Dairy Value Chain Analysis and
Strategy Development in Central Kenya
Region

A Study Report

Submitted to

Kenya Agricultural Productivity & Agribusiness

By

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EXECUTIVE SUMMARY

Achieving an innovative commercially oriented, and modern agricultural sector with effectively transformed institutional framework for productivity in agriculture calls for the infusion of business practices and modeling into agriculture.

Infusing of business practices in a sector where 80% of the production is by smallholder farmer who has no business knowledge or the organizational model to help link their operations to business is indeed a challenge. Indeed combining poorly understood business concepts in rural development, in a situation where the skills are also limiting exacerbates an already bad situation.

The approach adopted by KAPAP is to isolate the constraints that the dairy value chain faces along the continuum of the chain and use them to define strategies that define the contribution of each value chain layer. When constraints are addressed with strategies that help create business out of the potential in addressing the gaps heralds a new beginning in wealth creation. When addressed from the bottom up model in a model of impact investment heralds the possibilities in realizing the desired economic growth, and hence contributing to the government’s vision and sectoral performance goals.

Backed with this reality, KAPAP sought to undertake a study to gain a thorough understanding of the gaps or constraints, which when unlocked will open the doors to the opportunities that the dairy value chain projects for Kenya’s economy. This study assessed the dairy value chain as one of the sub-sectors whose growth and wealth creation potential presents opportunity for investment within the government’s choice model of public private partnership. It is for this that this study seeks to identify an upgrading strategy for investment. The therefore report presents the consultant’s assessment of the sector providing a background to the study in page 4 then highlights the assessment purpose and methodology used on page 5. The results are presented on page 8 where the concept of the value chain and value chain maps are discussed.

The findings and discussion on the findings start at page 11 with the critical assessment of the economic assessment of the dairy sector for select products – fresh milk and yoghurt. The long life milk, one of the identified champion commodities was missing in the supermarket shelves as we undertook the study during a season of depressed milk supply.

A key requirement of this study was an assessment of what works in the value chain and the actors currently engaged in the sector. We have identified the actors that are involved both in the region and at the national and regional scene with case studies. These are all presented from page 19. The presentation of the interpretation of the results and isolation of the investment opportunity in the dairy cow and goat value chains is presented from pages 25. We present the strategies for the value chain upgrading from pages 29 with the conclusion s and recommendations coming on page 32.

The study presents a case for investment in the dairy sector in Nyeri and Nyandarua proposing an incubation initiative that promotes knowledge to the communities and making it affordable to the communities. It has supported the case of a capacity and knowledge provision partner, which the study identified as crucial for success as in the two case studies provided. The study proposes the choice of Kimathi University as a partner and capacity enhancement institution to develop and evolve technologies that farmers can use.
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**LIST OF ABBREVIATIONS**

1. **AI**  | Artificial Insemination  
2. **ASARECA**  | Association for Strengthening Research in East and Central Africa  
3. **CBO**  | Community Based Organizations  
4. **CEO**  | Chief Executive Officer  
5. **CIGs**  | Common Interest Groups  
6. **DfID**  | Department for International Development (of the UK)  
7. **DGAK**  | Dairy Goat Association of Kenya  
8. **DVS**  | Director of Veterinary Services  
9. **GDP**  | Gross Domestic Product  
10. **GIZ**  | Deutsche Gesellschaft für Internationale Zusammenarbeit  
11. **GMP**  | Good Manufacturing Practices  
12. **GoK**  | Government of Kenya  
13. **HIVOs**  | Humanist Institute for Development Cooperation  
14. **ICTs**  | Information and Communication Technologies  
15. **ILRI**  | International Livestock Research Institute  
16. **KAPAP**  | Kenya Agricultural Productivity and Agribusiness Project  
17. **KDB**  | Kenya Dairy Board  
18. **KEBS**  | Kenya Bureau of Standards  
19. **KVS**  | Kenya Veterinary Services  
20. **NASEP**  | National Agricultural Sector Extension Programme  
21. **NDMC**  | Nyala Dairy Multi-purpose Co-operative  
22. **NGOs**  | Non Governmental Organizations  
23. **SACCO**  | Savings and Credit Cooperatives  
24. **SASRA**  | SACCO Societies Regulatory Authority  
25. **SHG**  | Self Help Groups  
26. **SMEs**  | Small and Medium Enterprises  
27. **UoN**  | University of Nairobi  
28. **USAID**  | United States Agency for International Development  
29. **VACID**  | Value Addition and Cottage Industry Development
BACKGROUND AND INTRODUCTION

The Vision 2030 articulates the aspirations and expectations of Kenyan people. The vision identifies the productive sectors of the economy that will spur growth and propel Kenya into a middle-income country by 2030. The productive sectors include tourism, manufacturing, retail/commerce and agriculture, which is the backbone of the economy. Growth in the agricultural sector results to direct growth in the whole economy with a 1% growth in the sector resulting in a 1.6% growth in the national GDP (WB, 2007). The Kenya vision 2030 envisions an innovative, commercially oriented, and modern agricultural sector with effectively transformed institutional framework that supports productivity in agriculture, a key pillar in the economic development focus of the country.

The Kenya Agricultural Productivity and Agribusiness Project (KAPAP) is one of the interventions that the government identifies as a strategic vehicle for realizing this vision; by invigorating the productive efforts of agriculture that contribute to the country’s economic growth pillar, where agriculture contributes 25% of the GDP. With the national vision being a globally competitive and prosperous nation with a high quality of life by 2030, the challenge is to make agriculture to drive the competitiveness given that our productivity is lower than international benchmarks by over 50%. To achieve this would call for innovation in the way economic resources—physical, human and financial that are used in the agricultural sector—are combined for higher productivity per unit of resource used. If the approach is guided by the right fundamentals, then addressing the constraints will help unlock the potential that agriculture portends. Identification of new opportunities will then follow naturally, and with organizational and process efficiency addressed, then achievement of competitiveness will similarly follow. For the realization of all these, the agricultural value chain approach has the potential to transform the sector, while the right approach to actualizing institutional reform is necessary. This study therefore aims at contributing to the upgrading strategy of the agricultural value chains.

In furtherance, KAPAP identifies the role that agribusiness, the infusion of business practices and modeling into agriculture, can play to contribute to institutional reforms in agriculture. By extension, KAPAP seeks to support the achievement of the six (6) key economic growth interventions identified as having the highest potential to deliver on the promise of the country’s vision. For a sector driven more by smallholders, themselves challenged in numerous ways, interventions that seek to provide solutions to these challenges are critical. The real test is that the solution seeks to come from a sector that itself has many challenges, which compounds an already bad situation. Combining business, a poorly understood concept in rural development, in a situation where the skills are also limiting exacerbates an already bad situation.

The approach that the KAPAP has identified to isolate the constraints faced along the continuum of the agricultural value chain, and defining what each of the chain layer can contribute to creating the biggest potential for wealth creation, resulting to economic growth is important. KAPAP has overcome the first challenge of identifying the definitive commodity chains, with the best potential to deliver on the projected growth to contribute to the government’s vision. The next step is to gain a thorough understanding of the gaps or constraints, which when unlocked will open the doors to the opportunities that these commodities project for the economy. This study assesses the dairy value chain as one of the sub-sectors whose growth and wealth creation potential will be possible to isolate by identifying the constraints that hinder opportunity exploitation.
Through this study KAPAP seeks to understand if institutional reforms in agriculture can benefit by showing the economic importance of the formal and informal actors, marketing channels and the SMEs. A clear understanding of the key constraints will highlight the opportunities that the dairy value chain presents as an avenue to delivering the development intervention strategies for investment.

**THE ASSESSMENT PURPOSE AND METHODOLOGY**

This main purpose of undertaking this dairy value chain study was to contribute new knowledge on the approaches, needed to actualize the government vision for the agricultural sector. The sectoral vision seeks to realize an innovative, commercially oriented, and modern agricultural sector through effectively transformed institutional frameworks for supporting sectoral productivity.

In order to realize this goal we sought to provide an in-depth assessment of the dairy value chain particularly focusing on the economic importance of the formal and informal actors, marketing channels and the SME environment. Given the challenges that the sector faces where the producers’ income keeps diminishing even as the prices of milk and milk products keep increasing, the study sought to investigate the causes of the income drains.

Being a smallholder focused value chain study; we also sought to identify the key constraints that the value chain actors, particularly in the lower end of the chain, face and the possible opportunities that can arise by addressing these constraints. The consultant is of the view that the opportunities, highlighted in this study form a critical pillar in the intervention strategies for the dairy value chain competitiveness. We also seek to pinpoint potential collaboration linkages and partnerships among the dairy value chain actors and service providers for strategic dairy value chain benefit. We were also keen in identifying the policy interventions that may be necessary to empower the chain actors (including the producer) and make sure there is a fair sharing of the benefits along the chain. This, the consultant feels is important as it will clarify the reasons behind the challenges that the producer does not understand, making them disenfranchised in decision-making in a sector that they are the critical drives.

**The study team**

Kiringai Kamau undertook this study for the Agri Training and Consulting Limited, whom KAPAP contracted to implement this study. Joachim Weber and Abraham Wakhutu (Agri-Training and Consulting Limited) provided the workshop Facilitation and support while VACID Africa Institute supported the fieldwork, and logistical coordination.

**Approach and Methodology**

As already indicated in the foregoing, we carried out this study with the overriding objective of supporting KAPAP to understand where investment in the dairy value chain can create the greatest benefit for investment interventions in the dairy sector. For this, we consulted closely with the value chain actors in Nyeri and Nyandarua.

The formulation of the study had clearly spelt out specific objectives, which included the following

1. To provide an in-depth assessment of the dairy value chain including a demonstration of the economic importance, the formal and informal actors, marketing channels and the SMEs environment
2. To identify the key constraints and opportunities in the dairy value chain to support the development of appropriate intervention strategies to improve the competitiveness of the dairy value chain
3. To identify potential collaboration linkages and partnerships among the dairy value chain actors and service providers for strategic dairy value chain benefit
4. To provide a clear picture of the overall policies affecting the specific value chains including rules and regulations that would either hinder or enable the participation of the various actors and stakeholders in the value chains functions

The consultant used a number of approaches to gain an understanding of the sub-sector particularly on the actors and the constraints faced in the value chain. Consultative talks with KAPAP secretariat and the Ministry of Agriculture clarified the consultants’ understanding as documented in the technical proposal, to ensure that there was clear meeting of the mind. We discussed and agreed on the technical details of the research in a technical meeting between the KAPAP Secretariat and the consultants.

We undertook an in-depth desk analysis of the documented studies on the dairy value chain interfacing with others on rural development in Kenya. We did this to provide an understanding of the real gaps and constraints as understood by others and to help guide the next steps in the research.

The consultants employed the ValueLinks tools of mapping and combined this with the time tested participatory and consultative techniques that tap on stakeholder’s inputs to ensure that the results reflect the expectations of the stakeholders in the dairy value chain.

Two stakeholder workshops were held the first to select the champion products on which to base the study and the other to evolve the upgrading strategies that would support the value chain become more vibrant and supportive to the stakeholders. These therefore were sub-sectoral situation analysis that brought together targeted stakeholders drawn from value chain organizations in the project area where dairy is considered most promising.

The first workshop collaboratively undertook an appraisal of constraints and opportunities from the purview of the stakeholders, and in the process developed a contextualized value chain map, isolating as it did the champion value chains to focus on in the field work. The value chain map with the constraints and opportunities derived from the workshop guided the development of the tools as well as providing the possible value chain upgrading opportunities and prospects for enhancing competitiveness.

Field Activities

The consultant undertook the field activities with a view to learn what is currently happening along the value chain in terms of promoting wealth creation in both dairy goat and dairy cow sub-chains. We also sought to understand the organizational framework that producers are using to reach the market and to assess the economic benefit that the dairy value chain is creating for them.

As part of this assignment, we also sought to understand what gaps may be hindering the realization of the value-chain wealth creation potential, that may support the sector’s contribution to the realization of the country vision. We were also keen to identify the constraints faced by the value chain actors in delivering the economic benefit to the producers.
We used the outcomes of the field activities to provide insight into the investment potential in the value chain.

**The Data Collection Methods**

We employed the following data collection methods:

1. Secondary Data Collection from Literature /Desk Review for the dairy value chain
2. Focus Group Discussions/Qualitative Interviews with Key Informants, Partners and Stakeholders who were identified based on their role in the dairy value chain
3. Primary Data Collection administered through questionnaires to field respondents in the dairy (cow milk and goat milk) value chains

**Literature /Desk Review for Secondary Data Collection**

We carried out a desk review of relevant documents, surveys, reports and studies to understand the sectoral issues and the where dairying takes place, identify key gaps, constraints, and opportunities that others may have found worthy of further investigation.

**Focus Group Discussions/ Key Informants Interviews**

We interviewed stakeholders along the value chain comprising of farmers, processors, researchers, financial institutions, consumers, customers, relevant ministries staff, value chain linked government institutions, transporters, and other relevant stakeholders. We sought to get specific information on areas identified in the field from 'Key Informants' through face-to-face interactions in policy institutions, and research organizations.

**Questionnaire Schedules for Primary Data Collection**

We developed standardized data collection tools, which we used to support in-depth interview with KAPAP partners at the grassroots and along the value chain, from where we collected the primary data. We categorized the respondents in appropriate groupings to make it possible to elicit a clear understanding of facts and issues about the survey for effective data analysis.

Upon the collection of the data from the stakeholders, the consultant developed a revised value chain map (shared under results) and presented it for stakeholder adoption in the value chain stakeholder-validation-workshop from which we further developed and documented the value chain maps as well as the opportunities for investment comprising this final assignment report.

**Sample Size, Information Collection and Analysis**

A representative sample of 100 respondents drawn from the value chain actors, selected at the micro level, formed the largest group of interviewees drawn from the producer common interest groups, the meso actors and the macro level actors. We selected the sample size with a desire to provide representative outcomes with the level of confidence required in coming up this study report.

**Documentation of Case Studies**
After going through the various models used and the proposals made for value chain investment by other research and implementation efforts of other dairy programmes, we undertook a case study on Nyala Dairy Multipurpose Cooperative Society Limited and Watuka Dairy Cooperative.

The two have benefited from the programmatic interventions of Technoserve, an inclusive business development organization and Land O'Lakes programme on Kenya Dairy Competitiveness Programme.

We visited Githunguri and Ndumberi Dairy, which though not in the regions of study provided suitable insights that have provided sufficient understanding behind the investment options and the relationship of various actors in the dairy value chain as they have gathered.

We identified the two organizations, used as case studies, with a view to demonstrating the choice institutional model in strategic orientation. We made effort was to understand the role of knowledge provision from a business development perspective. We sought to learn what, in the view of the case study organizations, was the benefit of the interventions of the active partner programmes of Land O'Lakes and Technoserve in capacity building, governance, investment, and financial intermediation.

We were particularly keen in knowing how the efforts of the smallholders have benefited from community startups that have used different paths to growth using mentored capacity building support from a knowledgeable organizational partner.
STUDY RESULTS

This study received direction from the participatory meetings and interaction of the consultant with the KAPAP secretariat and World Bank, as well as open desk review based on a number of policy and rural development documents. The National Dairy Master Plan (GoK, 2010), the Vision 2030 and the Agricultural Sector Development Strategy (2010-2020) formed the foundation on policy review. The guiding document was the dairy master plan, which notes that the dairy sub sector is the single largest contributor to the agricultural GDP, outperforming such sectors as horticulture, tea and coffee. It also notes that the dairy sub sector has (in the recent past), experienced one of the highest growths estimated in 2007 at an annual growth rate of 3 - 4 % of the national GDP. It also notes that milk-based enterprises support over 1.8 million smallholder households engaged in dairy production.

These statistics provided the study with the insight that would then guide the economic assessment of the value chain. We therefore assessed the dairy value chain from a household economic importance, particularly to the formal and informal actors identifying the channels of marketing used and their impact on the SMEs environment. In the spirit of the dairy master plan, this study also identified the key constraints and opportunities as pointers for appropriate intervention strategies, necessary to guide KAPAP’s focus on improved competitiveness in the dairy value chain.

We assessed the development work of other dairy value chain sectoral development partners to isolate success cases in their interventions. We intended through this effort to provide valuable collaboration linkages and partnerships potential among the dairy value chain actors and service providers. The ultimate intention here was to achieve a strategic benefit for the entire dairy value chain.

We wove the experiences derived from the foregoing into the approaches we used to pinpoint the policies that affect the value chain, particularly any rules and regulations that either hinder or support the participation of actors and stakeholders in the value chains functions.

Based on the foregoing and given the many concerns that the smallholder producer has voiced in the very recent past, this study sought to find out:

- Whether smallholder households, or farmers, undertake dairying as an income generation vehicle, or for other reasons.
- Whether there are any formal systems of aggregating produce for processing and eventual marketing
- Whether the existence, or absence, of such systems or frameworks influence a farmer’s channels of accessing the marketplace
- If the engagement with the dairy value chain really generates passive income for the communities, in terms of employment at the place where production takes place
- How the distribution of earnings generated from the dairy value chain reaches the various actors along the value chain.

Introduction to the Value Chain Concept

The consultant was guided by the requirement by the KAPP Secretariat, that this study needs to come up with new dimensions not covered in other dairy value chain studies. The desk analysis undertaken seems to indicate that value chains studies previously done in the dairy value chain focused more on the commodity rather than the organizational modelling. Since this study seeks to guide investment in the sector, we therefore provide guidance on the potential value chain investment options envisaged in the private public partnerships in the vision 2030.
Arising from the foregoing therefore, we assessed the value chain from its foundation, the competitive modelling of organizations by Prof. Michael Porter shown below.

**Figure 1: Generic Porter's Value Chain Model**

According to this model, the linkages of specific activities in organizations drive all income generation and hence the profit motivated activities in such organizations. The interlocking of the productive functions (or activities) is what makes the analogy of the chain necessary.

For ease of management, the activities fall into categories identified as either primary activities or secondary activities. The primary activities are the critical activities, which produce the product, around which the organization exists. The secondary activities are the support activities that ensure efficiency in the productive processes. As argued by the consultant in other publications (Kiringai MSc Thesis, 2010, UoN), this model was created to advise competitiveness in business organizations, or firms.

When linked to a sector like agriculture where the organization of smallholders is informal, some variations are necessary, hence the basis of using the ValueLinks tools used for the agricultural sector. In this case, therefore the primary activities are the various functions that farmers/producers engage in. The linkage of these functions then provide an assessment of the profitability of the sector and calls for effective governance of the chain actors if the earnings are to equitably get to all actors on the basis of level of effort.

This assessment is what has made this study necessary to isolate where the value chain functions have potential to generate more resources, hence support private-public partnership in the investment thinking, thereby evolving a model that promotes optimization in investment for the benefit of the majority of the value chain actors. In this case therefore, we assess the entire sector as the organization, hence the need for value chain mapping.
The Dairy Value Chain Map

Arising from the foregoing Porters model the dairy value chain is analyzed on the basis of the primary activities now categorised as distinct functions that can be mapped as input, production, transport, processing or transformation, and the trade layers. This concept was explained to the participant in the first workshop which facilitated the creation of the value chain map represented in Figure 2 below. All analysis was therefore based on this value chain map.

Figure 2: Stakeholder evolved Dairy Value Chain Map

Given that the informal sector, much as it contributes over 80% of the milk consumption is such an important value chain activity, we do not analyze it beyond the demonstration (shown in Figure 2). We however acknowledge that they are more efficient in getting the produce to the consumer than the costly processing route where employment generation and investment is feasible. This study therefore dwells more in the focus to advise investment options for the agricultural sector and hence promote value chain upgrading.

The formulation of this study therefore sought to assess the dairy value chain to support or oppose the case for investment in the sector based on whether:

1. Smallholder farmers are organized into producer formations amenable to value chain assessment in their operational function
2. Such farmer organizations are formal (which makes it easy for them to engaged in legal contracts) or informal (in which case only a few of the members, in their individual right, can represent others in discussions with the market, making the level of trust critical and lack of which can kill the entire function)
3. Investment has been mobilized by their functional operation, and what ways that has been done; if at all it exists
**STUDY FINDINGS**

As noted in the foregoing section, value chain competitiveness in productive processes is a product of clearly defined primary productive activities when managed by optimized operational systems or processes.

The normal domicile of operational systems and processes is in organizations or firms. To undertake contractual engagements, the organizations and firms would have to take a legal form. For if a legal form is absent in a model created to provide competitiveness, investment, or wealth creation, then there will be challenges as markets relate best with legal entities to ascertain their perpetual contractual engagement in what legal parlance regards a going concern.

Guided by the foregoing, the study sought to investigate the form of business types that smallholder farmers use to link up with the market. Figure 3 shows the organizational forms used by the smallholder farmers involved in dairy in the study areas, who responded to the questionnaires.

**Legal formation of Farmer Groups**

Figure 3, shows that the combined non-legal forms of the Common Interest Groups (CIGs), Self Help Groups (SHGs) and Community Based Organizations (CBOs) form over 60% of the business formations through which farmers engage the market. Less than 40% of the farmers engage with dairying as companies or cooperatives, which are legal forms of the business.

The foregoing result may not be very good for business as explained in the discussion below.

By definition, a Community Based Organization is any organization that serves the common interest of communities in a defined geographical area. This definition makes them amenable for registration under such agencies as the Ministry of Co-operatives and Registrar of Societies, and the Department of Gender and Social Services.

Within this definition any organization, which we have referred to as either formal or informal is a community-based organization. The legality however comes with the supporting legislation on whose strength a business form lies. The law defines the corporate or legal entity created therein as we as its powers and limitations, and whom, and how the officeholders in the registrar’s office exercise governance over the legal entity.

The Ministry of Co-operatives and administers the registration of cooperatives under CAP 490 laws of Kenya for the cooperative societies, while the Registrar of Societies administers the registration of societies under CAP 108 for the registration of societies register organizations. These two laws give legal personality to any organization registered under them.

For the legal organizations under these laws, the individuals promoting their creation are required to file a number compliance documents to support the existence of such organizations within the definition of the law. The registrar in the case of societies, or the commissioner in the case of cooperatives, has regulatory powers over the organizations.
created under their ministry. In essence, these laws create the organizations that they do as administrative organs that the government uses to carry out its role of service to the people in defined ways. The trust given to the organizations stems from the assurance that they are organs of the government that the government regulates through its own systems.

Organizations registered under the Department of Gender and Social Services are welfare organizations guaranteeing the right for association of the promoters. Organizations registered under this Ministry or Department do so for recognition and expression of a right rather than to transact business. A community-based organization within the purview of the department of culture and social services is amalgamation of registered Self Help Groups operating within a defined geographical area. A self-help group is made of 15 or more members whose aim is to pool resources together for social welfare and socio-economic development.

The foregoing helps us understand why it is critical for the registration of a business entity to be either a company or a cooperative. They are legally recognised organs of the state and comply with some norms defined clearly, in operation and form, by the state.

The normal registration process of a company is based on the shares a person subscribes when the presentation to the registrar of companies takes place. Some companies register without shares, in which case some individuals who present the registration of such companies, offer to guarantee their existence. The creation of companies registered by guarantee is normally not business, but rather for a common interest other than business.

Businesses (that we normally refer to as companies), register under CAP 486 of the Laws of Kenya. Decisions making in a company is based on how many shares a shareholder has subscribed, or invested, in the company. A shareholder, unless they have enough shares to sway the direction of a business (normally over 50%, refereed to as majority stakeholder), will not influence the decision making process of such a company. The majority can be an individual or a group of individual shareholders. It is the principle of the majority, in the case of a company, that makes decisions on behalf of the company, and will therefore bind the minority shareholders no matter how good or bad their decisions may be. The minority (who may be more in numbers in the registration roll of members, but unfortunately have investment less than 50% of the total shareholding or amount invested) in this case have no voting ability, but the discretion of the majority rules on whether their views is important in decision making.

Why cooperatives are important in setting up grassroots initiatives calls for an understanding that calls for insights into its foundation. The movement started with the benevolence of a cotton trader, Robert Owen (1771–1858). Owen believed that workers in his employ needed a good environment with access to education for themselves and their children. His focus on the bottom of the pyramid made him form villages of co-operation where workers would hoist themselves out of poverty by growing their own food, making their own clothes and ultimately becoming self-governing. His efforts to outscale his experience in Orbiston in Scotland, and in New Harmony, Indiana in the United States of America, both failed, but the lesson from his work created what is seen as the cooperative movement today.

His failure therefore inspired others – such as Dr William King (1786–1865) – who took Owen's ideas and made them more workable and practical. King believed in starting small. He started his efforts from a knowledge paradigm with his role being one of knowledge provision to the working classes, whom he thought needed to set up co-operatives for themselves and the communities they lived in. He founded a monthly periodical called The Co-operator, the first edition of the periodical appeared on 1 May 1828. In this publication, he integrated co-operative philosophy and practical management mentoring on how to run a
shop using cooperative principles. His main call was to the working class: ‘not to cut themselves off from society’, but rather to form a society within a society, where people invested in what their people and themselves needed. He promoted accounting and process audits, putting in place governance structures of 3 trustees, and having formal meetings in honourable non-drinking places. As will be seen later, knowledge champions, either as individuals or institutions are needed if investment at the grassroots has to be realized.

It was with the foregoing that in 1844, a group of 10 weavers and 20 others in Rochdale, England formed the Rochdale Society of Equitable Pioneers. This society of skilled workers who were going into poverty due to the industrial revolution decided to come together to open their own store, selling food items they could not otherwise not afford. The Owen failure made them design the Rochdale Principles, which they used to pool investment resources together one-pound sterling per person for a total of 28 pounds of capital. In December 21, 1844, they opened their store selling household necessaries such as butter, sugar, flour, oatmeal and a few candles. This later expanded to include other consumables. The market knew the Rochdale Society for their provision of high quality, unadulterated goods.

The inclusion of the findings of this desk study seeks to inspire the case of the Kenyan cooperative movement, which has similar ramifications as Owen’s cooperatives: succeeding in financial business everywhere, and creating serious business for the government in managing the SACCO movement, but failing in supporting the productive sector; out of reasons that this study may not delve.

From the foregoing, cooperatives are created from a social or collective perspective where individuals come together for a common purpose but allows the brains of all actors to participate in their full capacity, limited resources or otherwise. This scenario holds true in the case of many of the smallholder farmer cooperatives.

Cooperatives register their existence legally, under CAP 480 of the laws of Kenya, which provides a flexible shareholding. The person having few shares has the same ability to provide direction in the business of the cooperative as the one who has many. In a well-governed cooperative, the collective action of all the people in the organization is what counts in decision and strategic direction. This aspect makes them viable vehicles for use by farmers whose investment resourcefulness is varied.

Their operation of a cooperative is however subject to supervision by a cooperative officer, which is, the movement’s ‘Achilles’ heel’. The cooperative officer is only trained in the provisions of the Cooperative Act and may therefore be lacking in the technical agricultural knowledge where the business of a cooperative lies, a matter they personally will not own up to. This lack of technical knowledge, in agriculture and agribusiness, is what has created a bad name to the cooperative in Kenya since many officers apply the Cooperative Act without contextualization to the local needs of the gullible producers.

The challenge however is not that the cooperative officer usurps the role of the leader of the grassroots producers, rather the producers are in many cases lacking in knowledge on how to run organizations. The drafters of the cooperative law in their wisdom provided for the contextualization of what the farmers want through the provision of creating of the governing by-laws, which the producers create. The silence on how to create agricultural cooperatives gives room to co-operative officers who may be keen in creating fiefdoms, and become the guide in the formation of the cooperatives. When the cooperative office meets to form a cooperative with farmers who fear rather than seek to engage and interrogate the law, during the formation of their cooperative, provides the foundation of what farmers have come to dislike in the cooperatives.
Limited provision of advice to intending co-operators: that they can choose to include the presence of the technical officers of their respective productive Ministry, or that they can have the formulation of their cooperative presented to the cooperative officer by the technical officer of the productive sector Ministry is normally lacking. Co-operators need advise that they even have the privilege of providing for the presence of business development partners, in person or as businesses as ex-officio members of their general meeting in their by-laws. This will help in the case where agricultural officers feign weakness, as they indicate they do not have a law to back their practise like the cooperative officers do, thereby leaving the technically semi-literate officers in the cooperatives to guide a technical area in agricultural productivity and agribusiness. Discussion with cooperative officers, on their view of their agricultural counterparts, points on the need for a more harmonized operation to promote interaction amongst these officers. The challenge in this scenario seems to point to sub-optimization in managing the sector’s operations.

In assessing the meaning of the legal forms that the farmers have adopted, the foregoing issues came up with technical officers interviewed. It is the consultant’s view that these need a more focused policy re-alignment. To ensure sustainability of the agricultural businesses like dairy business that can assume the going concern perspective of companies, cooperatives operating in rural areas need to provide for the inclusion of the technical and business support persons in their by-laws as ex-officio members.

The foregoing legal forms define the manner of transacting business within the organizations represented in Figure 3.

**Experience of farmers in dealing with dairying**

Observation made from Figure 4, shows that the majority of the farmers have been in business for less than 5 years. Indeed, over 60% of the farmers have engaged with dairy for less than 5 years. While less than 40% have been in dairy business for 5 years or more. Less than 20% of the farmers have been in dairying for more than 10 years.

The dairy sector in the region of focus has been doing well over the last 5 years when more farmers have entered the sector. The potential for them to seek more engagement with the sector from a business rather than a cultural engagement is therefore real, making the study advice that there is reason to see potential for an investor seeking to see producers operating at the productive layer in a more businesslike manner.

This study focused more on the organizational forms that undertake investment at the grassroots. The author had however; in an earlier study in Githunguri Dairy established that the minimum age of a household head in Githunguri is 23 years, while the maximum is 83 years. According to that study (Kiringai, 2010), most of the farmers are literate with only 3% indicating they do not have primary school level certification while 32% had primary school certification. Majority of the interviewees indicated that they have secondary education with a total of 38% of the population having secondary school certification. The study also showed
that a sizeable percentage of 27% have post secondary certification and undertake dairying as a business owing to its ability to generate income to augment other income bases.

**Monthly Milk sales by farmer organizations**

This study recognizes that over 80% of the milk produced by smallholders gets to the consumer through informal channels, and that only 20% engage through the focused in this study. With a representative population providing insights into what happens to this marketed proportion, the chart in Figure 5 demonstrates what should guide investment from this study pending the value chain benefit pending the increased supplies to any processing initiative should investment and infrastructure to collect the milk be provided to the areas where production takes place.

From what we gather from Figure 5 therefore, the farmer organizations that sell less than 200,000 litres a month comprise over 55% of the average sales of milk, which is indeed the dominant supplier. Those who can guarantee delivery of 500,000 litres or more are just slightly above 20% at 21.7%. This indicates the need for more work to improve productivity, or yields from the farmers. To justify investment in value addition, targeted efforts need to help buoy the proportion of producer groups doing more than 500,000 to ensure an increase beyond the current levels.

**Geographical Coverage of Farmer Organization**

KAPAP has focused its interventions to the smallholder farmer initiatives at their CIGs. They therefore do not have a national appeal and is demonstrated by the failure of the Owen Model in the collective action effort of village cooperation, most of the agricultural production in the area of study is concentrated around a given the home place of the farmers. Indeed this rhymes with the 80% of the market being local and informal for unprocessed milk. Given the local perspective, producers own and can drive a given productive agenda as their own initiative. If value addition activities take place in the locality where production takes place then the returns benefit local people in immense ways as demonstrated in the case of Githunguri Dairy where employment of local people in direct employment has soured beyond the 600 mark, with indirect benefits being even higher. As seen in Figure 6, over 85% of the organizations serve their own locality. While this is good, the sources of investment may be limited, particularly if the investment vehicles are based on the organizational types discussed earlier.

**Economic Assessment of the Milk Products**
Milk sales, in Kenya, follow two separate channels: the formal and the informal. These two have different levels of appeal to the dairy sector regulator, the Kenya Dairy Board (KDB), which levies Cents 20 (20cts) for each litre of milk sold formally. Formal channels involve organization of farmers either by a milk processor or by farmers themselves into marketing groups. Some farmers sell directly to informal traders for cash. The cash trade in milk is preferred due to its convenience in providing financial liquidity in what has been termed a hand-to-mouth existence. A litre of milk sold through formal channels is currently fetching Ksh. 30 in Kiambu and 28 in Nyandarua and Nyeri. When the farmers sell to the informal traders, they gain a premium of Ksh. 10-15 per litre of milk, the scenario currently holding as milk demand from households is outstripping the normal supply from the processed milk channels.

**Economic Analysis of a Litre of Fresh Processed Milk**

The diagram in Figure 7 represents the earnings that a tetra-pack litre of fresh milk at Tuskys Supermarket fetches from customers to pay for the productive work that created the contents hence financing the chain.

From the interviews that followed the collection of this pricing data, an analysis of the marketplace earnings was undertaken.

The next in terms of the share of earnings is the Farmer’s earnings which form 16% (with 12% being the actual profit margin and 4% being the contribution of the productive effort that the farmer is actually involved in on a day to day basis) of the price earnings.

![Figure 7: Percentage share of Ksh 96/litre earnings of fresh milk](image)

<table>
<thead>
<tr>
<th>Table 1: Assessment of Production margins</th>
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<tr>
<td><strong>Productive Activity</strong></td>
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<td>i. Breeding</td>
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<td>ii. Feeding</td>
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<td>iii. Water</td>
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<td>iv. Health care</td>
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<td>v. Other labour</td>
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<tr>
<td>vi. Cow shed</td>
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<tr>
<td>vii. Farmer’s Margin</td>
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<tr>
<td><strong>Total</strong></td>
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Inputs suppliers take the farm level inputs earnings of 14% which when combined with the farmer’s productive effort of 4% brings the share of 18% of the market price per litre. Technoserve (2006) analyzed the share of the production earnings with the percentage distribution to the right, which we have applied in our case to the 18% or Ksh 17 out of the price per litre of Ksh 96. According to this distribution, the farmer earns approx Ksh 2/17; feeds take the lion’s share of approx Ksh 11/17 or 66% of the earnings from this productive function.

As is seen in Figure 7, the processors, whose direct function rakes in 59% of the market price, forms the biggest beneficiary of the dairy activity. However if the processor allows the farmer to control the 3% of the farmer transport, ensuring that they organize the transport function in their delivery to the bulking/chilling centre, then the farmers will control slightly under 32% of the earnings. We draw the reader to the attention that the processor controls the rest of the value chain earnings particularly the variable cost functions of transport and distribution. It is noteworthy that only in these cost areas can one have possibilities of...
economies of scale, whose logistical organization ensures that the farmer is alienated from the potential for any enviable economic gain in overhead management.

This finding shows that if the farmer has no ownership in the processing function, then they may not know what is involved in the approximately 60% of the earnings that the processor takes. Without a share of the functions in the layer above the production layer and barring effective communication from the processor, the farmer may get disgruntled. In such a scenario, productivity would most likely suffer unless the processing function is shared through an organizational model similar to what some cooperatives, engaged in processing, are doing today. As it stands now, the study also established that the processor controls the transport and distribution functions directly, without the involvement of the producer/farmer.

**Detailed Value Chain Map with Economic Analysis**

![Figure 8: Analyzed Fresh Milk Value Chain Map](image)

The revised value chain map is given in Figure 8 in the previous page with the margins that build up to the Ksh 92 per a tetra-pack litre of milk that a consumer pays to the supermarket. The functions of each actor, as formulated in the stakeholder value chain map is shown here. The monetary value, or economic contribution, of each function summarizes the study in one snapshot. The map further details the markets that the producers target at the micro level to provide an understanding of the planning necessary for the value chain. The planning, and
support functions, is provided by the secondary service provider actors, shown in the meso level. The regulators or sectoral overseers comprise the macro level.

The opportunities for investment exist in optimizing the functions at the micro level. The opportunities derive from the stakeholder workshops and from the field study as well as from the key informant interviews. The next section compares the findings in the milk yoghurt product, where more value added investment has taken place.

**Economic Analysis of a Litre of Milk Yoghurt**

The diagram in Figure 9 shows the earnings that a tetra-pack litre of milk yoghurt fetches from customers at Tuskys Supermarket to finance the chain.

The analysis undertaken in the case of the fresh milk still holds. When more investment in value addition takes place, the share of the earnings from the marketplace that a smallholder is alienated from becomes clearer.

As seen from the value addition of fresh milk to milk yoghurt, the figures and the associated comparative percentage on the earnings from the marketplace seems suggest the case for the promotion of value addition and the associated investment closer to where the smallholder farmers operate.

It should however be noted that the cost of processing that goes to earn the Ksh 170 as opposed to the Ksh. 96 for the skimmed milk will definitely be much higher but the proportionate increase may not be as high as the jump in the earnings.
Detailed Value Chain Map with Economic Analysis

The revised yoghurt value chain map is given in Figure 10 below with comparison shown for the Ksh 170 per litre\(^1\) of milk yoghurt that a consumer pays (if they buy two (2) 500 mls of milk yoghurt, to the supermarket. As in the previous case where we considered the role of the actors in the value chain, the functions of each actor, as formulated in the stakeholder value chain map is shown in Figure 10. The monetary benefit, or economic contribution, of each function summarizes the study in one snapshot. No doubt the processing and packaging area seems to carry the bulk of the resources but can be unpacked in terms of the costs that the function itself use.

It seems more compelling to propose that investment in the secondary activities as postulated in the Porter Model will be advisable for the smallholder producers. Models of investment vehicles are therefore necessary to explore. No doubt, the opportunities for investment seem clearer here to support the optimization and alignment of the functions in secondary level activities in the micro layer. The next section analyzes the cost of different types of packaging that the consultant observed from the different supermarkets various encountered in the study.

\(^1\) Yoghurt is commonly packed either in 500ml in cups or tetra packs. We use the liter only for comparison.
Cost of Packaging and its implication on the price

The foregoing economic assessment of the dairy value chain creates the thinking that alienation of financial resources happens against the smallholder farmer by the processor. However, it seems to be a need to define all costs that contribute to the increase in the price. The consultant chose to visit the Tusksys Supermarket, which was isolated for this study due to its investment in the milk-dispensing infrastructure that made it possible to assess the implication of the cost of packaging on the pricing of the dairy products.

Of the milk processors that were isolated for closer assessment, only one seemed to attract interest, Brookeside. The organization, which now owns a number of other processors, has retained the tetra-pack for the Brookeside and Delamere Brands while the other of its brands such as Tuzo and Ilala compete on the pouch market with the other processors. We analyzed the cost of packaging of the products from this company just to appreciate the implication of the pricing structure on milk products.

Figure 11 shows the milk prices when dealing directly with traders/brokers with no overheads, save for their labour, transport and the polythene paper, the dispensing machine pricing, the bag packaging pricing and the tetra-pack pricing with cork and without.

We chose to give the costing of the polythene paper has a token pricing of Ksh. 1, which though close to the actual pricing is not the actual price but is useful for comparison’s sake. We note that from the milk dispenser the price increase arising from the introduction of the pouch increments the price by Ksh 25 to Ksh 90 from 65, while changing from the Pouch to the Tetra Pack increments the price by another Ksh 6. The latest addition by Brookeside to put a cork rather than the tearing that is common on tetra packs, which gives convenience to storage, makes the price rise by another Ksh 8.

The choice of the packaging material is therefore critical when one seeks to embark in market entry with a processed product. According to Tusksys, the volume of sales is also revealing: Approximately 1,500 -2,000 litres are needed to refill the milk dispenser per day compared with 5,000 pouches of half a litre sold per day. The supermarket makes only 400 packets of tetra pack sales in a day with no statistics available for the corked tetra-pack.
POTENTIAL COLLABORATION LINKAGES FOR DAIRY VALUE CHAIN DEVELOPMENT

As notified by the Ministry’s Sector Development Committee, a lot of work has already been done in the dairy value chain sector. This study has established as much, while also acknowledging that the linkage of the organizational and economic assessment gaps needed the perspective presented in this study.

It is therefore important that we acknowledge the work that is being done by the existing programmes in the dairy sector with the recognition of the value chain interventions that has been carried out by a few.

Some of the partners that the interventions in the dairy sector will seek to include are the following:

1. The Kenya Dairy Sector Competitiveness Program that is driven by the Land O Lakes, supported by the USAID
2. The East African Dairy Development Programme of Heifer international with its partners – Technoserve and ILRI which was supported by the Bill and Merida Gates
3. The Dairy Goat Association of Kenya (DGAK) which has been supported by GIZ and its precursor Meru Goat Owners Association Supported by DfID backed Farm Africa
4. The regional programme of World Bank and ASARECA, the East African Dairy Competitiveness Project with the implementing partners that are regional in focus

Efforts should be made to link with the organizations that take the lead in each of these projects so that the integration of the value chain economic model with the thinking of competitiveness that we have argued for is realized. Some of the critical partners will include

1. Land O’Lakes
2. Technoserve
3. ILRI
4. Heifer International
5. Dairy Goat Association of Kenya

Of all the initiatives that have been undertaken, the organizational development focus supported by the Kenya Dairy Competitiveness Programme under the steering of Land O’Lakes needs to be sought out to integrate the structures that it has already achieved including the eMarketplace portal that it has developed into the value chain modelling. The Kenya Dairy Board seems to have adopted a competing product development which also received the backing of the Kenya Dairy Sector Competitiveness Programme in the name of eDairy but which seem more of an intrusion in the sector rather than a sectoral solution. As the organizational implementation model this study seeks collaboration with all the partners, the dairy board needs support to help focus on strategic role of the regulation and coordination of the sector rather than engage in areas that may create confusion by seeming to support different layers of the value chain.

The study while not focusing on the level of education of the farmers noted the level of literacy in the leadership of the farmer organizations. There is need to work in a model similar to what has emerged from the work of Technoserve with its business hub model. The business hub model, which takes into consideration the value chain roles of all actors, forms the foundation in the case studies cited in this study under Nyala Dairy and Watuka Dairy.
Given the localized capacity-building model in the KAPAP implementation, local support organizations need support. The study isolated two that may become critical partners. These are:
1. The Association of KAPAP Service Providers, and
2. Kimathi University College of Technology

**Association of KAPAP Service Providers**

The Public Private Partnership NASEP model implemented under KAPAP and which helps communities form organizational forms that drive demand for support services was identified in this study as a suitable vehicle for supporting the farmers avoid the level of illiteracy that makes them gullible to exploitative market intermediaries and other value chain pests.

**Kimathi University College of Technology**

Kimathi was the host of the two stakeholder workshops. The existence of two critical units – the food science department and an engineering department, both of which have indicated their willingness to support dairy and agribusiness as they have done in the coffee sector, where they pioneered a programme in coffee education, there is need to link up with them more. The college has a fully fledged community partnership department responsible for linking research and community agribusiness. As it grows to become a full fledge university, there is reason to explore how its incubation role to the agribusiness sector in the region can get more pronounced.

**The Policy Framework in the Dairy Value Chain**

The “milking the benefits for small-scale vendors study” (ILRI, 2010) notes that the annual per capita milk consumption in Kenya estimated at 145 liters, is five times higher than milk consumption in other East African countries. It also notes that dairy products constitute the largest item of food expenditure by Kenyan households, and supports nearly 800,000 farmers and 35,000 small-scale milk vendors who depend on dairying and the milk chain for their livelihoods. This includes employment for both men and women in milk collection, transportation, processing, and sale. The study further notes that with at least 86% of marketed milk being sold through the informal sector as raw and unpasteurized milk, the policy change that saw the licensing of certified milk vendors, has benefited the economy by around Ksh. 3billion million annually in exchequer collections. This outcome is a product of a policy shift against what the Dairy Board had hitherto held – that milk vendors pose health problems and should not be included in the formal milk chain.

Policy shifts, which change the way government does business with smallholders can, provide huge earnings and employment generation for Kenya. The Kenya Dairy Board (KDB), the regulatory arm of the government has mandate, under the Dairy Industry Act CAP 336, to organize, regulate, and evolve efficient production, marketing, distribution and supply of dairy produce in the country. Understanding how the KDB works in the regulation function helps understand how the KAPAP dairy value chain programme can interact with the government regulator in shaping suitable policy for investment promotion.

One of the ways the KDB regulates the dairy sector is through licensing. Licensing of dairy business provides safeguards to consumers against unscrupulous traders dealing in milk and milk products. The board ensures that only businesses that safeguard consumer safety are allowed to operate.
Types of licenses and permits

Some of the common licences issued by the Board include the following:
1. Primary producer licence for farmer owned milk-bulking sites that collect and bulk raw milk for processing.
2. Cooling plant licence for milk chilling plants operating below 5,000 litres per day
3. Cooling plant licence for milk chilling plants handling more than 5,000 litres per day
4. Milk bar licence for milk traders operating in specified premises
5. Cottage industry licence for on farm small-scale milk processing of speciality dairy products
6. Mini Dairy licence for milk processing plants handling less than 5,000 litres per day
7. Processor licence for milk processing plants handling more than 5,000 litres per day

The Board also issues permits for:
1. Milk carriage permit to transport raw milk from source to chilling/processing site
2. Import permit for importation of dairy produce outside East African Community
3. Export permit for exportation of dairy produce outside Kenya

Other than the Dairy Industry Act, CAP 336, other laws commonly come to play which the dairy value chain actor may not know. Some of the common ones that an operator in the value chain include:
2. Public Health Act CAP 242
3. Food, Drugs and Chemical Substances Act CAP 254

Research and Standards Focus
The board also has the mandate to ensure hygienic standards in the quality of milk delivered to the market. Since 1992, when liberalization in the dairy sector took effect, the board does not set milk prices but ensures reasonable and stable prices to producers of dairy produce, much as the mechanisms for achieving this may be lacking.

As a critical mandate, the board is supposed to promote market research in the dairy sector and to also promote the participation of the private sector in the dairy value chain. The board levies a fee of 20cents per litre of milk sold either through the formal channels using cooperatives or directly to traders for processing or sale to the consumers through milk processors or milk bars. It is therefore in the interest of the board to ensure formal marketing and sale of the milk produced in the country as much as possible that may blur its relationship with formal channels against the informal ones, which created reason for complaints by some of the cooperatives whose leaders we interviewed.

In to clarify its role and ensure the realization of the foregoing, the board promotes capacity building in the sector. The board’s capacity building activities target primary stakeholders by holding field days, workshops and seminars. These capacity building focuses on dairy producers, milk bulking sites, milk transporters, milk processors, milk traders and milk bar operators. Some of the areas of focus include:
1. Clean milk production
2. Feeding and feed conservation
3. Value addition
4. Milk quality and testing
5. Good Manufacturing Practices (GMP)
Cooperative Leaders Expectations of the Dairy Board

Since 1992 when the liberalization of the dairy sector took place, there have been enormous investments in the sector. The role of the board in assessing the performance of the value chain, particularly in managing the economic benefit to the farmer has been lacking. There is need to find out the level of support the producers, particularly in the cooperative movement need to see in the support extended to them by the board. Some cooperatives expressed desire to have the board focus more on:

1. Creating an investment fund to support preferential interest rates for value addition and cottage industry initiatives in the sector
2. Aggressively supporting cooperatives as smallholder farmer interfaces rather than seeming to side more with the private sector
3. Promoting linkage between producers and researchers and having such research reach the farmers through various media
4. Promoting standards in feed concentrate production linkage with input suppliers and brokering the best prices and ensuring compliance to the standards

Case Study 1: Nyala Dairy Multipurpose Cooperative

Nyala Dairy Multipurpose Co-operative (NDMC) is a member’s organisation, started in 2002 with the main economic activity being milk aggregation for sale to the market. While the community started this effort with the vision to aggregate milk, there was no business structure or plan on how to realize the vision. Getting members who were at the time facing a crisis in milk sales was not a challenge as they all faced the same challenge – marketing of their produce.

Conscious of their constraints, the society has over the years evolved a business support and capacity building collaboration with Technoserve, which has specialized in the capacity building focus of cooperatives with its model partner being Nyala Dairy Multipurpose Cooperative Society. The acceptance by the leadership in Nyala Dairy that they faced the challenge of running a farmers’ organization as a business was the starting point to what has made the cooperative a worthy learning ground for other cooperatives.

With this realization and the desire for Technoserve to evolve a learning model for other community organizations, by training their leaders and employees in business management principles, with a focus on clear separation of roles for the management and the board in line with proper corporate governance principles has earned recognition through Nyala. The cooperative has from this changed paradigm of government- development partner and community model created a knowledge driven trajectory for Nyala enabling them to knowledgeably structure their business with the strategic orientation of creating strategic business units. The board and the management assesses these strategic business units independently as independent social enterprises, all created with the clear focus of supporting the farmers in value chain linked activities.

The strategic business units that have been involved so far include the following:

1. Agricultural inputs agrovet shop
2. Advisory extension services delivery and artificial insemination
3. Milk aggregation, chilling and linkage to buyers/processors, and
4. Savings and Credit Cooperative Society

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2 Short for Nyandarua and Laikipia
Agricultural inputs/agrovet shop

The agrovet shop stocks all agricultural inputs which the cooperative buys in bulk as wholesale and breaks the bulk selling to its members and other retail customers at distinct prices, with farmers getting member based discounts. The shop has an independent CEO who develops strategies for its growth and presents the same to the board which meets once a month. The board has authorised the chairman to use two days in a week to meet the management and get to know the plans and offer his direction on how the business should run.

Farmer Advisory/Extension Services and AI

The extension or advisory service is a critical outlet to the agrovet shop. Farmers get the advise on what stocks are available from the animal health officers, as well as the extension staff of the government who work closely with the agrovet.

Milk Aggregation/Chilling and Processors Linkage

The cooperative has build a chilling plant in Ndaragwa with another chiller at Shamata the cooperative expects to start milk processing soon with the production of yoghurt earmarked as the first starting point.

Savings and Credit Cooperative Society

A Dairy agribusiness organization registered as a Cooperative running a SACCO, now registered under SASRA as an independent business that makes payment to the farmers and provides credit to them on need basis and for the purpose of promoting their dairy production/.

Case study 2: Watuka Dairy in Nyeri County

This is another cooperative modeled around the same business hub concept as the Nyala one. Their technical backstopping of derives from the same organization as Nyala, Technoserve.

While the cooperative has taken the same model is the Nyala one, the business units and the products or services given to the members are slightly different. Other than offering milk aggregation and support to their members through savings and credit services, they also provide services to their members in:

1. Enhanced fodder production
2. Risk mitigation herd insurance
3. Provision of AI services
4. Warehousing, packaging and direct sales of agricultural produce including potatoes
5. Engagement in agricultural product diversification
6. Aggregate and sale of excess milk produce that their customers are not able to sell to Kieni Dairies who have arrangement with processors

Lessons from the Case Studies

The two cases have one common thread in their operations. There is a clear separation of the primary activities and focus on secondary activities through a knowledgeable partner.
One of the key investments that Technoserve has encouraged is the use of knowledge and technology products and use of ICTs to manage member operations.

For the success in their business operations, the optimization of operational processes is critical and important. Reliance on an external party to deliver knowledge-based services, which though paid by another organization is taken seriously, is a good lesson that rural communities value partnership and collaboration with people and institutions that have their interest in focus.

As KAPAP seeks to develop an investment model for the dairy value chain the critical elements to identify include:
1. A clear assessment of the local opportunities, starting with what the neighbourhood has potential to produce best
2. Definition of the organizational model based on the local capacity of the people
3. Supporting the communities to run whatever business model is selected from a collaborative knowledge model
4. Infusion of technology and knowledge in what the communities do and ensuring that structured organizational models are used to run the business
5. Linkage with partners for marketing and investment in value addition
VALUE CHAIN BASED INTERPRETATION OF THE RESULTS

This study has started with the introduction to the value chains as modelled to advise competitiveness in business organizations, or firms. The argument has been that unless organizations are formed for smallholder farmers are created to help them take advantage of the value chain then poverty will stalk the smallholder farmers. The ValueLinks provides the basis of identifying how linkages of functional activities of smallholder farmers, acting as micro-organizations, link into a larger organizational forms within which the value chain model of competitiveness is applied. All the stakeholder perspectives in this study acted as basis of integrating the ValueLinks methodology to the smallholder farmers and the sector in general.

We devote this section to look at the level of preparedness with the challenges or constraints, and opportunities that smallholder farmers face as they work indefatigably to create wealth by investing incomes generated from their activities in an economic model within which they have very little control.

Value Chain Constraints

We start by assessing the constraints faced, first by the dairy cow farmers then the dairy goat farmers.

Cross-Cutting Constrains
1. Poor policies
2. Unfavorable weather condition
3. High cost of inputs including power and electricity
4. Production of low quality milk
5. Low quality feeds in the market
6. Poor market infrastructure
7. Poor and inadequate service provision
8. Inadequate capital and high interest rates- from the banks, it was said the cost of money and money handling is too expensive.
10. Multiple taxes
11. Slow adoption of technologies
12. Lack of unity among dairy farmers
13. Cartels by marketers and processors
14. Monopoly in processing
15. Political influence
16. Poor breeds and animal husbandry
17. High cost of technologies
18. Lack of traceability measures

Constraints Unique to Dairy Goat Farming
1. Low herd stock making milk production feasible as too much focus is given to marketing of dairy live animals
2. Poor linkage with credit programmes to make it possible to acquire goats or new breeds of goats
3. Poor productivity due to poor production management and lack of breed improvement systems
4. High incidence of in-breeding calling for introduction of AI whose low percentage of fertilisation makes the cost rather high to the farmer. Importation of semen a challenge as no framework is in place.
5. No organized system of training of localized inseminators.
6. Availability and Quality of the fertility hormone a challenge.
7. Availability of appropriate services (breeding, feeding, forage seeds, veterinary services, milk processing, etc).
8. Lack of an appropriate grassroots dairy goat production support framework.
9. Lack of formal organizational vehicle makes market interaction unfavourable to smallholder farmers.
10. Majority of smallholders use the Self Help Groups (SHGs) which they have control over avoiding the legally viable co-operatives which lack in effective governance structures resulting to mismanagement.
11. Market forces make illegal movement of animals necessary but this creates potential for taking disease with them.
12. While hawkers are convenient in their payment to the smallholder they become a source of challenge to the smallholders due to their huge take from the market proceeds which is rather punitive given the level of effort.
14. Cost of inputs is very high particularly for smallholders using retail Agrovet Shops.
15. Farmers do not keep proper dairy records, which makes animal registration a challenge.
16. Lack of records creates potential for inbreeding or uncontrolled breeding.
17. Low adoption of AI and not fully implemented, for daily goats, AI is still in pilot phase.
18. Lack of organized milk bulking system.
19. Dairy goat is not developed as a business.
20. Inadequate volumes of marketable milk.
21. Lack of standardized policies.
22. High prices of goat milk.
23. Lack of clear facts of medicinal and nutritional value of goat milk.
24. Lack of awareness of local dairy goat breeds.
25. Low consumption of goat milk.

**Constraints Unique to Dairy Cows**

1. Unethical practises by AI providers results to low conception rate.
2. AI is unaffordable for improved semen. At times improved semen not available in adequate amounts and variety lacks, thus encouraging inbreeding.
3. Untrained/Uncertified service providers (Quacks) operate clinical AI as private service experts.
4. Poor linkage of service providers with the DVS system makes outbreaks difficult to control.
5. Organized bulking is hurt by lack of marketing and distribution infrastructure or transport.
6. No organized system of information/knowledge provision exists for the smallholder farmer to help them make informed business decisions.
7. There is poor use of technologies that can infuse proper governance and management in cooperatives.
8. Poor breeds, high cost of inputs: land, feeds, vet services, disorganized production with farmers lacking in legal entities complicates support work in nationalized marketing.

**Opportunities discernible from the constraints**

**Dairy Goat Opportunities**

1. Goat cheese.
2. Goat milk packaged in long life packaging
3. Exploitation of latent demands in our markets
4. Radical campaigns for dairy goat keeping both by large scale and small scale farmers
5. Milk dispensers (both fixed and mobile dispensers) in merchandised outlets, schools, colleges, hospitals, and diversifying they dispensed products, fresh milk, mala, flavored milk and yoghurts.
6. Feed analysis laboratories- Due to high cost of investment and low returns in the Lab, it can be expensive to set up a lab for analyzing a few samples, Institutions and universities can take up that as part of their lab works
7. Milk driers for instant milk powder
8. Opportunity to improve feed quality.
9. There the Association of feed manufacturers who can be supported to enforce the code of ethics
10. KAPAP can support to ensure that feed manufacturers are registered with the association to curb on sub standard feeds that compromises the production.
11. Standard enforcement, there is a pending bill on feed standard enforcement and KEBS is being supported by the Veterinarian board (KEBS and KVS)
12. Product diversification and advertisement campaigns to improve on the consumption
13. School deliveries and contracts
14. Milk distribution especially to ever deficit areas
15. Milk dispensers (both fixed and mobile dispensers) in merchandised outlets, schools, colleges, hospitals, and diversifying they dispensed products, fresh milk, mala, flavored milk and yoghurts.
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**Input/Supply Chain Opportunities**

1. Input supply and warehousing business
2. Establishment of inputs provisions shops
3. Inputs related advisory services
4. Transport business
5. Warehousing/stores business

**Cross cutting (investment areas for both cow and goats)**

1. Commercialization of fodder production
2. Exploit opportunities of embryo transfer and production
3. Transportation, bulking and chilling investments
4. Biogas enterprises for green energy an example was cited Equatorial Fuels who have partnered with NGOs, HIVOs of the Netherlands, GTZ, Kenfap and they are enabling farmers to set up biogas digester at a subsidized costs
5. Communal farming and land leasing a borrowed from Israel – Kibbutz
7. Tanning- hides and skins
8. Ornaments- Hooves, horns, teeth and bones
**The Intervention Strategies**

This study seeks to introduce an intervention strategy that would help KAPAP support the dairy value chain from an informed perspective. We borrow from the business hub model of what seems to work from Nyala and Watuka in line with the business hub model of Technoserve but bearing in mind the need to integrate the job creation focus ingrained in the NASEP. We propose to support the value chain: the economic system organized around a particular commercial initiative, which in this case is the economically supported dairy sector, through which we seek to address the constraints highlighted in the stakeholder workshops.

Different pillars were identified at the functional level of the chain that would be required to address the value chain interventions in the manner now addressed in the next section.

**Dairy Cow Milk Strategies**

**Cornerstone:** Availability of high quality and affordable inputs

*Activities / Strategies*
1. Encourage farmers to purchase from certified stockers
2. Enter contracts with certified manufacturers and suppliers
3. Spot inspections by quality agencies
4. Fabrication of processing equipments to cut down on production costs, calling for collaboration with technological institutions.

**Cornerstone:** Availability of high quality breeds

*Activity / Strategies*
1. Promote embryo production and utilization
2. Promote castration of bulls
3. Enhance the availability and use of AI
4. Educate farmers on advantages of improved breeds

**Cornerstone:** Enhance availability and access of new technologies

*Activity / Strategies*
1. Capacity building
2. Enhanced research, extension – farmer linkages
3. Set demonstrations during field days and ASK shows
4. Undertake technology promotion campaigns
5. Use of media, internet and road shows

**Cornerstone:** Enhanced good animal husbandry practices

*Activities / Strategies*
1. Extension through group approach
2. Strengthening of extension services
3. Preparing and distributing information on easy to read brochures
4. Use of media on creating awareness on good husbandry

**Cornerstone:** Increase milk production at farm level

*Activities / strategies*
1. Educate farmers on quality fodder crops, KARI has a fodder map for the Country and farmers can access to plant what is suitable in their areas
2. Proper feeding program improved nutrition
3. Fodder conservation to enable availability all year round, hay, silages
4. Increase herd population

**Cornerstone:** Availability of adequate and effective extension services

**Activities / Strategies**
1. Allocation of more resources to extension services by the Govt.
2. Encourage private extension services where possible
3. Regular training of extension staff

**Cornerstone:** Availability of farmer friendly credit facilities

**Activities / Strategies**
1. Formation of farmers’ group for group lending packages
2. Educate farmers on what is available for them in terms of credit and where they can access it
3. Encourage farmers to insure their herds
4. Encourage farmers to have operational account with financial institutions to easily access loans

**Cornerstone:** Formulation of effective policies that encourages dairy farming

**Activities / Strategies**
1. Formation of farmers’ CIGs to lobby
2. Reviewing of current policies and modifying them
3. Fast track policy formation process

**Cornerstone:** Availability of affordable energy sources

**Activities / Strategies**
1. Lobby for reduction of power tariffs
2. Promote the use of alternative energy sources, solar, biogas, wind etc
3. Use energy efficient machineries
4. Encourage people to conserve energy through recycling, switching the power off when not in use

**Cornerstone:** Availability of affordable technology

**Activities / Strategies**
1. Research, development and fabrication of affordable local equipments and machineries in collaboration with technological institutions
2. Lobby for zero rating on dairy imported equipments and machineries

**Cornerstone:** Restructuring and harmonization of the dairy market

**Activities / Strategies**
1. Encouraging many processors so as to have competitive milk prices
2. Organizing farmers into marketing groups
3. Capacity building of the farmers group, cooperatives, processors and companies
4. Enhancing quality parameters for the dairy milk and its products to meet international set standards
5. Improvement of transports and infrastructural networks

**Cornerstone:** Ensuring supply of adequate high quality milk

**Activities / Strategies**
1. Enhance the use of proper milking equipments and coolers to ensure quality e.g aluminium milking jars and milk transportation cans
2. Promotion of better animal husbandry
3. Setting prices for different qualities of milk to encourage quality production
4. Encouraging supply of high quality milk in terms of hygiene standards and composition quality through incentives

**Dairy Goat Milk Strategic Focus**

**Cornerstone:** Awareness creation of the availability and affordability of local dairy goat breeds.

**Activities / Strategies**
1. Conducting exhibitions
2. Participating in breeders shows, ASK shows etc
3. Capacity building of local dairy goat associations
4. Working with breeders to improve on the quality of local breeds
5. Directing research to the local breed so that they can be researched.

**Cornerstone:** Encouraging adequate goat milk production volumes

**Activities / Strategies**
1. Developing effective milk marketing channels
2. Increasing dairy goat milk volumes through, improved nutrition, increasing herd population, proper breeding
3. Encouraging investors to invest in large scale dairy goat production.

**Cornerstone:** Ensuring adequate breeding systems in place

**Activities / Strategies**
1. Promotion of dairy goat AI services
2. Proper training of AI inseminators
3. Training on breed management
4. Designing breeding programs for dairy goats to curb inbreeding.

**Cornerstone:** Availability of proper research and documentation of facts on medicinal and nutritional value of goat milk.

**Activities / Strategies**
1. Gathering available information and making it available
2. Researching on the knowledge gaps that exists in goat milk
3. Conducting standard tests and setting out policy standards for the goat milk

**Cornerstone** Encouraging dairy goat milk consumption

**Activities / Strategies**
1. Diversifying milk goat products
2. Promotion and advertisement
3. Creating awareness on nutritional value
4. Train on clean goat milk production

**Cornerstone:** Affordable and fair pricing of the goat milk to encourage wider consumption

**Activities / Strategies**
1. Improve production to improve on volumes
2. Allow the market to determine the prices
CONCLUSION

The use of the value chain is a new approach to development thinking in agriculture. The infusion of the ValueLinks as a methodology and an approach to eliminate operational inefficiencies promotes the adoption of technology in the management processes. Indeed, as noted by Hosman (2011), when well thought out public–private initiatives that are also technologically appropriate, and designed with long-term sustainability and local empowerment in mind, they have the potential to enable real socio-economic progress.

The analysis provided here has created the need to:
1. Ensure that the value chain is used to structure whatever business activities the communities engage with into value linked businesses
2. Businesses should be created around the areas where there are best economic returns as demonstrated in the economic analysis of the financial margins noted in the value addition outcomes of milk in processing
3. It is observed that farmers need to create business models that support investment and promote growth through investment
4. While the economic analysis does not assess the impact of cost of money in the value chain assessment, the indicated fear to take credit from financial organizations needs to be analyzed more closely
5. Aggregation of resources, whether produce or financial through formalized organizations is necessary to promote the farmers’ ability to contract with the market actors

RECOMMENDATION

There is a case for investment in the dairy sector in Nyeri and Nyandarua. The choice of an incubation initiative that promotes knowledge to the communities and making it affordable to the communities even when it is economically valued is necessary.

The role of a capacity and knowledge provision partner has been identified as crucial for success as in the two case studies provided.

The potential to use Kimathi University as a partner and capacity enhancement institution with its ability to develop and evolve technologies that farmers can use is seen as a possible starting point. The university is also bound to withstand the temptation to be bought like other processors are currently being bought out leaving farmers hapless.

This study recommends a share-based, mentored and technology inclined business model to support the promotion of the smallholder dairy value chain.