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| logo.jpg |  | Fair Trade Organization of Kenya P.O. Box 3823-00506Nairobi, KenyaEmail:info@ftok.orgWebsite: www.ftok.orgTel: +254 (0)717 538219, +254 (020) 7780404 |

**TECHNICAL ASSISTANCE PROPOSAL**

***STRENGTHENING DAIRY VALUE CHAIN AND***

***IMPROVE INCOMES OF SMALL HOLDER FARMERS***

**GAKUNDU FARMERS COOPERATIVE SOCIETY,**

 **EMBU COUNTY KENYA**

### Background

### Dairy Value Chain

The Kenya dairy value chain of both formal and informal market is fragmented with a large number of players at each step, and a low level of vertical integration. In the formal value chain, the milk is usually transported to chilling and bulking centers, then to a processing facility. Once milk is processed, agents or distributors deliver it to a point of sale. Informal market connects producers to consumers normally via a number of brokers. Despite strong competition for milk between formal and informal market, the farm gate price is on average the same. The preference for selling into informal market is driven by preference for cash whereas in formal sector, while processors usually pay at the end of the month. Considering that milk is often the only recurrent revenue, the need for cash to cover dairy expenses creates a strong preference for producers to sell to informal traders/hawkers. In addition, there is no quality control in the informal market allowing producers to sell poor quality milk that would be rejected by processors.

The main characteristic of the dairy supply chain is the poor cold chain. A huge portion of milk received from farmers for marketing is not cooled. Normally, milk needs to be cooled within 2-4 hours from milking. Milk marketed through the informal market is not cooled at all. Since milk collection is conducted only in the morning, evening milk in particular is of poor quality when received by processors and hawkers the following morning. A poor cold chain also lowers the quality of processed milk and prevents processors from producing long life products that need the high quality input. Pricing of milk takes various routes from producers to the end consumer. The average current farm gate price is 17 KSh per liter. The price to end-consumer, on the other hand, is on average 30-45% lower in informal market when compared to the prices in the formal market. The price of raw milk fluctuates with the season, while the price of processed milk is relatively stable throughout the year. During the wet season, when milk is abundant, a liter of raw milk can be purchased for 26 KSh. — 38% cheaper than processed milk. However, during the dry season, the price increases to approximately 70 KSh a liter, reducing the price differential to 20%. In addition, raw milk is often sold in containers of 250 ml that actually hold only 200ml. When this, and possible adulterations, are taken into account the price difference almost disappears.

However, there are important drivers of consumer behavior that have more to do with perception and consumer awareness and less with price, and that will continue to make raw milk more attractive to a large number of consumers: Most milk is consumed immediately, usually mixed with tea, so most Kenyans buy milk in small quantities when needed. Most do not have a need for storing milk, and most do not have refrigerators. A number of consumer studies show taste preference for raw milk, perceived as creamier and richer. Consumers believe that boiling makes raw milk safe for consumption, reducing the willingness to pay a premium for pasteurized milk.

* 1. **Dairy production systems**

There are three types of dairy production systems in Kenya namely: zero-grazing (intensive), semi-grazing (semi-intensive) and open range (extensive). Zero grazing involves confining cattle to a limited physical space where they are managed, fed, watered and milked. Open range involves free grazing by the cattle, often with no supplemental feeds. Semi-grazing falls somewhere in the middle and involves the combination of the two approaches. While zero-grazing requires higher investment in fixed infrastructure and closer management of cattle, it normally produces higher yields per cow. Semi-grazing and open range systems are less labour and investment intensive, but normally produce lower yields. In the case of zero grazing in Kenya, the yields can be as high as 15-30 liters per day per cow, much higher than the 1-2 liters observed on farms practicing the other two systems in Kenya.

Feeding is a major cost component accounting for 70-80% of total cost. Due to the lower usage of feeds and reliance on grazing, feeding costs are somewhat lower in the semi-grazing system. These lower costs are however compensated by other higher costs, including labour per unit cost due to lower yields. Individual costs vary widely by farm depending on the quantity and type of feeds used and whether they are commercially produced or “home-made.” Switching to cheaper types of forage and home production of inputs are strategies used by farmers to mitigate price hikes of grain and commercial concentrates. 90% of production costs are variable, making cost and yield management the main drivers of production profitability. Effective dairy management requires instituting balanced feeding regime, and reducing seasonality. Balanced feeding is achieved when marginal increase in cost of feeding equals marginal increase in yield. Most farmers do not actively manage costs and are focused either on quantity of input or determine feeding regime based on available cash flow. Reducing seasonality requires reducing reliance on grazing and practicing annual feed planning. By reducing seasonality, farmers can capture more value in times of milk shortages, and can even reverse the cyclicality by producing more milk when there is a shortage of milk. Since most costs are variable, there is no need for economies of scale to spread the fixed investment. However, effectively managing yield and cost requires a high investment of time and knowledge. It also requires moving from subsistence dairy production to dairy as a business.

For most Kenyan dairy farmers, even though dairy is an important source of income, it is not seen as a business where the aim is to maximize income and minimize costs. For many producers keeping cattle is cultural and meets the need for domestic consumption and while providing some cash flow. When compared to best practices, most of Kenyan smallholders practice the opposite. They do not use Artificial Insemination (AI), do not feed the cows properly, do not water them properly and use a minimum, if any, preventive health care. This results in low genetic quality of cows which substantially under-produce even in respect to their already limited potential due to poor health and insufficient nutrient intake. Complete reliance on grazing also makes milk production seasonal. In the months after main rains, April to August, abundance of pasture leads to a flush period when milk supplies are plentiful and in excess of the ability of the formal and informal marketing systems to absorb resulting in milk glut. Yet during the dry season—January to March—there is a huge shortage. Linking farmers to multinational Dairy companies with chilling plants could definitely reduce milk glut on marketing point of view to near zero.

Market Analysis:

According to the Kenya Dairy Board, marketed milk production in 2005 was 3.32 billion litres. This

is an increase of 4 percent from 2004 performance which stood at 3.2 billion litres. Only 8 percent

of milk produced is processed, 24 percent is marketed unprocessed and 68 percent of

unprocessed milk is consumed at household level or wasted. There has been debate on the need

to increase the proportional of milk that passes through the processing channel of the dairy value

chain. The target action is to shift more milk to market and a larger proportion through formal

market outlets.

Using the values of 2005, the 2010 situation is projected and on their basis, the 2030 targets are

Set. Presently the proportion of milk production marketed is 65% leaving 35% for home consumption. Of the 2.925 billion litres

of milk marketed, 45% (1.316 billion litres) is handled in the formal market or through the

processors. The remaining 55% (1.609 billion litres) is handled in informal market outlets

dominated by hawkers. The targeted action is to shift the proportion of marketed milk in the

informal market outlet from 55% in 2010 to 35% (3.350 billion litres) in 2030. The shift targeted is

reducing from 35% (1.575 billion litres) in 2010 to 20% (2.552 billion) in 2030 for milk consumed

at home of the total production, in order to shift milk through markets from 65% in 2010 to 75%

(9.57billion litres) in 2030

* 1. **Gakundu Farmers Cooperative Society**

Gakundu Farmers Cooperative Society (FCS) is a coffee organization which has diversified into Dairy farming enterprise to improve incomes of smallholder producers. The society catchment area is Embu County with four agro-ecological zones favourable climatic conditions for dairy production. Altitude ranges between 1400m-1500m above sea level, for lower areas and between 1500m-4500m for upper areas towards the pick of Mt. Kenya. Annual precipitation is bimodal and ranges between 1100mm-1800mm per year spread over six months with peaks in April and October; January to march are generally hot. A short dry spell occurs in September and February.

**Gakundu Demographics**

Gakundu FCS has 7 board members elected from their four factories, 3 supervisory committee members and 35 permanent staff headed by Secretary Manager. Out of the 7 board members, 2 are women.

Gakundu has 60 casual workers specifically focused on the dairy project, which comprises of 2058 dairy farmers. Current milk production per farmer stands at 5 litres per day per animal, with the farmer incurring a production cost of ksh. 24 per litre of milk.

Smallholder milk producers and traders handle more than 80% of all the domestic milk. This milk marketing system is characterized by several gaps:

* sale of raw milk to the consumers due to lack of proper facilities that would make value addition possible
* low compliance with safety and quality standards
* a diffuse market structure with many small scale marketing agents thus creating a challenge in milk collection, leading to farmers delivering milk to roadside collection points,
* poor processing techniques, with labour intensive transport and handling methods with a large majority of smallholders hiring labour for dairy activities using low external input and production technologies, preferring those in which demand low costs
* Lack of a voice in sub dairy sector policy making, with little involvement of small holder farmers in the policy making process
* Low shelf life of raw milk due to lack of adequate cooling plants, making it difficult for the farmers to increase their volume of production

Creating remedies to these gaps will enable the cooperative to exploit the full potential of the dairy project. This will lead to improvement in the quality of the milk supplied by the farmers, increased milk production by the small holder farmers, better collection and distribution channels, increased earnings and subsequently a better livelihood for the farmers.

Analysis of existing market:

Gakundu cooperative lacks the capacity to process, pasteurize and subsequently add value to raw milk, due to lack of the necessary machinery to perform these activities. As a result, the cooperative is only involved in the purchases raw milk from the farmers and selling it raw to larger cooperatives such as KCC or directly to consumers.

Value addition:

Currently, the cooperative is focused on collection and sale of raw milk due to lack of facilities that would make value addition to the raw milk possible. The cooperative intends to diversify into production of other milk products such as cheese yoghurt and butter in future. Diversification will lead to increased income to the farmer and subsequent improvement of the farmer’s living standards.

The Society currently serves 5155 coffee farmers out of which 2058 members practice dairy farming enterprise who deliver their milk to the society for aggregation and marketing. The average land size per farmer is 1 acre and more than 95% of the members depend on agriculture for their livelihoods. Those farmers keeping dairy cattle have an average herd size of 2 cows with a preference for cross breeds due to their high growth rates, milk yield and early maturity compared to indigenous cattle. Currently about 7,000 kilograms of milk is procured from farmers daily at various collection points along designated routes.

The Fair Trade Organization of Kenya (FTOK), a capacity building organization, has identified following challenges alongside the dairy value chain Gakundu FCS which are also affecting the smallholder dairy farmers:

*Yield fluctuations:* Wide year to year fluctuations in milk volumes mainly due to low usage of commercial feeds and lack of knowledge on feed formulation.

*Poor and inadequate feeding:* Most cows produce well below their potential because their nutrient intake is insufficient in both quantity and kind. The farmers don’t give recommended ration of commercially or home-made feeds due high cost thus compromising nutrient intake. Some ingredients required to make home-made feeds, such as cotton seed cake are also not locally produced, and occasional shortages cab increase the cost of production.

*Fragmented value chain:* There is large number of players at each step and a low level of vertical integration thus reducing the farm gate price.

*Price differentials:* Despite strong competition for milk between formal and informal market, the farm gate price is on average the same. There are many players in the value chain taking 74% of the milk proceeds leaving farmer with only 26%. In addition, low quality issues and hygiene were noted as key drivers of low farm gate price.

*Poor breeding practices:* The low genetic base of dairy herd due to years of inbreeding and the use of unproven bulls have resulted in poor breeding practices.

*Value addition and Marketing:* The Society receives raw milk from the farmers which does not undergo further value addition apart from aggregation resulting in spoilage and wastage. Acquisition of cold storage infrastructure for milk storage and processing into other by-products would result in more incomes to the producers. Marketing of the raw milk was also noted as major challenge with reliance of New Kenya Cooperative Creameries (New KCC) as key buyer taking up to 60% of the milk with inconsistency payment prices and fixed milk intake. With acquisition of infrastructure and skills, Gakundu FCS would be able to collect all their milk, process and market locally and internationally.

*Technology Transfer (TT) system:* The technology and information dissemination systems is now demand driven and the relevant government authorities lacks capacity to reach all farmers. There has been little attempt for farmers in Gakundu FCS to turn to private sector for technology transfer.

*Stakeholder representation:* A significant number of stakeholders in the dairy industry have little or no effective voice in decision making, particularly smallholder producers, and raw milk traders in the informal market and their customers.

Feed supply: Feed supply from dealers is inadequate in terms of quality and availability and the farmers lack proper knowledge on which are the best feeds.

Challenges in developing a competitive value chain: The cooperative also faces the challenge in developing a competitive dairy value chain. This is where a sequence of activities that lead to value addition to the product at each step in which it passes through.

Lack of cooling plants and collecting stations, thus inhibiting the cooperative’s ability to increase its production volumes

It is from the above background that FTOK, proposes to carry out a capacity building project on Technical Assistance to build capacity of smallholder producers and Organization in order to address the gaps in the dairy value chain.

### Statement of the Problem

Lack of skills in dairy farming has resulted in heavy losses by the dairy farmers as noted by low returns from the dairy enterprise. Farmers have not been able to break even since they don’t undertake dairy farming as a business. Low milk production volumes have resulted in low returns from dairy farmers.

Fragmented dairy value chain has resulted in inconsistency price fluctuations due to many players in the chain. As a result, the society is not able to rip maximum returns from the dairy farming enterprise. Value addition, acquisition of dairy infrastructure and marketing will ensure no milk wastage since society will be able to produce other by products (such as yoghurt and cheese) which are long lasting.

Farmers lack skills of integrating dairy farming and Coffee farming which complement each other. Manure from the cows can be used to enrich soil fertility and Biogas production as source of energy. Majority of the farmers rely on firewood as a source of energy through cutting down trees which has long term negative impact on climate change. Biogas technology from dairy cows would ensure farmers have clean energy for consumption which is environmentally friendly.

Farmers have been faced with perennial food insecurity due to reliance on coffee production whose proceeds come annually. Dairy farming would ensure food security to the farmers through milk production and intake and increased incomes to meet the current food demands.

### Project Justification

FTOK recognizes that coffee farmers at Gakundu FCS have the potential to improve their incomes if they integrate dairy production with the coffee business. While production of high quality milk in large volumes will fetch good prices for the farmers, farmyard manure from the cows will also complement soil fertility management in coffee thereby saving farmers huge costs incurred in purchasing inorganic fertilizers. Proceeds from the sale of milk would be used to provide daily subsistence for the family while proceeds from coffee which come in lump sum could be used not only to boost family incomes but also reinvestment in both enterprises. This will have spiral effect on economic and rural development thus improvement of living standards by the farmers and community at large.

Due to inadequate input supply, extension services, and knowledge about dairy production and the value chain, the small holder farmers in Gakundu FCS have not been able to modernize and improve their breeds of cattle which has in turn increased the costs to farmers, compromised quality, and further reduced their incomes. An additional problem is that farmers in this society have little access to market information and do not know the value of their product until it is physically sold. In this regard, FTOK proposes to undertake interventions aimed at improving farmers dairy incomes with a view to assisting farmers get out of the poverty cycle by complementing incomes from coffee while providing farmers with the much needed farmyard manure for organic soil fertility management. This will be done through extensive capacity building to farmers on dairy management and business development support to the organization.

Enactment of Kenyan Constitution in year 2010 brought County governments in place. The school feeding programmes in low productive counties will open up market opportunities for dairy products ensuring sustainable supply. The milk demand in Kenya is about 4 billion litres against a supply of 3 billion litres annually hence guaranteeing market for the untapped potential regions.

Soil fertility through use of application of manure from the cows will ensure improved coffee productivity which will in turn lead to increased incomes for the farmers.

Environmental conservation will be ensured through biogas production from dairy cows as source of clean energy as opposed to firewood whose continuous cutting by the farmers has resulted in environmental degradation.

Farmers have been faced with perennial food insecurity due to reliance on coffee production whose proceeds come annually. Dairy farming would ensure food security to the farmers through milk production and intake and increased incomes to meet the current food demands.

Gakundu FCS and Kagaari North FCS share the same ecological area, are 4kms apart and share common farming activities with similar challenges affecting dairy producers. The project will also have wider outreach and benefit dairy farmers in Kagaari North. Integration of dairy farming among the coffee growing regions will have a great economic impact and improve livelihoods of the producers.

Gakundu cooperative currently collects over 7000 litres of milk in a day and has capacity to produce even more. Lack of a cooling plant in the area has largely inhibited the cooperative’s ability to increase milk production as they would not have a facility to cool the milk, hence prolonging its life. As a result, the cooperative is looking for a pre- financier to facilitate the acquisition of a cooling plant and pasteurizer. This will provide the cooperative with better capacity in storage and encourage higher volumes of production from the farmers.

An equipment and training kit will be necessary to facilitate the TOTs training of the rest of the farmers.

### Project Objectives

 The project seeks to achieve the following objectives:

1. To improve milk production
2. To increase incomes of smallholder dairy farmers
3. To promote good dairy husbandry
4. To strengthen the dairy marketing linkages
5. To integrate Coffee farming with dairy farming

### Expected Outcomes

 The successful project implementation will realize the following outcomes:

1. Growth in incomes by smallholder dairy farmers by 30%
2. Improve milk production from current 5liters per cow per day to 8 liters per cow per day
3. Creation of employment alongside the dairy value chain
4. Enhanced milk production through improved breeding techniques, improved production techniques and use of AI
5. Environmental conservation through promotion of biogas technology
6. Enhanced food security due to increased capacity to purchase food using the incomes from dairy farming as well as integration with coffee farming activity.
7. Strengthened market linkages by the society
8. Gender mainstreaming due to increased participation of Women and Youth in the dairy value chain
9. Improved management and governance capacity of the Gakundu FCS
10. Sustainable Agricultural practices through integration of coffee farming and dairy farming
11. Improved livelihoods of smallholder producers
12. Increase the current dairy membership from 2058 to 6000

### Approach and Methodology

The FTOK will employ the following methodology:

* Aggregate smallholder dairy farmers to market their milk through Organization. This will help smallholders add value to what they produce, thereby increasing their incomes and creating additional rural employment opportunities. Aggregating milk production will be effective and cost efficient method to link smallholders with consumers through participation in dairy value chain.
* Strengthening Gakundu FCS to ensure dairy farmers benefit from the economies of scale through mobilization of supply and demand. This attracts both buyers and service providers, facilitating smallholder farmer access to input and output markets, and enhances smallholders’ bargaining power, driving down costs and increasing profits. Pooling together also facilitates broad participation and communication in a wide variety of activities covering a range of issues. For example, producer groups can serve as an entry point to engage community members in HIV/AIDS awareness activities or post-conflict reconciliation efforts. Well-managed cooperative businesses can create sustainable economic opportunities, engender trust between members, and form a foundation for democratic participation.
* Use of Trainers of Trainers (ToT) model by identifying and training promoter farmers to ensure outreach to more farmers. 55 Trainer of Trainers (ToT) will be trained.
* Setting up a dairy farming demonstration farm in Gakundu FCS from where farmers can learn through demonstration.
* Formation of strong Farmer Business Groups (FBGs) with visionary leadership who will be responsible for mobilizing farmers and ensuring ToTs deliver quality services to the dairy farmers
* Linking farmers to Business Development Service (BDS) providers who will promote sustainable and recommended practices in dairy production to the smallholder farmers
* Promotion of sustainable agricultural best practices, use of organic manures from dairy animals to supplement organic fertilizers with an aim of overall farm improvement and ensuring sufficient animal feeds
* Promotion of biogas technology to provide clean energy and conserve environment
* Business development support for the smallholder dairy farmers and their organization will be the cornerstone of the project implementation. The FTOK will build capacity of the society leaders to ensure effective and efficient operations and management.
* Involvement of beneficiaries will in Planning, Monitoring and Evaluation (PME) system which is a key aspect of project sustainability. The FTOK will build the capacity of project beneficiaries and BDS providers with a view to ensuring adequate competence especially in self monitoring and evaluation at the project, Individual farmer and organization levels
* Advocating for cost sharing of project interventions at the farmer and organization levels. This will take the form of the farmers and organization contributing to their own individual enterprises (projects) while the project will only facilitate capacity building (empowerment) to the staff, organizational leaders and farmers.

### Project Duration

The project will be implemented in three (3) years.

### Project Sustainability

The policy of cost sharing by the participating organization and individual members/farmers in specified project interventions will emphasized. The cost sharing concept will ensure ownership of demand driven project interventions at farmer level and organizational level.

The policy of involving the partner organization, members/farmers and the FTOK from project mapping & Design, implementation, monitoring and evaluation will ensure ownership of the project interventions and hence the sustainability of the project. The project will encourage farmers and organization to establish networks and links with other relevant institutions/organizations for access to technical and financial resources.

A close collaboration will be cultivated within all project stakeholders as a prerequisite to successful operationalisation. Since the strategy will be driven by the philosophy of catalyzing rural development, the project’s major responsibility will be to facilitate an environment in which targeted small-scale farmers and their organization can establish sustainable relationships/linkages with various development actors within and beyond their localities

Use of participatory sustainable methods such as Organizational Development (OD), Strategic planning, and study circle concept at farmer level, which make the beneficiaries become major players in the project activities, will ensurethe long-term sustainability. When beneficiaries themselves plan and own the process, the possibilities of long-term results increases substantially.

Application of ToT model will ensure smallholder dairy producers have trained local facilitators who will continue building their capacity even after exit of the project. Gakundu will have 55 TOTs so as to effectively reach the 2058 farmers.

Linkages to the BDS providers will ensure farmers have direct access to services after phase out of the project. The Business Development Service (BDS) providers will be able to give services to dairy farmers alongside dairy value chain to foster community empowerment

Integration of coffee farming and dairy farming will ensure farmers have sustainable agricultural practices. Dairy cows will be able give manure to coffee trees for increased production; provide biogas for clean energy consumption to avoid cutting trees which results in environmental degradation; source of food for the family hence food security; and incomes for improved standards of living. Coffee on the other hand will provide extra incomes for meeting future capacity building initiatives aimed at continuously improving their productivity.

Building capacity of the organization through instilling good management and governance structures will ensure visionary leaders, adequate internal control systems and pro active business planning. The society will be able to generate funds from its operations to sustain future capacity building programmes. The society has received governance training in the past. However, is a continuous process and successive training will and current will compliment previous sessions.

**Contact person: Sophie Mukua**

**Contact details:**

**EXECUTIVE DIRECTOR**

**FAIR TRADE ORGANIZATION OF KENYA**

**Tel: Tel: +254 (0) 717 538 219**

**E-mail: sophie@ftok.org**