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SOMALIA CAMEL LEASING TO IMPACT RESILIENCE ACTIVITY

May 2021

Camel Milk Rapid Value Chain Analysis



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Feed the Future Somalia Camel Leasing to Impact Resilience Activity

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Prepared for

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Cover photograph: Sahra Ibrahim Abdi, milk vendor, selling camel milk in Salahley town. Photo credit: iZone for RTI International.

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Acronyms

COVID-19	coronavirus disease
GEEL	Growth, Enterprise, Employment, and Livelihoods
km	kilometer
L	liter
LPD	liter per day
MoERD	Ministry of Environment and Rural Development
MOLFD	Ministry of Livestock and Fishery Development
MT	metric ton
NGO	nongovernmental organization
UNDP	United Nations Development Programme
USAID	U.S. Agency for International Development
USD	U.S. dollars
VSFG	Vétérinaires sans Frontières Germany

INTRODUCTION

The Feed the Future Somalia Camel Leasing to Impact Resilience Activity (Somalia Camel Leasing Activity) is a 26-month activity, spanning from June 2019 through August 2021, implemented by RTI International and designed to assess the impacts of camel leasing on the resilience and resilience capacities of pastoralist households and communities and the dairy industry in Somalia. Camel leasing is a formal arrangement between camel milk dairies and camel herding pastoralists. Dairies lease lactating camels from pastoralists for a specified period of time and with a clear expectation of compensation. During the period of the lease, dairies cover the management costs for leased animals (i.e., feed, water, and veterinary services), and pastoralists receive a monthly payment (cash or in kind) for their camel. Camel leasing differs from the less formal practice of camel lending among family, friends, and clan members. Camel lending has been occurring in Somalia for generations.

The practice of camel leasing gained prominence during the severe drought of 2016 and 2017. During this drought period, camel leasing was piloted as a resilience initiative through the U.S. Agency for International Development (USAID)/Somalia Growth, Enterprise, Employment, and Livelihoods (GEEL) project. The pilot effort highlighted camel leasing's potential as a private sector–led resilience effort that could benefit dairies and pastoralists.

To understand the practice of camel leasing and its potential impacts on pastoralist households, communities, and dairies, the Somalia Camel Leasing Activity is designed as a longitudinal mixed-methods research study to answer the following three primary research questions:

- *What impact does camel leasing have on the welfare and resilience capacities of pastoral households and communities?*
- *What is the “business case” for the camel leasing model for dairy companies?*
- *To what extent do Somali social networks influence the camel leasing model?*

In early 2021, the RTI team conducted a rapid value chain analysis to gain insights into how the camel milk market is structured in the Somalia Camel Leasing Activity study area of interest, Woqooyi Galbeed, and to provide more information to further the understanding of camel leasing as a business case for dairies. A value chain is a set of connected activities that together add value to a product while linking producers, buyers, sellers, and markets. Value chain actors refer to the individuals, companies, organizations, and associations that are involved in regulating, producing, buying, selling, and providing services that enable products to move from farmers to markets or other locations where they are purchased by consumers. Depending on their position within or association with the chain, all of the actors are seeking to capture market share and increase profit margins. Gender dynamics within the local context will affect the ability of male and female actors to capture market share, deliver maximum value, and increase and benefit from profit margins.

We began with a look back at our desk review, which was conducted in September 2019. We used the information to assemble key informant questionnaires to understand how value chain actors interact and to determine the flows of camel milk from producers to consumers. Together with the on-the-ground support of a team of two consultants, we conducted 65 interviews in March and April 2021 with actors at each level of the value chain, from dairies to transporters, aggregators, milk vendors and milk vendor committees, consumers, and stakeholders such as government representatives. We also conducted a camel pastoralist household survey as part of our larger study concurrently in April 2021 that provided supplementary information for this analysis at the producer level. The findings are presented in the

remainder of this report, beginning with general context of the camel milk market in Woqooyi Galbeed; a visual representation of the camel milk value chain; descriptions of each level of actor, as well as the context and concerns regarding the system; and conclusions.

GENERAL CONTEXT

Woqooyi Galbeed is the most populous region of Somaliland and encompasses the capital of Somaliland, Hargeisa. The region has a semi-arid climate and typically experiences two seasons of rain, larger Gu rains in April through June and Deyr rains in August through November. The four livelihood zones in the region have varying degrees of pastoralism, including tending sheep, goats, camels, and cattle and cultivating some crops. As an independent, self-functioning state, Somaliland's security situation remains relatively calm by comparison to the remainder of Somalia. Out of 131 registered violent events in 2019 in Somaliland, Woqooyi Galbeed experienced 29 events, compared with 2,519 in Somalia.¹ Border disputes and clashes, particularly with Puntland to the east, have disrupted traditional herding patterns.

Camel milk was originally only used for household consumption or exchanged as a gift to establish and maintain family ties and social support. Although camel milk has played an important role in the nutrition of arid-zone populations in several East African countries, traditionally it was consumed only by pastoralists and their families.² In more recent years, the camel milk market has expanded as a new business activity, partially as a result of a ban on livestock exports from Somalia implemented in 2001. Selling camel milk in Somalia has been traced to women looking to develop an adaptive strategy to generate income and provide a coping mechanism against times of shock and stress.³ Evidence from the Camel Leasing Activity to date shows that dairies see great economic potential in the camel milk market and are actively seeking support to expand their businesses.⁴

Although not the focus of this value chain analysis, the concept of lending camels informally among family, clan members, and friends has existed for generations. More recently, the practice has become more formalized with written or oral leasing agreements as a resilience strategy for pastoralists and new income stream for entrepreneurial dairies and individuals. Leasing may also play a role in mitigating conflict as dairies seek new pastures for their expanding herds; dairies may lease lactating camels or lease rain-fed fodder enclosures owned by agro-pastoralists.

VALUE CHAIN ACTORS

The research team's consultants conducted interviews with 65 participants, summarized in **Exhibit 1**. The list of interviewees is presented in **Appendix A** of this report. The consultants conducted in-person interviews in and around Hargeisa, taking precautions to prevent the spread of coronavirus disease (COVID-19), such as maintaining social distance, wearing masks, and frequent handwashing. **Exhibit 2** summarizes the findings in terms of the interactions between the camel milk market actors in Woqooyi Galbeed with context and concerns as applicable to each level of the value chain in the margins. An expanded version of Exhibit 2 is available in **Annex B** with volumes and prices included, followed by a summary table.

Input Suppliers

Although the research team did not interview input suppliers directly, dairy farms provided information about inputs. Pastoralists and dairy farms use free pasture for grazing camels. Dairy farms also import fodder from West Somaliland via private-sector providers and cultivate their own maize and sorghum for feed, though dairy farm respondents noted that it is usually more cost effective to procure feed from

local input suppliers, including farmers and agro-pastoralists in areas west of Hargeisa. Farms may also procure concentrated supplements of wheat bran and sesame cakes from input suppliers in Hargeisa or imported from Ethiopia. During periods of drought or emergency, some aid organizations provide livestock feed to affected areas; there is evidence that these villages sometimes sell back the donated feed to livestock producers. Other input-related challenges identified by interviewees included the expense of imported livestock feeds and poor-quality veterinary drugs.

Milk Producers

Pastoralists

Pastoralists are the main producers of camel milk. Based on the findings from our household survey, 77% of the pastoralists interviewed indicated that they have sold at least some of their camel milk, with both the elder male and elder female in the household making the decision to sell. Both pastoralists directly interviewed during this rapid analysis reported that they provided 10 to 12 liters per day (LPD) to market. Based on findings from the household survey, the pastoralists reported that they produced 24 LPD on average for consumption. On average, respondents owned 21 camels, with approximately 5 of them lactating. The level of camel milk production is affected by the availability of water and pasture, as determined by incidences of rainfall and drought. Pastoralists collect their milk and typically package it in 5- to 10-liter (L) recycled cooking or engine oil plastic containers, which can cost between \$0.20 - \$0.50/ 5L can (in U.S. dollars [USD]). Pastoralists may sell the milk directly to consumers, or they can send it to market via aggregators or transporters to Hargeisa-based agents who are often either relatives, friends, or commercial sellers. The agents are responsible for sale of the milk and send back the proceeds in a monetary equivalent of goods requested by the pastoralist. Somaliland-based pastoralists often have direct relationships with agents and command a higher price for the milk (averaged at USD\$0.71/L) in comparison with Ethiopia-based pastoralists who have relationships with aggregators who purchase the milk at farm gate prices (USD\$0.57/L). Finally, pastoralists are more recently establishing relationships directly with dairies through leasing arrangements or through out-grower schemes, where they sell the fresh milk directly to the dairies on a daily basis at a farm gate price for cash (averaged USD\$0.90/L).

EXHIBIT I. INTERVIEWEES BY TYPE AND SEX.

Interviewee	Male	Female	Total
Pastoralists	2	0	2
Dairy Farms	10	1	11
<i>Leasing farms</i>	7	1	8
<i>Non-leasing farms</i>	3	0	3
Aggregators	0	2	2
Transporters	5	0	5
Primary Market	3	20	23
<i>Agents</i>	0	1	1
<i>Rural vendors</i>	0	8	8
<i>Hargeisa vendors</i>	0	6	6
<i>Outlets</i>	1	1	2
<i>Home delivery</i>	0	1	1
<i>Dairy kiosks</i>	1	0	1
<i>Hotels</i>	0	1	1
<i>Teashop</i>	1	0	1
<i>Sour milk vendor</i>	0	1	1
<i>Pastoralist relationship vendor</i>	0	1	1
Consumers	6	4	10
Other Stakeholders	6	6	12
<i>Milk market committee</i>	0	6	6
<i>Government, nongovernmental organization (NGO), other</i>	6	0	6
Total	32	33	65

EXHIBIT 2. CAMEL MILK VALUE CHAIN MAP

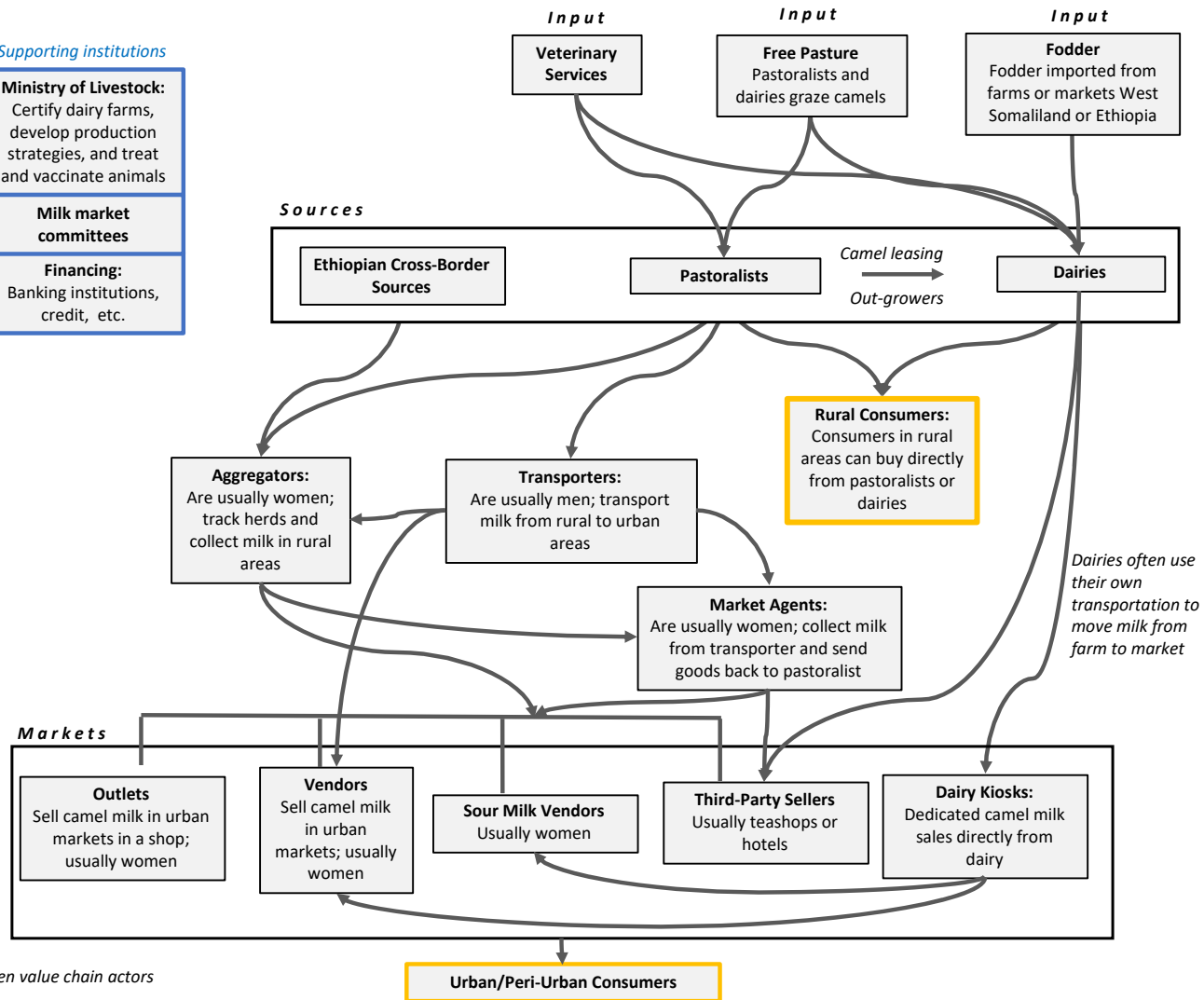
CONTEXT

- Milk prices vary based on supply and condition/freshness of the milk.
- At all links of the value chain, cash is usually the vehicle of payment, with limited in-kind trade.
- Occasionally aggregators will trade goods from urban markets for milk from pastoralists instead of cash. Most common trading items are sugar, rice, flour, and tea.
- Seasonal payment structures can vary; during wet seasons individuals may pay back debts from previous dry season.
- Camel milk is in high demand and can sell out within a few hours of reaching a local market.
- COVID-19 cases and deaths continue to rise in Somaliland, though not at an exponential rate. No notable change was found in the value chain as a result of the pandemic.

Supporting institutions

Ministry of Livestock: Certify dairy farms, develop production strategies, and treat and vaccinate animals
Milk market committees
Financing: Banking institutions, credit, etc.

Hargeisa Camel Milk Value Chain



CONTEXT

- Natural disasters related to climate change such as severe droughts and locust infestations are becoming more common.
- A camel can cost between \$1,200-\$1,400 and can also be include in dowries.
- Compared with cow milk, camel milk has several strengths: it has nutrient and pharmaceutical qualities; it has a longer shelf life in dry, dusty, hot places; and camels can continue to produce large amounts of milk even in dry spells.
- Because women lack formal clan ties, they can move more fluidly within social networks to sell and buy milk.
- There are no formal regulatory or legal frameworks guiding the camel milk market sector currently enacted.

Dairy Farms

Camel milk dairy farms are the other major supply source. Dairy farms often operate out of two locations: one centralized for production of camel milk from lactating animals and one in a location with good grazing pasture for non-lactating animals. Out of the dairies interviewed, they produced an average of 120 LPD of camel milk, though production varied by the size of the dairy (25 to 300 LPD). In addition, the number of camels per dairy varied from 8 to 480, with an average of 395. Dairy farms employed between 2 and 45 laborers, who were paid an average monthly wage of USD\$129.00 and were provided food during work hours. Dairies spent on average 35% of their income on feed and fodder and noted that feed is their most expensive cost; in addition, most dairies lacked storage on site, causing challenges with the quality of the feed left outside. Most purchased feed comes from Berbera Flour mills, imports from the United Arab Emirates and Oman, or illegal purchases from feed donated by USAID or by the United Nations World Food Program.

Once the camels have been milked, most of it does not remain on-site at the farm; only one respondent reported having cold storage at their production facility. Respondents from three dairy farms noted that they delivered their milk directly to consumers or vendors, thereby eliminating the need for cold storage. No dairy farms had access to transport with a refrigerator; five had cold storage at their vendor kiosks. Milk produced by a dairy or purchased from area pastoralists via an out-grower scheme (as was the practice for three respondents) can be bought directly from their production facility, from their milk kiosk, or through a third-party seller such as hotels.

Seven of the eleven respondents noted that prices for camel milk from dairies fluctuated seasonally. Additionally, prices are lower when bought at the dairy location (USD\$1.41 to \$1.79/L) and higher when bought in Hargeisa through a dairy's milk kiosk (USD\$2.00 to \$2.38/L), which is a dedicated vending location owned and operated by the dairy. Kiosks were as close as 18 kilometers (km) to the production facility and as far as 100 km; most were within 20 and 40 km. Clients were cultivated through long-term relationships, though they were seeing new consumers as the demand for camel milk increases. Dairy staff were knowledgeable about consumers' preferences for milk transported in aluminum cans (perceived to be more hygienic) than plastic jerry cans and preferences for shorter delivery times. Surplus milk is distributed by lowering the price, seeking new vendors, providing more to nursing calves, and using refrigerators to keep it cool for longer. Dairies noted that getting milk to kiosks in a timely manner was an opportunity to sell more that day.

All of the dairy farms interviewed were profitable. On a monthly basis, profit ranged from USD\$250.00 to \$2,500.00. Dairies reported that they saw room for business growth because there is unmet demand for fresh camel milk in the markets and the potential to export milk to Djibouti. However, credit for dairy farm expansion is limited, as most owners noted that the 12% interest rate is too high for successful repayment. Ten of the dairy farm respondents did not note that legal or regulatory frameworks posed a challenge to their businesses' growth overall, though one noted that land-tenure policy-related issues could be a challenge to expand. The Somaliland Camel Dairy Farms Association was provided as an advocacy organization to which the dairies paid membership fees and received information via WhatsApp, but it was noted as needing more institutional capacity building.

Transporters

Pastoralists and dairy farms use different mechanisms to transport their milk from rural areas to urban markets. Dairy farms most often use their own vehicles and hire their own drivers to transport milk to their milk kiosk in town or to other retailers. Pastoralists or aggregators use a network of private

transporters who own their own vehicles. On average, transporters pick up the milk from pastoralists inside Somaliland and travel 50 to 90 km (approximately 2.5 hours of driving time) or from Ethiopia and travel 130 to 150 km (5 to 6 hours of driving time). Routes for individual transporters are based on clan-affiliation and long-term relationships. Many transporters only deliver milk to specific markets; the interviewees reported that they travel three to five different routes and supply three or four different markets. Agreements between transporters and other actors in the value chain are usually verbal.

Transportation costs do not vary greatly from rainy to dry seasons. Transporters reported that they can turn a profit during the wet season, but struggle to maintain their businesses during the dry season when there is less milk to transport. Trucks will typically transport 600 to 750 5-L jerry cans during the wet season per day versus 70 to 120 jerry cans during the dry season. The vehicles are usually 4-metric ton (MT) trucks and are loaded with other passengers and materials such as charcoal and livestock. Transporters working with pastoralists are paid for their services by agents associated with the pastoralists upon arrival in markets. Usually working in pairs, with one driver and one assistant, the wages are USD\$10.00 per day for the assistant and USD\$20.00 per day for the driver. Transporters are sometimes unable to complete their route because of car trouble or road conditions, particularly during the wet season, which often results in milk spoilage. In this case, producers do not hold the driver responsible and do not ask for compensation for their milk. In turn, transporters do not ask for their usual transportation fee from the producer. Transporters also play an important brokerage role between pastoralists and agents; communications occur via mobile and oral/verbal messages, which help the transporters find new milk collection points or locations where clients villages have migrated.

Within towns, the milk is transported via wheelbarrows or mini-buses. Nearly 60 wheelbarrows were operating within Hargeisa during the time of the interviews.

Aggregators

There are two levels of aggregators operating in the study area: (1) cross-border aggregators who operate in Ethiopia and bringing milk back to the Hargeisa area and (2) local aggregators.

Cross-border aggregators operate their own dedicated vans and typically collect both camel and cow milk. Cross-border aggregators maintain license plates from both countries, thereby enabling them to cross freely, although they do have to pay taxes. These aggregators are associated with a Hargeisa-based agent who conducts selling, arranges logistics, and collects payments. For the aggregators in Ethiopia, producers sell milk to the aggregator at USD\$0.57/L and sell milk to market at USD\$0.69/L. If aggregators have unused surplus, then they attempt to preserve the milk or sell it at a lower price.

Local aggregators are generally women, and they may also function as direct retailers of camel milk. Local aggregators often have dedicated relationships with producers, who send them milk via transporters in particular catchment areas, which the aggregators then sell to secondary vendors and consumers. Local aggregators pay for their milk supplies typically in cash, and their business relationships typically follow traditional Xeer norms, in which each side has a mutual understanding of the terms. Income for local aggregators depends on the season, volume of milk, and market prices. Local aggregators may work in family teams, but they do not have any official employees. They sell between 175 and 500 LPD, with prices varying between \$1.07/L in the wet season on average and \$1.19/L in the dry season.

In the urban markets, agents, mainly women, receive milk in jerry cans marked with the names of pastoralists who sent it via transporters and sell large quantities of milk to other retailers; volumes

varied between 175 and 500 LPD. Agents are responsible for paying the pastoralists via the transporter, often in-kind with requested food supplies. Agents are generally paid a commission, based on the volume received and their agreement with agents; the average commission stated was USD\$0.11/L. Teashops and hotels are two of the most notable actors that buy camel milk from agents.

Markets

Market actors consist of outlets, vendors, third-party sellers, and dairy kiosks. Approximately 30% of the camel milk supply to the market in Hargeisa is imported from outside Somaliland. The remaining supply comes from pastoralists (67%) and camel milk dairies (2%).

Outlets sell milk in urban markets, and are mainly run by women usually in a space in conjunction with the sale of other petty trade items. Milk is supplied from producers via transporters, aggregators, or from agents. Prices to consumers vary seasonally between USD\$2.02/L in the wet season and \$2.17 in the dry season, on average. Volumes may vary from 25 to 40 LPD for small outlets and 80 to 300 LPD for larger outlets. Both fresh and sour camel milk is sold. Most outlets have refrigerators for cooling and save unsold milk for sale the next day. Many outlets complete their work over the course of approximately 5 hours each day, sometimes longer if they are also conducting petty trade, as is common for smaller outlets. More prominent outlets will sell all of the milk by 2:00 p.m.; the location and access to consumers dictates the pace of selling. Other surplus strategies include boiling the milk or selling it at a cheaper price.

Vendors sell milk directly to consumers in marketplaces owned by the municipality with space allocated to sell foodstuffs; some vendors engage in direct home delivery using wheelbarrows. Similar to outlets, vendors may source their milk from aggregators or directly from pastoralists, paying the cost of transport via truck, mini-bus, or wheelbarrow. In times of surplus, most vendors noted that they have access to cold storage, sometimes by renting refrigerators owned by private shops for which they pay approximately USD\$0.2- \$0.5 per night for whatever volume that can fit. Vendors stated they sold milk for \$1.45 on average, with a \$0.06-\$0.10 difference in price per liter between seasons. Quantities also varied depending on the size of the vendor, from as little as 10 LD to 175 LPD. Sour milk vendors are also largely women, and they sell sour milk from all livestock species, particularly during the wet season when more milk is available.

Based on the findings from the interviews, the price paid by outlets, vendors, and third-party sellers for the milk varied. Outlets averaged a purchase price of USD\$1.40/L during the wet season and USD\$1.60/L during the dry season. In contrast, vendors provided a slightly lower purchasing price of USD\$0.95 to \$1.19/L. Sour milk vendors purchased milk even more cheaply, between USD\$0.50 in the wet season and USD\$0.71/L in the dry season.

Third-party sellers are often teashops or hotels. Teashops use camel milk in their beverages and can become a popular source of camel milk because clients know they have a steady supply of fresh camel milk. Hotels need camel milk for their guests and demand large quantities for events such as weddings.

Camel milk is also available for sale to consumers through kiosks operated by the dairies previously described.

Consumers

Consumers buy camel milk on a daily basis; the respondents reported buying on average USD\$2.68 worth of camel milk per day for consumption. Depending on the financial means and internal structures

of the family, either the entire family or specific members, such as children or only men, drink the milk for its health benefits. The consumers who were interviewed said that they purchased both fresh and sour camel milk. The time from production to sale plays a big role in a consumer's willingness to pay. Transactions are conducted by using cash. Consumers prefer fresh camel milk transported in aluminum jerry cans to those in plastic jerry jugs because the aluminum cans are more hygienic. Some consumers have verbal agreements with specific milk kiosks and are registered as long-term clients. Respondents noted that there is competition for a limited supply of camel milk, especially during the dry season; some maintained their level of consumption no matter the seasonal fluctuation in price, while others reduced consumption during the dry season when supply is more limited.

Other Actors

Milk Market Committees

Primarily consisting of women, milk market committees are central points for advocating to governments and nongovernmental organizations (NGOs), maintaining the functioning of milk markets, networking among market vendors, and organizing training sessions about best practices. Donations and capacity strengthening for the committees from NGOs are also common. For example, in the Gobanimo market, NGOs donated solar-powered cooling facilities and funds for microfinance to the committee. Out of those interviewed, the milk market committees noted that their main challenges were competition from dairy farms and equipment shortages. Milk market committees may also serve as a financial safety net for member vendors during times of emergency, such as drought.

Government, Private Sector, and NGO Stakeholders

The Ministry of Livestock and Fishery Development (MOLFD) plays a role in the sector by certifying dairy farms, developing production strategies, vaccinating camels, and treating sick camels. During interviews, government stakeholders reported that demand for camel milk is increasing, but supply fluctuates seasonally. Although organizations such as USAID, the Department for International Development, the World Bank, and other United Nations agencies and donors have extended substantial support to the livestock sector through skills training, grants, equipment, and rangeland rehabilitation, respondents expressed a need for a stronger legal and regulatory enabling environment to support growth. A Dairy Policy Act has been developed, but not yet enacted. Respondents noted the need for training, financing, and sector visioning. A potential lifting of the ban on exports in the coming months of 2021 by Saudi Arabia was also stated as a factor that may significantly impact the dairy sector.

CONCLUSIONS

Camel milk is a critical product to consumers and businesses in Somaliland. Thanks to its nutritional properties and the camel's unique ability to produce milk during drought, demand is increasing, and suppliers are looking to send more milk to market. Overall, the camel milk market is characterized by informal yet vibrant linkages between actors, with unmet demand and potential for growth in volumes, as well as many opportunities to improve food safety through quality standards, increase the use of aluminum cans, and increase access to bulk cold storage, especially for aggregation and during transport. The sector could benefit from increased access to finance at all levels, as well as opportunities for value chain actors to mitigate their risks through insurance schemes. From a gender perspective, there are opportunities to build more trust between women who are operating in the markets and the male dairy owners who operate their own kiosks. Building the capacity of female agents to better understand the

market demand and to manage their supplies effectively will increase their competitiveness in the value chain.

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APPENDIX A: LIST OF INTERVIEWEES

Name	Location	Sex
Abdullahi Esse Gaboobe	Haabale Valley	Male
Ahmed Mohamed Hassal	Haabale Valley	Male
Dairy Owners		
Mustafe Ali Deeq	Salahley	Male
Ismail Aydeid	Toon	Male
Mowled Nur Omer	Gabiley	Male
Ahmed Omer Yusuf	Abaariso	Male
Mustafe Omer	Hunduli	Male
Biihi Muhumud Nuur	Xera Awr	Male
Mohamed Omer Hiid	Garabis/Haabaale	Male
Abdirahman Ali Mataan	Garabis/Haabaale	Male
Good Osman Mohamed	Garabis/Haabaale	Male
Feysal Muse	Gadhka	Male
Aniis Abdi Jama	Dacarbudhuq	Female
Transporters		
Abdi Weli Muhamed Ahmed	Hargeisa	Male
Mohamed Abdullahi Elmi	Hargeisa	Male
Mustafe Ibrahim Esse	Hargeisa	Male
Feysal Muse	Hargeisa	Male
Abdi Aden	Hargeisa	Male
Aggregators		
Ladan Abdi Egeh	Hargeisa	Female
Qaahira Haybe	Hargeisa	Female
Consumers		
Zainab Aden	Hargeisa	Female
Hussein M. Jibril	Hargeisa	Male
Asha Awale	Hargeisa	Female
Khadar Abdirahman	Hargeisa	Male
Sulub Ismail	Hargeisa	Male
Adna Geele	Hargeisa	Female
Marian Mohamoud Haddi	Hargeisa	Female
Abdullahi Yusuf	Hargeisa	Male
Ahmed Abdi Ahmed	Hargeisa	Male
Elmi Dahir Bulaale	Hargeisa	Male

Name	Location	Sex
Stakeholders		
Kasim Abdalle Yusuf	Vétérinaires sans Frontières Germany (VSFG)	Male
Dr. Farhan Ahmed Yusuf	Ministry of Livestock and Fishery Development (MOLFD)	Male
Abdirizak Sheikh Mohamoud	Ministry of Agriculture	Male
Abdi Abokor Yusuf	United Nations Development Programme (UNDP)	Male
Ahmed Ibrahim Warsame	Ministry of Environment and Rural Development (MoERD)	Male
Ibrahim Elmi	Chamber of Commerce	Male
Milk Market Committee		
Sahra Hussein Duale H. and Hodan Abdullahi Jama	Dheenta	Female
Sahra Ibrahim	Salahley	Female
Luul Ah Ahmed, Yurub Camooje, Fosia Limaan, and Halimpo Mumumud	Gobanimo	Female
Qaahira Haybe Abdi and Jinow Guhaad	NG	Female
Amina Abdirahman and Sado Omer	Jigiga Yar	Female
Hodon Ahmed Yogol	Star	Female
Vendors		
Shamis Abdi Osman	KM 150	Female
Sahra Hassan Duale	Dheenta	Female
Shukri Ahmed Awl	Dheenta	Female
Faadumo Jama Ali	Dheenta	Female
Hodan Aydiid Aden	Dheenta	Female
Amina Badde Ismail	Salahley	Female
Sahra Ibrahim	Salahley	Female
Samsam Omer	Kalabaydh	Female
Ifrah Mohamed	Star	Female
Hodon Aw Jama Yogol	Star	Female
Najah Mohamoud Hassan	Gobonimo	Female
Ayaan Abdullahi Muhumed	Gobonimo	Female
Halimo Mohamed Hassan	Abaaye Street	Female
Aamina Ahmed Omer	Jigig Yar	Female
Sado Omer Mohamed	Jigig Yar	Female
Qahira Abdi Yusuf	NG	Female
Jinow Guhaad	NG	Female
ABdirahman Abdullahi	Outlet	Male
Ahmed Ali Warsame	Barqamaal Kiosk	Male

Name	Location	Sex
Aden Saleban	Ina Garow Teashop	Male
Khadijo Sabdi Ibrahim	680 Restaurant	Female
Seynab Ahmed Hersi	Sour Milk Vendor	Female
Awo Ali	Relation Pastoralists Vendor	Female

APPENDIX B. MAP WITH PRICES AND VOLUMES

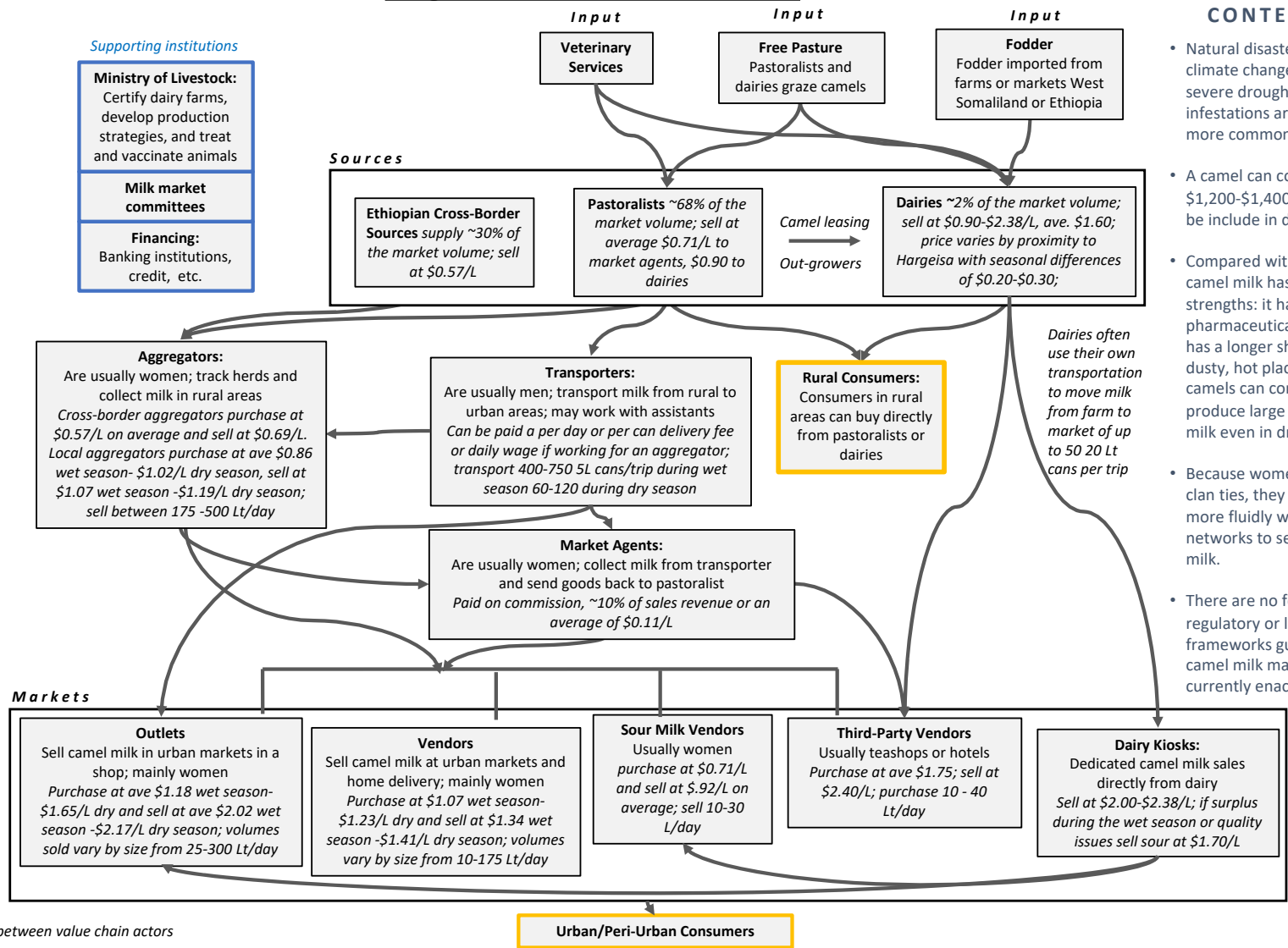
CONTEXT

- Milk prices vary based on supply and condition/freshness of the milk.
- At all links of the value chain, cash is usually the vehicle of payment, with limited in-kind trade.
- Occasionally aggregators will trade goods from urban markets for milk from pastoralists instead of cash. Most common trading items are sugar, rice, flour, and tea.
- Seasonal payment structures can vary; during wet seasons individuals may pay back debts from previous dry season.
- Camel milk is in high demand and can sell out within a few hours of reaching a local market.
- COVID-19 cases and deaths continue to rise in Somaliland, though not at an exponential rate. No notable change was found in the value chain as a result of the pandemic.

Supporting institutions

- Ministry of Livestock:** Certify dairy farms, develop production strategies, and treat and vaccinate animals
- Milk market committees**
- Financing:** Banking institutions, credit, etc.

Hargeisa Camel Milk Value Chain



CONTEXT

- Natural disasters related to climate change such as severe droughts and locust infestations are becoming more common.
- A camel can cost between \$1,200-\$1,400 and can also be include in dowries.
- Compared with cow milk, camel milk has several strengths: it has nutrient and pharmaceutical qualities; it has a longer shelf life in dry, dusty, hot places; and camels can continue to produce large amounts of milk even in dry spells.
- Because women lack formal clan ties, they can move more fluidly within social networks to sell and buy milk.
- There are no formal regulatory or legal frameworks guiding the camel milk market sector currently enacted.

Pricing and Volume Data by Market Actor Type

Actor Type	Season	Purchase Price (\$/L)	Sale Price (\$/L)	Volumes (L/Day)
Local pastoralist*	Wet			
	Dry			
	Average		\$0.81	
Ethiopian pastoralist*	Wet			
	Dry			
	Average		\$0.57	
Dairy farm	Wet		\$1.41	130-300
	Dry		\$1.79	25-150
	Average	\$0.90	\$1.60	20-300
Transporters	Wet			533 5L cans
	Dry			100 5L cans
	Average			317 5L cans
Cross-border aggregators*	Wet	\$0.54	\$0.59	
	Dry	\$0.60	\$0.79	
	Average	\$0.57	\$0.69	
Local aggregators*	Wet	\$0.86	\$1.07	
	Dry	\$1.02	\$1.19	
	Average	\$0.94	\$1.13	175-500
Outlets*	Wet	\$1.18	\$2.02	30-300
	Dry	\$1.65	\$2.17	25-125
	Average	\$1.50	\$2.03	25-300
Vendors	Wet	\$1.07	\$1.34	20-80
	Dry	\$1.23	\$1.41	10-40
	Average	\$1.15	\$1.45	10-175
Sour Milk Vendors*	Wet	\$0.50	\$0.80	
	Dry	\$0.71	\$0.88	
	Average	\$0.71	\$0.92	10-30
Third-party Sellers (Hotels, Teashops)*	Wet			
	Dry			
	Average	\$1.75	\$2.40	10-40
Dairy Kiosks*	Wet		\$2.00	
	Dry		\$2.38	
	Average		\$2.19	155
Consumers	Wet			
	Dry			
	Average	\$2.66/day		1-1.5

*Prices were reported by three or fewer respondents in that category