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**Commercial Agriculture & Resilient Livelihoods
Enhancement Program (CARLEP)**

Ministry of Agriculture and Livestock



KIL business and investment plan Development Comprehensive Background Assessment



Commercial Agriculture Resilience and Livelihood Enhancement Programme (CARLEP)
Ministry of Agriculture and Livestock
Wengkhar, Mongar, Bhutan

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Abbreviations

KIPL	Koufuku International Private Limited
DHI	Druk Holding and Investments
SNBL	Shin Nippon Biotech Laboratories
KIL	Koufuku International Limited
CARLEP	Commercial Agriculture Resilient Livelihood Enhancement Programme
NPV	Net Present Value
IRR	Internal Rate of Return
ROE	Return on Equity
IFAD	International Fund for Agricultural Development
MCCs	Milk Collection Centres
MCSs	Milk Collection Sheds
CSR	Corporate Social Responsibility
RLDC	Regional Livestock Development Centre
ICT	Information and Communication Technology
ISO	International Organization for Standardization
SAP-ERP	Enterprise Resource Planning
SWOT	Strengths Weaknesses Opportunities Threats
ESL	Extended Shelf Life
AEZs	Agro-Ecological Zones
COP	Cost of Production
HTST	High Temperature Short Time
NMT	Not More Than
RH	Relative Humidity
NSB	National Statistics Bureau

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1. Background

Koufuku International Private Ltd. (KIPL) is the first company that was established after the formation of DHI as one of its portfolios of companies among the dairy sector. It was founded as a joint venture between DHI and its Japanese partner, the Shin Nippon Biotech Laboratories (SNBL) in 2012 and started its operations in 2015. The company was initially founded with SNBL holding 70% of the shares and DHI the rest 30% in the company as a minority shareholder. However, the company ownership pattern changed in the beginning of 2017 with DHI becoming the major shareholder of the company owning 80% of its shares while SNB, Japan owned 20%. In 2020, the Company was further restructured with free transfer of shares from SNBL to DHI. The company's name was changed to Koufuku International Limited (KIL) and registered under the company Act of the Kingdom of Bhutan 2016.

The company was established at Chenary, Tashigang to provide market for the milk produced by the farmers in Tashigang and adjoining Dzongkhags by producing high end processed dairy products mainly Gouda Cheese for both export and domestic markets. The company was initially producing only Gouda cheese and most of what it produced was exported to Japan. However, with the market challenges for Gouda cheese in Japan, from 2017, the company shifted to domestic markets with product diversification for various products such as natural Gouda cheese, fermented cheese, Chugu (dried cheese), premium drinking yoghurt, stirred yoghurt, fruit flavored yoghurt, pasteurized & non-pasteurized butter. In 2019, Koufuku International Limited (KIL) also started manufacturing processed cheese from natural Gouda as main component of ingredients with the recruitment of consultants from India. The company produced processed cheese under flagship brand of "Druk Zambala Cheese".

When it started its operations, the company was operating at less than 12 % of its plant utilization capacity and today it is operating at over 90% plant utilization capacity. The plant at Chenary is collecting about 3600 litres milk a day from 19 milk cooperatives composed of 1500 micro-farms spread across Tashigang, Samdrup Jongkhar, Mongar and Trashiyangtse districts. The KIL processing plant at Chenary currently produces approximately 203 metric tons of Druk Zambala Cheese, 500,000 cups of stirred Swiss style yogurts, 6 metric tons of local cheese, 30,000 litres of drinking yogurt, 6 tons of salted and non-salted butter and 20,000 litres of whey health drink. KIL is steadily expanding its business to reach out to more dairy cooperatives & groups covering more Gewogs and communities under six eastern dzongkhags providing milk market opportunities to unreached communities, while creating value for farmer's milk and searching for growth.

KIL recorded increased in milk supply in 2022, an increase of more than 60% compared to preceding year. KIL gained market share of 8.5% in 2021 substituting processed cheese import. KIL recorded growth in between 2019 to 2021 of 94.2 %, signifying consumer

confidence gained to its products. There is immense market opportunity for the Koufuku to take advantage of domestic markets through instituting vertical coordination among the stakeholders to facilitate increased milk supplies to the plant. This also indicates a promising future for the dairy industries, sustainable rural livelihoods opportunities for the dairying communities, and also pathways for poverty reduction strategy for the marginal farmers.

KIL targets to collect more than 4000 litres of milk daily from the region and produce more than 260 MT of processed cheese annually from 2023-2028 to reach domestic cheese self-sufficiency to 65% and above within 5 years period. To cope up with the plan targets and domestic market demands, KIL will need to expand and upgrade its technology to automatic cheese production line as well as for yoghurt production in order to enhance production efficiency, ensure food safety, reduce cost of production and improve business efficiency.

KIL serves as the center of milk dairy value chain in Eastern Bhutan providing ready market for the farmers' milk in the six eastern dzongkhags and accessing 40% of the total milk production in the country.

With huge market challenges, the company had to adopt various entry and sustenance strategies that are critical in the process of navigating the market place. Although the Chenagri Dairy Plant was only designed for Gouda cheese production, with minimal dairy equipment (cheese cooker and semi manual operated cheese filling machine), the company had to shift to production of processed cheese technology with semi-manual operation, which is still continued despite lots of regulatory concerns, business issues, and production challenges. The expansion project is aspiring to enhance production efficiency, reduce cost of production, and enhance food safety and hygiene, then to achieve economies of scale through upgraded production technologies.

2. Objective

The principal objective of the assignment is the development of the overall business and investment plan for the Koufuko International Ltd. that will guide CARLEP in making viable investment priorities to the Processing Plant that serves as an assured market for fresh milk produced by the smallholder farmers in the eastern region.

3. Scope

The scope involves development of overall business and investment plan for Koufuko International Limited to be used for solicitation of funding for the proposed expansion/upgradation of the dairy plant at Chenari, Trashigang.

The key components for the assignment should include, but not limited to, the following:

- a) Background of the Company and structure

- b) Macro-economic overview (Economic indicators, demographic overview, financial and investment regulations, price, private sector engagement, employment generation, etc.)
- c) Raw materials, production, types of products, pricing
- d) Detail market research and marketing strategies (Supply and demand analysis-both domestic and international (Neighboring India) market opportunity, etc. taking into consideration the current market segments and strategies)
- e) Financial analysis (Profit and loss statement, Balance sheet, cash flow statement, etc.)
- f) Investment analysis (using reliable performance measuring tools. For example; NPV-IRR, ROE, and payback period)
- g) The study will be based on comprehensive survey/research providing information from multiple sources, including information collected from primary sources through interactions with different players- Koufuko International Ltd., dairy farmer groups & cooperatives, traders, transporters, retailers, other dairy processors, consumers, government agencies and desk-based research for secondary data collection
- h) Analysis of the statistics (data): Qualitative and quantitative data analysis
- i) Conclusion and Recommendations

4. Mandates of the company

As per the articles of incorporation of the company, following are the mandates:

- a) To construct, complete and operate the dairy plants in Bhutan
- b) To carry on the business of manufacturing, processing, packing, buying, selling, importing, exporting, transporting, distributing, dealing and acting as authorized agents for all types of dairy and dairy related products of any description.
- c) To acquire, operate and maintain farm, breed cattle or any other raw materials connected with the manufacture of dairy and other products, or value added products of the dairy.
- d) To build, acquire, merge, and amalgamate with other dairy plants or companies; and to upgrade, refurbish and increase the capacity of existing plant,
- e) To manufacture other products in the value chain such as packing bottles and to operate those venture also on commercial basis by selling the products and its related products within or outside Bhutan.
- f) To conduct technical feasibility studies, and detailed project reports for projects in dairy and other related fields
- g) To diversify into related fields.
- h) Develop human resource capacity in development, construction, operation, maintenance and management of dairy and dairy related fields.
- i) Do all such other things as directed by the shareholder of the company or which may be necessary to attain the other above objects of the company

5. Methodology

The study process involved looking from different perspectives such as through document reviews, detailed field survey, one-to-one consultations and interviews. Number of consultations were conducted with the relevant stakeholders such as KIL, Livestock Research Development Centre at Bumthang, Livestock Research Development Centre at Yusipang etc. The field consultations included consumers, retailers/whole sellers, exporters/importers, farmer's groups or cooperatives etc. Prior to field consultations, the overall methodology of the study along with the possible list of stakeholders and survey questions were highlighted in the inception report which was circulated to the members. In addition to the one-to-one field consultations, detailed survey was conducted to get the views of the beneficiaries or stakeholders within the limited time available for the study to understand the situation, issues and challenges including strategic areas of interventions required for the KIL. Then, based on the findings from the survey, Focus Group Discussions and interviews along with detailed literature reviews were conducted for business interventions.

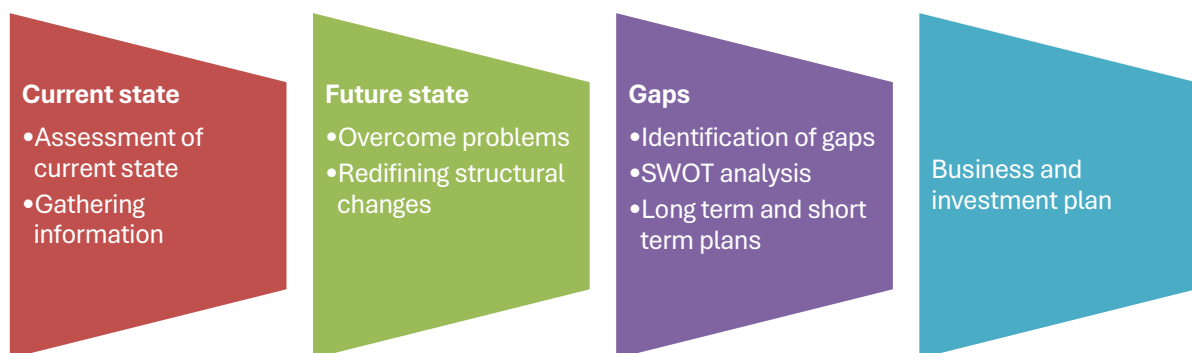


Fig 1: Methodology Framework

The methodology has been implemented through review of relevant documents, past study reports and consultation with key stakeholders as follows.

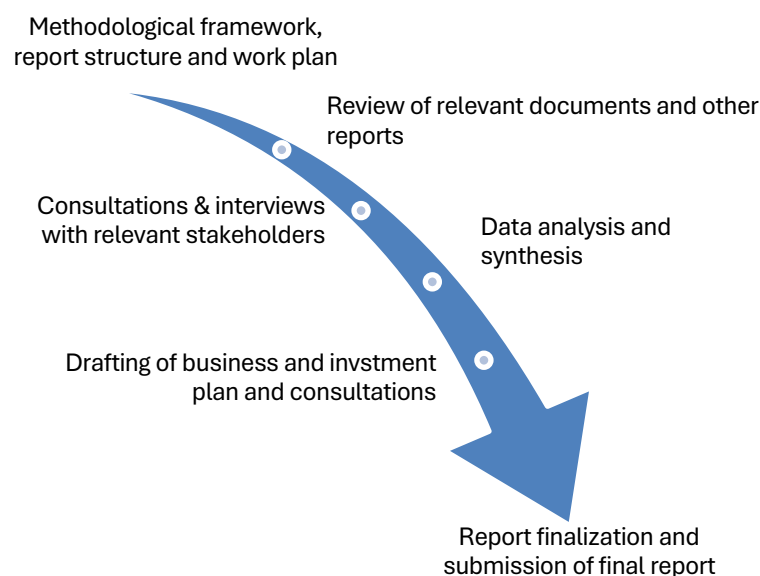


Fig 2: Overall process involved in the study

6. Findings from document review

6.1 Customer satisfaction survey 2022

About 87% of the distributors purchase KIL dairy products directly from KIL and the rest 8% purchase from wholesaler or distributors. Similarly, 95% of customers purchased KIL products from distributors and 3% brought directly from KIL.

In terms of products of KIL, 66% of customers brought Zambala block cheese followed by 20% Cup Yogurts. Similarly, most sought after dairy product is Zambala block cheese 58% by distributors followed by 15% for cup yogurts. 92% of the customers are satisfied for product packaging, 91% for product quality, 63% claimed that the Zambala cheese has no effect on health. About 45% of the respondents reported that it was easy to access the product and services of KIL and further 60% of them agreed with the availability of KIL products with the distributors. In terms of pricing of products, 68% agrees on reasonable pricing based on the quality of products, 49% agrees on reasonable price compared to other dairy product companies and 56% agrees on products are premium compared to other dairy products.

The study recommended the following:

- a) There is need to make KIL products more accessible/available in the market. Some request more distributors in their region/area as well since it seems there is none at present.
- b) KIL needs to reduce the price or make it equivalent to other brands.
- c) KIL needs to bring in variants in products, especially for the Cheese (slice cheese).
- d) KIL needs to do more marketing with creating awareness of its products.
- e) KIL needs to supply its products constantly and make an effort for quick delivery and also to have its own freezer van for transportation.
- f) KIL needs to make its packaging robust since most distributors have complained about their packaging getting damaged and eventually damaging the products.
- g) KIL needs to reduce the price of products and some even commented less margin of profit selling KIL products.

6.2 KIL expansion project

The project expansion was proposed to be implemented with a cost-sharing arrangement of 70:30 between CARLEP and KIL, where CARLEP will provide funding for the technology component and KIL will be responsible for the civil structure. The estimated project cost is

approximately Nu. 113.66 million, where Nu. 83.66 million is allocated for technology and Nu. 30 million for civil structure¹.

The growth in dairy markets will primarily benefit all shareholders, dairy value chain stakeholders, dairy cooperatives; commercial farms operators of private entrepreneurs, and overall Bhutanese populations and country's economy.

The focus for the products are: Gouda Cheese, Druk Zambala cheese, Cottage cheese, Mozzarella cheese, sliced cheese, Premium Yoghurt, Stirred Yoghurt, Fruit flavored Yogurts, Ice Cream and butter. The products will be marketed through distributors, retailers, FCBL outlets, BLDC outlets, special KIL outlets, digital marketing, and advertisement in social media and print media etc.

6.3 Investment strategies

Following are some of the strategies proposed for intervention.

a) Milk Supply Enhancement

Currently, the milk flow from the farmers to Koufuku Dairy Plant is inadequate due to lack of milk collection infrastructure, milk cooling equipment or either due to animal feed scarcity reaching to farmers. Poor feeding management and poor genetic potential for milk production resulted low productivity of dairy cows. Investment in milk supply chain enhancement will require expansion of new collection areas to more Gewogs & Dzongkhags, which can be realized through CARLEP (IFAD) Project support for dairy value chain infrastructure development like the construction of Milk Collection Centres (MCCs), Milk collection sheds (MCSs) and direct subsidy support for procurement of dairy cattle.

Lack of concentrate feeds access to dairy farmers impacted negatively to animal production experiencing drastic milk supply decline to the Plant. Fast KIL investment in Animal Feed Plant will bring tremendous financial benefits to dairy farmers as well as to KIL providing strong synergies for KIL business. For the interest of long-term business sustainability, KIL can produce quality and affordable feed to dairy farmers. In order to increase milk flow to the Plant, accelerated KIL investment should extend to Cow leasing program. At least 30-40% of the net profit from the business operation should be reinvested into procurement of Dairy Cows and Leasing Dairy Cows to farmers through special cost sharing mechanism and recover cost through monthly installment basis from the milk. This new approach of investment strongly fits into KIL's CSR benefiting the most disadvantage sections of dairy farmers interested in farming. Farmers have limited access to credits from the financial institutes. The fund invested in procurement of milking cows will be recovered on monthly

¹ KIL letter to DHI for expansion project vide letter no. KIL/DHI-01/2023/3954 26th April, 2023

installment basis through milk and reach out with similar scheme to unreached. This new innovative approach of investment will help to ensure increased and consistent milk supply from the farmers under formal legal agreement and binding.

b) Business Expansion

Within the CARLEP project period, KIL has immense opportunities for upgrading its processing technologies on cost sharing mechanism of 70:30, in which project provides 70% of the total cost and 30% civil structure by KIL. With the support of CARLEP project & RLDC Kanglung, Koufuku plans to develop and launch products based on the market demand in both domestic and export markets. However, milk products addition can be realized only through production line automation of all process like cheese processing automation, Yoghurt production automation, and technology upgradation of current KIL milk reception station, laboratory, CIP station and many other dairy equipment.

The following are the areas for interventions & investments:

- a) Market expansion of KIL Products (Druk Zambala cheese) in unreached destinations and locations through distributorship expansions. As per KIL, about 89% of potential distributors and about 86% of potential customers are interested with KIL products.
- b) New product innovation and launching of new KIL products like ice creams, fruit flavored yoghurts, butter cubes, ghee, mozerella cheese.
- c) Cattle feed plant.
- d) Expansion of existing KIL plant and technology up-gradation of product process line.

c) Technology up-gradation

There are few bottlenecks in production in terms of achieving the desired outputs from certain machines and fulfilling the mandates. KIL to take leverage of CARLEP project for investment in technology up-gradation of the following production process lines & other dairy equipment with focus in the following:

- a) Automatic processed cheese filling, sealing & packaging
- b) Automatic Yoghurt production line
- c) Automatic cheese slicing & packaging machine
- d) Cheese & butter cube processing machine
- e) Processed cheese station up-grade (cheese cooker)/back up
- f) Instant chilling plate & CIP tank
- g) Air compressor machine & pasteurizer machine.
- h) Other primary dairy equipment.
- i) Computerization of operational and administrative processes to improve efficiency and productivity.
- j) Introduction of auto-machine of the existing machines or Equipment.

Acquiring state-of-art technologies to keep up the pace with contemporary industries by use of ICT to boost efficiency and meeting the products with international standards of quality such as ISO, HACCP, GMP/GHP certification etc. is regarded as a part of dynamic process of management. Introducing management tools like SAP-ERP help to routine operations and at the same time help in forecasting and systematic production planning based on actual requirements from the markets.

d) Up-gradation of production facilities

In order to enhance and scale up production capacity as well as to incorporate the principles of Good Manufacturing Practices with total quality assurance system, the existing production facilities need to be upgraded and create additional new infrastructure through extension of existing building. The existing production structure or area will need to be modified to facilitate the smooth flow of processes and boost production. The following are the areas for investment:

- a) Construction of separate space for different production lines such as processed cheese production, yogurt production and ice cream for efficient processing process as well as to avoid cross contamination.
- b) Installation of additional cold storage to accommodate different products separately.
- c) Install air shower for air decontamination at the main entry point to the processing plant adjacent to changing room
- d) Reorient existing production floor as per the flow of materials and create stores adjacent to relevant product processing line.
- e) Install humidifier to maintain the relative humidity between 75-95% for optimal ripening of the cheese
- f) Modify existing drainage system with proper gradient ensure smooth flow of liquid waste.
- g) Set up a small maintenance workshop to carry out in-house preventive maintenance/repair and maintenance of the equipment and machines.
- h) Create safe and pest protective store room for raw material storage, equipment accessories and spares stores.
- i) Major renovation of the existing production unit.
- j) Modifying and strengthening effluent treatment plant.

These capital investment requirements are basic primary need of the plant which will enhance production efficiency and food safety principles.

e) Continuing professional development

As per the individual performance, tailor-made training programs will need to be facilitated for the staff both for in-country & ex-country. A short specific training course will benefit the organization to fill up the specific positions and job performance and it's also a tool for successive HR planning. KIL so far couldn't afford to send any employees or students for long

term studies targeted for its organization. Lack of trained manpower like Dairy Technologists or Dairy experts in the company limits exploiting opportunities in product innovations and product diversification activities.

f) Research and Development

There is need of Research and Development for innovation of new products that can compete with the very best companies in the country and the region. Research and development is required for products development, technological innovation and process optimization. The main areas of research will be focused in:

- a) The research must focus on the continuous improvement of the existing line of products in terms of tastes, textures, colors, presentations, ingredients, formulations, processes, sensory effects etc.
- b) Carry out research on quality parameters and set the quality parameters for both raw materials and finished products for implementation by the Quality Control section to ensure consistent quality of the products.
- c) Carry out research in improving the efficiency and productivity of the technologies for process optimization.
- d) Research on inputs needs and services will be essential in ensuring sustainable milk supply by the farmers to the company.
- e) Research on nutritional value of the products and labels as per the regulatory requirements of the markets to which the products will be marketed and sold will be very important for the company to ensure that its products fulfill the requirements of the markets.

KIL plans to launch series of new products like fruit based or fruit flavor yoghurts, mozzarella cheese, ice-cream, and few most popular brands made from farmers' cow milk. Developing such products require investment in capacity building including research facilities and human resource development. Therefore, the current investment strategy in research will be to setup basic research lab and facilities to initiate the Research that can be expanded later.

- a) The Koufuku will be procuring basic lab equipment for milk & milk products quality testing.
- b) There is need of technical backstopping/collaborative partners for research and development. So in order to access high end research technology and knowhow and increase access to facilities, there is need to explore/establish technical linkages with the institutions both within and outside the country for dairy research and development activities.

7. SWOT analysis

As part of the strategic planning process, SWOT analysis was conducted and the key outcomes are summarised below.

Strengths	Weaknesses
<p>Governance, structures, systems, policies</p> <ul style="list-style-type: none"> a) Strong support from stakeholders especially farmers' groups or cooperatives and others. b) Technical backstopping support from Department of Livestock, Research Centres and other partners c) Presence of basic production, processing and other infrastructure in place. d) Strong political will and support to promote domestic production, strengthen economic growth, import substitution e) Only major dairy processing plant with portfolio under DHI and ISO certified company f) Experience of exporting dairy products to international markets (Gouda cheese to Japan market) g) Well established collaboration with the farmers for supply of milk h) Conveniently located within the eastern region with feasible prospects for milk collection from all nearby districts. There is good road network connecting all far flung rural communities which enables possible milk collection and flow <p>Human Resources</p> <ul style="list-style-type: none"> a) Trained and experienced staff along with experienced management team b) HR Policies in place <p>Financial/Economic</p> <ul style="list-style-type: none"> a) Steady increase in revenue from the dairy products sales with commitment to improve the financial situation and sustainability b) Sound internal control system in place <p>Dairy Development</p> <ul style="list-style-type: none"> a) Milk production increasing as per country report and many farmers taking dairy farming as a source of livelihood. b) KIL is important part of dairy value chain as per the focus of CARLEP c) Good number of Dairy Cooperatives supplying milk to KIL <p>Markets</p>	<p>Governance, structures, systems, policies</p> <ul style="list-style-type: none"> a) For a dairy industry to thrive and stimulate milk production, some form of tax holidays and input subsidies or direct price subsidies are must to achieve self reliance for nation and generate employment. b) Government's policy support in agricultural farming and processing field is crucial, which currently doesn't exist as such. c) Inadequate space for a good flow of material, storage facilities, air-conditioning, drainage etc. which may cause fire hazard. d) Lack of facilities for product quality control and facilities to meet food processing standard requirements. e) Lack of spare parts for the equipment or machines f) Currently, no internal auditors and lack M&E Framework for all functions <p>Human Resources</p> <ul style="list-style-type: none"> a) No experts with specialised skills such as Dairy Technologist, Quality Analyst, Research and Product Development, dairy equipment servicing engineering etc.. b) Lack of Technological Expertise c) The inadequate skills especially with labourers retards the industry's efficiency. d) Less investment in Technology and HR development. e) Technically qualified personnel lack industrial practical experience. f) No backstopping services for machinery maintenance and spares as the technology in place were mainly sourced from Europe and elsewhere. g) Inadequate officials, Quality control management system among others. h) Inadequate staff motivation strategies, performance management system or succession planning <p>Financial/Economic</p> <ul style="list-style-type: none"> a) High cost of raw materials & production costs in general as compared to those in the neighbouring countries.

<ul style="list-style-type: none"> a) KIL can leverage on good will image of brand Bhutan in marketing products in the region and beyond. b) Bhutan imports about more than Nu. 1 billion value of dairy products annually of which an average of Nu. 480 to 500 million value is for processed cheese alone. c) Very stable market for dairy products where demand overshoots production particularly for Druk Zambala cheese. d) Yoghurt market for School feeding is growing steadily. 	<ul style="list-style-type: none"> b) Limited financial resources for investments in production technology machineries to achieve high production efficiency. <p>Dairy Development</p> <ul style="list-style-type: none"> a) Substantial seasonal fluctuation in milk production leading to lowering the plant utilization capacity. b) The haphazard distribution of dairy farmers makes it difficult for efficient milk collection and achieve economies of scale. <p>Markets</p> <ul style="list-style-type: none"> a) Company constrained with financial resources hardly invested in marketing advertisement b) Relatively small domestic market and huge external import of dairy products pose very strong competition.
<p style="text-align: center;">Opportunities</p> <p>Governance, structures, systems, policies Maximize synergies between KIL, Department of Livestock and other agencies Access to grant support for technology transfer Possible PPP model operation for KIL under DHI with Dairy Farmers Cooperatives, which will ensure adequate primary raw material (milk) and milk price stabilization reducing competitions for markets.</p> <p>Human Resource</p> <ul style="list-style-type: none"> a) Young employees mostly with high school graduates, undergone short courses in specific product specialization and professional development which is advantage for the organization to retain expertise b) Being under DHI has advantage to attract pool of experienced and qualified professionals for its growth. <p>Financial/Economic</p> <ul style="list-style-type: none"> a) Has access to financial resources from DHI and financial institutions for investment requirements and growth. b) MoU signed with CARLEP project (IFAD) on arrangement for financing for expansion and upgradation of KIL with technology development c) CARLEP Project support in dairy value chain development 	<p style="text-align: center;">Threats</p> <p>Governance, structures, systems, policies</p> <ul style="list-style-type: none"> a) Non regulation of imported dairy foods can be a threat to domestic production b) Changes in government decision or policy on livestock or dairy products <p>Human Resource</p> <ul style="list-style-type: none"> a) Experienced employees leaving the company for other opportunities b) Lack of succession planning for different positions will be a threat <p>Financial/Economic</p> <p>Non-availability of support for infrastructure expansion as well as diversification of products</p> <p>Dairy Development</p> <ul style="list-style-type: none"> a) Climate change is impacting water source scarecity which has direct bearing on milk production. b) Shortage of feed & fodder in lean seasons impacts negatively in milk production. Pasture & fodder is a challenge and one of the bottlenecks for livestock development. c) If there is sudden increased in demand of milk and offers better price than KIL, then milk supply will be diversted from KIL <p>Markets</p>

<p>Dairy Development</p> <p>a) Opportunity for expansion and growth in other regions as dairy milk production is gaining momentum for growth. KIL is steadily gaining people’s trust and popularity for its products and image for its services.</p> <p>b) Support from government and CARLEP project for its expansion and up-gradation.</p> <p>Market</p> <p>a) Immense potential for import substitution of dairy products.</p> <p>b) International and regional market is steadily increasing for organic and natural products from Bhutan.</p> <p>c) Government’s focus on nutrition for children and school feeding program</p>	<p>a) Cheap dairy imported products pose stiff market competition</p> <p>b) Competition from private firms who are into same business could be a market threat</p> <p>c) Government support to farmers’ cooperatives and youths enterprises in the production of similar products give more challenges for market competition.</p>
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8. Market analysis study 2022

Key findings:

- a) As for the customer needs (both distributors and customers), Zambala Cheese Block is highly preferred product line. Similarly, Gouda Cheese is also on high preference followed by Salted Butter.
- b) As for the buying decisions (both distributors and customers), the reasonability of price is rated high followed by product packaging and the brand image.
- c) Among the new products, Extended Shelf Life (ESL) Milk is rated as having high interest to purchase by both the potential distributors and the customers respectively.

Recommendations:

- a) About 89% of the potential distributors are interested to sell the KIL dairy products and about 86% of the potential customers are interested to buy if it were made available in their locality that too from the retailer and wholesaler (92%). Treating this as a match in the supply chain, KIL could put more effort into making their products available to the localities of Bumthang, Lhuntse, Tsirang, Zhemgang, and Dagana districts as the market potential mean for both potential distributors and the potential customers are shown higher in those districts over the others.
- b) Looking at the potential distributors and the customers’ preference response result, Zambala Cheese Block is highly preferred by both followed by unsalted/salted butter and Gouda Cheese. Koufuku may continue or enhance their product attributes, accessibility, and prices to keep the existing market intact as well to enhance the market base as these attributes are ranked highest by both the respondents.

- c) The main factor influencing their (both distributors and customers) buying decision is if the product prices are made reasonable. Therefore, Koufuku may focus on strategizing product pricing to make it competitive with other dairy product brands in the market.

9. Cost of production

Cost of production of raw milk

To determine the cost of production per litre of milk involves following steps²:

- A simple cost-benefit analysis carried out in the selected cattle rearing districts representing four Agro-Ecological Zones. In each AEZ, two Dzongkhags (two Gewog from each Dzongkhag) that accounts to eight district and 16 sub-districts were selected for the study. A total of 320 dairy units, 80 each from four AEZs were randomly sampled.
- The overall average annual capital investment per dairy unit under smallholder farming system in Bhutan was Nu. 27,258. The highest investment cost was accounted for cow purchase of 38%, followed by 33.63% on farm machinery and equipment.
- The overall, annual average variable cost recorded was Nu. 2, 14,052 per dairy unit, with labour constituting the highest cost of 65%, followed by feed cost of 31%.
- The overall average cost of production (CoP), farm gate price and profit margin recorded for litre of milk were **Nu. 26.85, 38.7 and 11.9**, respectively. The CoP was higher in cooler (Nu. 38.9/litre)

Average milk production cost (Nu./litre) and profitability of diary units in different AEZs

Table 1: Cost of production of milk and profit margin

Items	Cool temperature	Warm temperature	Dry subtropical	Wet subtropical	Total
Cost of production	38.9	19.8	31	17.9	26.85
Farm gate price	41.8	35.5	38.6	38.9	38.71
Profit margin	2.9	15.6	7.6	21	11.87

Further, CoP also significantly differed between the herd sizes ($p < 0.05$), where the CoP of smaller herd size (1-5 milking cows) was almost three times higher than the bigger herd size of 6-10 milking cows. However, CoP was not affected by location of the dairy units.

Comparison of average milk production costs by herd size and location of diary units

Variable	Category	N	Mean±SE	Sig (2 tailed)
Herd size	1-5 cows	290	28.28±2.51	0.04
	6-10 cows	26	20.92±1.86	
Location of diary unit	Near market	202	25.83±3.04	0.56
	Distant from market	114	28.65±3.54	

Table 2: comparison of average milk product cost

² Cost of production of diary inputs, NDRDC, Department of livestock, Yusipang, 2021

Table 3: Cost of producing 1kg butter or cheese

Milk (litres)	Cream output (kgs)		
100	8.90		
Cream (kg)	Butter (kg)		
2	1		
Milk (litres)	Butter (kg)		
100	4.45		
Skim milk (litres)	Datsi (Kg)		
20	1.60		
Datsi (kg)	Whey (Litre)		
1	9		
Fixed cost			
Particulars	Cost in Nu.		
Butter Churner 60LPH	95,000		
Cream Separator 325LPH	60,000		
SS buckets	1,000		
Gas stove	2,000		
Aluminium Pot	1,500		
Freezer	35,000		
Total cost	194,500		
Salvage value	15,000		
Depreciation value	179,500		
Life in years	10		
Depreciation (yearly)	17,950		
Depreciation (monthly)	1,495.83		
Recurring cost (monthly)			
	Milk volume	Milk rate	Total cost
Raw milk	30,000	39	1170,000
Recurring shared cost (monthly)			
Labour cost	10,000		
Electricity	1,000		
Water	250		
Gas cylinder	530		
Packaging material	1,000		
Total recurring cost	12,780		
Total cost	1,184,275.83		
Butter yield (kg)	1,335		
Datsi yield (kg)	2,400		
Cost of production butter	433.55		
Cost of production datsi	246.72		

Note:

Cost of production= (Fixed cost + variable cost)/Number of units

Rate of raw milk based on Farm Gate Price

10. Standard Operating Procedures

Receiving raw milk

- a) Milk cans should be clean and have lids properly fastened

- b) Visual examination/Organoleptic tests (colour, smell and taste) should be conducted. Milk presenting abnormalities (off colour, off smell or off taste) should be rejected
- c) Temperature of all milk being received should be recorded with the milk thermometer and should preferably be received at a temperature of not more than 10°C. If temperature of milk is above 10°C, members should be informed that milk should be cooled prior to supply to prevent rapid growth of microorganisms in the milk
- d) All milk samples should be subject to testing using the Platform Milk Test procedures and milk failing any of the platform milk tests should be rejected:
 - Clot on boil test
 - Alcohol Test (if available)
 - Lactometer test
- e) Periodic samples of the milk should be sent to the respective Dzongkhag Veterinary Hospitals/Accredited Food Testing Laboratory for antibiotic testing
- f) Milk is transferred to processing equipment for manufacture of desired products
- g) All milk cans, testing equipment and any other equipment used during the handling of milk should be washed using appropriate detergents (do not use laundry detergents), rinsed and sanitized (dairy sanitizers or hot water sterilization)
- h) All records on the milk received such as date, amount, source, results of the platform milk test and antibiotic test (as and when conducted) should be recorded
- i) Records for processing of milk products should be maintained with information on the quantity of milk processed and quantity of products manufactured
- j) All records maintained should be signed by person maintaining the record for accountability

Gauda Cheese

- a) Pasteurize standardized milk at 72 - 75°C/15 seconds (HTST) and cool down to 40°C.
- b) Draw a representative sample of pasteurized milk and perform alkaline phosphate test to check for proper pasteurization of milk. (Positive test indicates that milk has not been pasteurized).
- c) Add calcium chloride (25g/100 Litres)
- d) Add starter culture (0.7 - 1% of milk) at 36 - 38°C, mix thoroughly and incubate for 30 - 40 minutes.
- e) Add Rennet (0.022% of milk) at 30°C and incubate for 20 - 30 minutes or until formation of a firm curd.
- f) Cut the curd into 1x1x1 cm and stir gently (15 minutes)
- g) Remove 1/3rd whey and replace with same quantity of hot water (60°C) to bring the temperature of whey to Not More Than (NMT) 38°C.
- h) Stir for 30 minutes and allow to settle for 5 minutes in whey.
- i) Remove whey till the level of the curd and replace with hot water (60°C) to slowly bring the temperature of whey to NMT 38°C.
- j) Stir for 15 minutes and allow to settle for 5 minutes in whey.
- k) Drain out all the whey.

- l) Hoop cheese curd into mould lined with cloth, light pressing (5-6 kg) for 5-10 minutes and turn the cheese, apply 5-6 kg for 30 minutes.
- m) More weight pressing (10-12 kg) and turn cheese after every 1 hour (repeat turning and pressing 3-4 times) and press overnight.
- n) Remove the cheese from the mould and weight the cheese.
- o) Immerse cheese in brine solution of 20% and adjust the brine solution pH to 5.2. (Brining time depends on cheese weight viz., 0.5 kg/20 h, 1 kg/36 h, 10 kg/60 h).
- p) Surface drying of cheese for 5 to 6 days at 12 - 16°C.
- q) Ripen/aging in the cheese cellar maintained at 12 - 16°C and Relative Humidity (RH) of 80 - 85% up to 3 - 4 weeks.
- r) The cheese cellar shelves should be cleaned regularly to prevent mold growth.
- s) Package in appropriate materials with batch number and manufacturing date.
- t) Store under refrigerated condition.
- u) Deliver cheese to retail outlets under refrigerated conditions.
- v) Send periodic representative batch samples of cheese to accredited food testing laboratory for testing.

Stirred yogurt

- a) Continue heating standardized milk till recommended pasteurization time temperature combination is achieved (90°C/no hold, 85°C/10 min and 80°C/15 min).
- b) Draw a representative sample of pasteurized milk and perform alkaline phosphate test (If test is positive re-pasteurize the whole batch).
- c) Cool milk to 45°C.
- d) Add starter culture @ 2% of milk at 42 - 45° and mix thoroughly.
- e) Incubate in the yogurt vat for 2-3 hours at 45°C or until pH 4.5 is reached.
- f) Cool down to 20 - 25°C and stir and add colour and flavour.
- g) Fill and seal in desired yogurt cups (manually or using filling and sealing machine) with batch number and manufacture date.
- h) Transfer cups for cooling and storage in cold store until dispatch. (Before dispatch check cups for any leakages and segregate the cups with leaks).
- i) Deliver yogurt to the retail outlets under refrigerated conditions.
- j) Carry out shelf life test with at least two samples from each batch.
- k) Send periodic batch samples of yogurt to accredited food testing laboratory for testing.

Butter

- a) Transfer butter into the butter melting vat.
- b) Heat the melted butter to 110-120°C until golden yellow in colour.
- c) Filter through mesh (size 60) into storage tank.
- d) Cool to 90°C.
- e) Pack at 45°C with batch number and manufacture date.
- f) Storage until dispatched.
- g) Carry out deliver to the retail outlets as per storage instructions.
- h) Carry out shelf life test with at least two samples from each batch.
- i) Send periodic batch samples of yogurt to accredited food testing laboratory for testing.

11. Forecast for milk flow

Below is the forecast of milk flow to KIL in the next 5 years.

Table 4: Milk flow to KIL forecast

Milk group	Daily 2023	2024	2025	2026	2027	2028
Samkhar Gewog						
Khapti	300	300	300	300	320	350
Domkhar	100	100	100	100	120	150
Yenangbrangsa	100	100	100	100	120	150
Rangshikhar	250	250	250	250	270	300
Pam	0	150	150	150	150	200
Rolong	5	10	10	10	20	20
Rongthong	0	150	150	150	170	200
Uzorong	150	150	150	150	170	200
Phongmey	0	0	0	150	150	200
Radhi	0	0	0	150	150	200
Saling	0	0	0	150	150	200
Lungtenzampa	80	80	80	80	100	100
	985	1290	1290	1740	1890	2270
Shongphu Gewog						
Chaling	150	150	150	150	170	200
Chnagmey	100	100	100	150	150	170
Gongsaphangma	100	100	100	150	150	170
	350	350	350	450	470	540
Yangner gewog						
Gongthung	500	550	550	550	600	600
	500	550	550	550	600	600
Mongar Dzongkhag						
Ngatshang Gewog	250	250	250	250	270	270
Yadi	20	20	20	20	50	50
Chaskhar Gewog	250	250	250	250	250	250
Balam Gewog	200	200	250	200	250	250
	720	720	720	720	820	840
Trashiyangtse						
Jamkhar	100	100	100	100	150	170
	100	100	100	100	150	170
S/jongkhar Dzongkhag						
Gomdar	400	400	400	400	450	450
Orong	300	300	300	300	350	350
Shokshing	200	200	200	200	250	250
Nublang farm	0	100	200	200	250	250
Yarphu	150	150	200	200	250	250
Jangchubling	150	150	200	200	250	250
	1200	1300	1500	1500	1800	1800
Daily average milk (ltr.)	3,855	4310	4510	5060	5730	6220

12. Import/export

Bhutan imported more than 1 billion Ngultrum worth of processed dairy products annually in the last three years. Among all dairy products, Processed Cheese (Britania & Amul, GoGo) brands constitute one of the highest import values on an average of Nu. 0.5 Billion annually. There are also immense opportunities for UHT milk products including packaged toned milks, yogurts with extended shelf life, butter and nutritional health dairy products.

Table 5: Import of milk and its products

Items	2015		2016		2017		2018		2019	
	Qty (MT)	Value (m)	Qty (MT)	Value (m)	Qty (MT)	Value (m)	Qty (MT)	Value (m)	Qty (MT)	Value (m)
Fresh milk (MT)	140.88	5.49	130.77	5.07	126	4	62.35	3.04	16.33	1.06
Milk powder (MT)	1692.36	532.68	1899.32	547.75	1180	372	397.48	93.7	523.48	131.64
Tetra pack (MT)	624.93	30.89	1796.5	100.91	3993	85.29	1226.7	69.52	3042.19	157.18
Condensed milk (MT)	317.2	15.26	30.05	1.53	16	1	7.4	0.56	1.36	0.13
Butter (MT)	213.75	61.49	200.51	62.95	207	509	661.52	61.91	170.06	58.18
Processed cheese (MT)	1005.64	355.49	1265.81	448.2	1480	550	1158.82	477.25	1138.64	448.51
Total	3994.75	1001.29	5322.96	1166.41	7002	1039.29	2560.58	705.98	4892.06	796.7

While India has large and well developed dairy industry particularly the processed milk products sector, there are pockets of opportunities for KIL as shortages of specific products are felt in nearby local markets that the large companies in India are not able to reach at the moment. Currently, there is severe shortage of fresh milk, curd and ghee in the local Indian markets. Samdrup Jongkhar group cooperatives alone exports 1500 to 2000 litres fresh milk to nearby towns in Daranga & Mela bazaar, India. Therefore, with added milk, KIL can in near future market its products to major Indian cities through well established market links.

The company has long experience in international market. It has exported its Gouda cheese to Japan and Yoghurts to India. Taking the strength of its experience, the company will explore international markets for its exotic products of high value targeting niche markets in the long run. While the quantities of export will not be in tons, the company will focus on producing and supplying high end exotic cheese products targeting niche markets in abroad. The company will partner with local marketing and importing agents to penetrate the markets in other countries.

13. Findings from the survey

13.1 Production

Total of 463 individual dairy farmers in 10 dzongkhags of Lhuntse, Mongar, Pemagatshel, Samdrup Jongkhar, Sarpang, Trashhi Yangtse, Trashigang, Trongsa, Tsirang, and Zhemgang, were surveyed covering central and eastern parts of Bhutan. There are significant variations in terms of average daily milk production and consumption patterns across various gewogs in the regions.

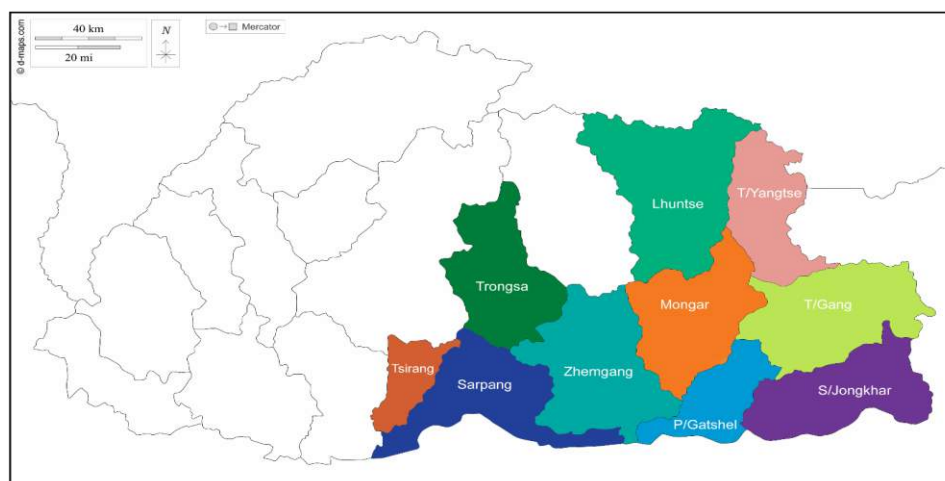


Fig 1: Map showing the study areas

Table 6: Average daily milk production

Gewog	Daily Milk Production by each household (litres)	Daily Milk Sold by each household (litres)	Sold as raw milk (%)	Self-consumed or for processing (%)
Kurtoed	7	1	14.3	85.7
Chaskhar	49	24.5	50.0	50.0
Dremetse	8	5	62.5	37.5
Mongar	50	10.6	21.2	78.8
Khar	1	1	100.0	0.0
Nanong	3	3	100.0	0.0
Norbugang	1	1	100.0	0.0
Shumar	3	3	100.0	0.0
Yurung	1	1	100.0	0.0
Deothang	1	1	100.0	0.0
Domphu	1	1	100.0	0.0
Gomdar	1	1	100.0	0.0
Langchenphu	1	1	100.0	0.0
Martshala	2	2	100.0	0.0
Orong	4	4	100.0	0.0
Pemathang	1	1	100.0	0.0
Phunthothang	3	2	66.7	33.3
Chhudzom	12	12	100.0	0.0

Dekidling	8	8	100.0	0.0
Gakidling	3	3	100.0	0.0
Jigmecholing	8	8	100.0	0.0
Samtenling	15	15	100.0	0.0
Senggye	4	4	100.0	0.0
Sershong	17	17	100.0	0.0
Umling	2	2	100.0	0.0
Jamkhar	11	6	54.5	45.5
Khamdang	7	0	0.0	100.0
Ramjar	27	0	0.0	100.0
Thongmizangsa	5	0	0.0	100.0
Tongshang	11	0	0.0	100.0
Bartsham	20	1	5.0	95.0
Bidung	29	0	0.0	100.0
Kanglung	1	1	100.0	0.0
Samkhar	21	15	71.4	28.6
Shongphu	3	2	66.7	33.3
Yangner	12	10	83.3	16.7
Drakteng	44	44	100.0	0.0
Langthel	2	2	100.0	0.0
Tangsibji	38	38	100.0	0.0
Kilkhorthang	9	9	100.0	0.0
Tsholingkhar	2	2	100.0	0.0
Goshing	1	1	100.0	0.0
Ngangla	3	3	100.0	0.0
Average	10.51	6.19	76.64	23.36



Milk cooperative members

Table 7: Average daily milk production by Dzongkhag

Dzongkhag	Daily Milk Production by household (Litres)
Lhuntse	3.43
Mongar	7.57
Pemagatshel	11.44
Samdrup Jongkhar	15.14
Sarpang	12.06

Trashi Yangtse	5.45
Trashigang	6.83
Trongsa	13.06
Tsirang	8.00
Zhemgang	5.00

On the average, each household produces 10.51 litres of milk per day and sells about 6.19 litres per day which means about 76.64% of the milk are sold and about 23.36% are retained for self-consumption or processing in the household. In terms of Dzongkhag, the highest production is from S/jongkhar with 15.14litres by each household followed by Trongsa with 13 litres, Sarpang with 12 litres, Pemagatshel with 11.44 litres per day.

In **Kurtoed Gewog**, the average daily milk production per household is 7 litres, with only 1 litre being sold which represents 14.3% daily production. The majority of 85.7% is self-consumed or further processed by themselves. This indicates preference of milk for self-consumption within the household. Milk is primarily supplied among the villages and to the local groups with minimum sales to milk collection centres.

Chaskhar Gewog stands out with an average daily milk production of 49 litres per household, of which 24.5 litres (50.0%) are sold. This indicates 50.0% of milk from each household is supplied to nearby centers and private individuals, facilitating a substantial proportion of sales.

In **Dremetse Gewog**, households produce on an average of 8 litres of milk per day, with 5 litres (62.5%) sold as raw milk. The remaining 37.5% is self-consumed or processed by household themselves. The higher percentage of sales is a result of the presence of milk collection centres, which encourage farmers to sell significant portion of their produce.

Mongar Gewog sees a high average daily production of 50 litres per household, yet only 10.6 litres (21.2%) are sold. A significant 78.8% is retained for self-consumption or further processing into local dairy products such as cheese and butter by themselves.

Several gewogs, including Khar, Nanong, Norbugang, Shumar, Yurung, Deothang, Domphu, Gomdar, Langchenphu, Martshala, Orong, Pemathang, Phuntshothang, Chhudzom, Dekidling, Gakeding, Jigmecholing, Samtenling, Senggye, Sershong, Umling, Drakteng, Langthel, Tangsibji, Kilkhorthang, Tsholingkhar, Goshing, and Ngangla, exhibit a pattern of selling 100% of their milk as raw milk. These gewogs rely heavily on collection centers, indicating a robust market infrastructure that supports high raw milk sales.

Bartsham Gewog produces 20 litres of milk daily per household but sells only 1 litre (5.0%) and major portion (95.0%) being self-consumed or processed. This high rate of self-consumption and local processing highlights the preference for homemade dairy products over raw milk sales.

Samkhar Gewog presents a balanced scenario with 21 litres of milk produced daily per household and 15 litres (71.4%) being sold. The remaining 28.6% is self-consumed or processed, indicating both a strong local market and a cultural inclination towards self-consumption.

Table 8: Annual production of livestock products

Dzongkhag	Milk (Litre)	Butter (Kg)	Cheese (Kg)
Lhuentse	1,488,994	69,914	125,128
Mongar	3,058,103	112,821	202,169
Pema Gatshel	1,623,552	62,874	104,861
Samdrup Jongkhar	2,281,269	56,490	128,251
Trashi Yangtse	1,020,060	44,309	83,150
Trashigang	5,332,639	232,196	341,219

Source: Annual Livestock Census 2022, NSB.

The Bhutan Agriculture and Livestock Census 2022 provides detailed insights into yearly dairy production across several key Dzongkhags in eastern Bhutan, namely Pema Gatshel, Samdrup Jongkhar, Trashigang, Trashiyangtse, Mongar, and Lhuentse. These districts are of interest for milk collection by Koufuko International Limited. Trashigang, for instance, leads in milk production with 5,332,639 litres. Similarly, Samdrup Jongkhar and Mongar also play important roles, producing 2,281,269 litres and 3,058,103 litres of milk respectively. Pema Gatshel, Trashiyangtse, and Lhuentse contribute with their own unique production patterns, reflecting 1,623,552 litres, 1,020,060 litres, 1,488,994 litres respectively.

Table 9: Daily production of livestock products

Dzongkhag	Daily Milk (litres)	Daily Butter (kg)	Daily Cheese (kg)
Lhuentse	4081.88	191.55	342.46
Mongar	8371.17	309.36	553.85
Pema Gatshel	4443.3	172.28	287.37
Samdrup Jongkhar	6245.06	154.79	351.62
Trashi Yangtse	2794.3	121.38	227.67
Trashigang	14604.7	636.57	934.29

Source: Annual Livestock Census 2022, NSB.

In terms of daily production, Lhuentse contributes approximately 4081.88 litres of milk, 191.55 kilograms of butter, and 342.46 kilograms of cheese, followed by Mongar with daily outputs of 8371.17 litres of milk, 309.36 kilograms of butter, and 553.85 kilograms of cheese. On the other hand, Pema Gatshel produces around 4443.30 litres of milk, 172.28 kilograms of butter, and 287.37 kilograms of cheese per day. Similarly, Samdrup Jongkhar yields approximately 6245.06 litres of milk, 154.79 kilograms of butter, and 351.62 kilograms of cheese, Trashi Yangtse contributes about 2794.30 litres of milk, 121.38 kilograms of butter, and 227.67 kilograms of cheese, then Trashigang produces about 14604.71 liters of milk, 636.57 kilograms of butter, and 934.29 kilograms of cheese on daily basis.

13.2 Rate of dairy products and income

The average rate of milk per litre varies across different dzongkhags, among 6 Dzongkhags, Samdrup Jongkhar has the highest average milk rate at Nu. 41.43, followed closely by Trashigang at Nu. 39.73 and Trashi Yangtse at Nu. 39.67. Pemagatshel also shows a relatively higher average rate of Nu. 39.22 per litre, while Mongar averages Nu. 37.21 per litre. Lhuntse, on the other hand, has the lowest average milk rate among the listed dzongkhags at Nu. 32.5 per litre.

These differences in average rates likely stem from various factors such as local production capacities, transportation costs, and demand-supply dynamics within each region. Higher rates in Samdrup Jongkhar can be attributed to higher demand of milk from customers across the border, whereas lower rates in Lhuntse could reflect different market conditions.

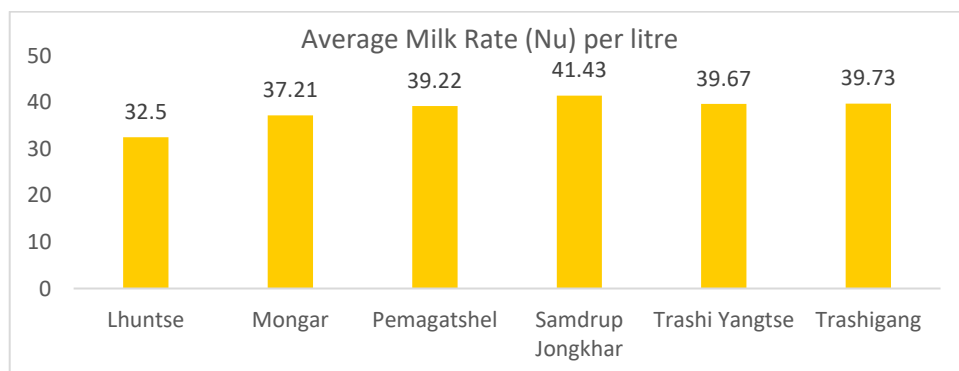


Fig.2: Average rate of milk per litre by Dzongkhag

Overall, in Monger, people supply milk at Nu.38 per litre and each of the households supplies about 3 to 15 litres of milk per day by each household. In Samdrupjongkhar, they sell at Nu.35 to Nu.55 per litre of milk to the people or collection centre ranging from 5 litres to 18 litres per day by each household. In the case of Trashiyangtse, they sell around 3 to 20 litres per day by some of the households at Nu. 38 per litre. Similarly, people from Trashigang also supplies around 5 to 25 litres of milk per day by some of the households at Nu.38 per litre.

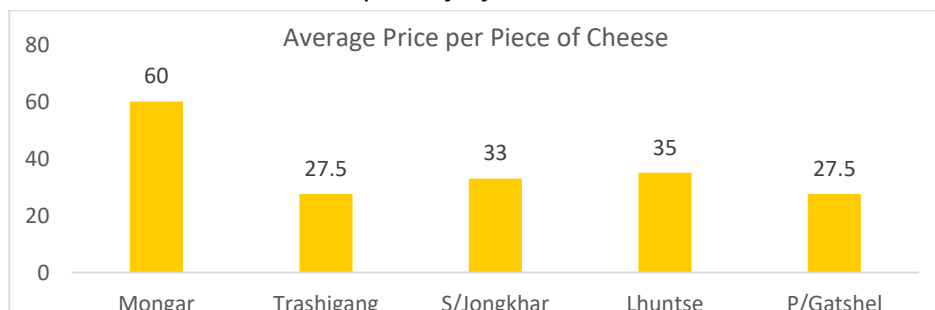


Fig.3: Average rate per piece of cheese by Dzongkhag

Among the dzongkhags mentioned, Mongar has an average price of approximately Nu. 60.0 per piece of cheese indicating moderate pricing. Trashigang follows with an average price of Nu. 27.5 per piece, reflecting relatively lower prices compared to Mongar. On the other hand, Samdrup Jongkhar shows a slightly higher average of around Nu. 33.0 per piece, suggesting

a mixed pricing trend with some variability. Lhuntse averages Nu. 35.0 per piece and Pemagatshel Nu. 27.5 per piece of cheese.

In terms of cheese per kg, Pemagatshel emerges with the highest average price per kilogram at Nu. 366.7, followed closely by Trashigang at Nu. 350.0. Mongar and Samdrup Jongkhar show somewhat lower average prices at Nu. 275.0 and Nu. 250.0 per kilogram respectively, while Trashi Yangtse has the lowest average price at Nu. 246.0 per kilogram.

Significant differences in per piece prices and that of price per kilogram across Dzongkhags may be attributed to factors such as different cheese size or regional market dynamics.

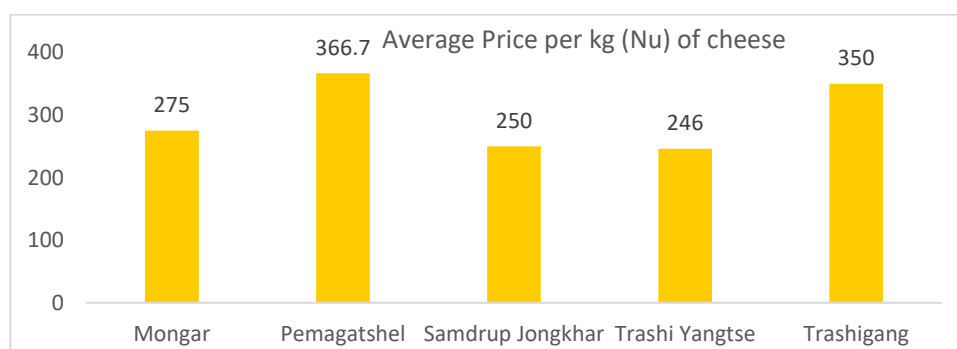


Fig.4: Average price (Nu) per kg of cheese by Dzongkhag

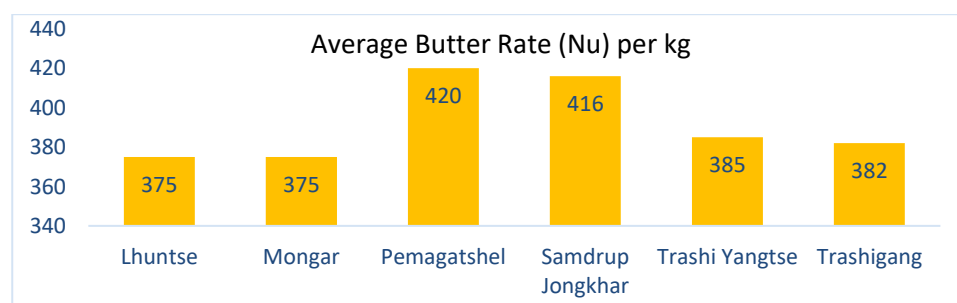


Fig.5: Average price (Nu) per kg of butter by Dzongkhag

The average butter rates per kilogram varies across 6 eastern Dzongkhags in Bhutan, reflecting distinct regional pricing dynamics. Pemagatshel emerges with the highest average butter rate at Nu. 420/kg, indicating potential for higher production costs or local market demand influencing the price. Samdrup Jongkhar follows closely at Nu. 416/kg, suggesting competitive pricing influenced by local economic factors. Trashiyangtse and Trashigang exhibit average rates of Nu. 385/kg and Nu. 382/kg, respectively, demonstrating moderate pricing relative to other regions. Lhuntse and Mongar share the lowest average butter rate among the listed Dzongkhags at Nu. 375/kg each.

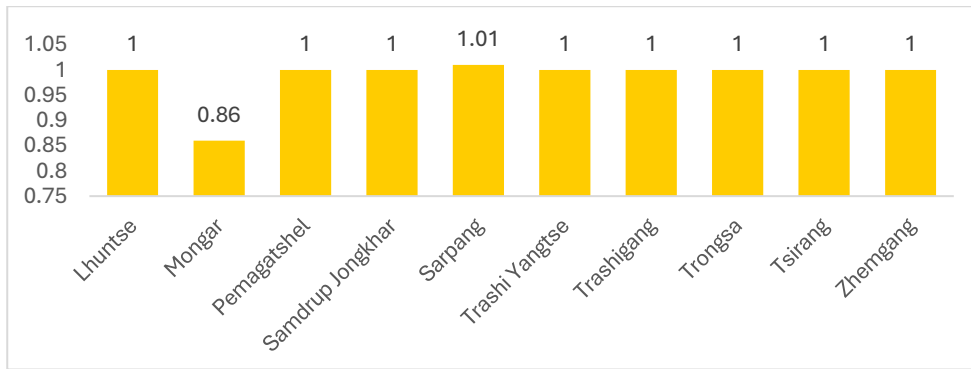


Fig.6: Average Quantity of butter sold (kg) in a week by Dzongkhag

The data reveals the average quantity of butter sold per week (kilograms) by individual households (463) across various Dzongkhags of Lhuntse, Pemagatshel, Samdrup Jongkhar, Trashiyangtse, Trashigang, Trongsa, Tsirang, and Zhemgang is 1.00 kg. This indicates a consistent weekly demand for butter across the regions. Sarpang stands slightly above with an average of 1.01 kgs sold per week while Mongar shows a slightly lower average of 0.86 kg sold per week suggesting a marginally lower demand of butter in the Dzongkhag.



Gomdar Milk Cooperative.

In terms of annual income from the sale of milk and its products, Mongar has the highest number of farmers who are making good income followed by Trashigang and Trashiyangtse. Most of them earn from Nu.10,000 to 60,000 in a year and some of their income goes beyond Nu.300,000 as can be see in the case of Mongar, Trashigang and Pemagatshel in the graph below. On average, each farmer generates an income of approximately Nu. 77,872 per year from their milk supply to the KIL.

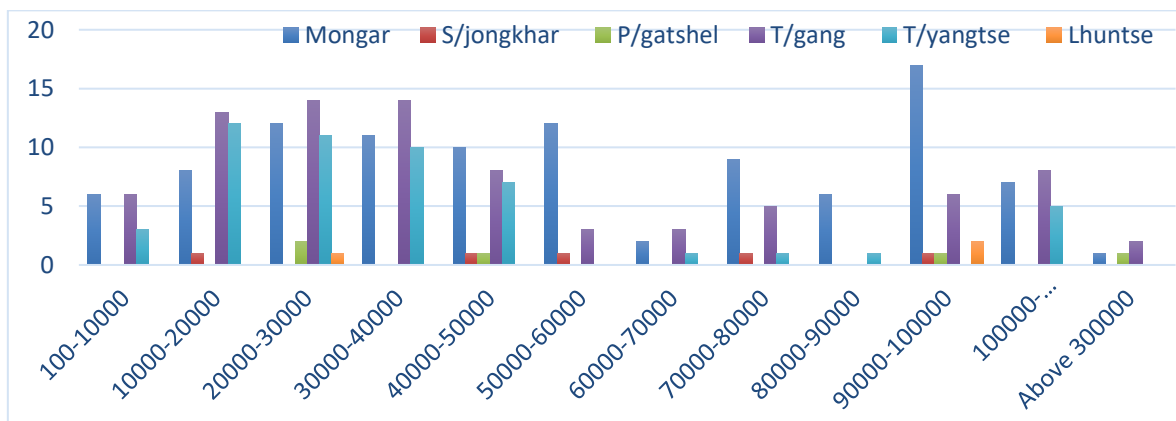


Fig.7: Annual earning from sale of milk and its products

13.3 Milk distribution

Among the respondents, farmers distribute or supply milk to various destinations but majority are directed towards milk collection centers constituting about 25% of the total distribution. Milk cooperatives receive about 8% of the supply, villagers or communities receive around 20%. Koufuku International Limited constitutes about 13% of the milk collection. Local markets receive around 3%, institutions like offices, schools and dratshangs receive about 10%. This distribution highlights the diverse channels through which farmers deliver their milk, with communities and collection centers being the predominant avenues. In addition to that about 18% do not supply milk to anyone except for self consumption.

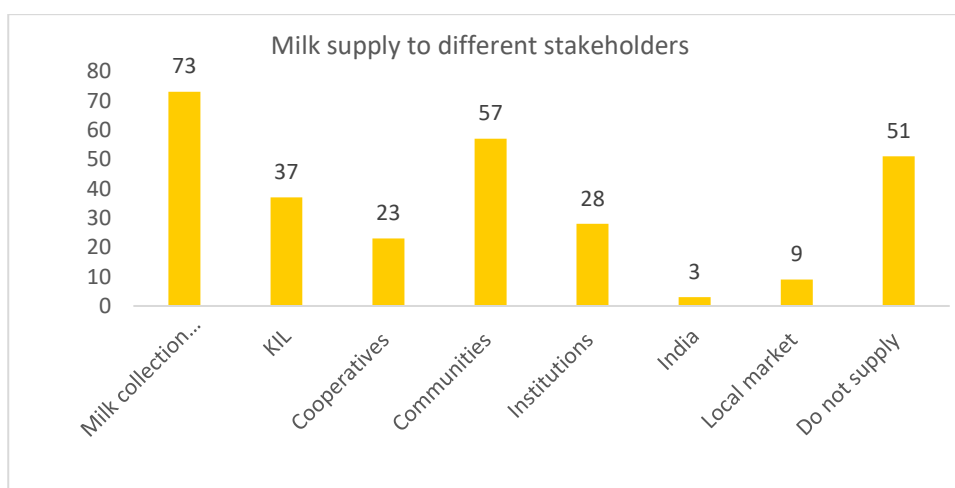


Fig.8: Milk supply to different stakeholders

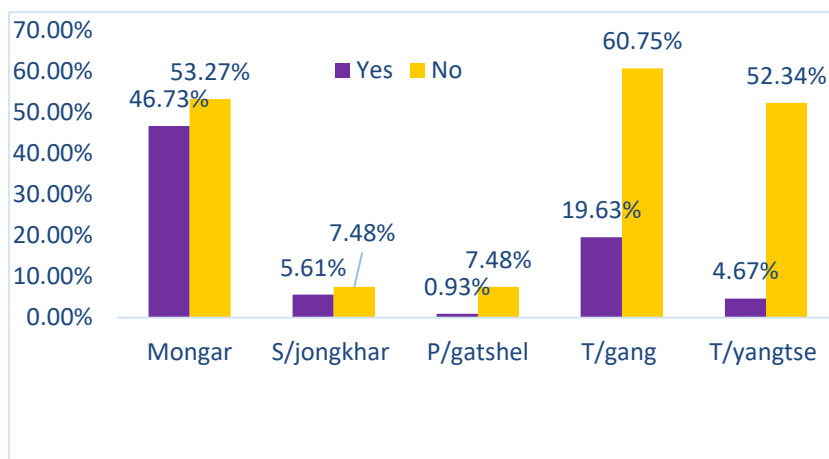


Fig.9: Supply of milk to KIL/collection center

People are not able to supply milk to KIL or to the milk collection center due to longer distance from the village, selling milk to the nearby markets, low milk production, low rate of milk offered by KIL and is not profitable, difficult to supply during the off season, not able to meet the demand within the locality or community, non-availability of milk collection from KIL in

most of the areas of Mongar, Trashigang, Trashi Yantse, pemagatsel or the Samdrupjongkhar. Details are given below.

- a) **Not sufficient within village:** Some suppliers indicated that the milk demand within their village or community is not able to meet, leave aside supplying to KIL/collection centers.
- b) **Difficult during the off-season:** During certain times of the year, such as the off-season for milk production, it becomes challenging for suppliers to maintain regular supply to KIL/collection centers.
- c) **Low quantity:** Suppliers mentioned that the quantity of milk they produce is not sufficient to supply to KIL/collection centers.
- d) **Far distance:** For some, distance to the KIL/collection centers is perceived as a barrier, making it inconvenient or impractical to transport milk.
- e) **No collector from KIL:** Some suppliers stated that there is no designated collector from the KIL/collection center in their area, which impedes their ability to supply.
- f) **Price rate problem:** low rates offered by KIL/collection centers is low which is one reason for not supplying milk.
- g) **Marketing issues:** There are challenges related to marketing and collection services provided by KIL/collection centers in their village or community.
- h) **Other reasons:** Miscellaneous reasons included lack of awareness about procedures, absence of demand, or logistical problems related to KIL/collection center operations.

13.4 Transportation and charges

The rates charged per litre of milk vary among farmers supplying to KIL and their annual income.

The rates charged per litre of milk vary among farmers supplying to KIL ranging from Nu. 55, 38, 37, 47, 35, 40 to 39 per litre. The quantities supplied also vary, ranging from 4 to 18 litres per day per farmer. The average rate at which farmers supply milk to KIL is approximately Nu. 38.63 per litre. This average price provides an indication of the typical pricing farmers are using when selling their milk to the processing plant.

Table 10: Modes of transportation used for delivering milk

Transportation Method	Frequency (%)	Details
Walking	80%	Mostly delivered milk by walking, often to nearby collection points.
Bolero/Car	20%	Transport using a vehicle like Bolero or car which costs about Nu. 10,000, Nu. 15,000, Nu. 25,000, Nu. 28,000, Nu. 35,000 or Nu. 45,000 per month.
Cost Information		

No Cost (Free)	70%	Transportation free means due to community arrangements or from KIL
Cost Incurred	30%	Specific costs using vehicles: Nu10,000 to Nu. 45,000 per month.

As per the respondents, the most preferred mode of transporting milk to the collection centers is by walk indicated by approximately 80% of respondents. A notable portion, around 15% mentioned using vehicles such as Bolero or other cars for transportation which cost them ranging from Nu. 10,000 to Nu. 45,000 per month. Interestingly, a majority of 70% reported free transportation either facilitated by community or arrangement from KIL. The remaining 30% mentioned where they have incurred costs while using vehicle for transportation.

Table 11: Challenges faced in transporting milk

Challenges Faced	Frequency (%)	Details
No Challenges	60%	No issues due to proximity to collection centers with easy access of transportation or other favourable conditions.
Weather Conditions	15%	Challenges due to rain, slippery footpaths, and weather-related delays in transportation.
Timing/accessibility issues	10%	Difficulties in reaching collection centers on time, often due to household duties or lack of proper transportation.
Infrastructure/facilities	5%	Issues related to infrastructure, such as lack of containers for safe milk transportation or poor road conditions.
Specific instances		Specific instances include challenges like dependency on weather conditions or proximity to collection centers.

Based on an analysis of 153 farmers who responded, the challenges faced in transporting milk to processing plants or collection centers vary significantly among respondents. The majority, approximately 60%, reported no challenges or problems associated with transportation. Reasons cited included the proximity of their collection center, which facilitated easy and timely delivery of milk. Another significant group, about 15%, highlighted weather conditions as a major challenge. This included issues such as rain making footpaths slippery or causing delays in reaching the collection center. Around 10% of respondents mentioned timing and reachability issues, often due to personal responsibilities like household chores or the lack of suitable transportation. Approximately 5% noted challenges related to infrastructure and facilities, such as inadequate containers for transporting milk safely, lack of refrigerator or the chillers including poor road conditions. Overall, while a significant number reported no issues, a notable percentage faced challenges primarily related to weather, timing constraints, and infrastructure limitations. Further, to maintain the quality of the milk, majority keep milk in the refrigerator and to the milk jars while others do not take any measures rather takes directly to the collection center.

Among the respondents 286 farmers have given their rating with regard to relationship with the milk collection centers or customers.

- a) **Satisfied:** The majority of respondents, approximately 70%, expressed satisfaction with their current relationship with milk collection centers or customers. The reasons are such as timely payments, ease of selling products, and support for their families through constant income generation.



Wooling group milk van

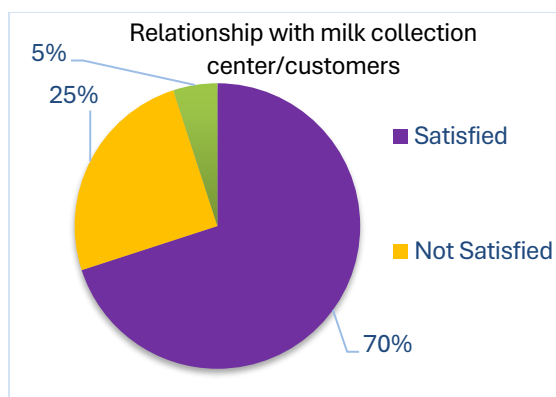


Fig.10: Satisfaction level

- b) **Not Satisfied:** Around 25% of respondents indicated dissatisfaction primarily due to low milk rates offered by collection centers. Some mentioned issues with timely payments or lower demand affecting their income from milk sales.
- c) **Neutral/No Specific Response:** A small percentage did not provide clear feedback or mentioned no issues either way.

Specific Insights:

- a) **Satisfaction with Payments:** Many respondents highlighted satisfaction with receiving payments promptly at the end of the month or as needed, which supports their household finances.
- b) **Challenges Mentioned:** Dissatisfaction was mainly centered on financial aspects such as low milk rates or delays in payment, which impacts the economic viability of farmers.

13.5 Milk quality issues and sale

In terms of milk quality issues while delivering to the milk collection center or in the processing plant, majority of the farmers do not have any issues. However, few of them do face milk quality issues mainly due to the following:

- a) Milk collector not arriving on right time as well as transportation issues which deteriorates the milk quality
- b) Milk being kept overnight from the morning hours due to shortage of chiller and transportation.
- c) Somestimes, there are road blocks which leads to carry milk by themselves which unnecessary delays in reaching the collection center on time.

d) In some cases, the collection center is far from the village and it is not possible to deliver milk on time to the collection point.

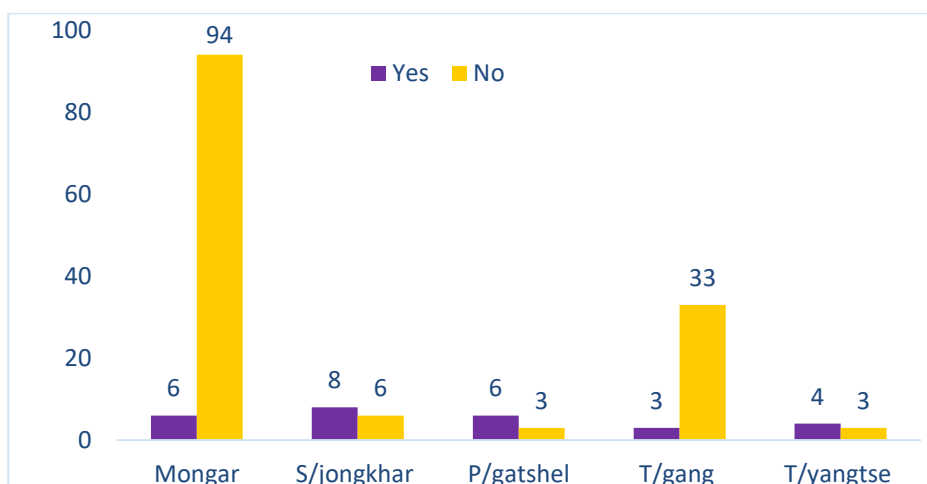


Fig.11: Milk quality issues

In most cases, farmers are not able to sell their milk due to inadequate production. In some cases, it is not even enough for their own consumption where they make butter and cheese for self requirements.

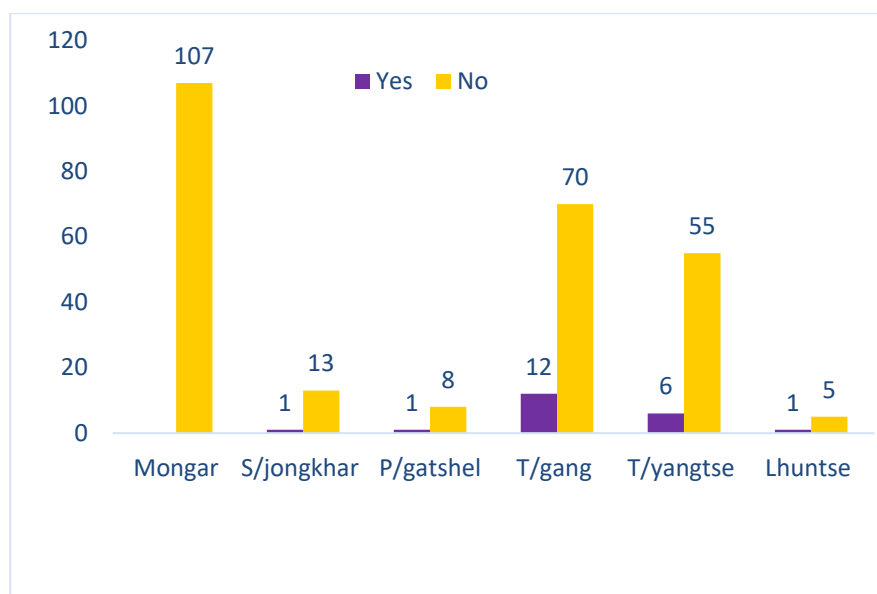


Fig.12: Problems in selling milk

13.6 Consumer preference and milk supply

The preference of consumers are different for different Dzongkhags in general. For instance, majority of Trashigang and Trashiyangtse Dzongkhags prefer cheese brands like Amul cheese, Zambala cheese from Koufuko and other locally produced dairy products. The same two Dzongkhags also have preference for all types of packaged cheese products rather than local cheese. While in the case of Mongar, most prefer to use raw milk instead of processed dairy products due to health benefits.

Table 7: Trend and preference of customers

Particulars	Description
Amul brand, koufoko and local dairy products	About 37.21% of Trashigang and 19.35% of Trashiyangtse prefer Amul brand cheese, Koufuko products and local made dairy products
Raw milk	About 49.53% of those in Mongar prefer raw milk than the dairy products compared to other Dzongkhags
Processed package cheese including imported ones	About 41.86% of Trashigang and 58.06% Trashiyangtse prefer processed cheese which includes both koufoko products as well as imported ones

In terms of continuous supply of milk over the years, most of the Dzongkhags agree to supply especially the Dzongkhags like Mongar, Samdrupjongkhar and Pemagatshel compared to Trashigang and Trashiyangtse. In the case of Trashiyangtse, there is more than 50% willing to supply which about 50% are not willing. Then for Lhuntse, people are in delima whether to supply the milk or not as 70% have indicated neutral. They are not in a position to supply milk due to the following:

- There are issues like cattle only produce milk when they gave birth, then after few years the milk production gets reduced and stops.
- Sometimes when cattle gets caught with diseases then the production of milk is less and sometimes there isn't any milk produced by the cattle.
- During winter the cattle produce less milk compared to summer due to less feeds.
- Raising more cattle required more time as it involves lot of work. Further, people are not able to make more profit by selling milk and its products, rather it is worth to carry out farming which can make good amount of money by selling farms produce.
- There is no milk collection center in the village which is not convenient to sale milk.

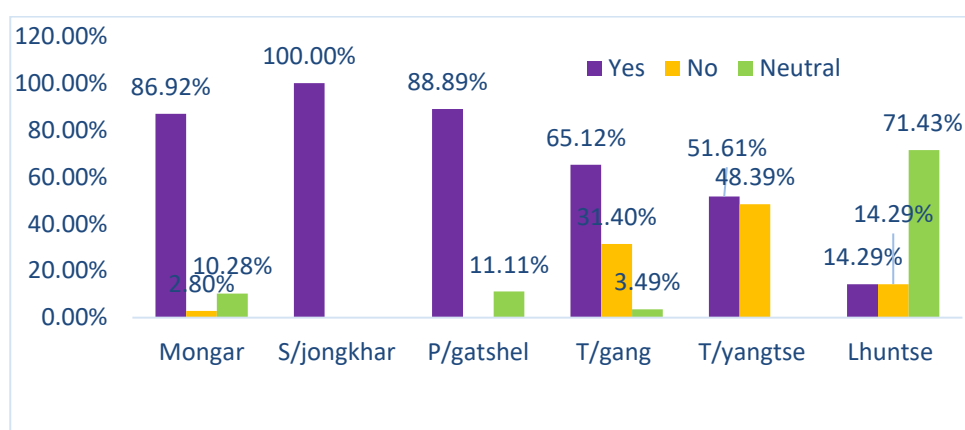


Fig.13: Continuous supply of milk

13.7 Improvement or plans

The improvements farmers would like to see is in their business relationship or communication with the milk collectors.

231 farmers had suggestions for improvements in their relationship with the milk collectors as follows:

- a) **Rate Increase:** About 35% of respondents expressed a desire for higher milk rates. They believe that an increase in rates would lead to more success, better income, and overall development of their community. This indicates that the current rates are perceived as inadequate and impacting their livelihoods.
- b) **Timeliness:** 25% of respondents suggested collectors to arrive on time for milk collection and to ensure timely payment. Farmers highlighted the importance of punctuality in milk collection and payment, which affects their trust and financial planning.
- c) **Quality and Facility Improvements:** Some 15% of farmers mentioned the need for improvements in milk quality, facilities like refrigerators at milk collection centers, and even the provision of high-quality cows. These improvements are seen as crucial for enhancing productivity and efficiency in milk production.
- d) **Communication and Engagement:** 20% of respondents suggested for better communication and engagement between farmers and milk collectors. This includes listening to farmer's concerns, setting fixed collection time and maintaining transparent communication regarding milk quality and payment issues.
- e) **Infrastructure Development:** A few respondents (10%) mentioned the need for infrastructure development such as proper milk houses or centers nearer to their villages. This would reduce transportation challenges and improve overall operational efficiency.
- f) **No Immediate Improvements Needed:** Some respondents (5%) indicated that they are currently satisfied with their business relationship or communication with milk collectors. They mentioned no specific improvements needed at the moment, suggesting that their current arrangements are meeting their expectations.

Approximately 40% of respondents explicitly mentioned having plans for either expanding their operations or diversifying into related areas. These plans ranged from increasing cattle numbers to exploring new dairy products or services. Another 15% indicated a general intent to expand or diversify without specifying details, suggesting a potential interest in growth but with uncertain specifics. Around 15% detailed specific plans such as purchasing Jersey cows or implementing new farming techniques. A notable 25% of respondents stated they had no current plans for expansion or diversification, citing reasons like sufficient existing operations or challenges in implementing new ventures.

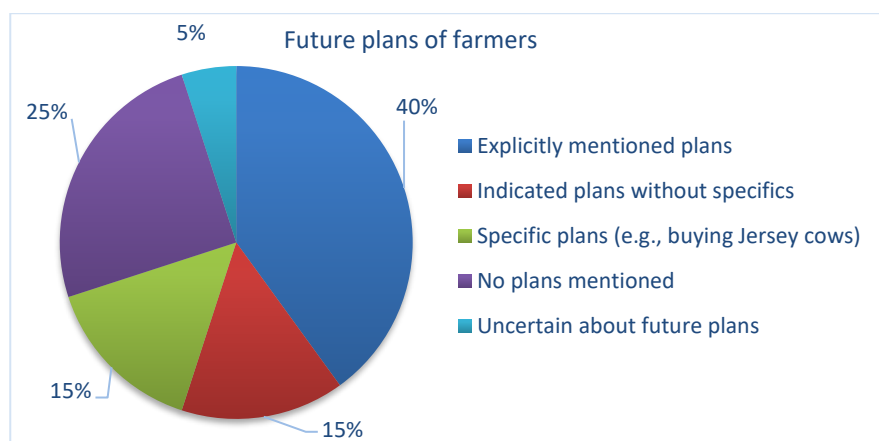


Fig.14: Future plans of the dairy farmers

Lastly, 5% expressed uncertainty about their future plans, indicating a need for more stability or support before considering growth initiatives. Overall, while a significant portion of dairy farmers showed interest in expanding or diversifying their businesses, others preferred to maintain current operations or facing barriers for growth.

13.8 Dairy cooperatives or groups

Several dairy milk cooperatives or the groups were interviewed in six eastern districts. It was found that they collect fresh milk ranging from 20 litres to 800 litres per day. Mostly, they sale fresh milk and also produce products ranging from yogurt, paneer, butter and cheese. In terms of milk, they sale on the average of 60litres to 500 litres per day, then for butter 5kg to 13kg and cheese from 4kg to 20kg per day.

Table 8: List of cooperatives interviewed

Sl.no	Dairy cooperative	Members	Gewog	Dzongkhag
1	Tshewang pelmo	19	Mongar	Mongar
2	Thunder dhaytshen	13	Monger	Mongar
3	Dangling dungkar choeling gonor detshen	29	Khanglung	Trashigang
4	Gonor Sanam Nyamdruk detshen	11	Mongar	Mongar
5	Pam midoe namlay detshen	48	Samkhar	Trashigang
6	Tashi tsheringma namlay detsen	43	Shamkhar	Trashigang
7	Batso dhari tshogpa	31	Shongphu	Trashigang
8	Zambala detshen	18	Mongar	Mongar
9	Deothang milk marketing Namley Tshogdey.	23	Deothang	S/Jongkhar
10	Druk chethen namlay tshodue	65	Yangner	Trashigang
11	Jangchubling Mandar om Thudrel Tshogpa	64	Orong	S/Jongkhar
12	Wooling dairy farm	10	Orong	S/Jongkhar
13	Yatong Gonor gongphel detshen	36	Chaskhar	Mongar
14	Kharnang lamtha lamwog Nyamrub detshen	44	Chasker	Mongar
15	Gomdar Om Nyamlay Tshokdhey	147	Gomdar	S/Jongkhar
16	Mandaire thundred dettshen	120	Orong	S/Jongkhar
17	Menjigang Om tshogdrel detshen	10	Phuntshothang	S/Jongkhar

18	Jersy tshochung thuendrel detshen	14	Martshala	S/Jongkhar
19	Jamkhar milk desthen.	44	Jamkhar	Trashiyangtse
20	Wangphu yusum thruendrel detshen	5	Martshala	S/Jongkhar
21	Pemathang omley tshongley detshen	22	Pemathang	S/Jongkhar
22	Langchenphu Om tshogdrel detshen	26	Langchenphu	S/Jongkhar
23	Tangrong om Detshen	23	Kortoed	Lhuntse
24	Khangma Gonor Chithuen Group	38	Yurung	Pemagatshel
25	Chidhen tshephel detshen	59	Shumar	Pemagatshel
26	Zambala milk cooperative	65	Norbugang	Pemagatshel
27	Tshatshidagor norlha detshen	124	Nanong	Pemagatshel
28	Tokarie om tshongley detshen	23	Nanong	Pemagatshel
29	Woongchilo om tshongley detshen	25	Nanong	Pemagatshel

The data on daily average milk collection across 29 cooperatives in various Gewogs reveals significant disparities in production levels. Orong stands out with the highest average daily production of 1060 litres, followed by Yangner with 800 litres and Nanong with 570 litres. These areas are the major contributors to milk production. On the other hand, Norbugang has the lowest daily collection with just 20 litres, and Kurtoed and Yurung also report low of 60 and 50 litres respectively. Mid-range producers include Chaskhar with 550 litres, Gomdar with 500 litres, and Samkhar with 475 litres. The substantial variation in milk collection suggests that while some Gewogs are excelling in dairy production, others may require targeted support and strategic interventions to enhance their output. Understanding and addressing the factors contributing to these disparities could be key to improving overall dairy productivity in the region.

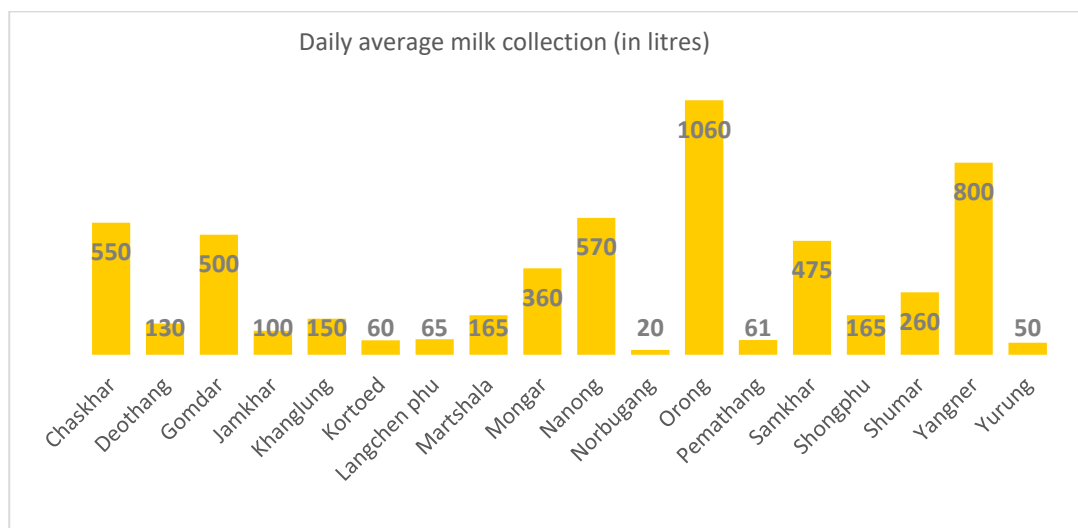


Fig. 15: Daily average milk collection (ltrs) by cooperatives in gewogs

Cooperatives collect milk in the morning in can buckets where villagers come and drop milk in bottles. They also do check the quality of the milk in some cases. In some of the cooperatives, they have hired milk collector who collects milk from the collection points.

13.9 Price of diary products by cooperatives

Table 9: Rates (Nu) of diary products sold by cooperatives

Gewog/Cooperatives	Milk per (ltr)	Cheese per (pc)	Butter per (Kg)
Chaskhar			
Kharnang lamtha lamwog Nyamrub detshen	37		
Yatong Gonor gongphel detshen	37		
Deothang			
Deothang milk marketing Namley Tshogdey	55	35	400
Gomdar			
Gomdar Om Nyamlay Tshokdhey	39		
Jamkhar			
Jamkhar milk desthen.	38		
Kanglung			
Dangling dungkar choeling gonor detshen	65	70	450
Kortoed			
Tangrong om Detshen	20	40	300
Langchen phu			
Langchenphu Om tshogdrel detshen	43	30	500
Martshala			
Jersy tshochung thuendrel detshen	50	30	450
Wangphu yusum thruendrel detshen	35	35	400
Mongar			
Gonor Sanam Nyamdrup detshen	50	70	400
Thunder dhaytshen	42	70	450
Tshewang pelmo	39	70	400
Zambala detshen	39	70	400
Nanong			
Tokarie om tshongley detshen	60	30	370
Tshatshidagor norlha detshen	35	30	360
Woongchilo om tshongley detshen	50	35	420
Norbugang			
Zambala milk cooperative	50	45	420
Orong			
Jangchubling Mandar om Thudrel Tshogpa	43	25	350
Mandaire thundred delttshen	38	25	350
Wooling diary farm	37	25	350
Pemathang			
Pemathang omley tshongley detshen	45	30	420
Phuntshothang			
Menjigang Om tshogdrel detshen	50	30	450
Samkhar			
Pam midoe namlay detshen	55	70	450
Tashi tsheringma namlay detsen	38		
Shongphu			
Batso dhari tshogpa	38		
Shumar			
Chidhen tshephel detshen	55	35	400
Yangner			
Druk chethen namlay tshodue	38		
Yurung			
Khangma Gonor Chithuen Group	30	30	350
Average price	43	44	407

Milk Rates

The average milk rate across the listed cooperatives is Nu.43 per litre but there are variations in pricing:

Highest Milk Rates:

- a) Kanglung's "Dangling dungkar choeling gonor detshen" has the highest milk rate at Nu.65 per litre indicating either high demand or superior quality.
- b) Deothang's "Deothang milk marketing Namley Tshogdey" and Samkhar's "Pam midoe namlay detshen" both offer milk at Nu.55 per litre which are also on the higher end of the spectrum.
- c) Nanong's "Tokarie om tshongley detshen" offers milk at Nu.60 per litre.

Lowest Milk Rates:

- a) Kurtoed's "Tangrong om Detshen" has the lowest milk rate at Nu.20 per litre, possibly due to lower demand or quality issues.
- b) Yurung's "Khangma Gonor Chithuen Group" offers milk at Nu.30 per litre, which is also on the lower end.

Cheese Rates

The average cheese rate across the cooperatives is Nu. 44 per piece but it also varies as follows:

Highest Cheese Rates: Multiple cooperatives including those in Kanglung, Mongar and Samkhar offer cheese at Nu.70 per piece, indicating high quality or demand.

Lowest Cheese Rates:

- a) Orong's cooperatives "Jangchubling Mandar om Thudrel Tshogpa" and "Mandaire thundred delttshen" offer cheese at Nu.25 per piece, which is the lowest rate.
- b) Langchenphu's "Langchenphu Om tshogdrel detshen" offers cheese at Nu.30 per piece, which is also relatively low.

Butter Rates

The average butter rate across the cooperatives is Nu. 407 per Kg are as follows:

Highest Butter Rates:

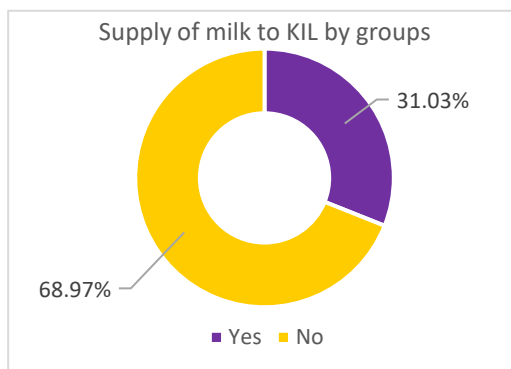
- a) Langchenphu's "Langchenphu Om tshogdrel detshen" offers butter at Nu.500 per kg which is the highest among the listed cooperatives.
- b) Several cooperatives, including those in Kanglung and Martshala, offer butter at Nu.450 per Kg.

Lowest Butter Rates:

- a) Kortoed's "Tangrong om Detshen" offers butter at Nu.300 per Kg, which is the lowest rate.
- b) Yurung's "Khangma Gonor Chithuen Group" offers butter at Nu.350 per Kg which is also on the lower end.

13.10 Milk supply to KIL by groups

Out of 29 cooperatives surveyed, 69% (Mongar, Kanglung, Orong, Deothang, Nanong



Gewogs) reported that they do not supply their collected milk, while the remaining 31% indicated that they do. This highlights majority of the milk cooperatives do not supply milk to the KIL processing plant at the time of the survey. Cooperatives have cited reasons for not supplying milk to KIL such as economic considerations, logistical challenges, and communication gaps as given below.

Fig.16: Supply of milk to KIL

Economic Concerns: A notable number of entities express dissatisfaction with KIL's pricing structure. For instance, **Khanglung** notes that the rates offered by KIL are perceived to be low, which discourages them from supplying milk. Similarly, **Orong (having highest daily average milk production)** and **Shumar** state that supplying milk to other customers yields higher profits compared to KIL's pricing model, where profitability is diminished due to the lower rates per liter of milk offered.

Logistical and Operational Challenges: Several cooperatives face logistical challenges that hinder their ability to supply milk to KIL. **Martshala** points out that their dairy farm has limited production capacity, which restricts their ability to maintain a continuous supply to KIL. Additionally, **Mongar** highlights the absence of a dedicated collector from KIL which complicates the logistics of transporting milk from the farm.

Communication and Engagement: Communication issues also play a significant role in the decision not to supply milk to KIL. Cooperatives from **Deothang, Pemathang,** and **Norbugang** mention that KIL members did not turn up for marketing activities. Similarly, **Langchenphu** notes a lack of awareness about KIL's operations and marketing efforts in the village.

The cooperatives or the groups are able to supply on average of 50 litres to 400litres per day to the KIL at Nu.37 or Nu.38 per litre. While selling to other customers, they fetch Nu.50 to Nu.55 per litre of milk. The cooperatives or the groups are able to earn annual income in between Nu.60,000 to Nu.800,000. While those supplying milk to KIL were able to earn annual income of Nu. 500,000 to Nu. 2,800,000.

13.11 Market preference

Market Preferences: Some entities, such as **Samkhar, Yurung, and Shumar**, prefer to sell their milk at local markets like in Trashigang, where they perceive better pricing opportunities and profitability.



Retailers selling Dairy products

Fig.17: Willingness to supply milk to KIL

However, out of 29 cooperatives surveyed with regard to their willingness to supply milk to KIL, 25 responded affirmatively while 14 indicated they were not willing to do so. This indicates a strong majority of 86.2% are open to supplying their milk to KIL, suggesting potential for increased collaboration. Addressing concerns of the 13.8% that responded negatively could further enhance participation and optimize the milk supply chain to KIL.

Based on the information provided by cooperatives, the annual income from the sale of milk and its products to customers varies significantly among different sources. Reported figures range from approximately Nu. 60,000 to Nu. 3,600,000 annually, reflecting diverse scales of operation and market conditions. Conversely, income derived from supplying milk to KIL, if any, shows inconsistency, with some stating no current supply and others suggesting potential earnings of up to Nu. 1,200,000 per year.

The discrepancies in reported incomes could indeed be attributed to the contrasting dynamics between local markets and supplying to KIL. Local markets may offer better prices for milk and its products due to immediate demand and potentially less quality requirements compared to supplying to KIL.

Local markets often provide a more flexible pricing structure that can vary based on supply and demand dynamics within the community or region. This can lead to higher income for dairy producers who can negotiate directly with local buyers or consumers. On the other hand, supplying to KIL through provides a consistent market, may require adherence to stricter quality standards, pricing agreements, and possibly bulk supply commitments.

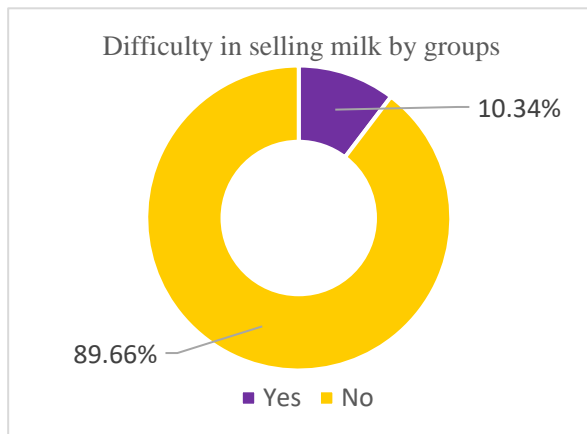
Table.10: Mode of transportation used by cooperatives

Category	Percentage of Respondents
Transportation Methods	
Own Vehicles	50%
Hired Transport (KIL/Pvt)	35%
Group Efforts	15%

The majority of dairy cooperatives, approximately 50%, utilize their own vehicles to transport milk to processing plants or collection centers. They claim that this method offers flexibility and cost control, as they can manage timing and avoid transportation expenses. About 35% of respondents opt for hired transportation incurring monthly cost ranging from Nu.10,000 Nu to Nu.45,000. Some farmers, approximately 15%, rely on group efforts or community vehicles for milk transportation, which helps to distribute costs among members.

In terms of costs, 25% of farmers reported no transportation expenses incurred when using their own vehicles, while 30% mention specific costs associated for hiring of transport services. Further, 10% sighted deductions for per liter of milk being transported, which affects their overall income from milk sales.

Based on the responses provided, a 20% minority of dairy farmers reported encountering issues with storage or refrigeration during the transportation of milk. These challenges often stem from insufficient infrastructure such as shortages of chillers or lack of proper storage



facilities, which can be particularly problematic during warmer weather or when milk needs to be stored before processing. In contrast, majority of respondents, about 50%, stated they do not face any issues with storage, refrigeration, or transportation of milk. They attribute this to having adequate refrigeration facilities or employing immediate transport practices to minimize storage time and maintain milk freshness.

Fig.18: Difficulty in selling milk by groups

In terms of measures to ensure milk quality and freshness, approximately 25% of farmers mention using refrigerators or chillers immediately after milk collection. This method helps in preserving milk quality by keeping it at optimal temperatures. Additionally, about 15% of respondents use a lactometer, a device that measures milk density and helps to assess its freshness and purity. This proactive approach ensures that milk meets quality standards before reaching processing centers or collection points.

Even in the case of dairy milk cooperatives of groups, they do not have much problem in selling their milk and its products as highlighted by 90%. About 10% do have certain issues mainly due to insufficient milk in stock as well as due to necessity to produce other products like cheese and butter.

The majority of dairy cooperatives, approximately 80%, reported no quality-related issues during transportation or at the processing plant/collection center. They describe their operations as running smoothly without significant challenges in maintaining milk quality. However, about 20% of respondents acknowledge encountering specific issues. Among

these, some farmers (5%) mention delays in receiving payments, which impacts their financial planning and operational efficiency. Another 10% highlighted transportation problems, such as a lack of vehicles, which can cause delays in milk delivery or affect its freshness. Additionally, approximately 5% note instances where milk got spoiled during transportation due to inadequate handling or storage conditions.

13.12 Current Relationship with KIL

Approximately 40% of respondents express satisfaction with their current relationship with KIL. They appreciate aspects like timely milk collection and overall good communication. About 24% of the cooperatives or groups do not have relationship with KIL and they are not supplying milk to the company due to low rates.

Areas for Improvement:

Around 60% of respondents indicated areas where they would like to see improvements:

- a) **Better Rates:** Many farmers express dissatisfaction with the rates offered by KIL, stating that they are lower compared to other agencies. They desire increased rates per litre of milk supplied.
- b) **Communication and Relationship Building:** Several respondents highlighted the importance of improved communication and building stronger business relationships with KIL. They emphasize the need for clearer rules, friendlier interactions, and more supportive communication channels.

Changes in Demand for Milk and Products:

Roughly 60% of respondents have noticed changes in demand for milk or its products in their village/area. Reasons include easier accessibility of milk, increased demand during festival times, Benefits of milk on health leading to higher demand, and preferences for dairy products like cheese and butter. About 40% reported no significant changes in demand due to either stable preferences or low demand because of competition or low market interest.

Emerging Trends and Preferences:

While some respondents (around 30%) observe emerging trends such as increased demand for dairy products, particularly during festivals or due to health conscious choices and others (around 10%) note stable preferences without noticeable trends.

Continuous Supply of Milk:

Approximately 70% of respondents expressed confidence in their ability to supply milk continuously over the years, highlighting plans for expansion and diversification to meet future demands. However, about 30% cited issues such as irregular milk collection, low rates, shortages of raw materials, and insufficient support from stakeholders as barriers to sustainable supply.

Expansion and Diversification Plans:

A significant majority (around 80%) have expansion or diversification plans, depending upon factors like increased rates for milk, support from government or local authorities, and improvements in infrastructure such as water supply and processing facilities.

Business Evolution in 3-5 Years:

Respondents see their businesses evolving into larger and more profitable ventures over the next 3-5 years, provided there is sufficient support, market demand, and operational efficiency. Plans include increasing production, enhancing product quality, and potentially entering new markets.

Feedback on Processing Plants/Collection Centers:

Feedback provided includes suggestions for processing plants and collection centers to improve rates for milk, ensure timely payments, establish clearer communication channels, and support farmers with better infrastructure and logistical solutions.

13.13 Consumer survey

Insights were gathered from a diverse groups of consumers focusing on their dairy product purchasing habits. The data represents a broad spectrum of consumer demographics in terms of age, gender, and geographical location. The largest segment of consumers 43.1% falls within the 30-39 years age range, followed by younger adults aged 19-29 years by 21.6%.

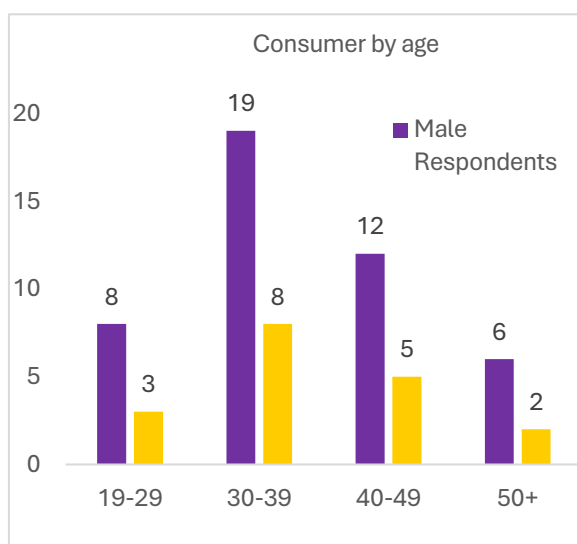


Fig.19: Consumer demographics

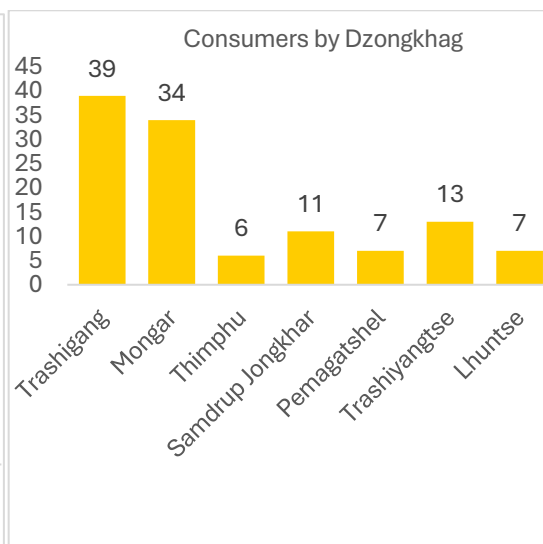


Fig 20: Consumers by Dzongkhag

The survey population were male respondents, constituting 68.6% of the total, with females making up the remaining 31.4%. Geographically, the survey captured respondents predominantly from Trashigang (33.8%) and Mongar (29.9%).

Thimphu, 5.5% of respondents, Other Dzongkhags such as Samdrup Jongkhar, Pemagatshel, Trashiyangtse, and Lhuntse collectively accounted for 31.4% of respondents.

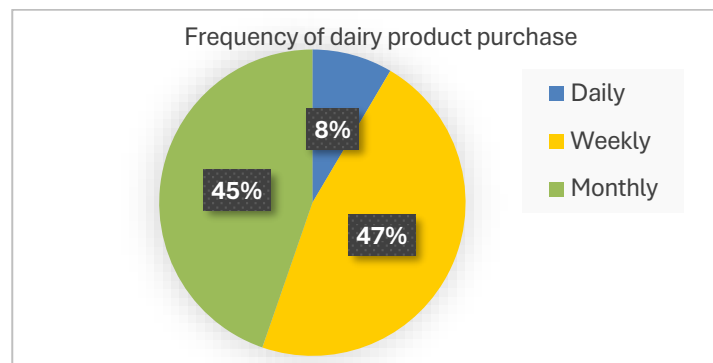


Fig.21: Frequency of dairy product purchase

The purchasing frequencies of dairy products among consumers reveals that a small percentage (8.5%) purchase these items daily. The majority of the consumers 46.8% buy dairy products on a weekly basis. On the other hand, 44.7% of consumers purchase dairy products on monthly basis.

Based on the analysis of product preferences from a total of 161 consumers, fresh cheese is the preferred item by 46.93%, followed by milk by 42.98% and organic butter by 33.33%. Cheddar cheese is preferred by 26.75% while both salted and unsalted butter is preferred by 21.93%. Plain yogurt is preferred by 19.30%, cottage cheese by 13.16% and Gouda cheese by 9.65%. Less frequently chosen items included fruit yogurt by 5.70%, sweet yogurt by 3.95%, mozzarella cheese by 2.19%, and both Druk Zambala cheese and Amul cheese by 0.88%.

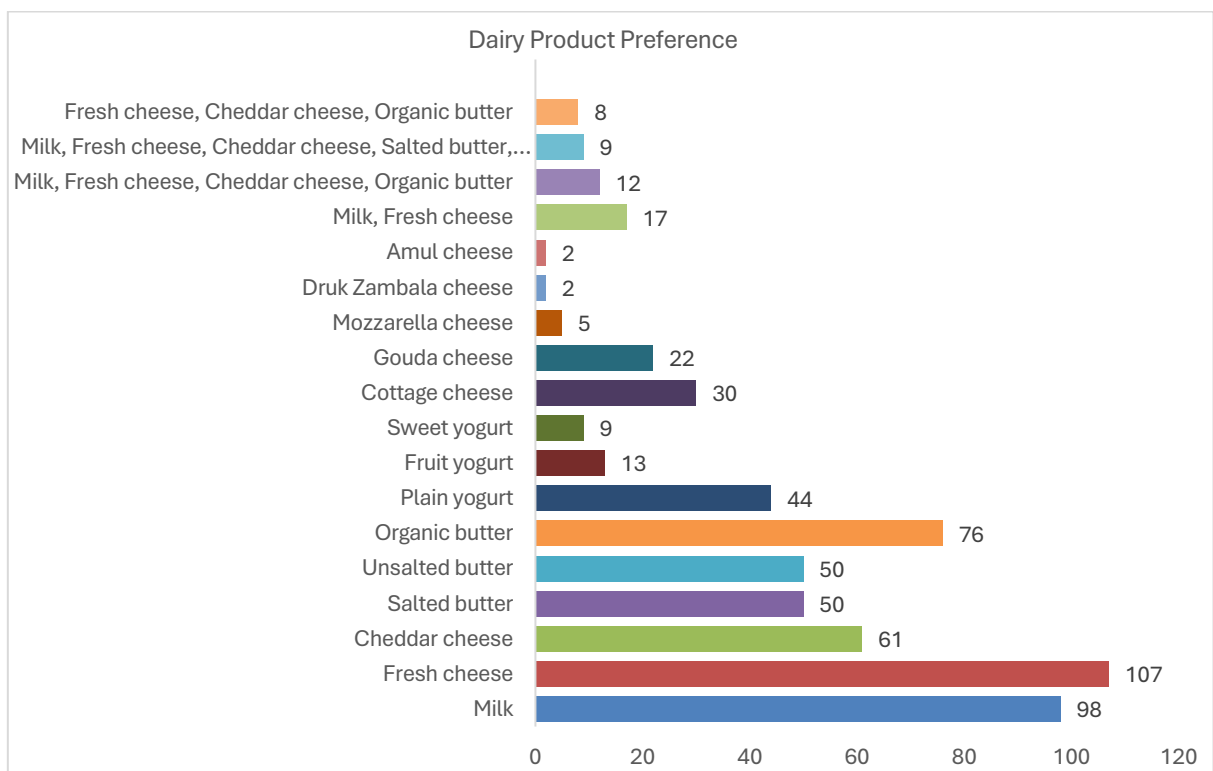


Fig. 22: Dairy product preference

In terms of combinations, "Milk and Fresh cheese" was the most common pair found by 7.46%, "Milk, Fresh cheese, Cheddar cheese, Organic butter" by 5.26%, "Milk, Fresh cheese, Cheddar cheese, Salted butter, Organic butter" by 3.95% and "Fresh cheese, Cheddar cheese, Organic butter" by 3.51%. These figures highlight a clear preference for combinations involving milk, fresh cheese, and various butter and cheese with a notable inclination towards organic products.

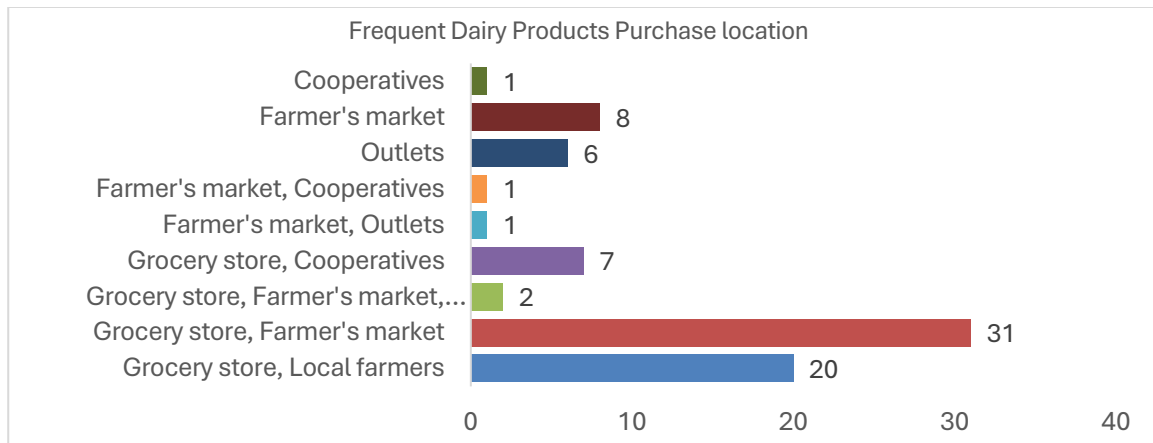
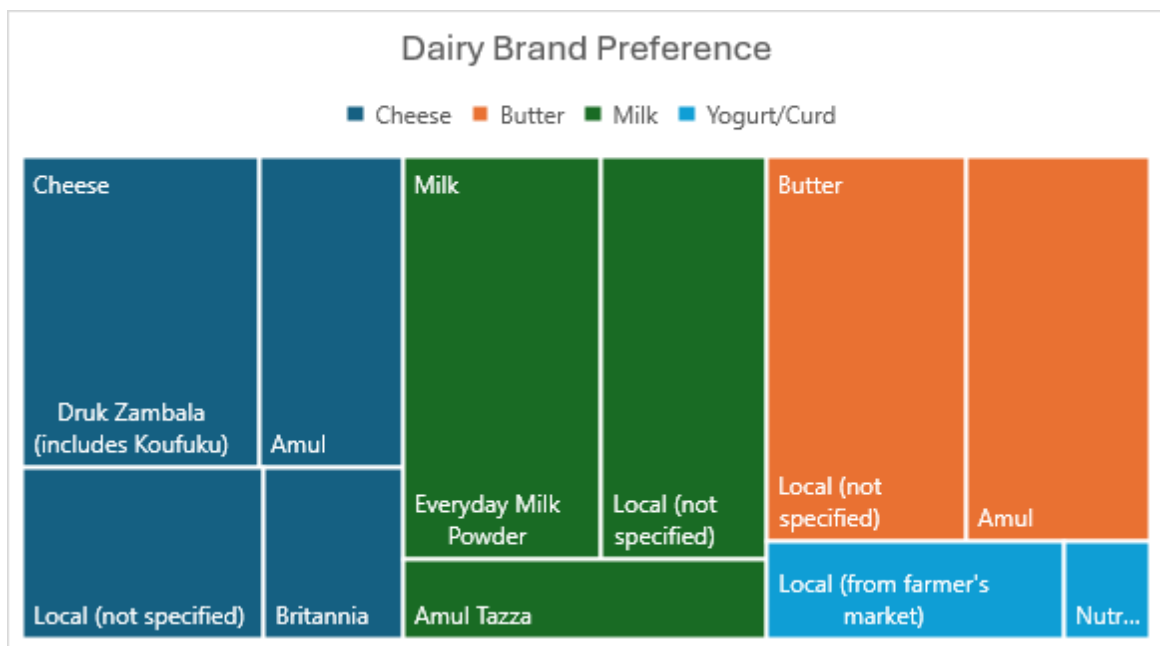


Fig. 23: Location of dairy product purchase

A significant number of consumers 24.60% prefer to purchase dairy items from both grocery stores and farmer's markets. About 15.87%, indicated preference of buying dairy products from grocery stores and local farmers. About 1.59% prefers buying from grocery stores with outlets, 5.56% from grocery stores with cooperatives and others from farmer's markets combined with outlets or cooperatives.

Fig. 24: Dairy product brand preference by consumers



In reviewing the preferences for dairy products among respondents, it is evident that certain brands and types hold significant popularity. Cheese preferences are dominated by Druk

Zambala by 40.1%, followed by 24.3% for Amul emphasizing its strong presence in the cheese market. Britannia and local cheeses represent 13.0% and 22.6% respectively.

Regarding butter, Amul emerges as the preferred brand, comprising 47.9%, local butter, though slightly less dominant still holds a substantial share at 52.1%, underscoring the preference for locally sourced dairy products in this category.

In the milk category, Everyday Milk Powder leads with 45.6%, highlighting its popularity among consumers seeking consistency and quality. Amul Tazza follows with 16.6%, while local milk sources account for 37.9%.

Preferences for yogurt and curd shows a clear inclination towards local options sourced from farmer's markets, comprising 77.8%. Nutrilife, representing a branded yogurt holds a smaller yet notable share of 22.2%, appealing to consumers looking for specific brands in this category.

In terms of preferences for dairy products, majority of 85%, prefer either locally sourced or organic options. These choices are driven by factors such as perceived freshness, absence of chemicals, support for local farmers, and the belief in healthier and better-taste of products. Conversely, 11% of respondents cited reasons such as high prices, availability issues, or lack of strong preference for either type or choosing imported ones. A smaller percentage, 4%, indicated a mixed approach for choosing dairy products based on availability or specific situations.

Product quality and safety are considered extremely important by majority of respondents when purchasing dairy products with 84% expressing "Very important." Another 13% rated product quality and safety as "Important," while only a small fraction of 3% are neutral on these aspects.

Based on the responses, about 87% have not encountered any issues with the quality or safety of Koufuku dairy products. Many respondents highlighted their satisfaction with the freshness, taste, and overall quality of the products, particularly the Druk Zambala cheese.

Here are the key points from the detailed analysis:

1. **Positive Feedback (87%):**

- a) **No Issues:** Majority of respondents reported no problems with Koufuku dairy products. They noted that the products are good, safe, and tasty. Many specifically mentioned about Druk Zambala cheese, stating that it is good for cooking and eating raw without any safety or quality concerns.
- b) **Freshness and Quality:** Several respondents praised the freshness and quality, with some noting that they have not experienced any issues with texture, taste or safety. They appreciate the local and organic attributes, emphasizing that these products are free from chemicals and preservatives.

2. **Minor Issues (6%):**

- a) **Texture and Taste Concerns:** A small group of respondents mentioned specific issues, such as Druk Zambala cheese becoming hard if not stored properly, which could affect its taste and texture after a few days. One respondent noted that the cheese, when added to curry, make the dish taste overly sweet and like it had milk added to it, which was not desirable.
- b) **Fungi Growth:** A few respondents reported encountering minor issues such as the cheese developing mold when not used promptly or stored improperly. This highlights a need for proper storage to maintain product quality.

3. Neutral or Unfamiliar Responses (7%):

- a) **Lack of Experience:** Some respondents stated that they had not used Koufuku dairy products extensively or were unfamiliar with them. They mentioned that they had not faced any issues because they had not tried the products or had limited experience with them.
- b) **Specific Conditions:** A few respondents indicated that they had heard about quality concerns but had not personally encountered any issues, or they had not tried the products due to availability or personal preference.

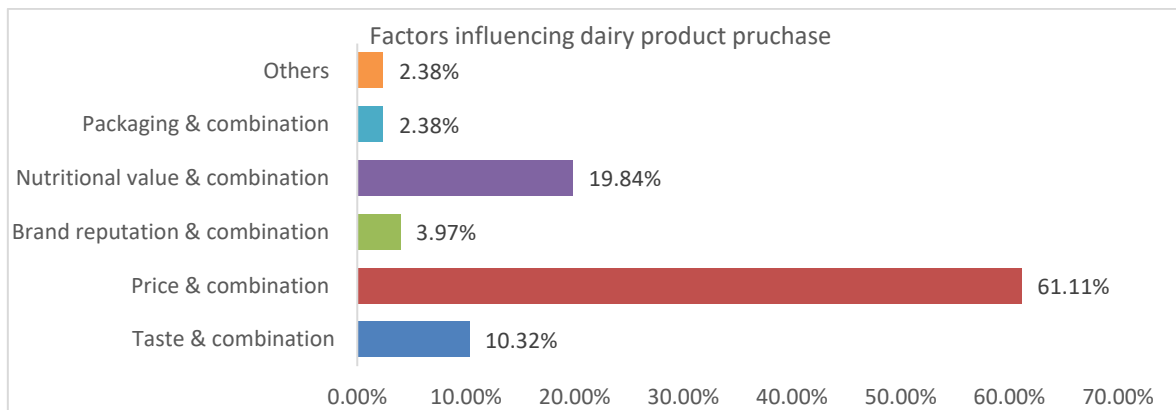


Fig. 25: Factors influencing product purchase

Consumers' perceptions of dairy brands are influenced by several key factors, each contributing differently to how they perceive and choose products. According to the responses, price including brand reputation, product availability, taste and nutritional value holds the highest influence at 61%. This underscores the importance of consumers trust in a brand's consistency, quality, and overall reliability. Then the nutritional value along with taste, packaging etc. follows closely at 20%, indicating that attractive and well-designed packaging significantly enhances perceived product quality and appeal on the nutritional value of the product. Then it is the taste of the product as well as packaging and product availability makes a decision for the customers to buy the product as indicated by 10%.

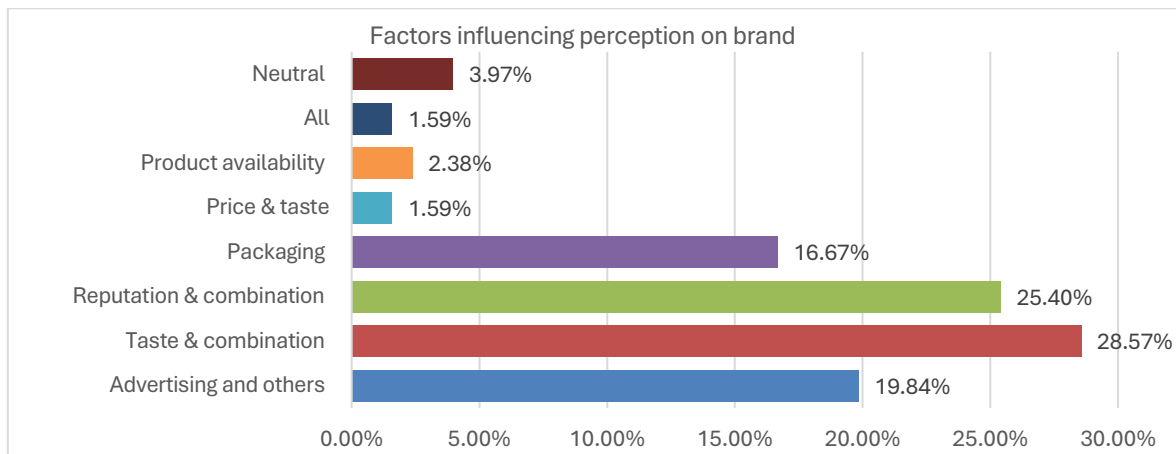


Fig. 26: Factors influencing perception on brand

The factors which influences consumers decision on choosing the brand of dairy products is mainly on the basis of taste, health benefits, country of origin of product, product availability and price as indicated by 29%. This is closely followed by adversiting, reputation. Price and packaging with 20%. Further, about 25% of the consumers based their perception in terms of reputation, advertising, taste etc. Then packaging, adversiting, reputation with 17%. Advertising plays a substantial role where effective campaigns not only raising awareness but also shaping positive brand associations in consumers' minds. The remaining 4% are neutral in the decision for selection of brand of the dairy products.

However, 98% of respondents indicated their awareness of Koufuko International Limited's dairy products, particularly Dzambala Cheese and yogurts. Further, 95.2%, says that they would choose Koufuko products over imported ones if they were competitively produced in the market.

Based on the survey responses, there is a clear indication of how consumers perceive and prioritize sustainability and ethical practices when it comes to purchasing dairy products. Below are the detailed analysis of the findings:

Importance of Sustainability and Ethical Practices:

- a) About 56.53% of respondents consider (Very important) sustainability and ethical practices to be very important. This suggests that a significant portion of consumers prioritize factors such as environmental impact, animal welfare, and ethical production methods when choosing dairy products. These consumers likely seek assurance that the products they buy are produced in a way that minimizes harm to the environment and ensures fair treatment of animals and workers.
- b) A notable percentage of 17.46% (Important) respondents also view sustainability and ethics as important factors in their purchasing decisions. They are likely influenced by considerations such as product quality, availability, and price alongside sustainability concerns.

- c) There is a sizable segment of 16.67% respondents who are neutral towards sustainability and ethical practices. This group may not actively seek out sustainable or ethically produced dairy products but could be open to choosing them if other factors align, such as taste, availability, or price.
- d) A minority of 9.52% respondents do not consider sustainability and ethical practices not important when selecting dairy products. Their purchasing decisions are likely driven more by factors such as taste, convenience, or affordability rather than ethical considerations related to production practices.

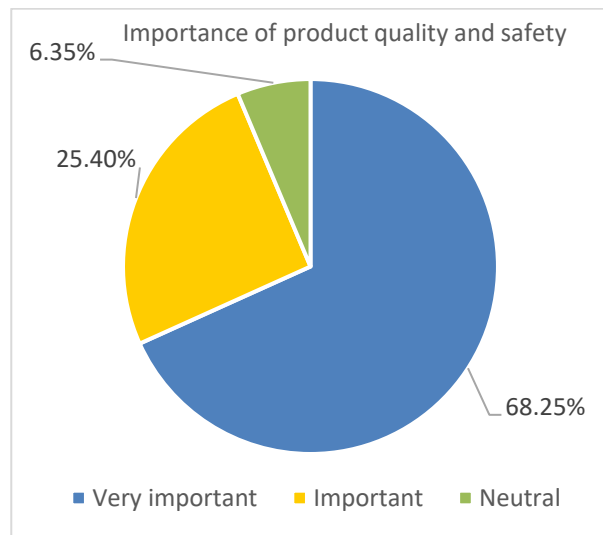


Fig. 27: Product quality and safety to consumers

About 90% of the consumers have not faced any issue with the product quality and safety of KIL. Others about 10% have faced certain issues such as the following:

- a) Druk Zambala cheese has less quantity than block cheese
- b) Cheese gets hard after using sometime if not refrigerated and also get fungi
- c) While adding in the curry, its does not taste good. It taste like as if they have added flour in the curry not cheese.

Willingness to Pay More for Sustainable or Ethically Produced Dairy Products:

An overwhelming 80.16% of respondents are willing to pay more for dairy products that are produced sustainably or ethically. This indicates a strong consumer preference for products that adhere to higher standards of production, including environmental sustainability and ethical treatment of animals. However, a notable 19.84% of respondents are not willing to pay more for sustainably or ethically produced dairy products. Reasons for this may be simply prioritizing lower prices over ethical considerations in their purchasing decisions.

13.14 Customer Feedback and suggestions

Based on the feedbacks provided by consumers regarding Koufuko International Limited's dairy products, here are some insights and suggestions for the company to consider for improving their products or services:

Quality and Product Improvement:

1. **Consistency in Product Quality:** Several consumers appreciate the quality of Koufuko's products but suggest maintaining consistency, especially concerning taste and texture of items like Druk Zambala cheese.
2. **Packaging and Shelf Life:** There are concerns about the packaging and shelf life of certain products, such as Druk Zambala cheese developing mold when not refrigerated. Improving packaging to ensure longer shelf life could address this issue.
3. **Product Range Expansion:** There's a demand for more variety in products. Suggestions include producing sliced cheese, flavoured yogurt, and even bottled milk with a longer shelf life comparable to imported ones.
4. **Ingredient Transparency:** Some consumers mentioned concerns about the ingredients used in cheese production, suggesting clarity and transparency about additives like raw banana.

Availability and Market Reach:

1. **Supply Chain Strengthening:** Improving the supply chain to ensure consistent availability of products, especially in remote areas, was a common suggestion. Enhancing distribution networks could help to capture more market share.
2. **Market Awareness and Advertising:** Many consumers expressed a desire for more advertising and marketing efforts by Koufuko. Increasing brand visibility and educating consumers about their products' benefits could attract more customers.

Pricing and Affordability:

Competitive Pricing: Price sensitivity was mentioned by some consumers, suggesting that while they appreciate the quality, they also consider affordability. Ensuring competitive pricing compared to imported products could enhance consumer willingness to purchase.

Customer Engagement and Feedback:

1. **Engaging with Customers:** Regularly seeking customer feedback and addressing concerns promptly could improve customer satisfaction and loyalty.

2. **Educational Initiatives:** Educating consumers about the benefits of sustainable and ethical practices used in Koufuko's products could further enhance brand reputation and consumer trust.

The responses regarding dairy consumption habits and preferences for import substitution, provide some key insights and preferences shared by consumers as follows.

Preferences for Local Dairy Products:

1. **Preference for Locally Produced:** Many consumers expressed a preference for locally produced dairy products, citing reasons such as supporting the local economy, trust in production practices, and affordability if priced competitively with imported products.
2. **Quality and Trust:** Consumers value locally produced dairy products for its perceived quality, freshness, and the assurance that it is free from unknown additives or chemicals commonly found in imported products.
3. **Specific Product Preferences:** There is a demand for specific dairy products like cheese, butter, and milk, especially if locally produced alternatives are available and offer similar quality and shelf life.
4. **Organic and Healthy Choices:** Some consumers prioritize organic dairy products or those perceived to be healthier for regular consumption, like fresh cheese and butter.

Challenges and Considerations:

1. **Availability and Price:** Availability and competitive pricing are crucial factors influencing consumer choices between local and imported dairy products. Consumers are more inclined to choose local options if they are readily available and reasonably priced.
2. **Product Variety and Innovation:** There are suggestions for local producers to innovate and introduce new products like sliced cheese, bottled milk, and smaller packaging sizes to meet diverse consumer needs and preferences.
3. **Consumer Awareness and Marketing:** Increasing awareness through effective marketing and educational initiatives about the benefits of local dairy products could further encourage their consumption.

13.15 Wholesaler or retailers

The wholesalers and retailers import dairy products such as Amul Taaza, Amul Gold, Keventer, Go milk, Milk Mist, Britannia milk and cheese, Nestle milk, Amul cheese and butter brands etc. In terms of product type, they have products like Druk Zambala cheese, local cheese, Sonai doodh premium milk, Britannia cheese both slice and block, Amul cheese, Amul butter etc.

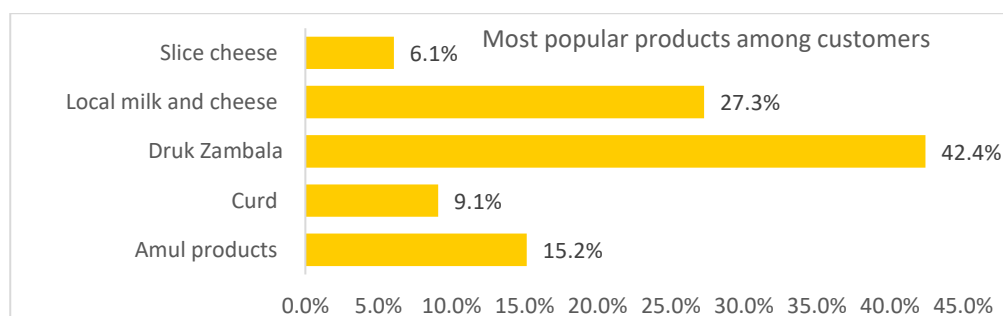


Fig. 28: Popular products among customers

Among the customers, the most popular products are Druk Zamabala cheese as indicated by 42%, followed by 27% local cheese and butter or milk, 15% Amul products and then curd and clice cheese.

Table.11: Quantity of dairy products sold per month

Particulars	Qty. sold (month)	Rate	Remarks
Fresh cheese			
Per piece	1000 balls	60-65	
Cheese in kg	2 kgs	300	
Cheese in kg	10 kgs	350	
Cheese in kg	As per demand	360	
Cheese in kg	As per demand	400	
Cheese in kg	As per demand	420	
Cheese in kg	50 kgs	550	
Cottage cheese			
Druk Zambala	One cartoon	575	
Cheese in tin	48 tins	265	
Cheddar cheese			
590 per kg	5-6kg	590	
575 per kg	2 cartoon	575	
295 per half kg	4-5 nos	295	
Druk Zambala	One cartoon	575	
Britannia	3-4 cartoon	590	
Britannia cheese block	1 cartoon	625	
Britannia cheese slice	1 cartoon	190	
Gouda cheese	2 bulk	575	
Salted butter	50kg	285	285 per half kg
Unsalted butter	10-15kg	270	270 per half kg
Organic butter	100kg	400-450	
Plain yogurt	15 cartoon	30	30 per piece
Milk			
50 per litre of milk	35 to 50ltr.	50	
90 per bottle of milk	15 to 20 bottles	90	
60 per bottle of milk	240 bottles	60	
85 per bottle of milk	24 bottles	85	
1 cartoon 12 bottles	10-15 cartoons	75	
55 per litre of milk	As per demand	55	
65 per litre	450 litres	65	
35 per litre	As per demand	35	
Other products			
Britennia Winkin		40	

Everyday milk powder	pkt	450	
Amul milk powder			
Krematop milk powder			
Panner	tin	190	
Curd	Bottle	60	

The products are sourced from different areas such as Druk Zambala cheese from KIL, other products from FCB, wholesalers, nearby shops, suppliers and producers especially for the milk, local butter and cheese. Thus, about 95% of the wholesalers or retailers are happy with the suppliers but 5% are not happy mainly in terms of non-delivery of products on time and causing un-necessary delay in supply.

The wholesalers and retailers would like to see improvements in supplier relationship through increase in demand for dairy products and suppliers to supply products continuously without delaying. Specifically, for the KIL products, it would be one option to supply like Druk Zambala cheese through milk tankers when they come to collect milk.

In terms of factors influencing purchasing decision of various products is attributed by customer preference and demand, advertisement, reputation of brands, cheaper price as in the case of Indian products etc.

About 68% of wholesalers and retailers are aware about the KIL products but 32% are not aware about its products in the market. This indicates that if the wholesalers or the retailers are not aware of the KIL products, then how the consumers will come to know about it.

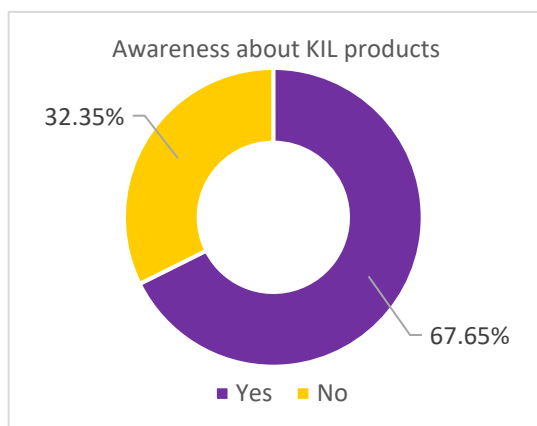


Fig. 29: Awareness about KIL products

In some cases, they have just heard about KIL products but they do not keep in stock. However, those who know about the KIL products, it is mostly the Druk Zambala cheese which is also based on the customer demand. Now, most customers seems to prefer to buy only druk zambala cheese compared to Amul cheese.

In terms of issues and challenges, they do face shortage of customers which leads to stocking up of products for longer duration of time. Thus, incurring loss to the businesses due to limited buyers. The other factor is the cost of the products like cheese where everybody wants at cheaper rate.

There is opportunity for the KIL products since people are more conscious about health and locally produced ones are organic in nature. Further, if local products are being stocked up in the shops, then definitely people will buy when they see different product. Also, there are demands from the institutions like schools, dratshangs and health centers.

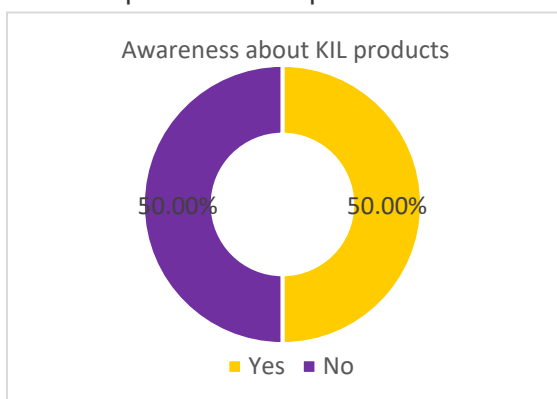
In terms of advocacy and promotion, shop keepers do tell the customers that local produce cheese doesn't effect health like imported cheese whereas, amul cheese causes pain in hands and legs. Sometimes, they do paste a poster of druk zambala cheese at the wall of entry to the shop. Sometimes, they also promote through social media like in facebook, wechat etc. to attract customers and also explain the product in the shop to convince them about products durability and quality including brand reputation.

The recommednations for improvement include supply of KIL products to every shops in a sustainable and continuous manner. They want products to be well packed with assurance on food safety and hygine. They would love to see KIL products of good quality and standard in the near future.

13.16 Importers and exporters

Mostly, they do import products like Amul Taaza, Amul butter and cheese, Go Milk, Britennia cheese both block and slice, yogurt, paneer among others. They purchase almost 6 to 7 cartoons of Amul Taaza and Amul cheese per month. The cost of the milk ranges from Nu.75 to Nu. 85 per bottle or Nu.55 to Nu.70 per litre. For the yogurt, it cost between Nu. 30 to 50 per piece and purchase about 2000 containers per month, then about 148 packets of paneer in a month. Most of the products are sourced from India.

These importers and exporters are satisfied with the current suppliers and infact they would



love to see strengthening of their relationships in the coming years. They are able to influence wholesalers and retailers through advertisement and convincing them about the products. However, even among the importers and exporters, some of them are not aware about the KIL's dairy products as shown in the figure below.

Fig. 30: Awareness about KIL products

They aspire to market KIL products but have no idea since KIL have not done adequate marketing to the importers/exporters. It is also that the KIL products have not reached in their community to be supplied to the businesses. Then in terms of demand for the dairy products, it is now moving towards yogurt and milk.

The challenges faced by the importers/exporters is that they are not able to get dairy products supply on time and there are shortages of supplies. Even in terms of dealers, there are lesser number of dairy product dealers in the market. However, there is opportunity for future in terms of employment generation and income for both the intermediary actors in the dairy value chain as well as the farmers.

So in order to improve the services in future, it is recommended to produce good quality products, safe and hygienic food with adequate advertisement including good packaging. There is need of good transportation and continues marketing of products so that it can reach out to large stakeholders. Then, there is need of enough supply to stock up the products and it should be durable and long lasting.

13.17 Other comments and suggestions

KIL is unknown to many people so as the reputation and products offered by the company is not reachable to most people, in that way people are consuming imported products. Due to lack of awareness, most farmers have not supplied milk to KIL. If they know about the products of KIL, consumer would switch to KIL products rather than imported ones in the market.

There is limited information about KIL with limited marketing and communication. Most of the illiterate people are unaware of KIL products. Thus, they have no choice but to consume the imported products. However, there is difference in the products where KIL products are organic in nature and is better for consumption than the imported products available in the market.

Since the imported products are widely available, there is choices in the market for the consumers. With the limited supply in the market, some consumers think those products from KIL are not safe for consumption and also that the products from KIL are not reachable to most of the people. Moreveover, most people have already built their trust on imported ones rather than domestically produced ones.

KIL supply chain lacks little behind because KIL is not able to supply their products in bulk and to most of the farmers in the villages. Thus to bring about trust in their products, KIL will have to supply as many diary products as possible to the diary farmers. They need to interlink the diary farmer's needs to supply sufficient milk to KIL so that they can supply more milk and also reach out to more people. Further to strengthen the relationship between KIL and dairy farmers, they need to negotiate the price range and support each other and bulid stronger network and communication.

The company should maintain good price and quality of its products including how to deal with expired products. For the farmers, if the milk is to be sustainable in future, high breeds needs to be introduced with assistance from the Department of Livestock. There is also need of mass market advertisements for their brand reputation since most of the farmers as well as other stakehodlers working in the value chain are not aware of KIL products, leave aside consumers.

KIL needs to offer milk better milk price so that supply remains continuous from the diary farmers. On the other hand, diary farmers needs to raise more cows and breeds to generate

sufficient milk production along with support from the government. The supply chain needs to be strengthened between KIL and the dairy farmers. KiL tentatively needs to open its subsidiaries in all dzongkhags to function properly and to meet the needs and demands of people. Government and public as well as dairy farmers should support KIL to diversify or expand its business in future.

13.18 Visit to KIL plant

Detailed discussion was held with the plant management in terms of its establishment, how it has grown to the present state, milestones and objectives. Performance of the company over the past 3 years was also discussed including its role in dairy value chain in eastern Bhutan. This was followed by issues and challenges in the production process such as the following:

- a) Almost all equipment and machines have served to its guranted period since it has been operating over 8 years which needs definite attention for upgradation,
- b) Difficulty in arranging critical spare parts of those equipment or machines since brands have become obsolete in the market.
- c) Difficulties faced in transporting the milk from far off places through the tanker is one of the factors leading to inefficient quality of milk because it is not able to maintain the required temperature.
- d) Maintaining quality of milk by the farmers is an issue which affects the quality of the products from KIL.
- e) Space constrants within the production area, inconvenience to work in job process within the plant for the workers is also contributing over contamination of products as well as on quality.
- f) Thus, the need for upgration of the equipment as well as the machines including infrastructure development is felt necessary in the plant which requires funding support from the CARLEP.
- g) All production process are done in semi-automatic way but mostly done manually specially for packaging of the products.



13.19 Visit to Swiss cheese at Bumthang

Site visit was made to Swiss cheese at Bumthang to study their practices in production of Gouda Cheese. It was found that they do collect milk from the nearby farmers. The standard of milk collection is that they have unique identity tagged to the individual jerry cans for specific communities. This is to ensure the quality of the milk being collected from each of the communities. They also check the quality in the process of milk collection and pay Nu.52 per litre of milk and they increase the price every year by about Nu.1 per litre based on the market conditions. There is also connection with the Swiss Breeding Center at Bumthang which also supplies milk. They have been operating the plant from the erstwhile Swiss company passed down to the family private business since 2 decades ago. They also have good relationship with the farmers. Their focus is only on the production of Gouda cheese but they also sell local cheese, butter and milk to the local market. However, they do not market at the international level and until now, they have not faced any issues or problems with the equipment or machines.



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15. Annexes

15.1 List of stakeholders consulted

Sl.No	Name	Location	Agency	Designation
1	Throwa Tenzin	Trashigang	KIL	CEO
2	Dorji Nima	Thimphu	DHI	Director
3	Chencho T Namgay	Thimphu	DHI	Director
4	Yoezer Lhamo	Bumthang	Swiss Cheese	Proprietor
5	Sonam Tshewang	Bumthang	Swiss Cheese	Operator
6	Ram Lama	Gelephu	RAMCO	Sr. Marketing Officer
7	Pema Thinley	Bumthang	NLRC	Sr. LPO
8	Arpana Rai	Bumthang	NLRC	Sr. LPO
9	Dr. Dorji	Thimphu	NDRC	Specialist
9	Phuntsho Tobgyal	Thimphu	NDRC	Principal LO
10	Dr. M.P.Timsina	Thimphu	DoT	Specialist
11	Sonam Yangchen	Thimphu	DoT	Dy. CLO

15.2 List of farmers interviewed

Name of dairy farm/Individual	Gewog	Dzongkhag	Representative
Thundrel dhaytshen	Mongar	Mongar	Sonam zangmo
Om Thendral dhaytshen	Mongar	Mongar	Karma lhatu
Zhogar Nazhen Gongphal Dhaytshen	Mongar	Mongar	karma lhatu
Dangling dungkar choeling gonor detshen	Kanglung	Trashigang	Sonam gyeltshen
Gonor Sanam Nyamdrup detshen	Mongar	Mongar	Pema yangzom
Tashi tsheringma namlay detshen	Samkhar	Trashigang	Ugyen
Om detshen	Mongar	Mongar	Tshewang pelmo
Zambala detshen	Mongar	Mongar	Rinzin wangchuk
Batsho dhara tshogpa	Shongphu	Trashigang	Dawa gyeltshen
Om detshen	Mongar	Mongar	Tshewang Pelmo
Takchu Sanam gonor Nyamrup detshen	Mongar	Mongar	Nima Dema
Deothang milk marketing (Nyamley Tshodley)	Deothang	S/Jongkhar	Karma tenzin
Druk chekthen namlay tshogdue	Yangner	Trashigang	Tashi penjor
Jangchubling Mandar om Thudrel Tshogpa	Orong	S/Jongkhar	Sonam Dendrup
Wooling dairy farm	Orong	S/Jongkhar	Nima gyalpo
Rekhey and Domphu om Thudrel Tshogpa	Domphu	S/Jongkhar	Yangzom
Yatong Gonor Gongphel Detshen	Chaskhar	Mongar	Tsechi
Namwog Nyemrub Detshen	Chaskhar	Mongar	Kota
Lamwog Nyanrub Detshen	Chaskhar	Mongar	Kota
Kharnang lamtha lamwog Nyamrub detshen	Chaskhar	Mongar	Kota
Gomdar om Nyamlay Tshokdhey	Gomdar	S/Jongkhar	Kezang Dawa
Gonor Detshen	Dremetse	Mongar	Tshewang
Mandaire Thungdred Deltshen	Orong	S/Jongkhar	Tshering phuntsho
Gonor Detshen	Dremetse	Mongar	Tshewang

Menjigang Om tshogdrel detshen	Phuntshothang	S/Jongkhar	Bhim Bdr Rai
Jersey tshochung thendrel detshen..	Martshala	S/Jongkhar	Namshey Dorji
Jamkhar se chur tshongdel detshen	Jamkhar	T/Yangtse	Pema dema
Wangphu yusum thurendrel detshen	Martshala	S/Jongkhar	Namgay wangchuck
Pemathang Om tshogdrel detshen	Pemathang	S/Jongkhar	Sangay tenzin
Jamkhar se chur tshongrel detshen	Jamkhar	T/Yangtse	Drupchu
Phuntshothang om detshen	Phuntshothang	S/Jongkhar	Jagat bdr kharka
Langchenphu Om tshogdrel detshen	Langchenphu	S/Jongkhar	Yoba krishma powdel
Tangrong om Detshen	Kurtoed	Lhuntse	Sonam chophal
Tanrung Om gi Detshen	Kurtoed	Lhuntse	Yuden
Tashitsheringma namlay tshokdey	Samkhar	Trashigang	Ugyen norbu
Pam meday namlay tshodey	Samkhar	Trashigang	Karma
House hold collection centre	Khar	Pemagatshel	Ugyen pelmo
Individual house hold firm	Yurung	Pemagatshel	Phuntsho wangdi
Individual house hold milk seller	Shumar	Pemagatshel	Karma choden
Shumar Chuethen detshen	Shumar	Pemagatshel	Kezang choden
Chodhen tshephel	Shumar	Pemagatshel	Nyechen wangmo
Zambala milk cooperative	Norbugang	Pemagatshel	Tashi namgyal
Tshatshidagor omley detshen	Nanong	Pemagatshel	Jamtsho
Individual house hold suppliers	Nanong	Pemagatshel	Sonam jamtsho
Individual household firm	Nanong	Pemagatshel	Tempa Tshering
Nima	Langthel	Trongsa	
Rabi lai Monger	Samtenling	Sarpang	
Sonam Dorji Tamang	Samtenling	Sarpang	
Karma Yangzom	Langthel	Trongsa	
Ramesh basnet	Dekidling	Sarpang	
Susila karki	Dekidling	Sarpang	
Tara Maya Basnet	Samtenling	Sarpang	
Jagat bdr basnet	Samtenling	Sarpang	
Mon kumari Rai	Samtenling	Sarpang	
Duku Maya Phuyel	Samtenling	Sarpang	
Hari bhakta adhikari	Kilkhorthang	Tsirang	
Gopi lal chamlagai	Kilkhorthang	Tsirang	
Dillip kumar adhikari	Samtenling	Sarpang	
Madhap Dulal	Kilkhorthang	Tsirang	
Tahal man Tamang	Kilkhorthang	Tsirang	
Kalpana Tamang	Samtenling	Sarpang	
Yam lal oli	Samtenling	Sarpang	
Mon Bahadur Moktan	Kilkhorthang	Tsirang	
Bishnu Maya Monger	Samtenling	Sarpang	
Sashi Dhar Bhandari	Samtenling	Sarpang	
Achut oli	Samtenling	Sarpang	
Harka maya raini	Kilkhorthang	Tsirang	
Bal Bahadur Samal	Chhudzom	Sarpang	
Tshering Lhadon	kilkhorthang	Tsirang	
Dhanapati adhikari	Kilkhorthang	Tsirang	
Rup narayan Ghimiray	Dekidling	Sarpang	
Madhu Maya Rai	Kilkhorthang	Tsirang	
Om prasad bhatrai	Samtenling	Sarpang	

Tek Nath Bastola	Chhudzom	Sarpang	
Phanda Singh Rai	Chhudzom	Sarpang	
Madhavi Sharma	Jigmecholing	Sarpang	
Dili Ram monger	Kilkhorthang	Tsirang	
Mon Maya Thatal	Sershong	Sarpang	
Jai naraya rimal	Umling	Sarpang	
Chandra bdr monger	Sershong	Sarpang	
Dal Bahadur Thatal	Sershong	Sarpang	
Bhakta bdr monger	Sershong	Sarpang	
Ran Maya	Sershong	Sarpang	
Rup mani oli	Sershong	Sarpang	
Mon Raj Rai	Sershong	Sarpang	
Ran maya gurung	Sershong	Sarpang	
Pavitra Devi Ghimery	Sershong	Sarpang	
Ram kumar chamlagai	Dekidling	Sarpang	
Devika raini	Sershong	Sarpang	
Surja Prasad Chamlagai	Sershong	Sarpang	
Madha maya chamlagai	Sershong	Sarpang	
Chutur sing tanmang	Sershong	Sarpang	
Lhapa dorji tanmang	Sershong	Sarpang	
Chador Dolma	Sershong	Sarpang	
Ganga ram rai	Sershong	Sarpang	
Yangdon	Sershong	Sarpang	
Phurba Tshering tamang	Drakteng	Trongsa	
Gerra Maya	Drakteng	Trongsa	
Sun Bahadur Tamang	Drakteng	Trongsa	
Sangay Lhamo	Drakteng	Trongsa	
Rinchen Yangzom	Drakteng	Trongsa	
Jigme Tshering	Drakteng	Trongsa	
Sonam zangmo	Drakteng	Trongsa	
Rinchen Lhamo	Drakteng	Trongsa	
Rinchen Lhadon	Drakteng	Trongsa	
Chhimi Dema	Drakteng	Trongsa	
Kharka Bahadur Rai	Tsholingkhar	Tsirang	
Tshomo zangmo	Drakteng	Trongsa	
Leki chezom	Drakteng	Trongsa	
Karma Yangzom	Drakteng	Trongsa	
Choten Zangmo	Drakteng	Trongsa	
Chozang Lhamo	Drakteng	Trongsa	
Choden	Umling	Sarpang	
Yangchenmo	Dekidling	Sarpang	
Sangay Tenzin	Dekidling	Sarpang	
Karma Dorji	Drakteng	Trongsa	
Pema choden	Tsholingkhar	Tsirang	
Dorji wangdi	Drakteng	Trongsa	
Mindu Dorji	Drakteng	Trongsa	
Choden	Drakteng	Trongsa	
DekarMo	Drakteng	Trongsa	
Langamo	Drakteng	Trongsa	

Chimi	Drakteng	Trongsa	
Tashi zangmo	Drakteng	Trongsa	
Tshering Yangchen	Drakteng	Trongsa	
Buddha muni Rizal	Drakteng	Trongsa	
Jigme Norbu	Drakteng	Trongsa	
Norbu Dema	Drakteng	Trongsa	
Monorath bhandari	Drakteng	Trongsa	
Kamala devi	Drakteng	Trongsa	
SangaMo	Drakteng	Trongsa	
Thukten Wangmo	Drakteng	Trongsa	
Sonam pelden	Drakteng	Trongsa	
Leki Lhadon	Drakteng	Trongsa	
Rigki dorji	Drakteng	Trongsa	
Yangchen lhamo	Drakteng	Trongsa	
kumar gurung	Drakteng	Trongsa	
Sonam Lhamo	Drakteng	Trongsa	
Wangtsho	Drakteng	Trongsa	
Lachi Maya Rizal	Drakteng	Trongsa	
Kopila muni Rizal	Drakteng	Trongsa	
Yangchen	Drakteng	Trongsa	
Karma thinley	Goshing	Zhemgang	
Ugyen Zangmo	Gakiling	Sarpang	
Nala	Drakteng	Trongsa	
Karma Lhacho	Drakteng	Trongsa	
Chimi Pem	Drakteng	Trongsa	
Thinley zangmo	Drakteng	Trongsa	
Lachey Dema	Drakteng	Trongsa	
Ugyen pemo	Drakteng	Trongsa	
Sonam Penjor	Drakteng	Trongsa	
Lhazom	Tangsibji	Trongsa	
Dema	Tangsibji	Trongsa	
Chok Chok	Dekidling	Sarpang	
Tshering yangden	Tangsibji	Trongsa	
Dema	Tangsibji	Trongsa	
Lhaden	Tangsibji	Trongsa	
Ganga Raj Khatri	Tangsibji	Trongsa	
Phub thamo	Tangsibji	Trongsa	
Tashi yangzom	Dekidling	Sarpang	
Rinchen	Tangsibji	Trongsa	
Tsheringmo	Tangsibji	Trongsa	
Chengamo	Tangsibji	Trongsa	
Dechen Pelden	Tangsibji	Trongsa	
Tashi	Tangsibji	Trongsa	
Rinzin wangchuk	Tangsibji	Trongsa	
Dorji	Tangsibji	Trongsa	
Dorji gyeltshen	Tangsibji	Trongsa	
Purna bdr kamer	Tangsibji	Trongsa	
Samden	Tangsibji	Trongsa	
Kinley Zangmo	Tangsibji	Trongsa	

Yangzom	Tangsibji	Trongsa	
Tsheltrim	Tangsibji	Trongsa	
Tobgay	Samtenling	Sarpang	
Tashi yangzom	Samtenling	Sarpang	
Gyalmo	Tangsibji	Trongsa	
Dema	Tangsibji	Trongsa	
Wangmo	Tangsibji	Trongsa	
Dorji Nidup	Tangsibji	Trongsa	
Sonam	Tangsibji	Trongsa	
Nimen	Tangsibji	Trongsa	
Rinchen chogyel	Tangsibji	Trongsa	
Tenzin kezung	Tangsibji	Trongsa	
Sumden kezung	Tangsibji	Trongsa	
Phub Pem	Gakiling	Sarpang	
Dorji Sithup	Tangsibji	Trongsa	
Pema Wangda	Tangsibji	Trongsa	
Nir maya rimal	Gakiling	Sarpang	
Dhan maya Rimal	Tangsibji	Trongsa	
Pema namgay	Tangsibji	Trongsa	
Yeshi Wangdi	Tangsibji	Trongsa	
Sonam norbu	Tangsibji	Trongsa	
Rinzin wangmo	Tangsibji	Trongsa	
Tshering Wangdi	Tangsibji	Trongsa	
Tshewang Choden	Tangsibji	Trongsa	
Wangchuk dema	Senggye	Sarpang	
Sanga Dema	Ngangla	Zhemgang	
Kinga Lhamo	Ngangla	Zhemgang	
Karma yangzom	Ngangla	Zhemgang	
Langa norbu	Senggye	Sarpang	
Tenzin Pemo	Chhudzom	Sarpang	
Tshering nidup	Senggye	Sarpang	
Sonam Pelden	Senggye	Sarpang	
Karma Dema	Senggye	Sarpang	
Tshewang norbu	jigmecholing	Sarpang	
Kinley Wangmo	jigmecholing	Sarpang	
Karma Dema	Jigmecholing	Sarpang	
Tshering Lhamo	Jigmecholing	Sarpang	
Tenzin jamtsho	Jigmecholing	Sarpang	
Nidup Dorji	Jigmecholing	Sarpang	
Pema Lhachay	Jigmecholing	Sarpang	
Sangay Dorji	Chhudzom	Sarpang	
Sherab Dema	Chhudzom	Sarpang	
Ugyen zangmo	Chhudzom	Sarpang	
Sangay Dema	Chhudzom	Sarpang	
Dorji Wangdi	Chhudzom	Sarpang	
Kinley wangmo	Chhudzom	Sarpang	
Dorji tshewang	Chhudzom	Sarpang	
Bishnu Bhakta Sharma	Chhudzom	Sarpang	
Lachu man dulal	Jigmecholing	Sarpang	

Kuenga tenzin	Jigmecholing	Sarpang	
Tshering Choden	Chhudzom	Sarpang	

15.3 List of groups/cooperatives consulted

Name of dairy cooperative	Village	Gewog	Dzongkhag	Representative
Wengkhar om dhaytshen	Wengkhar	Mongar	Mongar	Tshewang Pelmo
Thunder dhaytshen	Phosorong	Mongar	Mongar	Karma Lhatu
Dangling dungkar choeling gonor detshen	Rongthung	Khanglung	Trashigang	Sonam gyeltsehn
Gonor Sanam Nyamdrup detshen	Kidheykhar	Mongar	Mongar	Pema yangzom
Pam midoe namlay detshen	Pam	Samkhar	Trashigang	Karma
Tashi tsheringma namlay detsen	Rangshikha	Samkhar	Trashigang	Ugyen
Batso dhari tshogpa	Chaling	Shongphu	Trashigang	Dawa Gyeltshen
Zambala detshen	Jaibab	Mongar	Mongar	Rinzin wangchuk
Deothang milk marketing Namley Tshogdey.	Kebsa	Deothang	S/Jongkhar	Yanki lhamo
Druk chethen namlay tshodue	Gongthung	Yangner	Trashigang	Tashi Penjor
Jangchubling Mandar om Thudrel Tshogpa	Mandar	Orong	S/Jongkhar	Sonam Dendrup
Wooling dairy farm	Wooling	Orong	S/Jongkhar	Nima gyalpo
Yatong Gonor gongphel detshen	Chasker	Chaskhar	Mongar	Tshechi
Kharnang lamtha lamwog Nyamrub detshen	Babung	Chaskhar	Mongar	Kota
Gomdar Om Nyamlay Tshokdhey	Tshangchillo	Gomdar	S/Jongkhar	Kezang Dawa
Mandaire thundred delttshen	Dortsun	Orong	S/Jongkhar	Tshering phuntsho
Menjigang Om tshogdrel detshen	Menjigang	Phuntshothang	S/Jongkhar	Bim Bdr
Jersy tshochung thuendrel detshen	Gorthungma thizor	Martshala	S/Jongkhar	Namshey dorji
Jamkhar milk desthen.	Thachama	Jamkhar	T/yangtse	Drupchu
Wangphu yusum thruendrel detshen	Wangphu	Martshala	S/Jongkhar	Namgey wangchuck
Pemathang omley tshongley detshen	Pemathang	Pemathang	S/Jongkhar	Sangay tenzin
Langchenphu Om tshogdrel detshen.	Langchen phu	Langchen phu	S/Jongkhar	Tenzin lungten
Tangrong om Detshen	Tangrong	Kortoed	Lhuntse	
Khangma Gonor Chithuen Group	Khangma	Yurung	Pemagatshel	Rinchen Chedup
Chidhen tshephel detshen	Nangkor	Shumar	Pemagatshel	Norbu dema
Zambala milk cooperative	Norbugang	Norbugang	Pemagatshel	Prma wangda
Tshatshidagor norlha detshen	Tshatshi	Nanong	Pemagatshel	Sonam choden
Tokarie om tshongley detshen.	Tokarie	Nanong	Pemagatshel	Pema wangda
Woongchilo om tshongley detshen	Woongchilo	Nanong	Pemagatshel	Pemba tshering

15.4 List of consumers consulted

Name	Age	Gender	Dzongkhag
Tandin Bidha	34	Woman	Trashigang
Dorji Gyeltshen	28	Man	Trashigang
Dendrup Gyrltshen	23	Man	Trashigang
Karma yangzom	34	Woman	Mongar
Sonam dorji	27	Man	Trashigang
Tshering Dorji	34	Man	Trashigang
Tsheltrim Sangay	25	Man	Trashigang
Ugyen kuenzang	19	Man	Trashigang
Phurpa Wangchuk	23	Man	Paro
Kinzang wangchuk	38	Man	Trashigang
Jamyang kinley	35	Man	Mongar
Dechen pelden	24	Woman	Thimphu
Pema dorji	35	Man	Trashigang
Tshewang Jamtsho Tamang	32	Man	Thimphu
Dorji Wangchuk	38	Man	Trashigang
Sonam dema	34	Woman	Trashigang
Dorji wangmo	39	Woman	Trashigang
Chimi Rinzin	24	Man	Punakha
Namgyel wangchuk yoezer	21	Man	Punakha
Cheki Dorji	35	Man	Thimphu
Karma choden	39	Woman	Trashigang
Sangay choden	49	Woman	Mongar
Nima dorji	48	Man	Trashigang
Sherab dema	37	Woman	Trashigang
Sharab wangmo	49	Woman	Mongar
Pema choki	32	Woman	Mongar
Chimi Dema	39	Woman	Mongar
Basant kharka	37	Woman	Samdrup Jongkhar
Pema Dendup	50	Man	Mongar
Tshewang Jemo	38	Woman	Mongar
Sonam Yangchen	20	Woman	Mongar
Karma	37	Woman	Mongar
Phurpa yeshi	34	Man	Mongar
Rinchen Yangzom	42	Woman	Mongar
Tandin Wangmo	20	Woman	Mongar
Sangay loday singye	32	Man	Mongar
Sonam yangchen	21	Woman	Mongar
Tashi yangzom	23	Woman	Mongar
Cheten zangmo	55	Woman	Trashigang
Tshering Penjor	36	Man	Mongar
Thinley Wangmo	29	Woman	Mongar
Yangchen Dema	33	Woman	Mongar
Drukpa Kinley	37	Man	Mongar

Dendrup zangmi	39	Woman	Trashigang
Kezang Choden	36	Woman	Samdrup Jongkhar
Kinzang dekar	36	Woman	Samdrup Jongkhar
Pema jigme	28	Man	Trashigang
Deki lhamo	38	Woman	Trashigang
Tseten dorji	35	Man	Trashigang
Tempa wangchuk	23	Man	Samdrup Jongkhar
Nidup zangmo	48	Woman	Trashigang
Sonam dorji	36	Man	Trashigang
Kezang wangpo	19	Man	Mongar
Tshering Lhaden	42	Woman	Trashigang
Dawa tshering	27	Man	Trashigang
Chimi dorji	25	Man	Trashigang
Pema dorji	45	Man	Trashigang
Sherab dorji	32	Man	Trashigang
Dorji khandu	47	Man	Trashigang
Rinzin wangchuk	42	Man	Trashigang
Pema dorji	39	Man	Samdrup Jongkhar
Dechenphu Wangmo	45	Woman	Mongar
Khando	40	Woman	Mongar
Dechen Dema	39	Woman	Mongar
Tshering dema	36	Woman	Samdrup Jongkhar
Tandin	25	Man	Samdrup Jongkhar
Nima gyelpo	50	Man	Samdrup Jongkhar
Kinzang dorji	47	Man	Samdrup Jongkhar
Phu Dem	36	Woman	Samdrup Jongkhar
Karma	42	Woman	Mongar
Jigme choden	21	Woman	Mongar
Rinchen wangdi	32	Man	Trashiyangtse
Tobgay	30	Man	Trashigang
Dorji wangchuk	45	Man	Trashiyangtse
Nidrup zangmo	39	Woman	Trashiyangtse
Deki Om	42	Man	Trashiyangtse
Sherub Tenzin	52	Man	Trashiyangtse
Pema choden	43	Woman	Trashiyangtse
Yeshey wangdi	49	Man	Trashiyangtse
Tandin dorji	42	Man	Trashiyangtse
Tenzin dorji	45	Man	Trashiyangtse
Chimi wangmo	38	Woman	Trashiyangtse
Samten wangchuk	63	Man	Trashiyangtse
Dawa lhendrup	40	Man	Trashigang
Chador dema	39	Woman	Trashiyangtse
Rinzin dorji	56	Man	Trashiyangtse
Cheki dorji	31	Man	Samdrup Jongkhar
Nima	47	Man	Trashiyangtse
Kinga wangdi	46	Man	Trashiyangtse

Jampel	48	Man	Trashiyangtse
Tashi dendrup	48	Man	Trashiyangtse
Ugyen Dema	38	Woman	Lhuntse
Rinzin wangchuk	25	Man	Trashigang
Kinley wangmo	32	Woman	Lhuntse
Pama Norbu	31	Man	Lhuntse
Kinley Chenzom	23	Woman	Lhuntse
Yeshi wangmo	21	Woman	Lhuntse
Ugyen youden	38	Woman	Lhuntse
Pema chenzom	37	Woman	Lhuntse
Namgay lhendrup	40	Man	Trashigang
Pemba Tshering	45	Man	Pemagatshel
Sonam lhamo	34	Woman	Pemagatshel
Tshethrim zangmo	40	Woman	Mongar
Jigme choden	36	Woman	Trashiyangtse
Pema choden	38	Woman	Trashiyangtse
Karma dorji	49	Man	Trashiyangtse
Jamyany	22	Man	Pemagatshel
Sherab dorji	52	Man	Trashiyangtse
Kinzang lhaden	28	Woman	Mongar
Tenzin Wangmo	25	Woman	Mongar
Chador wangmo	48	Woman	Trashiyangtse
Wangmo	50	Woman	Trashiyangtse
Sonam	46	Woman	Mongar
Karma Choki	23	Woman	Mongar
Dechen wangmo	26	Woman	Mongar
Nima dorji	37	Man	Trashiyangtse
Pema Wangchuk	58	Man	Pemagatshel
Sampa Dorji	32	Man	Pemagatshel
Sonam zangmo	38	Woman	Pemagatshel
Rinchen	36	Woman	Mongar
Rinchen Drakpa	40	Man	Mongar
Pema	40	Woman	Lhuntse
Tenzin Wangchuk	37	Man	Mongar
Sharab choden	27	Woman	Mongar
Dema yangzom	33	Woman	Mongar
Dorji Rinchen	42	Man	Mongar

15.5 List of whole sellers, retailers or suppliers consulted

Name of business	Dzongkhag	Type of business	Phone no:
Karma wangzom general shop	Mongar	Grocery store	77632969
Jampel wangchuk general shop	Trashigang	General store	17359850
Tandin wangyal	S/Jongkhar	Grocery General shop	
Karma tshongkhang	Trashigang	General shop	17656632

Raj	S/Jongkhar	Grocery store	
Namgay grocery shop	S/Jongkhar	Grocery store	77734125
Muku Tshongkhang	Trashigang	General shop	17889294
Pema bar and general shop	Trashigang	General shops	17806030
Deki wangmo general shop	Trashigang	General shop	17707279
Pk general shop	Trashigang	General shop	17360617
Kuenphen kelzang tshongkhang	Trashigang	General shop	17262009
Mendral General shop	Samdrup Jongkhar	Grocery store	77228647
Wangchuk tshongkhang	Trashigang	General shop	17648070
Wangdi general shop	Trashigang	General shop	17926734
Wangda general shop	Trashigang	General shoo	17614695
Dejung Tshongkhang	Trashigang	Grocery store	17130303
Gopal rai	S/Jongkhar	Grocery general shop	17511053
Lacky general shop	S/Jongkhar	Grocery store	17429799
Luxman ghalley whole sale shop	S/Jongkhar	Grocery store.	77723451
Kuebphen dawa general shop	T/Yangtse	General shop	77613281
Ugyen Tshongkhang	S/Jongkhar	Grocery store	17412670
Samdrup general shop	S/Jongkhar	General mini shop	1751053
Kelzang enterprise	S/Jongkhar	Grocery store.	17756234
Pem milk outlet	S/Jongkhar	Specialty dairy shop	77752743
Jurmin general shop	Lhuntse	Grocery store	17529741
3 sister General shop	Pemagatshel	Grocery	17709063
Aza restaurant	Pemagatshel	Restaurant	17225478
Karma natshog tshong khang	Pemagatshel	Grocery store	77734562
Tashi wangyal Tshongkha	Mongar	Grocery store	17611179
Reya Tamang General Shop	Pemagatshel	Grocery store	17546721
Doksumpa NN mart	Mongar	Super market	17561754
Samdrup General Shop	Pemagatshel	Grocery Store	17555235
Sonam general shops.	Pemagatshel	Grocery store	17884512
Pema tshomo tshongkhang	Pemagatshel	Grocery store.	17745681
Mini General shop	S/jongkhar	General shop	17511053
Suresh	S/jongkhar	Cake shop	
Ashok shop enterprise	S/jongkhar town	Whole seller	17653421
Dil may	Jaigoan	Dilu enterprise	
Sangeeta enterprise	S/jongkhar.	Sangeeta grocery shop	17778905
Divi parsad	S/jongkhar	Wholesalers	17222217
Sangay sale	S/jongkhar	Export and import enterprise	77734569
Dorji dem wholesaler	S/jongkhar	Wholesalers deliver	17654203
Bir Bdr Gurung	Langchenphu	Wholesaler/ dealer	17668900
Zhogar nazhen detshen	Mongar	Dairy products	77775773

15.6 Sample size for field survey

Stakeholder type	Sample size	Remarks
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Consumers	300	Will cover all areas mainly major urban places besides the 6 Dzongkhags
Producers or micro farms	500	Cover areas of Trashiyangtse, Mongar, Lhuntse, Trashigang, Pemagatshel and Samdrupjongkhar
Dairy farmer groups & cooperatives	45	The actual respondents will depend on the actual number in each of the 6 Dzongkhags
Traders and Transporters	20	This will also depend on the actual operators available in the market
Retailers	50	Mostly, it will be from major urban areas
Other dairy processors	60	Dairy processors in 6 Dzongkhags as well as in other areas

15.7 Interview questionnaires

Consent

Good morning/afternoon/evening, my name is____, we are working for the project called development of business and investment plan for Kofuko International Limited (KIL) based in Chenery, Trashigang through Commercial Agriculture and Resilience Livelihood Enhancement Programme at Wengkhar, Mongar, Bhutan.

We are conducting a survey to know more about the existing practices in terms of collection of milk from the farmers or cooperatives, market linkages, supply chain and other aspects of the products from KIL. Your valuable input will immensely help in coming up with concrete business and investment plan of the company.

Tool#1 Dairy Farmers

1) General Information:

- a. Name of your dairy farm:
- b. Location: Village: Gewog: Dzongkhag/Dungkhag:
- c. Cooperative Representative Name:
- d. Phone number:
- e. How many years have you been in the dairy farming?
- f. What is your average daily milk production (in litres)?
- g. What else are being prepared from the milk besides the raw milk?
- h. What is your daily sale of milk and its products?

	Rate (Nu.) per (ltr./kg/No)	Qty sold (Ltr/kg/nos)	Remarks
Milk			
Cheese			
Butter			
Others			

2) Supply Chain and Logistics:

- a. Where do you normally supply your milk and in what quantity?
- b. What other dairy products do you supply and to whom?
- c. Do you also supply milk to KIL/collection centre? Yes/No, if No, why not? If yes, how much do you supply on daily basis and on what price?
- d. Are you willing to supply milk to KIL?
- e. If supplied to other customers, how much do you charge for milk?
- f. What is your annual income for supply of milk and its products to other customers? What is the annual income from the sale of milk to KIL/collection centre?
- g. How do you transport milk to the processing plant/collection centre? (Own vehicles, hired transport, etc.). What is the transportation cost?
- h. What challenges do you face in transporting milk to the processing plant/collection centre?
- i. Do you face any issues with storage or refrigeration during transportation?

3) Quality Assurance:

- a. What measures do you take to ensure the quality and freshness of your milk?
- b. Have you faced any quality-related issues during transportation or at the processing plant/collection centre?

4) Business:

- a. Do you feel difficulties in selling your milk? Yes/No. If yes, then what do you do with the left over milk?
- b. How satisfied are you with the current relationship with the milk collection centre or the customers?
- c. Are there any improvements you would like to see in the business relationship or communication with your milk collector?

5) Market Trends and Demand:

- a. Have you noticed any changes in demand for milk or its products in your village/area? What can you say whether increasing/decreasing/same over the years?
- b. Are there any emerging trends or preferences among consumers that you've observed on the milk and its products? Please elaborate on this.

6) Sustainability:

- a. Do you think that you can supply milk continuously over the years? Yes/No. If No, what are the issues and what needs to be done to improve sustainable supply of milk in future?

7) Future Plans:

- a. Do you have any expansion or diversification plans for your dairy business?
 b. How do you see your business evolving in the next 3-5 years?

8) Feedback and Suggestions:

- a. Do you have any feedback or suggestions for the processing plant/collection centre to improve their services or processes?

Tool#2 Milk Cooperatives/Groups/Processors

1. General Information:

- a. Name of your dairy cooperative:
 b. Location: Village: Gewog: Dzongkhag/Dungkhag:
 c. Cooperative Representative Name:
 d. Phone number:
 e. How many members are part of your cooperative?
 f. What is the daily average milk collection (in litres)?
 g. What is your daily sale of milk and its products?

	Rate (Nu.) per (ltr./kg/No)	Qty sold (Ltr/kg/nos)	Remarks
Milk			
Cheese			
Butter			
Others			

- h. What else are being prepared from the milk besides the raw milk?

2. Supply Chain and Logistics:

- a) Where do you normally source your milk?
 b) How do you collect your milk and in what way?
 c) Do you also supply milk to KIL? If No, why not? If yes, how much do you supply on daily basis and on what price?
 d) Are you willing to supply milk to KIL?
 e) If supplied to other customers, how much do you charge for milk?
 f) What is your annual income from the sale of milk and its products to customers? What is the annual income from the sale of milk to KIL if supplied?
 g) How do you transport milk to the processing plant/collection centre? (Own vehicles, hired transport, etc.). What is the transportation cost?

h) What challenges do you face in transporting milk to the processing plant/collection centre?

i) Do you face any issues with storage or refrigeration during transportation?

3. Quality Assurance:

a) What measures do you take to ensure the quality and freshness of your milk?

b) Have you faced any quality-related issues during transportation or at the processing plant/collection centre?

4. Business Relationship:

a) Do you feel difficulties in selling your milk? Yes/No. If yes, then what do you do with the left over milk?

b) How satisfied are you with the current relationship with the KIL processing plant?

c) Are there any improvements you would like to see in the business relationship or communication?

5. Market Trends and Demand:

a. Have you noticed any changes in demand for milk or its products in your village/area? What can you say whether increasing/decreasing/same over the years?

b. Are there any emerging trends or preferences among consumers that you've observed on the milk and its products? Please elaborate on this.

1. Sustainability:

a. Do you think that you can be in a position to supply milk continuously over the years? Yes/No. If No, what are the issues and what needs to be done to improve sustainable supply of milk in future?

2. Future Plans:

a. Do you have any expansion or diversification plans?

b. How do you see your business evolving in the next 3-5 years?

3. Feedback and Suggestions:

Do you have any feedback or suggestions for the processing plant/collection centre to improve their services or processes?

Tool#3 General Consumers

1. Demographic Information:

a. Name:

b. Age:

c. Gender:

d. Location (Dzongkhag):

2. Consumption Habits:

a. How often do you purchase dairy products (milk, cheese, yogurt, etc.)?

Daily/weekly/monthly

b. Choose which of the following products you prefer to buy?

	Tick
Milk	
Cheese	
a) Fresh cheese	
b) cottage cheese	
c) Cheddar cheese	
d) Gouda cheese	
e) Mozzarella cheese	
Butter	
a) Salted butter	
b) unsalted butter	
c) organic butter	
Yogurt	
a) Plain yogurt	
b) Sweet yogurt	
c) Fruit yogurt	
Other products	

c. Where do you typically purchase dairy products?

- a) Grocery store
- b) Farmer's market
- c) Outlets
- d) Cooperatives
- e) Online
- f) Others

d. What factors influence your decision to purchase dairy products? (Price, brand, nutritional value, etc.)

3. Product Preferences:

- a. Which types of dairy products do you consume most frequently and which brand. List all?
- b. Are you lactose intolerant or do you have any dietary restrictions that affect your dairy consumption?
- c. Do you prefer locally sourced or organic dairy products? Why or why not?

4. Quality and issues:

a. How important is product quality and safety when purchasing dairy products?

- b. Have you ever experienced any issues with the quality or safety of Koufuku dairy products? If yes, please describe.

5. Brand Perception:

- a. Are there any dairy brands that you trust or prefer? If yes, why?
- b. What factors influence your perception of a dairy brand? (Advertising, packaging, reputation, etc.)
- c. Are you aware of Koufuku International limited’s dairy products? (eg. Dzambala Cheese) Yes/No
- d. Will you choose KIL products from imported ones if they are competitively produced in the market? Yes/No and how would you like to see

6. Sustainability and Ethics:

- a. How important are sustainability and ethical practices (e.g., animal welfare, environmental impact) in your purchasing decisions?
- b. Would you be willing to pay more for dairy products that are produced sustainably or ethically? Why or why not?

7. Feedback and Suggestions:

- a. Do you have any feedback or suggestions for KIL as a producer to improve their products or services?
- b. Is there anything else you would like to share about your dairy consumption habits or preferences especially for import substitution?

Tool#4 Retailers/whole sellers

1. Business Information:

- a. Name of your business:
- b. Location (Dzongkhag):
- c. Type of business (e.g., grocery store, supermarket, specialty dairy shop):
- d. Phone no:

2. Product Offering:

- a. What types of dairy products do you sell in your store? List all with types and brand names?

	Export		Import	
	Product type	Brand	Product type	Brand
Milk products				
Cheese products				
Butter products				

Yogurt products				
Other dairy products				

- b. Which dairy products are the most popular among your customers?
- c. Do you offer any specialty or niche dairy products according to preferences of your customers?
- d. Which of the following products do you sell? Please provide details as below.

	Rate Per bottle/kg/nos	Unit (Bottle, kg, nos)	Qty sold (month/year)
Milk			
Cheese			
a) Fresh cheese			
b) cottage cheese			
c) Cheddar cheese			
d) Gouda cheese			
e) Mozzarella cheese			
Butter			
a) Salted butter			
b) unsalted butter			
c) organic butter			
Yogurt			
a) Plain yogurt			
b) Sweet yogurt			
c) Fruit yogurt			
Other products			

3. Supplier Relationships:

- a. Where do you source your dairy products from? (Local farms, local producers, distributors, wholesalers, imports, KIL etc.)
- b. How satisfied are you with your current dairy product suppliers?
- c. Are there any improvements you would like to see in your supplier relationships?

4. Consumer Preferences:

- a. What factors influence your purchasing decisions when selecting dairy products to stock in your store? (Price, quality, brand, etc.)
- b. Are you aware of KIL's dairy products? Yes/No. If Yes, do you order those products to be stocked in the store? If not, why?

- c. Have you noticed any shifts in consumer preferences for dairy products recently?
- d. Are there any emerging trends or demands in the dairy product market that you've observed?

5. Challenges and Opportunities:

- a. What are the main challenges you face in selling dairy products?
- b. Are there any untapped opportunities or potential for growth in the local dairy product market in your area?

6. Marketing and Promotion:

- a. How do you market and promote your dairy products to attract customers?
- b. Have you implemented any successful marketing strategies for promoting dairy products?

7. Feedback and Suggestions:

- a. Do you have any feedback or suggestions for local dairy producers or suppliers such as KIL to improve their products or services?
- b. Is there anything else you would like to share that could help KIL better meet the needs of retailers like yourself?

Tool#5 Importer/exporters

1. Business Information:

- a) Name of your business:
- b) Location (Dzongkhag):
- c) Type of business_____
- d) Phone no:

2. Product Offering:

- a) What types of dairy products do you import/export? List all with types and brand names?

	Export		Import	
	Product type	Brand	Product type	Brand
Milk products				
Cheese products				
Butter products				
Yogurt products				

Other dairy products				

- b) Why do you export/import specific brand and types of dairy products?
- c) Which dairy products are the most popular among your customers and why?
- d) Which of the following specific products do you export/import per month/year?

	Rate Per bottle/kg/nos	Unit (Bottle, kg, nos)	Qty imported (month/year)	Qty exported (month/year)
Milk				
Cheese				
a) Fresh cheese				
b) cottage cheese				
c) Cheddar cheese				
d) Gouda cheese				
e) Mozzarella cheese				
Butter				
a) Salted butter				
b) unsalted butter				
c) organic butter				
Yogurt				
a) Plain yogurt				
b) Sweet yogurt				
c) Fruit yogurt				
Other products				

3. Supplier Relationships:

- a) Where do you source your dairy products from?
- b) How satisfied are you with your current dairy product suppliers?
- c) Are there any improvements you would like to see in your supplier relationships?

4. Consumer Preferences:

- a) What factors influence your supply to the whole sellers or retailers?
- b) Are you aware of KIL's dairy products?
- c) Why don't you deal with KIL products?
- d) Are there any emerging trends or demands in the dairy product market?

5. Challenges and Opportunities:

- a) What are the main challenges you face in sourcing the dairy products?
- b) Are there any opportunities or potential for growth in the dairy product market?

7. Feedback and Suggestions:

- a) Do you have any feedback or suggestions for local dairy producers or suppliers such as KIL to improve their products?

b) Is there anything else you would like to share that could help KIL better meet the needs of market?

Questions for KIL and FDG (Officials)

- a) Are you aware of the functions of KIL? Please describe
- b) What do you feel about the products supplied by KIL? Please explain
- c) The main objective of KIL is for the substitution of imported dairy products but still the preference of the customers are the same imported ones? Why do you think so?
- d) What do you think about the product choices and preferences of the customers between those produced by KIL and the ones imported products available in the market?
- e) What can you say about the supply chain system between KIL and the dairy farmers who actually supply the milk? What needs to be done to improve this relationship and to ensure sustainable supply of milk to KIL?
- f) What do you think about the future opportunities of the KIL in terms of supply of all dairy products within the country as well as for export?
- g) Can you suggest any strategies to improve quality and diversification of KIL products so that it becomes one of the most preferred dairy products among different brands in future?
- h) Any other comments.