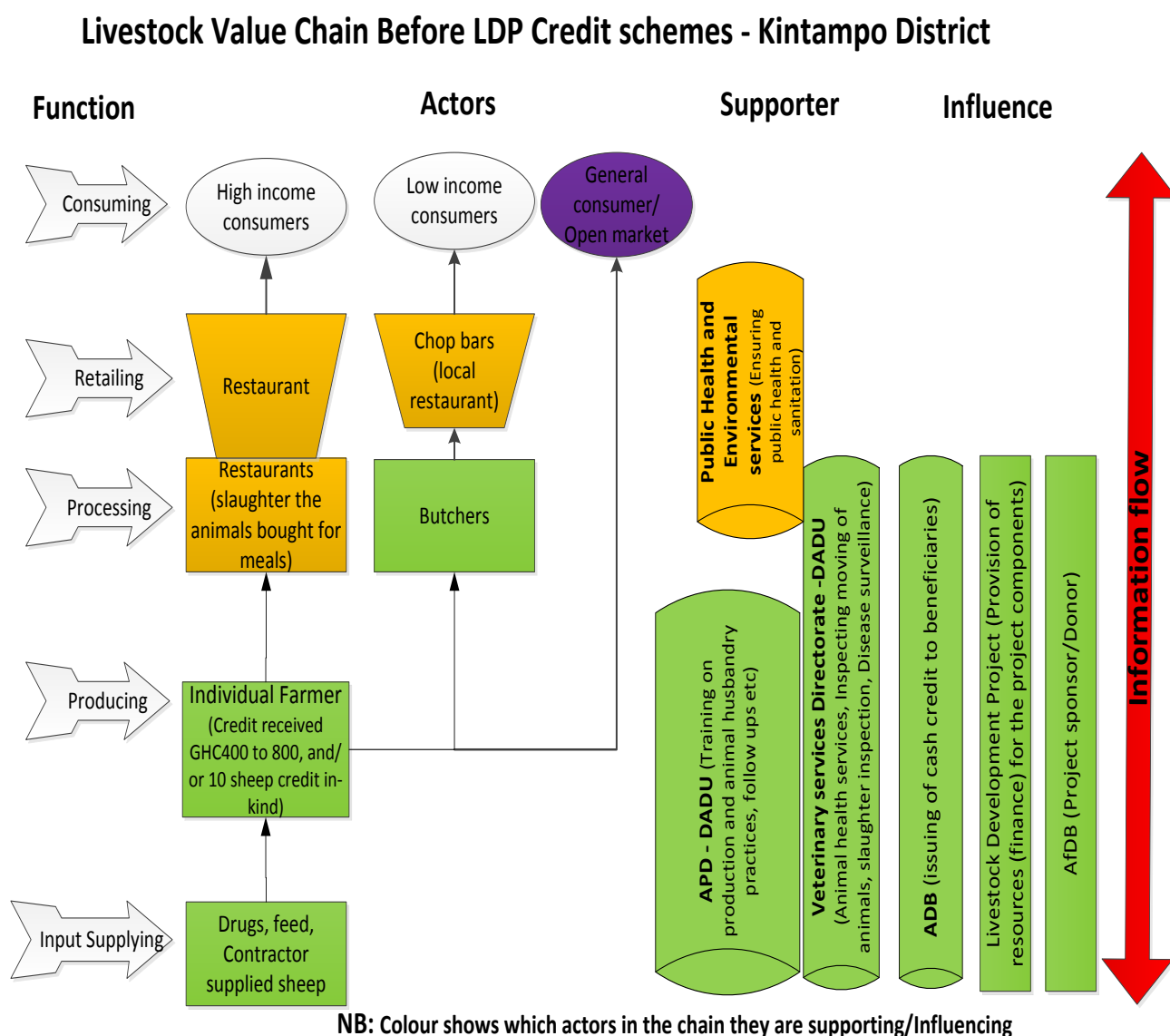


Figure 4 Livestock value chain after LDP intervention

## 4.2 Results from Questionnaire

Thesis raw data and questionnaires are in Annex 4, 6 and 7 respectively. The total number of respondent and the sex (gender) in tables 1&2.

**Table 3 Type of credit & Sex**

Type of credit					Sex						
		Frequency	Percent	Valid Percent	Cumulative Percent			Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Credit in cash	37	45,1	45,1	45,1	Valid	Male	63	76,8	76,8	76,8
	Credit in-kind	45	54,9	54,9	100,0		female	19	23,2	23,2	100,0
	Total	82	100,0	100,0			Total	82	100,0	100,0	

The results from the questionnaire are categorised into:

1. Analysis and comparison of the batches (1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> batches)
2. Analysis of the credit in cash
3. Comparison between credit in cash and credit in-kind
4. Agricultural Development Bank's response to the cash credit

The interviews are summarised into report and in categories as, credit in cash interview, credit in kind interview and livestock specialist interview.

### 4.2.1 Analysis and Comparison of the batches (1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> batches)

Here are results from analysis done on 45 respondents from the credit in-kind scheme answering the hypotheses raised in the previous chapter (3) on the credit in-kind scheme. See Annex 3 for details on the analysis.

Result from table 4 shows that,  $P=0.05$ , thus there was not exactly a clear cut significant difference in the number of animals that died between females (8) and males (37) beneficiaries. Nevertheless figure 5 shows the relation between sexes (gender) and the number of animals that died in relation to principal worker (s) on the farm: Farms with the principal worker been self where all males.

**Table 4 Number of animals that died and sex**

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Number of animals that died	Equal variances assumed	4,456	,041	1,382	43	,174	,990	,716	-,455	2,435
	Equal variances not assumed			2,079	20,938	,050	,990	,476	,000	1,980

**Figure 5 Number of animals that died between males and the principal worker(s) on the farm**

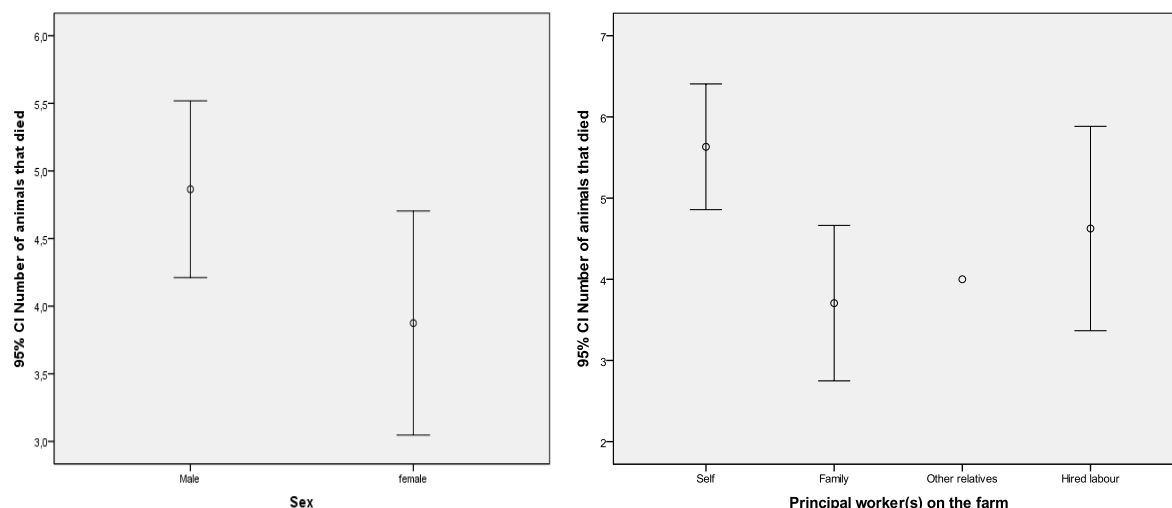


Table 5 is further check on who the principal worker (s) on the farm were for the sexes (gender) showed that from the 82 respondents 59% males were the sole worker o their farm whilst none of the females were the sole workers on their farm. Rather the out of 79% of the females employed family labour on their farms whilst only 25% of the male respondents employed family labour.  $P=0.015$ ,  $P<0.05$ , thus there was significant difference between the numbers of animals that died and principal worker(s) on the farm.

**Table 5 who principal worker(s) of the farm were between sexes (gender) and Number of animals that died between the those workers**

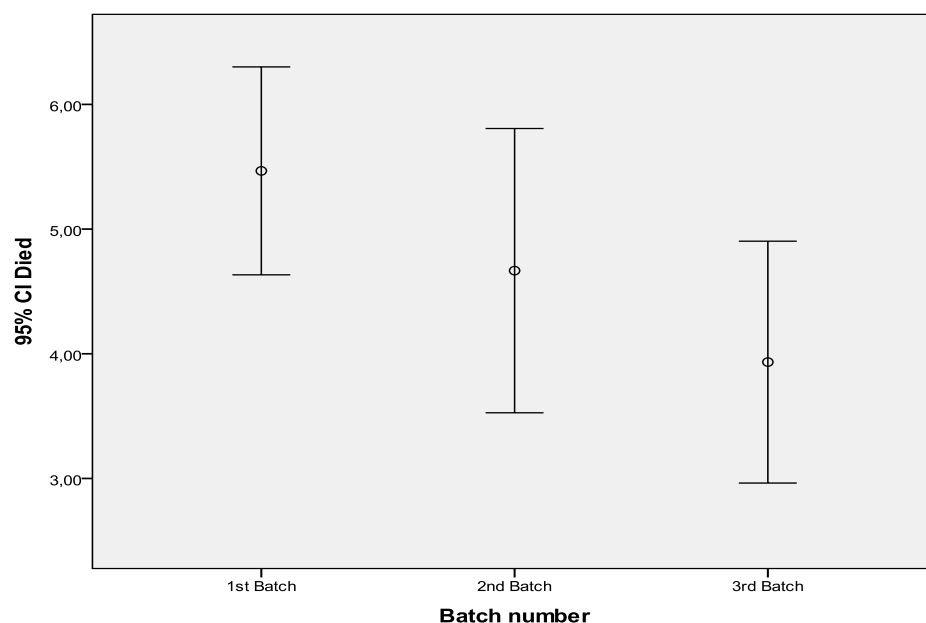
ANOVA					
Number of animals that died					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	33,819	3	11,273	3,923	,015
Within Groups	117,825	41	2,874		
Total	151,644	44			

Sex * Principal worker(s) on the farm Crosstabulation						
			Principal worker(s) on the farm			
			Self	Family	Other relatives	Hired labour
Sex	Male	Count	37	16	2	8
		Expected Count	28,4	23,8	1,5	9,2
	female	Count	0	15	0	4
		Expected Count	8,6	7,2	,5	2,8
Total		Count	37	31	2	12
		Expected Count	37,0	31,0	2,0	12,0

The number of average number of animals what died in animals that died among the 1<sup>st</sup> batch = 5.5; 2<sup>nd</sup> batch = 4.8 and the 3<sup>rd</sup> batch = 4 (figure 6). The difference between the average number of animals that died among the 3 batches did not show no significant difference  $P=0.07$ ,  $P>0.05$  (table 6). Instead there was significant difference in the number of animals that died among the 1<sup>st</sup> batch and the 3<sup>rd</sup> batch,  $P=0.016$ ,  $P<0.05$  (table 7). Also there was no significant difference among number of animals that died in the 2<sup>nd</sup> and 3<sup>rd</sup> batches (see Annex 3 b and 3c).

**Figure 6 Number of animals that died and batch**



**Table 6 Number of animals that died and batches**

**ANOVA**

Died

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	17,644	2	8,822	2,765	,074
Within Groups	134,000	42	3,190		
Total	151,644	44			

**Table 7 Number of animals that died between 1st and 3rd batches**

**Independent Samples Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Died	Equal variances assumed	,096	,759	2,571	28	,016	1,53333	,59628	,31190	2,75477
	Equal variances not assumed			2,571	27,384	,016	1,53333	,59628	,31066	2,75601

There was significant correlation between improved management approach and animal performance,  $P=0.044$ ,  $P<0.05$  the null hypotheses is rejected (table 8). Thus there is a relationship between improved management approach and animal performance (number of animals left and their lambs) under the credit in-kind scheme although there was not much training impact response recorded (Annex 3 k).

**Table 8 Correlation between training impact on improved management approach and animal performance (ewe+lambs)**

Correlations<sup>a</sup>

		There was general improvement in management approach?	Number of animals left and their lambs
There was general improvement in management approach?	Pearson Correlation	1	,305*
	Sig. (2-tailed)		,044
Number of animals left and their lambs	Pearson Correlation	,305*	1
	Sig. (2-tailed)	,044	

\*. Correlation is significant at the 0.05 level (2-tailed).

a. Listwise N=44

Also the response given for the difference between criteria and batches had some difference in response, but these difference were not significant (annex 3 l & 3 m). The statistical analysis tool used did not give valid reliable results as sample sizes were small.

#### 4.2.2 Analysis of the credit in cash

From Table 9 out of the 37 respondent 77% of them used the credit to buy animals, drugs and feed according to the purpose of the cash credit. Only about 5% used the credit for non-animal related ventures which was not according to the purpose of the cash credit.

Table 9 what credit was used for under the credit in cash scheme

Purpose	Frequency	Percentage
Buying animals	15	39.5
Buying animals, drugs and feed	14	36.8
Rehabilitating pen and others	7	18.5
Others (not animal related)	2	5.2
<b>Total</b>	<b>38</b>	<b>100</b>

Table 10 shows that 25 out of the 37 respondent have fully paid off their loan making almost 66% and 34% are yet to fully payback loan under the credit in cash scheme

Table 10 Loan recovery performance in Credit in cash scheme

Reason	Frequency	Percentage
I've paid my loan and interest	25	65.8
I've not able to raise all the money	10	26.3
I've not been able to pay the interest	3	7.9
<b>Total</b>	<b>38</b>	<b>100</b>

#### 4.2.3 Comparison between credit in cash and credit in-kind

In table 11 follow-ups beneficiaries received from DADU were done mainly to collect data on animals and performing of health checks and treatment. (See Annex 3: g, i) to v)). The table shows follow-ups were non-applicable for almost all respondents from the credit in cash since they did not receive any.

Table 11 Difference between follow ups received by all 82 beneficiaries

Type of follow up	Yes	No	Non-applicable	Total
Training	15	36	31	82
Animal Data collection	44	3	34	81
Health checks and treatment	43	4	35	82
Vaccination	1	46	35	82
Market information	2	45	35	82

**NB: One response from the follow up type animal data collection was missing.**

Table 12 shows the significant differences in training on housing and training on entrepreneurship respectively for the organised training that beneficiaries attended when the livestock Development Project was operational (82respondents).  $P=0.02$  and  $P=0.000$  and  $P<0.05$ . (See Annex 3h for further test on the impact of the trainings).

**Table 12 Difference between types of organised training attended by beneficiaries when LDP was operational and both credit schemes**

Test Statistics				
	Did you receive training on animal health when LDP was operational	Did you receive training on proper husbandry practices when project was operational?	Did you receive training on housing?	Did you receive entrepreneurial training when project was operational?
Chi-Square	,195 <sup>a</sup>	,195 <sup>a</sup>	9,561 <sup>a</sup>	23,610 <sup>a</sup>
df	1	1	1	1
Asymp. Sig.	,659	,659	,002	,000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 41,0.

In table 13  $P=0.452$ ,  $P>0.05$ . The null hypothesis is accepted since there is a significant difference between training impacts improved management and credit schemes. Thus between both credit schemes to training impact improved management approach there was no significant difference in their response.

**Table 13 Difference in training impact improved management approach between both credit schemes**

Test Statistics <sup>a</sup>	
	There was general improvement in management approach?
Mann-Whitney U	764,000
Wilcoxon W	1754,000
Z	-,752
Asymp. Sig. (2-tailed)	,452

a. Grouping Variable: Type of credit

There is a significant difference between preference and credit scheme.  $P=0.001$   $P<0.05$  so the null hypothesis is rejected (Table 14). Majority of the beneficiaries from the credit in cash scheme prefer credit in-kind scheme as the number from the credit in-kind that prefer the credit in-kind See (annex 3s). The reverse is true with beneficiaries from the credit in-kind scheme preference for the credit in-kind.



**Table 14 Preference of credit in kind scheme by both credit scheme beneficiaries**

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	11,511 <sup>a</sup>	1	,001	,001	,001
Continuity Correction <sup>b</sup>	9,768	1	,002		
Likelihood Ratio	12,959	1	,000		
Fisher's Exact Test					
Linear-by-Linear Association	11,371	1	,001		
N of Valid Cases	82				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8,34.

b. Computed only for a 2x2 table

Table 15 shows availability of pen as the topmost criteria in both credit schemes with 100% requirement, followed by keeping of livestock already 100% for credit in cash and 88% for credit in-kind. Then having feed resource and/or willing to established fodder bank was 78% required for cash credit and 53% for credit in-kind. (See Annex 3 o, p, and q for details).

**Table 15 Type of criteria given for both credit schemes**

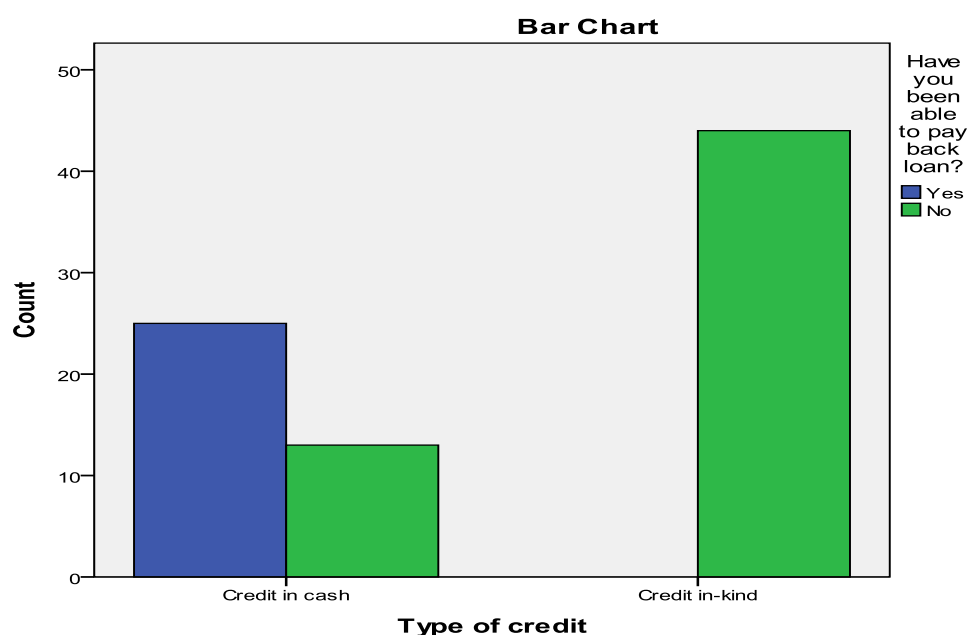
Type of Criteria	Type of credit scheme	Yes		No	
		Frequency	Percentage	Frequency	Percentage
Criteria 1: Available animal pen	Cash	37	100	-	-
	Kind	45	100	-	-
Criteria 2: Have/keep livestock already	Cash	37	100	-	-
	Kind	37	82,2	8	17,8
Criteria 3: Have not benefited from any ADB loan issued by DADU	Cash	22	59,5	15	40,5
	Kind	5	11,1	40	88,9
Criteria 4: Having feed resource and/or willing to established fodder bank	Cash	29	78,4	8	21,6
	Kind	24	53,3	21	46,7
Criteria 5: Attend and access services of DADU	Cash	10	27,0	27	73,0
	Kind	24	53,3	21	46,7
Criteria 6: Others (Group formation)	Cash	18	100	-	-
	Kind	-	-	-	-
Criteria 7: Others (Opening account at ADB)	Cash	18	100	-	-
	Kind	-	-	-	-

**NB: Others were additional criteria given credit by some credit in cash respondents**

Most respondent (23 from credit in cash and 12 from credit in kind) sell their animals in the open market followed by those respondents who do not sell their animals at all for both credit schemes. Respondents from the credit in-kind scheme sell more of their animals to middlemen compared to respondents in the credit in cash scheme (Annex 3t).

None of the credit in cash beneficiaries has been able to repay their loan, Figure 7. Table 16 shows that among the reason from 58 beneficiaries who haven't paid back loan 30 of them said time was not due making the highest reason given and only 3 respondent making 5.2 % said they were left with the interest of the loan to pay; as in analysing the recovery performance in both credit in cash and credit in kind schemes from respondents.

**Figure 7 Ability to repayment credit**



**Table 16 Reasons for not having paid back loan**

Credit scheme	Reason	Frequency	Percentage
Cash	I've not able to raise all the money	10	17.2
	I've not been able to pay the interest	3	5.2
Kind	Time not due	30	51.7
	They have not asked for them although time is due	15	25.9
<b>Total</b>		<b>58</b>	<b>100</b>

From Table 17 there was 100% response from beneficiaries from the credit in-kind scheme were all 45 beneficiaries answered “Yes” on the following opinions: Payment will be easy if animals are of best breed; Animals given were weak and sick; Animals were not acclimatized to the environment and a lot of animals died because they were not good. Over 60% of credit in-kind beneficiaries said it will not be easy to sell animals and divert it into other venture as against 94% of the credit in cash beneficiaries who are of the cash credit could be easily diverted into other ventures. 100% of 68 respondents from both credit scheme said it will be easy to pay back the animals if they are of the disease resistant breed. 97% (33) of credit in cash respondent thinks the loan repayment period was too short whilst 53% (24) of credit in-kind respondents also thinks their loan repayment period is too short because the animals died.

**Table 17 Opinions of credit schemes between beneficiaries**

Type of Opinion	Type of credit scheme	Yes		No	
		Frequency	Percentage	Frequency	Percentage
Cash credit: Payment was cumbersome	Cash	24	75,0	8	25,0
	Kind	8	66,7	4	33,3
Cash credit: Easy to divert money into other ventures	Cash	30	93,8	2	6,3
	Kind	10	83,3	2	16,7

Cash credit: Loan repayment period too short	Cash	33	97,1	1	2,9
	Kind	11	91,7	1	8,3
Cash credit: I can select and buy best suitable animals for me and the environment	Cash	31	96,9	1	3,1
	Kind	9	90,0	1	10,0
Cash credit: Interest rate too high (20%)	Cash	5	33,3	10	66,7
	Kind	2	40,0	3	60,0
Credit in-kind: Payment will be easy if animals are of resistant breed	Cash	23	100,0	-	0,0
	Kind	45	100,0	-	0,0
Credit in-kind: Able to generate loan within a shorter period before 2 years	Cash	0	0,0	9	100,0
	Kind	5	11,1	40	88,9
Credit in-kind: Easy to sell animals and divert into other ventures	Cash	4	44,4	5	55,6
	Kind	17	37,8	28	62,2
Credit in-kind: Animals given were weak and sick	Cash	9	100,0	-	0,0
	Kind	45	100,0	-	0,0
Credit in-kind: Animals were not acclimatized to the environment	Cash	9	100,0	-	0,0
	Kind	45	100,0	-	0,0
Credit in-kind: Is loan repayment period too short because most animals died	Cash	6	66,7	3	33,3
	Kind	24	53,3	21	46,7
Credit in-kind: A lot of animals died because they were not good	Cash	9	100,0	-	0,0
	Kind	45	100,0	-	0,0

#### 4.2.4 Agricultural Development Bank's activities in the cash credit

In Table 18 the bank had set criteria for credit approval. Also the officer considered the credit in cash as a failure.

**Table 18**ADB officer's response from questionnaire

Item	Response
Criteria for approval of credit by ADB	Farmers were to belong to an farmer based organisation (FBO)
Interest rate per annum	10%
Credit repayment period	12 to 24 months
Mechanism put in place by ABD to ensure complete recovery of loan	Opening of group account by each group. Employing of AEA to assist in regular monitoring.
Percentage of Default in Kintampo	38%
Percentage credit recovery nationwide	66.75%
Number of cash credit beneficiaries (national)	4514 (Males =2998, Females =1516)
Total amount disbursed as cash credit (national)	GHC1, 906,155.59

Candid option about credit in cash scheme	Credit in cash was a failure even though the production of livestock increased it did not translate into improving the lives of farmers. Farmers did not want to sell their animals and for that matter repayment of the loan was affected.
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### 4.3 Result from Interview

Report on interviews from: three beneficiary groups' chairmen and/or secretaries from the credit in cash, three individual farmers from the credit in-kind scheme, and the livestock specialist of the District Agricultural Development Unit (Check list in Annex 8).

#### 4.3.1 Report on Credit in cash Interview

According to the interviewees before the introduction of the credit scheme livestock farmers were receiving training at the District Agricultural Development Unit (DADU) office upon invitation by the Agricultural Extension Officer (AEA) in charge of the communities in the district. It was during these meeting that some farmers heard of the credit in cash scheme. During the introduction of the credit scheme farmers we asked to form groups of not less than 5 or more than 10 members. Members were vetted and when approved of asked to open a group account at the Agricultural Development Bank in Techiman (a municipality an hour drive from Kintampo). Then the bank will inform them via DADU when credit is awarded for beneficiaries to go for them as a bulk amount for that group. Money was then equally distributed among members. For some groups the total money was given in two parts causing the temptation to divert it. The condition given them was to use the credit to buy animals, feed and drugs but the farmers were suppose to have an existing pen. And based on the objectives of the group beneficiaries were to use the credit for the intended purpose as an actor in the livestock chain (Yara, et al., 2012).

According to the chairmen the interest rate was 20% of the loan for a period of 15months. Some groups requested loan repayment date be extended to 24months but was only extended for 3months upon which groups had no other excuse but to pay all the money as well as the interest. During the period the money was given till the time of complete payment some groups use to meet to deliberate on the animals keeping and the challenges. If challenge was beyond them they called for the assistance of the livestock specialists. Only one of the groups interviewed still meet to discuss although that group receive the credit ones. According to the group chairman and secretary the credit in cash failed because the interest was too high and the loan repayment period was too short for a livestock business rather a period of 2years at least was best for livestock production. They also said the right amount they requested for was not given them by the bank as this doesn't help for proper improvement of the livestock chain if the government wants to indeed help in poverty alleviation and increment of livestock population in the country (Yara, et al., 2012).

One chairman of a group said he has summoned to court by the bank requesting of him to get the defaulted members to pay the loan left or he will be made to pay outstanding debt of the members who have left the district after they were prosecuted at court by the bank. He is of the view that if animals were given to these members it would have been much better for them to pay back the loan as some projects have been doing. He said farmers in general have a lot of responsibilities that they are easily tempted to divert credit given them in cash especially into their crop farming and other social responsibilities. The other two chairmen and their secretaries were of the view that the cash credit is good since beneficiaries can purchase their own health animals since most of them have experience in livestock keeping already nevertheless if the money requested for is not given for their projects then buying healthy animals for them will be a much better idea (Yara, et al., 2012).

#### 4.3.2 Report on Credit in-kind Interview

According to the interviewees the credit in-kind scheme was a great idea but the implementation was just so bad. All the animals that came were looking weak and sick and some very young. They were not of good breed because the interviewees think the contract (buying of the animals) was not given to an expert in livestock. Some farmers even refused to take the animals because they were less than a year old (young). They said a lot of money; their money has gone into treating the animals they received. Also the animals were also stolen and DADU did not come to vaccinate their animals (Abowine, et al., 2012).

According to them some farmers even called for DADU to come and take their animals when they got some lambs but DADU did not and the lambs died of diarrhoea and others got stolen. They were of the opinion that if a poor farmer is to given credit or relieve in the name of poverty alleviation then their opinions should be taken into consideration and not only represent them on their decision making team. They also said animals are to be bought from areas with the same climatic conditions so that the animals can survive in their new environment (Abowine, et al., 2012). They claim the credit in-kind scheme can only be a successful revolving fund if all the anomalies are not repeated. But also one was quick to add that the next group of people to benefit from the credit in-kind scheme will have fewer challenges with the animals in terms of health issues and adaptability (Abowine, et al., 2012). Finally, according to one of the interviewee her group benefited from the credit in cash scheme of which they were able to pay off the first loan and take a second. She said although the time was short and it was quite strenuous they were able to make the best selection of the animals that suited them and bought drugs as well as rehabilitated their pen with the cash credit they got. She said it was some of these drugs she still had that helped reduced her cost in treating these sick animals she received under the credit in-kind scheme.

#### 4.3.3 Report on Livestock specialist Interview

According to the livestock specialist the credit in cash beneficiaries were vetted after they had formed groups (FBO). There was no written down criteria but DADU made their own criteria they based on and vetted groups that were made up of producers to middlemen, traders (butchers) and 15 groups making 101 individuals were recommended to the bank that had the mandate to approve of the group and their amount requested. With this 14 groups (94 individuals) were approved by the bank and an amount of loan ranging from GHC400 to GHC800 (Ghana cedis) was given to the groups. These criteria were base on housing, beneficiaries not taken loan from DADU and whether there was group dynamics. He said before they were given loan there was no training organised for groups but only after receipt of loan were given quarterly training on loan recovery and savings as it's included in approved District's LDP activities and budget (Ayerikolo, 2012). Provision was made for beneficiaries to bring their money (repayment) to DADU but at a point ADB trained one DADU officer and resourced him to go round to recover loan from beneficiaries in the district. The whole issuing of loan disbursement and recovery program was left to ADB (Ayerikolo, 2012).

According to him the criteria for the credit in-kind scheme was drawn at the national level and was given to DADU to nominate farmers. Animals were bought outside Ghana from neighbouring Burkina Faso and Northern part of Cote d'Ivoire by a contractor. Animals were quarantined at Paga and Dorba Quarantine stations for less than two weeks, vaccinated and the district whose consignment it is called to go for the animals. He said beneficiaries were asked to collect the animals upon arrival of the sheep at the Goat Breeding Station of the Animal Production Directorate where animals were kept in a holding pen. He also said some animals died during transportation and others arrived weak and also some of the animals were less than a year world (they were weaners not gimmers).

The 1<sup>st</sup> batch of animals were distributed the on the 27/05/2010, the 2<sup>nd</sup> bath 11/08/2010 and the 3<sup>rd</sup> batch 11/03/2011 respectively. He said some farmers were hesitant to collect the

animals but they were reminded of the contract they have signed with DADU so they took the animals. He said in total 120 farmers benefited from the credit in-kind in receiving sheep. The criteria for paying back the loan was to pay back with same number of animals received within the ages of 8 to 12 months. In the contract agreement he said there was no provision made for contingencies as in free treatment of sick animals within some period after receipt, making up for losses (death) within some period after receipt and increase of loan repayment for farmers who received animals below 8months of age. Instead DADU advised farmers to buy ewes to replace dead ones so they can meet the criteria of the contract agreement they had sign upon time of payment (Ayerikolo, 2012). He said although for the 1<sup>st</sup> batch the credit repayment date has elapse and the time for the 2<sup>nd</sup> batch is due they have still not been given the mandate from APD head office to go and collect the credit repayment (the sheep). He said the credit in-kind scheme to him is very good but it will be sustainable if the best animals are selected considering adaptability and period of the year.

## Chapter 5 Discussion

Livestock especially small ruminants have since been the guaranteed relieve to most social needs. Farmers sell their livestock to make up for losses in their crops; families sell their livestock to be able to pay their fees and keep large number of livestock for prestige in society. Not forgetting the high demand of livestock by “chop bar” operators/local restaurants and urban dealers as their protein intake goes up with increase in come (Kamuanga, et al., 2008). Thus financing livestock is a major boost in the Ghanaian economy. The two credit schemes under the livestock Development Project will be discussed and further discussion will be done by comparing it to other credit schemes and/or facilities.

### 5.1 Review of credit in cash

The introduction of the credit component of the Livestock development Project started with sensitization of farmers and vetting of prospective credit beneficiaries base on criteria set by the District Agricultural Development Unit – DADU since according to the livestock specialist there was no written criteria given by the project. The vetting of the group was also done to see the group dynamics as some groups had both husband and wife (Ayerikolo, 2012). Trainings were given to credit beneficiaries (14 groups) who received cash credit from the Agriculture Development Bank in Techiman to prepare them for loan savings towards credit recovery. The credit in cash given to livestock chain actors in the Kintampo district was a great step to improve the livestock value chain since about 77% of beneficiaries used the credit for what it was intended for as stated by the livestock specialist. Unfortunately the repayment became a problem as about 38% of beneficiaries defaulted according to the ADB officer. These defaulters had to be prosecuted in court and even the leaders of the group summoned to court to ensure that credit recovery was 100% by the bank.

#### 5.1.1 Evaluation /Impact Assessment

Over 90 livestock chain actors from producer to processors (butchers) benefited from the cash credit provided by the Agricultural Development Bank. Nevertheless not all beneficiaries were able to repay credit 66% of respondents were able to pay off credit with interest and 34% have still defaulted although the credit officer claims there is 100% recovery now as full recovery was made after loan period. The leaders of the beneficiaries group claim otherwise since they know that some member relocated from the district and a few are dead (death not attributed to loan repayment). It is understandable for the bank as the sole risk bearer of the credit and having a reputation to protect to go all length to recover their loan (Livestock Development Project Team, 2008). It was also interesting to note that the women group among the sample size was able to secure a second loan which they have also paid off and even two of them also benefited from the credit in-kind scheme (Abowine, et al., 2012). Unfortunately their female counterparts who were in the mixed group were only able to pay off the loan with difficulty some of them have still not finished paying back the loan. According to literature women farmers and entrepreneurs have proved time and again that women are essential to economic development, especially in rural and agricultural economies. Also bringing gender awareness issues to development process ensure that interventions produce sustainable results for women and men (VOCA, 2012). In Chapter 2, table 1 the percentage of women involved in agricultural activities is very encouraging in rural Ghana although there is still the strong tendency for project planners and implementers to assume that the major actors in livestock production are men, particularly when large ruminants as cattle are involved (Swanepoel, et al., 2010).

The goal of the credit component of LDP was to intervene in livestock production and processing since they were predominantly income-generating activities carried out by poor smallholder operators in rural areas in a way to achieve the goal of LDP which is focused on reducing poverty and contributing to food security. Unfortunately the cash credit which was also to serve as a revolving fund failed as the initial interest rate of 27% was too high (Livestock Development Project Team, 2008). Although there was an agreement between



LDP and ADB yet some farmers claim they still had to pay for interest at 20% instead of the new agreed interest of 15% (Yara, et al., 2012). Also the period for repayment was too short to increase livestock production to generate income. According to literature small ruminants and pigs reach their reproductive age at 8 months and 2.5 years for a cow so been given a loan with a repayment period between 12 and 24 months was not ideal (Koney, 2004). With this in mind it could be said that value chain finance under the credit in cash scheme was not effective and this livestock value chain might have work without the cash credit intervention from LDP through the bank (KIT and IIRR, 2010). In addition to this because livestock is not like growing high yielding crop that matures within a year, livestock projects need years to mature or better still yield results. Thus the long term nature of livestock chain development requires that more than a year and in some instances many years when it comes to breeding works and vaccine research (Swanepoel, et al., 2010)

Accordingly if value chain finance is not tailored to the capacities and needs of the “business” in the chain it may disrupt the value chain creating debts and discrepancies as realised among the beneficiaries of the cash credit (KIT and IIRR, 2010). Instead of beneficiaries using the credit to develop the livestock chain they now have to battle with debt, court summon and prosecutions in court. The credit in cash could be termed a failure as all parties involved (bank, LDP midterm review team and livestock farmers) put it. Nevertheless there was an impact just that it did not have a continuity aspect as the revolving fund was meant to be.

## **5.2 Comparing MASLOC’s Cash Credit to LDP Cash Credit?**

Considering MASLOC as a microfinance institution they are equally sensitive to gender as LDP appraisal was and they are chopping that success in compared to LDP credit scheme. Their interest rate is also lower compared to the traditional banks like ADB as MASLOC is giving micro- credit, small loans and wholesale lending. For their micro-credit an individual per group be can access a minimum of GHC100 to a maximum of GHC500. The group solidarity mechanism is applied in this credit scheme similar to LDP’s cash credit but with LDP the chairman is held responsible in cause of default and also the amount of credit was GHC 400 as minimum. This means the whole group is held liable for the repayment of the loan. For their small loan scheme, an individual can get between GHC1000 to GHC10000 and an acceptable security is obliged from loan beneficiary, in addition to a personal guarantor who must be in a position to redeem the loan in case of default. MASLOC makes it clear that their credit is only for a period of 12months maximum so as they are considering increasing funding in agriculture sector it is going to be a great challenge to them unless only actors of the livestock chain (like input supplies, collectors and processors) either than producers. But for LDP credit scheme at Kintampo the beneficiary groups were many producers except for a few butchers (processors) and even the maximum credit repayment period for small ruminants (15months) was not favourable for a livestock project (Swanepoel, et al., 2010)

## **5.3 Review of credit in-kind**

The credit in-kind a scheme proposed during LDP midterm review in 2008 became reality during the last week of May 2010 in the Kintampo district the period of the onset of the major rains with the arrival of sheep. This was followed by the second batch of animals (sheep) in the second week of August during the minor rains; then the third batch of animals during the second week of March the later part of the dry season. A total of 120 individual farmers much more than beneficiaries in the credit in cash scheme benefited from this credit in-kind scheme. Farmers had to meet the set criteria of having a pen and having feed resource and/or willing to establish fodder bank (see Annex 4). The paramount requirement of a pen by beneficiaries runs through both schemes. Whilst the criteria for feed resource/willingness to establish fodder bank was requested of only 50% of beneficiaries (table 14). Beneficiaries were allowed to make their own selection from the lot but not all beneficiaries received 10



sheep as they signed for in the contract, some even received as low as 5 animals. There were women beneficiaries but not as their male counterparts.

The sheep were brought in from neighbouring Burkina Faso and Northern part of Cote D'Ivoire which has different climatic conditions than the middle belt of Ghana (Kintampo). These animals were quarantined for less than 2 weeks vaccinated against PPR in the Upper region of Ghana which has a different climatic condition to where they were coming from and where they were been transport to (Kintampo).

#### **5.2.1 Evaluation /Impact Assessment**

According to Miller & Jones, 2010 financing of supporting services to agricultural value chain has evolved. With a firm understanding of value chain and its interconnectedness, indirect financing to the chain through support services and product and even partial grants offers interesting options to value chain growth. The credit in-kind is a form of value chain and financial innovation to develop the livestock (sheep) chain in Kintampo. The credit in-kind scheme took over the credit in cash after it was declared a failure. Notwithstanding just at the initial stages of this new scheme the contract was breached with some farmers receiving less the number of animals they signed for. Also the age of the animals was not between 8 to 12 months instead much younger animals (weaners) were brought to farmers yet the contract was not renewed. Again from the opinions of beneficiaries in table 17 all credit in-kind beneficiaries said the animals were weak and sick and even the livestock specialist attested to that fact. These weak animals caused already poor farmers to spend a lot of money in treating these animals of which many died. The death was much in the 1<sup>st</sup> and 2<sup>nd</sup> batches which the difference within the death of the 1<sup>st</sup> and 3<sup>rd</sup> batch was so much (figure 5, table 5 & 6). These rural resource poor make decisions as in their farm-managements carefully and critically because as a household they have limited resources allocated to them that they have to use efficiently as much as possible in order to increase income security, food security and their ability to risk-coping (Swanepoel, et al., 2010).

Women were part of the beneficiaries and it is much interesting also to note that in the credit in-kind too their animals performed better than their male counterpart although their number was less (figure 3, table 3) (VOCA, 2012). These indeed confirm that women are better stewards of economic development, especially in rural and agricultural economies compare to their male counterparts. Because mixed farming system is practiced most farmers give priority to their crops than to their animals so if there only one person taking care of his animals the animal are marginalised because most Ghanaians believe that animals (small ruminants) can take care of themselves and need less attention compared to crops. This notion although not documented but a known fact is proven right as beneficiaries who took care of their animals only by themselves had the highest number of deaths compared to other beneficiaries whose principal workers on their animals was from family, other relatives and even hired labour (figure 4, table 4). Trainings organised for farmers when LDP was operational benefited credit in-kind beneficiaries who attended them by improving their management approach. Also this had a direct relation with animal performance (the number of animals that were left and the number of offspring they have been able to raise) this calls for much capacity building as the can be advantages amidst challenges (table 7). Unfortunately farmer had less or no market information on livestock which is an important part of motivation in the mist of challenges of for livestock keepers to do all they can to maintain production level if they cannot keep production levels high and avoid mortalities (Swanepoel, et al., 2010).

#### **5.2.2 Influence of Weather, Breed and Diseases on Animal Health and Production**

An animal is considered to be of much value if it has high adaptability, good market value, and potential for increasing productivity and is able to contribute to the social and economic need of the owner. It was learnt that beneficiary farmers were of the opinion that the sheep they received were not of the resistant breed so they were weak, sick and not acclimatised to the weather in Kintampo (table 17). The Djallonke Sheep which was given to farmers was

brought from neighbouring Northern Cote D'Ivoire and Burkina Faso. Although according to an FAO corporate document repository on Community-based management of animal genetic resources stated that the Djallonke sheep is predominantly adaptable to the physical environment of Northern Cote D'Ivoire these same animals might not do well immediately in a different environment. This could be due to climate variation, transboundary animal diseases or even the animal's level of resistance. Thus it is important to know that classical risk assessment approaches for animal diseases are influenced by the probability of release, exposure and consequences of a hazard affecting a livestock population. Once a pathogen enters into domestic livestock, potential risks of exposure and infection both to animals and people have a major consequence on a chain of economic activities related to producing, buying and selling of animals and products. (FAO, 2011). The table 19 shows the difference in climate between Burkina Faso, Northern Cote D'Ivoire and Ghana.

**Table 19** Difference in Climate between Burkina Faso, Northern Cote D'Ivoire and Ghana

Country	Climate/seasons	Rainy Seasons	Rain fall (mm)	Temperature (°C)
Northern Cote D'Ivoire	Warm and dry (November to March) Hot and dry (March to May) Hot and wet (June to October)	Single - July to November	1100 - 1600	25 - 30
Burkina Faso	Dry and cool mid-November to mid-February Hot season (Harmattan) - mid-February to June. Rainy season - June to September Intermediate season - September to mid-November	Single – June to September	250 - 1000	16 - 40
Kintampo - Ghana	Cold and wet (April to July) Dry spell in August Hot and wet (September to November) Hot and dry (Harmattan) –November to April	Two - Major season (April to July). Minor season (September to November)	1100 - 2100	25 - 34

Combine sources: (Aregheore, 2009); (Habitat for Humanity Ghana, 2011); (Deschamps, et al., 2012)

An important aspect of climate to consider is its effect on livestock production. Some of these effects are the direct effect of weather on animal health, growth and reproduction, forage crop production and quality and other feed related diseases like rumen acidosis and changes in distribution of livestock diseases and pest (Valtorta, 2002). The differences in temperatures, and seasons of Northern Cote D'Ivoire and Burkina Faso into Ghana (Kintampo District) might have resulted in a spread of disease and parasites or produce an increase in the incidence of disease, which, in turn, would reduce animal productivity and possibly increase animal mortality although PPR vaccinations was carried out before at the quarantine stations. This also was seen in the difference in the number of deaths within the batches especially the 1<sup>st</sup> batch which arrived in May a dry and hot season in animals country of origin to a new environment which was wet and cold. Also was it realized that the 3<sup>rd</sup> batch of sheep that arrive had less deaths due to weather pattern that coincided with country of origin and destination (figure 5, tables 5, 6 & 17).

#### 5.4 Comparing Heifer International's Pass on the Gift to LDP Credit in-kind?

Livestock credit needs some time for animals to grow to reproductive stage and reproduce. Thus giving two years for repaying a livestock credit on small ruminants under the credit in-kind was enough (Koney, 2004). But there were some anomalies which became drawbacks to the credit in-kind scheme as discussed earlier in this chapter. This helps in comparing a similar "credit in-kind" scheme of Heifer International's project pass on the gift to light. Heifer international gave pregnant heifers to beneficiaries and are only trusting that those

beneficiaries will pass on the gift of which beneficiaries India for example have passed on their gifts (Heifer International, 2011). Heifer projects take 5 years and in the first year there is capacity building in terms of trainings whilst LDP the credit in-kind was at the end of the project phase so beneficiaries did not get any more training except for those beneficiaries who were lucky to have been invited to trainings when LDP was operational. Also the gift of the animal was based on how suitable they were to the beneficiary family, community and environment. The parameters to sustainability of Heifer International's pass on the gift project could be said is based on equity, economy and environment. The credit in-kind scheme is more channelled toward economy for a sustainable development where here sustainability could be seen in FAO's definition of sustainable development: "the management and conservation of the natural resource base, and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations. Such sustainable development (in the agriculture, forestry, and fisheries sectors) conserves land, water, plant and animal genetic resources, is environmentally non-degrading, technologically appropriate, economically viable and socially acceptable" (Corsin, et al., 2007)

### 5.5 Comparison of both credit schemes (Credit in cash & Credit in-kind)

The two credit schemes under the livestock development project were both instituted to ensure that livestock farmers and actors in the chain have access to credit facilities. It was in this light that the cash credit was the main credit component instituted but as it was gathered through both field study and desk study it failed. But because LDP sought to intervene in livestock production and processing since they were predominantly income-generating activities carried out by poor smallholder operators in rural areas a new credit scheme in a form of value chain finance innovation was instituted. The credit in-kind was instituted to continue the development of the livestock value chain and help reduce poverty. Nevertheless both credit schemes had some impact on the livestock value chain but these impacts might vary in terms of importance. Thus it is important to compare and contrast the two schemes for the sake of future policies on livestock chain development. Below is a table comparing and contrasting the credit in cash scheme against the credit in-kind. Numbers are from list of beneficiaries provided by DADU- Kintampo. Table 20 compares and contrast the two credit schemes in terms of benefits and challenges. From this table the sustainability of the credit scheme could be discussed.

**Table 20 comparing the two credit schemes of LDP**

<b>Factor</b>	<b>Credit in cash</b>	<b>Credit in-kind</b>
Number of beneficiaries	91	120
Gender Involvement	Males =63; Females =28	Males =101; Females =19
Follow ups	No follow-up	Follow ups on animal health& treatment, animal data collection especially
Trainings organised	More training organised when loan was given	No trainings organised. Only trainings attended when LDP was operational.
Type of credit	Money	Animals (sheep)
Amount received	GHC400 to GHC800	5 to 10 Animals
Repayment period	12months to 24months (Medium term 15 months given for small ruminants in Kintampo)	24months
Mode of payment	Money(in instalment)	Onetime payment of Sheep (8 to 12months old)
Use of credit by beneficiaries	Buying animals, drugs, feed and even rehabilitation.	Raising the animals.

Level of payment	38% defaulted in Kintampo (33% nationwide)	No payment done yet although time is due for 1 <sup>st</sup> batch in Kintampo.
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### 5.5.1 Measuring sustainability of the credit schemes

More women (28) benefited from the cash credit. According to literature more women in a livestock project means a stronger driving force for the project's success (VOCA, 2012). Although there were not many women in the credit scheme for this research 31% they were still a driving force in the project's success. These women (78%) employed family labour to take care of the animals they received as this was realised from the finding (table 5) that there is a relation number of animals that died and gender. Also from the research it was realised that the all female group performed better in terms of loan repayment than women were in the mixed gender group. This argument might need further research to authenticate findings. But as stated the only female group benefited twice from the cash credit and they were able repay both cash credit on time; even two members of the group also benefited from the credit in-kind scheme. From this research, family support (labour) in working on the farm also helps in reducing animal mortalities (figure 5 and table 5) irrespective of the gender that employs it. For the sustainability of a livestock project less than a year is not enough as it takes time for these animals to grow and reproduce and their offspring reach reproductive age (Koney, 2004). Prosecution of defaulting is not a good start for a revolving fund since it will further scare off the defaulters as it was observed during this research. Most of the beneficiaries have left town and those left too are hiding from MOFA staff.

Sustainability of the credit in-kind scheme would be great. The preference for the credit in-kind scheme was significant with 78% preference for the credit in-kind scheme by both schemes (table 14). Although beneficiaries of credit in-kind were not happy with the deaths of their animals yet only 36% do not prefer the credit in-kind (annex 3s). These beneficiaries preferred to be given money so they can make the right selection of animals themselves in terms of disease resistance, and also animals that are acclimatised to the weather in Kintampo. From the research it was gathered from opinions of interviewee that sustainability of the project under the credit in-kind scheme will be possible and can be 100%. But the positive impact will not be 100% for the first year of credit recovery as many animals died. They said beneficiaries from subsequent years will realise more positive impact because they will have healthy animals with better adaptability (Abowine, et al., 2012).

## Chapter 6 Conclusion and Recommendations

### 6.1 Conclusion

In conclusion, the credit component of the Livestock Development Project was the first value chain finance and innovation in the livestock sector in Ghana. What could be confirmed is the impact of both credit schemes (credit in cash and credit in-kind) in the livestock value chain. The credit in cash had more women (28) benefiting in the overall 91 beneficiaries in Kintampo district. The credit in-kind scheme reduced the burden of defaulting in cash credit when a maximum of 10ewe (sheep) were given to beneficiaries on credit. Beneficiaries will repay credit with the same number of animals they received to develop the livestock value chain. SWOT analysis best concludes on the strengths, weakness of the credit in-kind scheme (internal factors) then the opportunities and threat (external factors) influencing the current credit in-kind scheme which is still operational.

**Table 21 SWOT Analysis of the credit in-kind scheme**

<b>Strengths (S)</b>	<b>Opportunity (O)</b>
<ul style="list-style-type: none"> <li>Increased population of livestock (approximately 1200 sheep)</li> <li>More beneficiaries than in cash credit (120 farmers)</li> <li>Loan repayment can be easy if animals are healthy and acclimatized to the Ghanaian weather.</li> <li>High preference for the credit in-kind scheme</li> <li>Farmers who received training had less animals dying</li> <li>Reduction of environmental pollution (more use of crop residues to feed animals)</li> </ul>	<ul style="list-style-type: none"> <li>More livestock farmers will be able to access credit</li> <li>APD can make better policies to cater for livestock credit schemes</li> <li>Improvement in the livestock value chain development</li> <li>More stakeholders will get involved in developing the livestock sector when it is vibrant.</li> <li>Investor will invest in the livestock sector</li> <li>Better bargaining power of smallholders</li> </ul>
<b>Weakness (W)</b>	<b>Threats (T)</b>
<ul style="list-style-type: none"> <li>Less female beneficiaries compare to cash credit</li> <li>Sick and weak animals given to farmers</li> <li>Animals not acclimatized to the weather</li> <li>A good number of animals received by beneficiaries died</li> <li>Time frame for loan repayment not adopted</li> </ul>	<ul style="list-style-type: none"> <li>Breach of contract (less number of animals given to farmer than in contract)</li> <li>No guarantee period given to famers by APD &amp; VSD</li> <li>Contract for buying animals put on tender instead of it been given to experts in livestock.</li> <li>No training organised for farmers after they received the animals</li> </ul>

The criteria for selecting beneficiaries for both credit schemes encouraged more farmers to build pens although they had few animals before they benefited from the credit schemes. Beneficiaries who did not even have pens constructed pens to receive their credit in-kind (sheep). Having pen kept the animals away from “predators”: theft, getting knocked down by vehicles and been poisoned or attacked when they stray. Also another criterion used for selection made dry season feeding easier for farmers. Some farmers were selected and supported to establish fodder bank for dry season feeding. The performance of beneficiary women in both credit schemes is a great confirmation that women play a major role in agricultural development and in livestock chain development. They were credit worthy. Also amidst receiving weak animals that died, the women beneficiaries still have a higher mean number of animals (ewe and offspring left) and less mean number of deaths among sheep



received. Thus soon their income will improve and their herd size will continue to increase, increasing the livestock population and at the same time making available animal protein. Although the revolving nature of the credit in cash failed because some farmers defaulted yet, some farmers benefited from the revolving fund. The revolving nature of the credit in-kind is assured although not all beneficiaries can make an upright payment and still retain their part of the animals they received.

The livestock development project after it reviewed the cash credit and concluded that it has failed and recommended that the credit in-kind scheme be considered instituted the credit in-kind scheme even in the last year in which the project was phasing out. This way of ensuring continuity in the livestock chain improvement (development) increased the population of livestock in the Kintampo district and the country. Finally the trainings (including multi-stakeholders in livestock), disease sensitisation and surveillance, vaccination exercises helped so much when LDP was operational to control livestock diseases, deaths and improve management approach of livestock farmers. Although it seemed the phasing out of the project phase out with all these benefits in trainings etc, follow ups by the livestock specialists on animals health and treatment helped in reducing the rate of death to ensure some animals survived to reproduce and sustain the revolving fund for continuity of the credit in-kind.

## 6.2 Recommendations

From this research considering both desk study and field studies of the cases of the two credit schemes under Livestock Development Projects credit component operated by the Animal Production Directorate in partnership with the Veterinary services Department and a collaboration with Ghana Health service it could be said that although there were challenges yet some success was chalked in improving the livestock (sheep) value chain. Upon these findings the objective of this research which is to measure the sustainable impact of Livestock Development Projects credit component with emphasis on the credit provision and make suitable recommendations to improve future livestock projects the following recommendations are made also considering the specific objective of LDP and the goal of APD (the livestock sector) (pages 2 & 3):

1. Animal Production Directorate should add at least a year more to the 2years of payment for the 1<sup>st</sup>, 2<sup>nd</sup> and even the 3<sup>rd</sup> batch of beneficiaries of this credit in-kind scheme to ensure that farmers are able to pay back exactly the same number of animals of the required age (8 months to 12 months) and still retain some animals if not the same number of animals they received. This will bring equity and also ensure the continuity of the credit in-kind as a revolving fund and also ensure sustainable poverty reduction in livestock value chain development.
2. APD should also consider giving contract in buying livestock to livestock experts and not just but it on tender like any contract. A livestock expert who also knows about animals' health and welfare will consider the importance of climate and season variations, diseases, period of quarantine, transportation and all other welfare parameters that influence sheep production. This is because livestock play multiple roles in providing increasing income of the poor, improving their nutrition, even serving as risk reduction and emergency source of relieve so any policy or contract as in the buying of animals for these poor smallholder farmer should be considered by assessing the impact it will have on them especially in terms of poverty reduction.
3. APD and VSD should ensure that DADU gives adequate training to farmers on animal health and production before animals are handed over to farmers although LDP project itself has phased out and there is budget cut. This is because there is a direct relation between proper farm management approach and livestock mortality as found out also in this research. At least one training per quarter for new beneficiaries before they receive the credit in-kind will make this scheme sustainable thus helping in developing the livestock value chain and fulfilling the goal of the livestock sector (APD).

4. Also APD should ensure that cash credit for livestock intervention should not be less than 2 years for repayment by beneficiaries and if possible negotiate for interest rates that are less than commercial loan even before credits are given to farmers. Since most of these interventions are going to resources poor livestock farmers. Livestock ownership will continue to form part of rural people's livelihood strategies. Thus the outcomes and impacts of livestock-related interventions are generally relatively long term compared to those from crops, and often require significant initial investment so this taken into consideration will ensure sustainability of livestock value chain financial interventions.
5. Livestock production is constrained by institutions, markets and policies, as well as technical issues and requires interdisciplinary approaches thus successful livestock programmes need multi-stakeholder involvement from initial project planning to completion. Because of this ADP should continue to work with all stakeholders involved in the livestock value chain to ensure successful development of the livestock value chain.
6. APD should also ensure that during distribution of animals collected from credit in-kind recovery the variation in climate and the ecological zones of the country (Ghana) is considered. Thus animals collected from beneficiaries in the Northern part of Ghana should be distributed among those regions and same with animals from the Southern part of the country so adaptability will not be a challenge anymore.
7. Finally, APD should liaise with WIAD (Women in Agricultural Development) in empowering more women to voluntarily join livestock projects since these women make significant contributions to livestock rearing and should benefit from these inputs. It is concluded that increase development projects/interventions related to livestock will contribute to poverty reduction and sustainable natural resource management when more women are involved (as proved in this research and literature).

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# ANNEX

## 1. Production of Major Crops in Ghana – 2010

	CROPS										
REGION	MAIZE	RICE	MILLET	SORGHUM	CASSAVA	YAM	COCOYAM	PLANTAIN	G'NUTS	COWPEA	SOYABEAN
WESTERN	74,191	23,022			687,350	75,164	223,727	577,065			
CENTRAL	195,394	5,241			1,914,979	15,725	94,252	153,671			
EASTERN	380,505	20,703			3,618,825	712,890	250,789	839,480	9,859	1,404	
GREATER ACCRA	3,584	12,741			68,170				-		
VOLTA	93,887	67,229		4,849	1,529,022	374,610	45,678	62,502	-	1,224	4,945
ASHANTI	253,374	27,705			1,842,666	466,127	405,936	925,015	8,762	4,727	-
BRONG AHAFO	510,172	6,573		425	2,728,351	2,318,158	334,417	980,002	14,132	7,293	
NORTHERN	202,316	185,877	90,619	108,495	1,114,723	1,476,369	-	-	227,650	105,841	98,398
UPPER WEST	96,018	7,291	64,247	124,041		521,443			196,676	75,969	21,219
UPPER EAST	62,256	135,221	64,086	86,613					73,808	22,801	20,364
TOTAL	1,871,695	491,603	218,952	324,422	13,504,086	5,960,486	1,354,799	3,537,734	530,887	219,257	144,926

Source: Statistics, Research and Info. Directorate (SRID), Min. of Food & Agric.- January, 2011

## 2. Work Plan

### Time Planning

Date	Activity	Remarks	Hours
07/05/2012	Presentation of first draft thesis proposal		7hrs
14 to 18/05/2012	Correction and addition to the first draft proposal		32hrs
19/05/2012	Submission of second draft proposal to my thesis supervisor	Expecting feedback from my thesis supervisor on 23/05/2012	10mins
26 to 29/05/2012	Submit final thesis proposal to supervisor	Dependent on when I receive feedback	18hrs
01 to 05/06/2012	Writing of my check list for the interview for the farmers, Credit officer of the bank and the two livestock specialist		15hrs
06/06/2012	Send the checklist to my thesis supervisor via email and book an appointment to meet him on the 8 <sup>th</sup> of June	Based on the outcome I will continue to do the research design	10mins
12 to 14/06/2012	Write the research design and send to my supervisor	Expecting feedback from him through meeting on between the 16 <sup>th</sup> and 18 <sup>th</sup> June	15hrs
18 to 29/06/2012	Do all necessary corrections		22hrs
30/06/2012	Send the corrected work to my thesis supervisor via email and book an appointment to meet him on the 2 <sup>nd</sup> June	Expecting feedback	10mins
13/07/2012	Leave for data collection in Ghana		12hrs

16/07 to 21/08/2012	Data collection and analysis in Ghana		200hrs
22/08/2012	Return from Ghana		12hrs
23/08/2012	Book an appointment with my thesis supervisor to brief him on finding and data collection challenges and successes		20mins
24/ to 27/08/2012	Complete my data analysis and start writing results and discussion	Send to supervisor	24hrs
28/08/2012 to 04/09/2012	Complete results and discussion and give to my thesis supervisor and discuss it with him	Feedback will determine if I make correction or continue to the next step	72hrs
05 to 07/09/2012	Write conclusion and recommendation		8hrs
07/09/2012	Send the completed conclusion and recommendations to thesis supervisor	Feedback expected at most after a day	20mins
08/09/2012	Make the necessary corrections and meet with supervisor		8hrs
09/09/2012	Send first draft thesis report to my thesis supervisor and book an appointment		30mins
11/09/2012	Meet my supervisor for feedback and corrections		8hrs
14/09/2012	Submit the final thesis report my supervisor		20mins

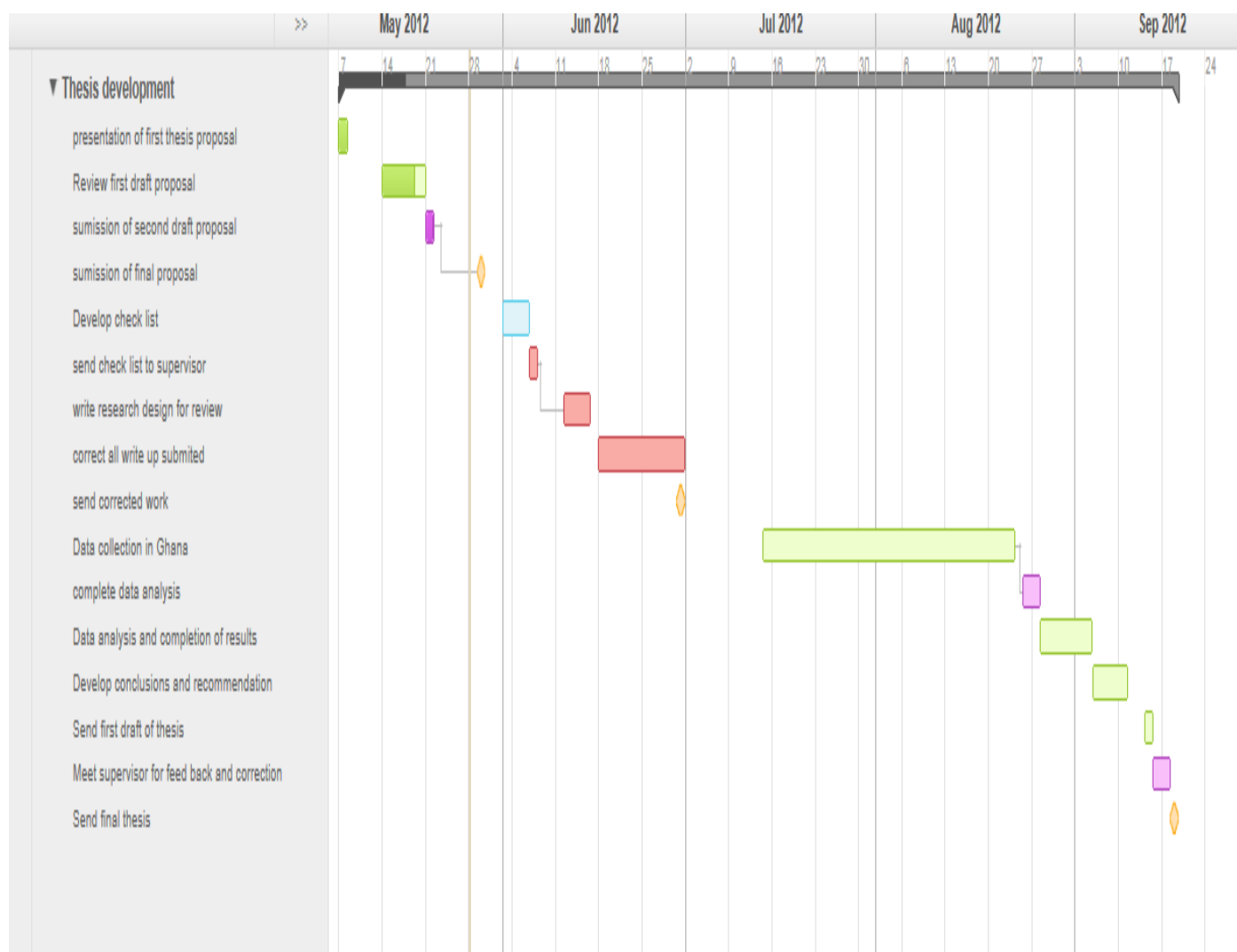


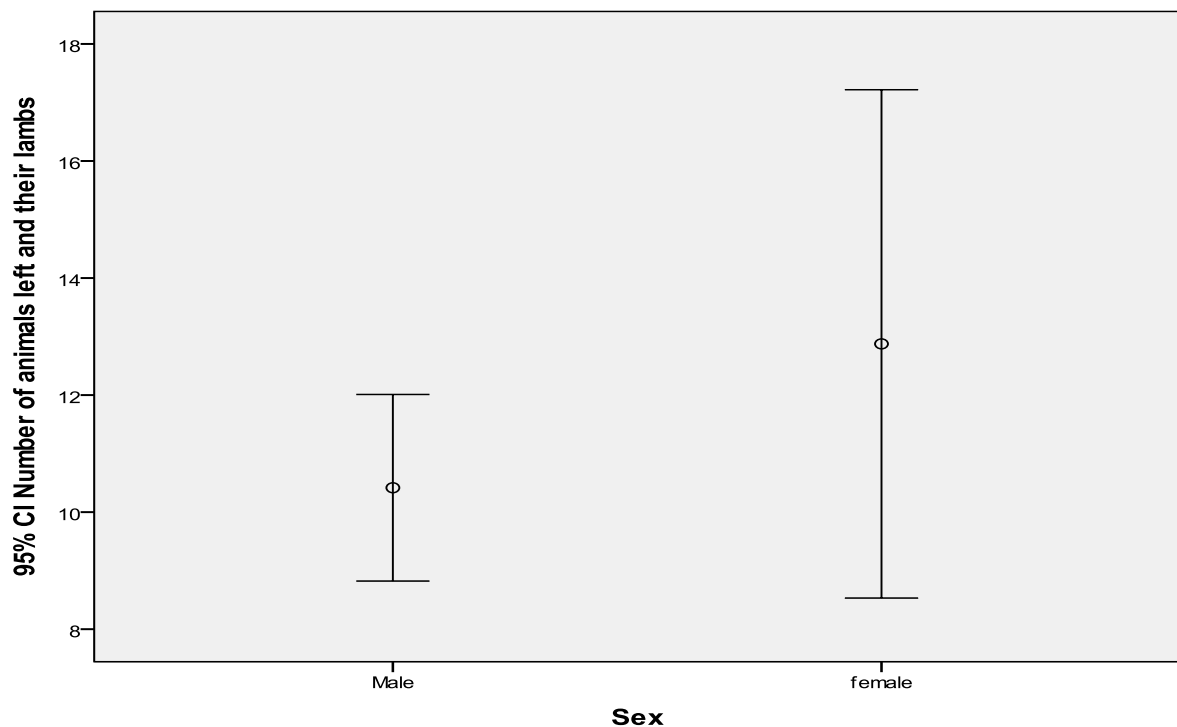
Figure 1 Gantt chart for thesis proposal

### 3. Results of Data Analysis

#### a. Group Statistics of animals that died and sex

##### Group Statistics

	Sex	N	Mean	Std. Deviation	Std. Error Mean
Number of animals that died	Male	37	4,86	1,960	,322
	female	8	3,88	,991	,350



b. Group statistics of number of animals that died within the 1<sup>st</sup> and 2<sup>nd</sup> batches

#### Group Statistics

	Batch number	N	Mean	Std. Deviation	Std. Error Mean
Number of animals that died	1st Batch	15	5,47	1,506	,389
	2nd Batch	15	4,67	2,059	,532

c. The statistical test for number of animals that died between the 1<sup>st</sup> and 2<sup>nd</sup> batches

#### Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Number of animals that died	Equal variances assumed	2,020	,166	1,215	28	,235	,800	,659	-,549	2,149
	Equal variances not assumed			1,215	25,644	,235	,800	,659	-,555	2,155

d. Group statistics of number of animals that died within the 1<sup>st</sup> and 3<sup>rd</sup> batches

#### Group Statistics

	Batch number	N	Mean	Std. Deviation	Std. Error Mean
Died	1st Batch	15	5,4667	1,50555	,38873
	3rd Batch	15	3,9333	1,75119	,45216

e. Group statistics of number of animals that died within the 2<sup>nd</sup> and 3<sup>rd</sup> batches

#### Group Statistics



	Batch number	N	Mean	Std. Deviation	Std. Error Mean
Number of animals that died	2nd Batch	15	4,67	2,059	,532
	3rd Batch	15	3,93	1,751	,452

- f. The statistical test for number of animals that died between the 2nd and 3<sup>rd</sup> batches

**Independent Samples Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Number of animals that died	Equal variances assumed	,972	,333	1,051	28	,302	,733	,698	-,696	2,163
	Equal variances not assumed			1,051	27,298	,303	,733	,698	-,698	2,164

- g. Descriptive statistics on "Follow ups" for credit in cash and credit in kind scheme

**Statistics**

	Did you receive trainings as follow up?	Did DADU come for animal records?	Did you receive health check and treatment	Did DADU come to vaccinate your animals?	Did you receive market information?
N	Valid Missing	82 0	81 1	82 0	82 0

- i) Follow up in form of trainings

**Did you receive trainings as follow up?**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	15	18,3	18,3	18,3
No	36	43,9	43,9	62,2
Non-applicable	31	37,8	37,8	100,0
Total	82	100,0	100,0	

- ii) Follow up to collect data on animals

**Did DADU come for animal records?**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	44	53,7	54,3	54,3
No	3	3,7	3,7	58,0
Non-applicable	34	41,5	42,0	100,0
Total	81	98,8	100,0	
Missing System	1	1,2		
Total	82	100,0		

- iii) Follow up for health checks and treatment

**Did you receive health check and treatment**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	43	52,4	52,4	52,4
No	4	4,9	4,9	57,3
Non-applicable	35	42,7	42,7	100,0

**Did you receive health check and treatment**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	43	52,4	52,4	52,4
	No	4	4,9	4,9	57,3
	Non-applicable	35	42,7	42,7	100,0
	Total	82	100,0	100,0	

iv) Follow up for vaccination of animals

**Did DADU come to vaccinate your animals?**

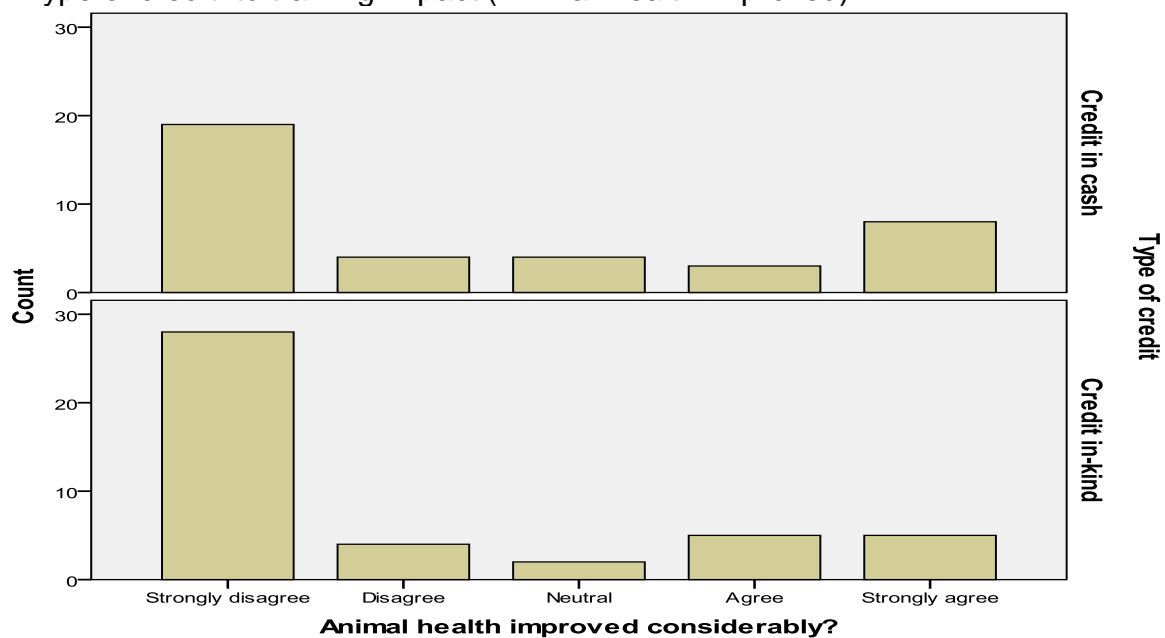
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	1	1,2	1,2	1,2
	No	46	56,1	56,1	57,3
	Non-applicable	35	42,7	42,7	100,0
	Total	82	100,0	100,0	

v) Follow up for market information

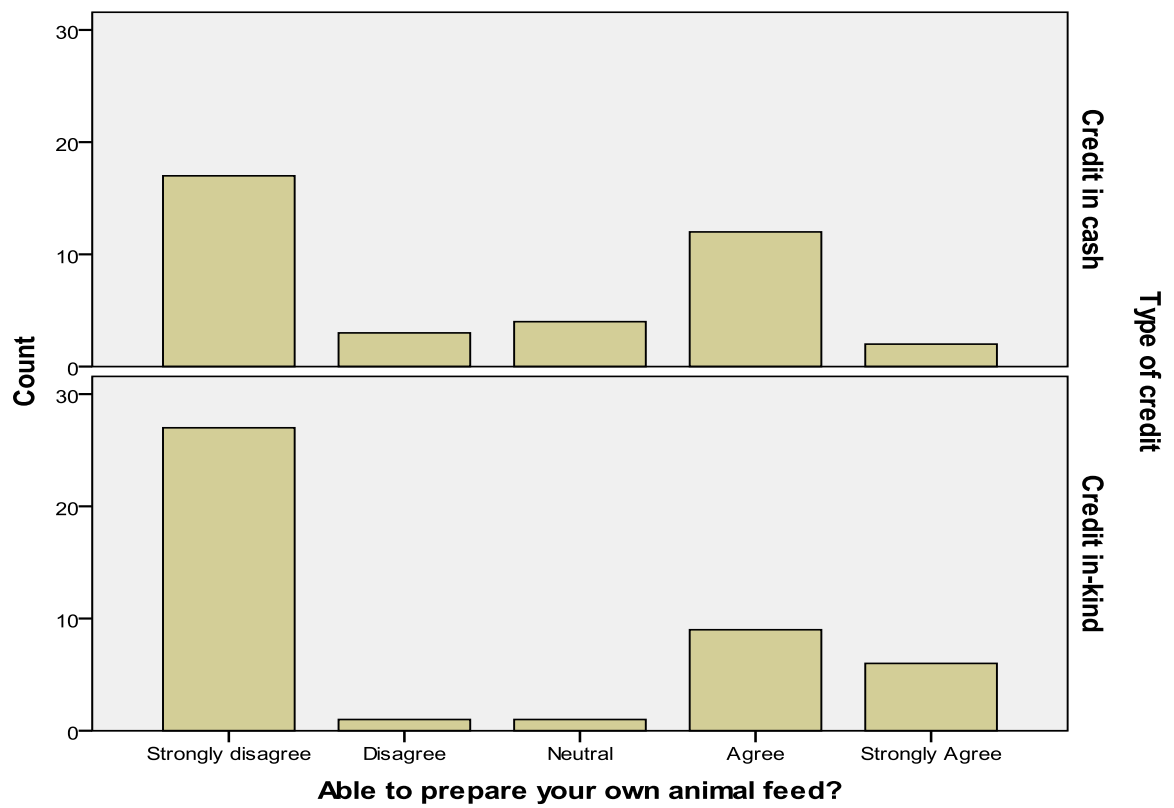
**Did you receive market information?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	2	2,4	2,4	2,4
	No	45	54,9	54,9	57,3
	Non-applicable	35	42,7	42,7	100,0
	Total	82	100,0	100,0	

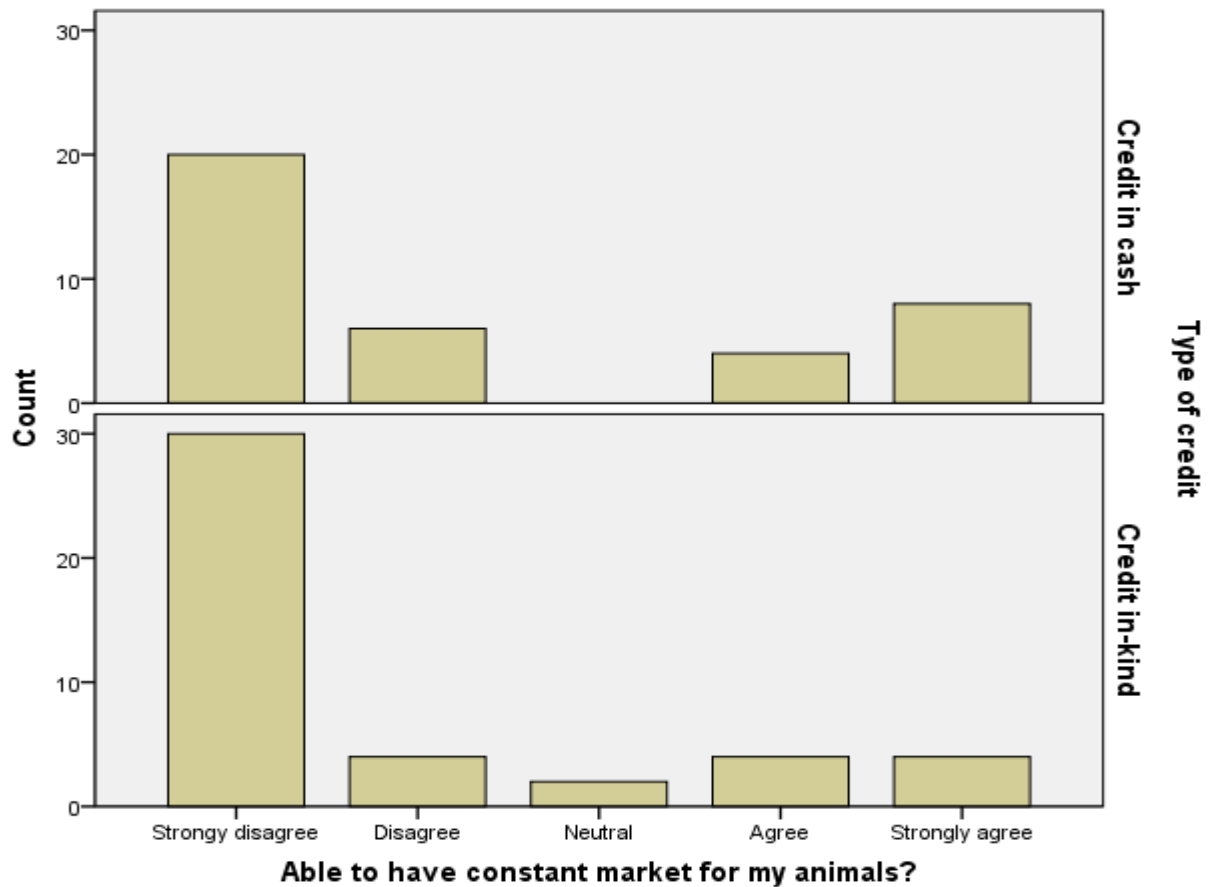
h. Type of credit to training impact (Animal Health Improved)



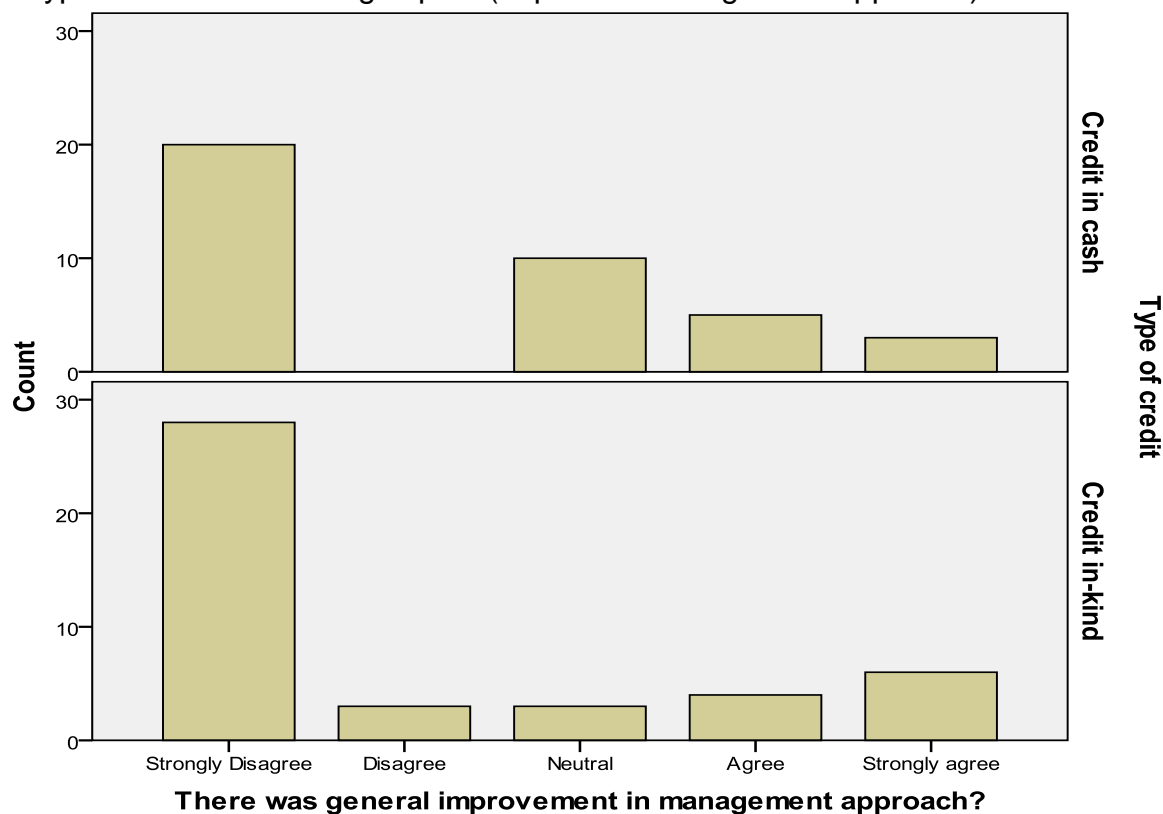
i. Type of credit to training impact (Able to prepare feed for animals)



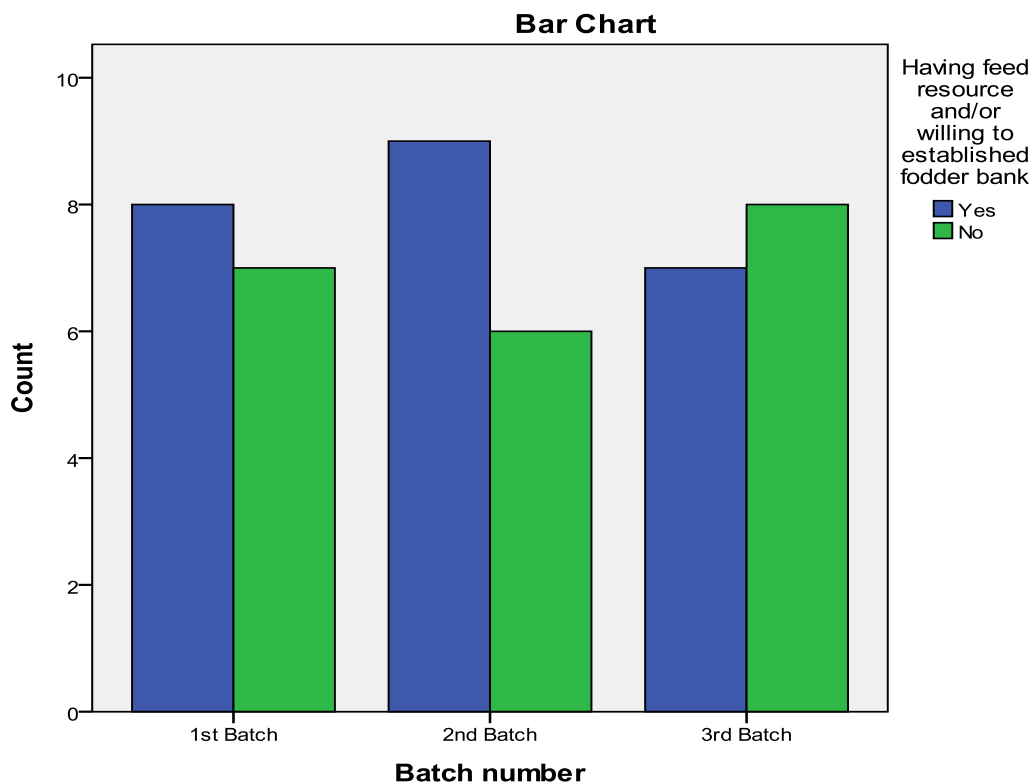
j. Type of credit to training impact (Animal Health)



k. Type of credit to training impact (Improved management approach)



l. Bar chart showing the different response to the criteria do you have feed resource/or willing to establish fodder bank by all batches



- m. Chi- square and Group statistic from response of batches on having feed resource/or willing to establish fodder bank

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	,536 <sup>a</sup>	2	,765
Likelihood Ratio	,537	2	,764
Linear-by-Linear Association	,131	1	,717
N of Valid Cases	45		

a. 0 cells (, 0%) have expected count less than 5. The minimum expected count is 7,00.

#### Batch number \* Having feed resource and/or willing to established fodder bank Crosstabulation Count

		Having feed resource and/or willing to established fodder bank		Total
		Yes	No	
Batch number	1st Batch	8	7	15
	2nd Batch	9	6	15
	3rd Batch	7	8	15
Total		24	21	45

- n. Table of frequencies of response on use on credit by the credit in cash scheme

#### What did you use loan for?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Buying animals	15	18,3	39,5	39,5
	Rehabilitating pen	2	2,4	5,3	44,7
	Growing crops	1	1,2	2,6	47,4
	Buying animals and rehabilitating pen	2	2,4	5,3	52,6
	Buying animals & Buying drugs and feed	14	17,1	36,8	89,5
	Buying animals, Rehabilitating pen & buying drugs and feed	2	2,4	5,3	94,7
	Rehabilitating pen and Buying drugs	1	1,2	2,6	97,4
	Buying animals, drugs and feed and paying fees	1	1,2	2,6	100,0
	Total	38	46,3	100,0	
Missing	System	44	53,7		
Total		82	100,0		

o. Response to Criteria3; have not benefited from any ADB loan issued by DADU?

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	19,990 <sup>a</sup>	1	,000		
Continuity Correction <sup>b</sup>	17,938	1	,000		
Likelihood Ratio	21,036	1	,000		
Fisher's Exact Test				,000	,000
Linear-by-Linear Association	19,746	1	,000		
N of Valid Cases	82				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 12,51.

b. Computed only for a 2x2 table

P=0.00, P<0.05 there is significant difference in response.

p. Response to Criteria 4; having feed resource and/or willing to established fodder bank

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5,572 <sup>a</sup>	1	,018		
Continuity Correction <sup>b</sup>	4,530	1	,033		
Likelihood Ratio	5,731	1	,017		
Fisher's Exact Test				,022	,016
Linear-by-Linear Association	5,504	1	,019		
N of Valid Cases	82				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 13,09.

b. Computed only for a 2x2 table

P=0.018, P<0.05 there is significant difference in response.

q. Response to Criteria 5; Attend and access services of DADU

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5,789 <sup>a</sup>	1	,016		
Continuity Correction <sup>b</sup>	4,756	1	,029		
Likelihood Ratio	5,910	1	,015		
Fisher's Exact Test				,024	,014
Linear-by-Linear Association	5,719	1	,017		
N of Valid Cases	82				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 15,34.

b. Computed only for a 2x2 table

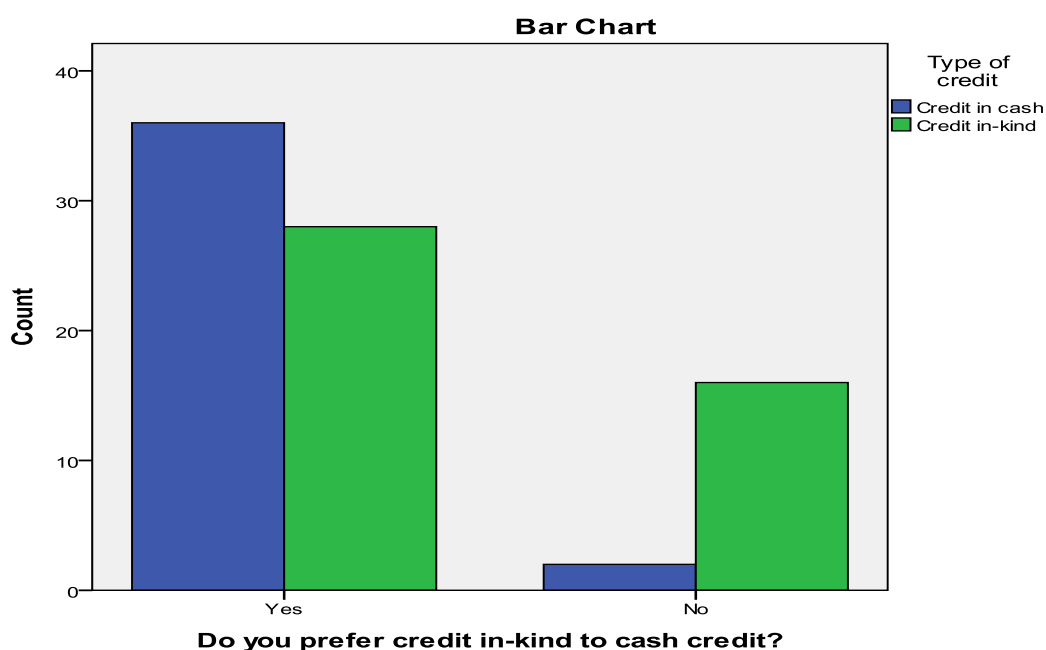
P=0.016, P<0.05. There is significant difference in response.

r. Response to why beneficiaries haven't paid back loan

**Why have you not paid back loan?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Time not due	30	36,6	51,7	51,7
	They have not asked for them although time is due	15	18,3	25,9	77,6
	I've not been able to raise all the money	10	12,2	17,2	94,8
	I've not been able to pay the interest	3	3,7	5,2	100,0
	Total	58	70,7	100,0	
Missing	System	24	29,3		
Total		82	100,0		

s. Difference between Preference for credit in-kind and credit scheme beneficiaries

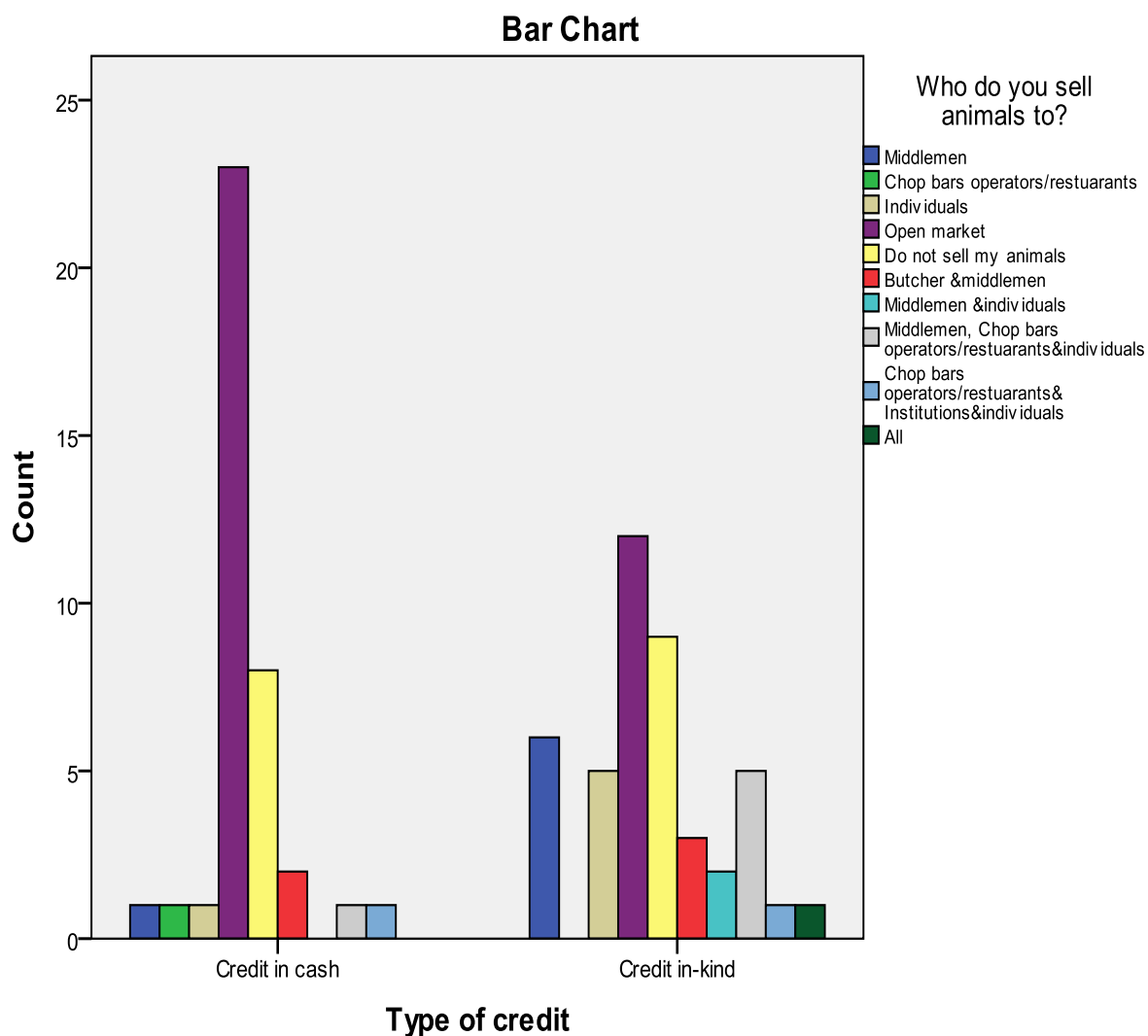


**Type of credit \* Do you prefer credit in-kind to cash credit? Crosstabulation**

			Do you prefer credit in-kind to cash credit?		Total
			Yes	No	
Type of credit	Credit in cash	Count	35	2	37
		Expected Count	28,9	8,1	37,0
	Credit in-kind	Count	29	16	45
		Expected Count	35,1	9,9	45,0
	Total	Count	64	18	82
		Expected Count	64,0	18,0	82,0



t. Who do farmers (beneficiaries) sell their animals to?



#### 4. Thesis raw data



Thesis data.sav

**NB:** In case you have the hard copy a soft copy is available

## 5. Criteria for Credit in-Kind Scheme

### ANIMAL PRODUCTION DIRECTORATE

*In case of reply the  
number and date of this  
letter should be quoted.*

My Ref. APD/LDP/102

Your Ref. ....



REPUBLIC OF GHANA

Ministry of Food and Agriculture  
P. O. Box 5779  
Accra - North  
Tel. 666374 / 670273  
Fax: 676998

16 July 2008

..... 20.....

All Regional Livestock Officers  
(LDP Regions)

All District Livestock Officers (LDP Districts)

#### SELECTION OF FARMERS FOR THE SMALL RUMINANT PROGRAMME OF THE LIVESTOCK DEVELOPMENT PROJECT

You are hereby informed that the Ministry of Food and Agriculture (MoFA) has plans to utilize the Credit Component of the Livestock Development Project (LDP) as a Credit in kind scheme.

Under this scheme, twenty (20) small ruminants (sheep and goats) would be supplied to serious and enterprising farmers.


You are therefore expected to start sensitizing prospective beneficiary farmers on the programme.

The selection criteria are as follows:

- o Possession/provision of a suitable housing for the twenty animals and followers.
- o Capacity to feed these animals (conservation/storage of fodder and establishment of pasture and fodder banks.
- o Access to land for the project (a land areas of not less than 0.4ha / 1 acre (for pasture/fodder bank establishment).
- o Provision of a barn for fodder conservation/storage

Agricultural Extension Agents (AEAs) are therefore to start sensitizing farmers in their operational areas on the above conditions for qualification to participate in the programme

Thank you

  
**J. H. K. Ankah**  
(Ag. Director)

cc:

The Hon. Dep. Minister (Livestock)  
The Chief Director, MoFA  
The Schedule Officer (LDP)  
The Regional Director (Project Regions)  
The District Director (Project Districts)

## 6. Questionnaire for ADB officer

1. Name and position of respondent?
2. How much in loan was disbursed to farmers under the Livestock Development Project?

3. Were there any criteria the bank considered in awarding the loan to farmers?

☐ Yes, ☐ No

a) If Yes please outline them

b) If No please state why

4. What was the interest rate?

5. What was the period for repayment of loan (in months) by farmers?

6. Were there any mechanism put in place to ensure complete repayment of loan by farmers? ☐ Yes, ☐ No

a) If yes please outline them

b) If No please state why.

7. Did some farmers default? ☐ Yes, ☐ No

a) If yes, what was the number/percentage?

8. Was there complete recovery of loan with the interest? ☐Yes, ☐No

A) If yes was it within or after the given period of loan repayment?

b) If No why? Please state

9. Did some farmers receive another batch of loan after repayment of first loan?

☐Yes, ☐No

A. If No why? Please state reason

10. What is your candid opinion about this LDP credit scheme that ADB facilitated?

## 7. Questionnaire for farmers

NB: Questions 15 and 16 for credit in cash farmers only

1. Name of farmer's community
2. Gender ☐ M ☐ F
3. Age group ☐ < 26 ☐ 26-35 ☐ 36-45 ☐ > 46
4. What is your family size ☐ < 6 ☐ 6-10 ☐ 11-15
5. Who are the principal workers in your farm? ☐ Family members ☐ Other relatives ☐ Hired Workers
6. Are you a beneficiary of any credit scheme provided by LDP? ☐ Yes ☐ No
  - a. If yes, which of them did you benefit ☐ Credit in Kind ☐ Credit in Cash, ☐ Both
  - b. If No, are you a beneficiary of any other project? ☐ Yes ☐ No
    - If Yes, please indicate
7. Was there any awareness/capacity building exercises organized by DADU before introduction LDP? ☐ Yes, ☐ No
  - a. If Yes, what kind?
    - Trainings at DADU ☐ Yes, ☐ No
    - Radio/FM broadcast on livestock ☐ Yes, ☐ No
    - Campaigns by DADU ☐ Yes, ☐ No
  - b. If No, Did you have any other source of capacity building from other sources? ☐ Yes ☐ No
    - If yes please specify
8. Were there any criteria you were expected to have before you benefited from any of the credit scheme? ☐ Yes ☐ No
9. What were these criteria for both credit schemes?

Criteria	Cash	Kind
Available animal pen	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Have some sheep and goats already	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Have not benefited from any ADB loan issued by DADU	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Have established or willing to establish fodder bank (pasture)	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Attends and access services of DADU	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Others:		

10. What animals did you keep before the introduction of the credit scheme?(Multiple answers accepted) ☐ Goat ☐ Sheep ☐ Cattle, ☐ Pigs, ☐ Poultry, ☐ local birds, Others specify
11. How many sheep and/or goats did you have before the scheme commenced? ☐ < 6 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ > 21
12. How many animals did you receive from the credit in-kind scheme?
13. Which kind of animal did you receive under the scheme? ☐ Goats ☐ Sheep ☐ Both
14. How many animals do you have now? ☐ < 6 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ > 21
15. **\*How much money did you receive as loan from the credit scheme?**
16. **\*What did you use the loan for?** ☐ Buy animals ☐ Rehabilitate pen, ☐ Buy drugs and feed, ☐ Pay school fees, Others please indicate
17. Did you receive any training from DADU when the project was operational? ☐ Yes ☐ No
  - a. If yes, what kind of training did you receive?
    - Animal healthy ☐ Yes ☐ No
    - Proper husbandry practices (feeding, Trimming, transportation etc) ☐ Yes ☐ No
    - Entrepreneurship (making farming a business) ☐ Yes ☐ No
    - Housing ☐ Yes ☐ No
    - Other, please specify

18. In a scale from 1 to 4 (1-Strongly disagree, 2-disagree, 3-neutral, 4-strongly agree, and 5-agree), please indicate how this training improved your farming activity?
- The number of sick animals reduced ☐ 1, ☐ 2, ☐ 3, ☐ 4, ☐ 5
  - I was able to properly prepare my own animal feed ☐ 1, ☐ 2, ☐ 3, ☐ 4, ☐ 5
  - The level of hygiene increased in my farm ☐ 1, ☐ 2, ☐ 3, ☐ 4, ☐ 5
  - I have been able to have a constant market for my farm produce ☐ 1, ☐ 2, ☐ 3, ☐ 4, ☐ 5
  - There was a general increase in my management approach ☐ 1, ☐ 2, ☐ 3, ☐ 4, ☐ 5
19. Do you still receive any form of follow up from the provider of the scheme/ DADU? ☐ Yes, ☐ No
- a. If Yes, What kind of follow up do you receive?
- Training ☐ Yes, ☐ No
  - More animals ☐ Yes, ☐ No
  - Health checks & treatment ☐ Yes, ☐ No
  - vaccination ☐ Yes, ☐ No
  - Market information ☐ Yes, ☐ No
  - Other please specify
- b. If No, Do you have any other source of expert advice and follow-up? ☐ Yes ☐ No
- If yes please specify
20. Who do you sell your animals to? (multiply answers are accepted)  
☐ Butchers, ☐ Middle men, ☐ chop bar operators/restaurant, ☐ Schools, hotels, ☐ individual consumers, others please specify
21. Have you been able to pay back the loan you received from the scheme providers? ☐ Yes ☐ No
- a. If No, please explain why
22. Do you think the credit in cash failed as a revolving fund? ☐ Yes ☐ No
- a. If Yes why?
- The repayment procedure was cumbersome ☐ Yes ☐ No
  - The bank was far from community (transportation) ☐ Yes ☐ No
  - The money not used for livestock improvement ☐ Yes ☐ No
  - The time for loan repayment was too short ☐ Yes ☐ No
- b. If No why? Explain
23. How will you describe the credit in-kind scheme?
- It is easy to pay back the loan received ☐ Yes ☐ No
  - I was able to generate the loan I received in a shorter period ☐ Yes ☐ No
  - It is difficult to divert credit into other ventures ☐ Yes ☐ No
  - The time for loan repayment was too short ☐ Yes ☐ No
24. Do you prefer the credit in-kind to the credit in cash ☐ Yes ☐ No
- a. If yes why?
- It is more convenient to pay back ☐ Yes ☐ No
  - Many people can benefit from its revolving nature ☐ Yes ☐ No
  - There will be many animals available and also on the market ☐ Yes ☐ No
  - It will reduce poverty and increase farmers revenue ☐ Yes ☐ No
  - It can continue if more follow -up is given to beneficiaries ☐ Yes ☐ No
- b. If No explain why....

## 8. Check list for Interview

### Checklist for Interviews

#### Beneficiary farmers Credit in Cash

1. How was your group formed?
2. How much loan was given to your group?
3. What were the criteria for loan disbursement?
4. Was there any prior training or workshop advice given to selected loan beneficiaries and was it important?
5. What was the period for payment?
6. What was the interest rate given to your group?
7. Were there defaults in your groups?
8. What was done to defaulters or the group?
9. How often did your group meet and what do you do at your meetings?
10. What is your candid opinion about the credit in cash scheme's sustainability?
11. How will you evaluate the credit in-kind scheme?

#### Beneficiary farmers Credit in-kind

1. What was the number of animals you received?
2. What were the criteria for credit disbursement?
3. Was there any prior training or workshop, advice given to you when you were selected?
4. What about trainings and follow ups after you received the animals?
5. What was the period for payment and the conditions?
6. How do you appreciate the credit in-kind scheme?
7. What is your candid opinion about the credit in-kind scheme's sustainability?
8. How will you evaluate the credit in cash scheme?
9. What do you think could have been done better about this scheme?

#### Livestock Specialist APD and VSD

1. How many farmers benefited from the credit in cash scheme?
2. How many farmers benefited from the credit in-kind scheme?
3. Where were the criteria set by LDP for both credit scheme beneficiaries?
4. What were the criteria for the credit in cash scheme?
5. What were the criteria for the credit in-kind scheme?
6. Was there any prior training or workshop for selected loan beneficiaries?
7. Are you still giving trainings and/or other services to loan beneficiaries and other stakeholders?



8. Were you involved in ensuring that beneficiaries paid back their loan to the bank?
9. What is your candid opinion about the credit in cash scheme's sustainability?
10. What is your candid opinion about the credit in-kind scheme in terms of sustainability?