



FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative

FEED THE FUTURE SOMALIA CAMEL LEASING TO IMPACT RESILIENCE ACTIVITY

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FINAL REPORT



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Final Report

Feed the Future Somalia Camel Leasing to Impact Resilience Activity

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Cover photograph: A pastoralist caring for his camel near Salahley, Somaliland. Photo credit: iZone for USAID

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Table of Contents

Executive Summary	1
Introduction and Background	2
Lessons Learned.....	3
Implementation.....	3
Future Challenges and Opportunities.....	5
Activity Description	5
Development Impact Objectives.....	8
Activity Significance	9
Important Research Findings.....	9
Observations of Potential Unintended Consequences	10
Comments and Recommendations	10
References.....	11
Annex A. Study Report.....	13
Annex B. Key Informant Interview Participants	51
Annex C. Desk Review Report.....	52
Annex D. Maps of Verified Dairy Farms	86
Annex E. Camel Leasing Theory of Change.....	87
Annex F. The Hargeisa Camel Milk Value Chain	89
Annex G. Somalia Camel Leasing to Impact Resilience Activity—Camel Leasing Experiences	90
Annex H. Qualitative Survey Instruments	99
Annex I. Quantitative Survey Instruments.....	151
Annex J. Case Study Interview Guides	164

Acronyms

AMISOM	African Union Mission in Somalia
AOR	Agreement Officer’s Representative
CLA	Collaborating, Learning, and Adapting
COVID-19	Coronavirus Disease 2019
FAO	Food and Agriculture Organization of the United Nations
FEWS NET	Famine Early Warning Systems Network
FGD	Focus Group Discussion
FGS	Federal Government of Somalia
FSNAU	Food Security and Nutrition Analysis Unit
GDP	Gross Domestic Product
GEEL	Growth, Enterprise, Employment and Livelihoods
HACOF	Horn Africa Consultants Firm
HDDS	Household Dietary Diversity Score
HFIAS	Household Food Insecurity Access Scale
HHS	Household Hunger Scale
IDP	Internally Displaced Person
IRG	International Resources Group
KII	Key Informant Interview
PRIME	Pastoralist Areas Resilience Improvement through Market Expansion
RMS	Resilience Recurrent Monitoring Survey
TANGO	Technical Assistance to Non-Governmental Organizations
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
USD	U.S. Dollars
USG	United States Government

EXECUTIVE SUMMARY

In response to a severe drought in Somalia in 2016 and 2017, the United States Agency for International Development's (USAID's) Somalia Growth, Enterprise, Employment and Livelihoods (GEEL) project piloted the practice of camel leasing¹ to mitigate impacts on the livestock sector. Under a leasing arrangement, commercial dairies lease a lactating camel from a camel-herding pastoralist (henceforth referred to as “pastoralists”), and in exchange provide the pastoralist with a monthly payment and a guarantee that the camel's health and well-being will be maintained through the provision of food, water, and veterinary services. Leasing has the potential to be a mutually beneficial practice to enhance the resilience of both pastoralists and dairies.

The Feed the Future Somalia Camel Leasing to Impact Resilience Activity (henceforth referred to as the Camel Leasing Activity) was a 33-month activity from June 2019 through March 2022 and was supported by USAID and implemented by RTI International. Through a phased and mixed-methods approach, the Camel Leasing Activity explored the potential impact on resilience and resilience capacities of leasing on pastoralist households, dairies, and communities.

Phase I of the activity aimed to provide a deeper understanding on how leasing works in the region. Phase I included a desk review, a mapping exercise, the development of a theory of change, and focus group discussions (FGDs). The desk review consisted of secondary data sources and key informant interviews (KIIs) with experts in camel pastoralism, livestock leasing, and resilience. The desk review provided an overview of the demographics, social dynamics, existing political system, agro-pastoralist economy, climate and environment, and security contexts that may influence leasing. The results from the mapping exercise identified leasing dairies and pastoralists and indicated that the highest concentration of leasing dairies and pastoralists was in the Woqooyi Galbeed Region. Therefore, Phase 2 of the activity focused on that specific region. The theory of change outlined the pathways through which leasing can impact resilience and served as the basis to develop data collection tools and approaches. Lastly, the FGDs helped refine the hypothesis that generating income from leasing can have positive, widespread household effects that build resilience capacities in the form of additional savings and investing in assets.

The study team incorporated the findings from the Phase I study (USAID & RTI International, 2020) into the Phase 2 study, which used a mixed-methods longitudinal exploratory study design, involving a value chain analysis, quantitative surveys, FGDs, and exploratory case studies. The findings from Phase 2 include quantitative data points from 46 leasing pastoralist surveys, 51 previously leasing pastoralist surveys, and 594 non-leasing pastoralist surveys and from 40 leasing dairies, 25 previously leasing dairies, and 48 non-leasing dairies. The small sample size limits the ability to generalize the study findings.

During Phase 3 of the study, the study team analyzed all the collected data and disseminated the findings. The goal of disseminating the findings was to share the results and conclusions of the activity with key stakeholders and the development community in ways that are relatable and accessible to a general audience.

Leasing is a creative innovation that is generally advantageous for pastoralists and dairies. For pastoralists, leasing has led to positive changes in income, and the ability to save cash and purchase assets. For dairies, leasing provides an opportunity to maintain consistent milk sales, generate profits,

¹ It is important to note that when “leasing,” “non-leasing,” and “previously leasing” appear in this report, these words and phrases are referring to camel leasing.

and invest in improving their farms. Still, leasing has led to some unintended consequences for pastoralist households, communities, and dairies. These unintended consequences include poor care of the leased camels, depletion of grazing land for pastoralists, a decrease in the availability of camel milk for consumption within rural communities, and competition between traditional small milk market sellers and dairies. Future work is needed to understand how best to adjust for these unintended consequences and improve resilience for the full milk market value chain.

INTRODUCTION AND BACKGROUND

Camel milk is a critical product to Somali consumers and businesses. 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. Leasing is a formal arrangement between camel milk dairies and pastoralists. Dairies lease lactating camels from pastoralists for a negotiated lease term 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 camels. **Leasing differs from the less formal practice of camel lending among family, friends, and clan members; camel lending has been occurring in the region for generations.**

The Camel Leasing Activity was a 33-month activity from June 2019 through March 2022. Implemented by RTI International, the activity aimed to assess the impacts of leasing on the resilience and resilience capacities of pastoralist households and communities and the dairy industry in the region. The activity was designed as a longitudinal mixed-methods research study to answer the following three primary research questions:

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

Throughout the course of the activity, the study team identified several lessons that led to important improvements in implementation of the activity. These lessons informed operational and technical adaptations to the original study design. This final report documents these experiences, focusing on the lessons and adaptations derived from applying a collaborating, learning, and adapting (CLA) approach through the life of the activity; identifying future challenges and opportunities; describing the activities significance and important research findings; and summarizing the comments and recommendations. The annexes of this final report are organized as follows:

Annex A—Study Report

Annex B—Key Informant Interview Participants

Annex C—Desk Review Report

Annex D—Maps of Verified Dairy Farms

Annex E—Camel Leasing Theory of Change

Annex F—The Hargeisa Camel Milk Value Chain

Annex G—Somalia Camel Leasing to Impact Resilience Activity—Camel Leasing Experiences

Annex H—Qualitative Survey Instruments

Annex I—Quantitative Survey Instruments

Annex J—Case Study Interview Guides.

LESSONS LEARNED

CLA was a foundational element to the Camel Leasing Activity. CLA emphasizes considering new ideas and continuously incorporating new best practices into activity designs. The Camel Leasing Activity was intentionally organized in an iterative manner, allowing for close collaboration among stakeholders and identification of learnings from each sub-activity, which led to activity adaptations.

This activity placed emphasis on localization, engaging with a local firm, the Horn Africa Consultants Firm (HACOF), to collect the study data, advise and participate in decision-making, and serve as a key connector with the Ministry of Livestock & Fishery Development (the Ministry). Even with HACOF's support, the study team experienced challenges with gaining buy-in from the Ministry. Although Ministry personnel were enthusiastic about the research topic, they requested deeper financial engagement than the award allowed. Through HACOF's support, the activity eventually moved forward. The study team learned that it is imperative to have a strong local presence either through a partner or direct staff to represent the activity.

USAID, RTI, HACOF, and local experts were involved in key decisions such as engaging with Ministry personnel, determining geographic focus, and identifying effective data collection approaches. This collaboration proved to be an effective way of ensuring that the data collection was comprehensive and aligned with the needs of all stakeholders.

The study team initially intended to collect data from households in two livelihood zones across northern Somalia to allow for comparisons between them. However, learnings from the mapping exercise completed during Phase I of the activity suggested that it would be more effective to focus on the Woqooyi Galbeed Region. This region is at the confluence of several livelihood zones and has the highest concentration of leasing participants (Annex D). The iterative design of the activity allowed for the flexibility to adjust the geographic focus to the Woqooyi Galbeed Region.

There are fundamental challenges when collecting data from migratory and semi-nomadic populations, such as pastoralists. The study team developed and administered multi-day training sessions for data collectors (FGD facilitators [also referred to as data collectors] and notetakers). These training sessions included role-playing exercises to improve familiarity and comfort with using the qualitative data collection instruments. However, even with the training sessions, the data collectors continued to experience challenges. After receiving feedback from the trainees, the study team adapted the training sessions to focus on clarifying the difference between leasing and lending and reiterating the differences between each study arm, and shortened the qualitative data collection instruments.

Implementation

The study team originally envisioned that the Camel Leasing Activity would be a rigorous, longitudinal mixed-methods research study. However, because the number of identified instances of leasing was smaller than anticipated, it was not possible to reach the sample size needed to conduct the planned statistical models. Therefore, the team adapted the study to focus more deeply on qualitative components and shifted the aim to generate learnings for future opportunities, rather than measure impact.

One of the main challenges during implementation was identifying and contacting study participants. A database of camel leases does not exist; therefore, the study relied on self-identification of leasing status among pastoralists and dairies. As the study progressed, the study team learned that there was confusion in distinguishing between the formal practice of leasing and the informal practice of camel lending (pastoralists loan camels to family members, friends, or community members). The study team used this information to adapt the previously mentioned training to reinforce the definition of leasing.

Maintaining a panel of study participants over time also proved to be a challenge for the following reasons:

1. Pastoralists and dairies changed their self-identified leasing status.
2. Migratory and semi-nomadic lifestyles of pastoralists made it difficult—and often prohibitive—to reach participants.
3. When data collectors reached out for screening or scheduling purposes, the study participants' telephones were often turned off or the calls were not answered.
4. The telephones of study participants had changed hands, either to another person in the household or to another household entirely.
5. Some pastoralists did not want to continue their participation in the study.

Data collectors also provided feedback about the survey modules. The data collectors noted that indicators such as the Household Food Insecurity Access Scale were too complicated and time consuming to be collected practically. With this learning, the study team adapted and streamlined the focus of the modules to indicators on how leasing directly affects pastoralists. However, even with these adaptations, the data collectors indicated that the survey was too long and complicated, thus making it difficult to administer with the target populations.

In November 2021, the participants in the FGDs and case studies mentioned an unidentified disease that was affecting many camels in the Woqooyi Galbeed Region. This disease led to the termination of some leasing agreements and was an unanticipated shock to both pastoralists and dairies. The terminated leases resulted in a leasing status change for some participants. Therefore, the study team adapted the quantitative survey instruments to capture the nuance of “previously leasing” pastoralists and dairies.

Coronavirus disease 2019 (COVID-19) severely impacted activity implementation. As previously mentioned, the study team shortened quantitative survey instruments, and from May 2020 through September 2020, the data collectors gathered data over the telephone rather than in person. Moving to a telephone survey increased the challenges with maintaining a panel of study participants. There were also logistical challenges, such as participants relying on telephones from family members or neighbors and disconnected telephone numbers. Also, data collectors reported that they felt a lack of trust from participants when speaking over the telephone rather than in person. A key learning was that telephone-based data collection should be avoided and that in-person data collection should be heavily emphasized. The decision was made to delay future data collection until in-person data collection could safely resume. Training sessions were also adapted in response to COVID-19. In-person training and supervision by RTI were changed to virtual platforms, and local consultants were leveraged to ensure quality.

FUTURE CHALLENGES AND OPPORTUNITIES

Although camel milk has played an important role in the nutrition of arid-zone populations in several East African countries, traditionally, camel milk was consumed only by pastoralists and their families (Farah et al., 2007). 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 shocks and stressors (Nori, 2010). Learnings from the Camel Leasing Activity suggest that dairies see great economic potential in the camel milk market and are actively seeking support to expand their businesses.

Overall, the camel milk is characterized by informal linkages between actors, with unmet demand and potential for growth. The livestock 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 support women in the milk market value chain through including third party vendors in leasing agreements and subsidizing resources such as refrigeration, storage, and transport equipment. These actions could help women milk sellers remain competitive in the milk market.

Natural shocks and stressors have had an important impact on pastoralists, dairies, milk market members, and communities. Most of the pastoralists surveyed had reported experiencing at least one shock in the past three years; 84.2% (n=399) reported experiencing drought, 82.7% (n=392) reported crop pests, 24.1% (n=47) reported camel disease, 11.6% (n=55) reported depletion of pasture, and 6% (n=29) reported heavy storms and cyclones. In addition, 41.5% (n=81) of surveyed pastoralists and 67.7% (n=44) of dairies reported that drought was the main challenge that they experienced. Despite the high number of shocks and stressors experienced by households, only 19.6% (n=93) of all pastoralists surveyed reported having plans in place to prepare for future shocks and stressors.

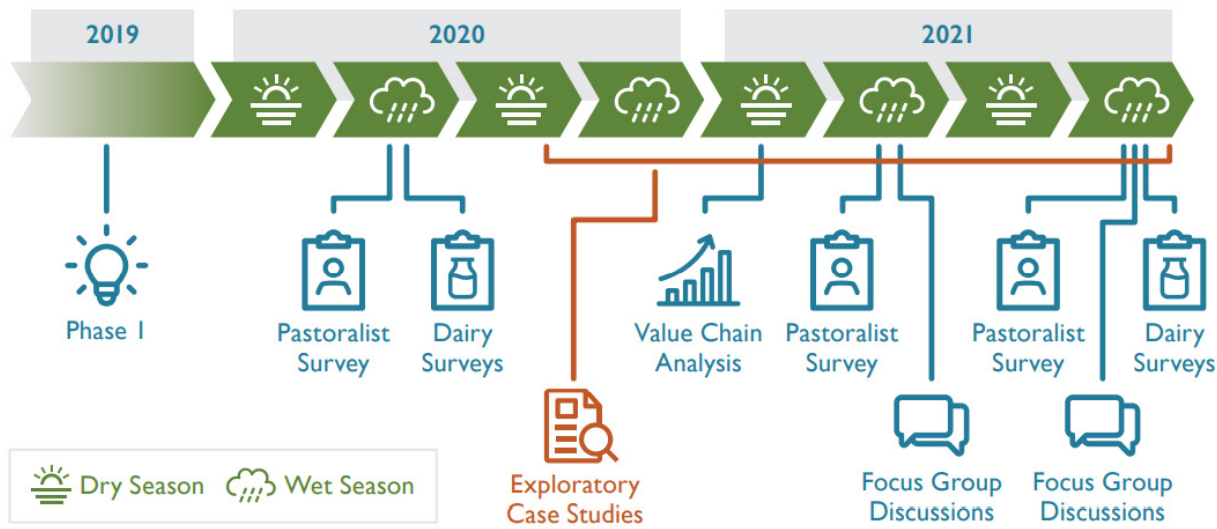
Innovations such as leasing can provide much needed support to pastoralists and their communities in times of shocks and stressors. More work is needed to understand the benefits and unintended consequences of such innovations and to continue to learn and adapt as these innovations scale.

ACTIVITY DESCRIPTION

To understand the practice of leasing and its potential impacts on pastoralist households, communities, and dairies, the Camel Leasing Activity, which spanned June 2019 through March 2022, was designed as a longitudinal mixed-methods research study (Figure 1) to answer the following three primary research questions:

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

FIGURE I. LONGITUDINAL MIXED-METHODS APPROACH



Phase I of the study focused on generating a strong foundational understanding of the historical practice of leasing in the region. Knowledge gained and lessons learned from Phase I were applied to adaptively manage the research and ensure that prospective portions of the study conducted during Phase 2 accurately reflected the situation on the ground in order to answer the research questions. To best understand the historical and contextual aspects regarding leasing in the region, the study team conducted the following sub-activities:

Desk review. The team conducted the desk review of available resources and incorporated KII to document the origins of leasing in the region and to identify the existing contextual factors that may facilitate or inhibit the success of the practice (Annex C).

Mapping exercise of dairies and pastoralists currently participating in leasing. The study team conducted the mapping exercise to appropriately orient the study’s geographic focus (Annex D). In collaboration with USAID and partners, the study team decided to shift from a livelihood zone approach to focusing on the Woqooyi Galbeed Region because it had the highest concentration of leasing dairies.

Theory of change. The study team generated a theory of change that reflected how the team hypothesized the practice of leasing would affect the resilience capacities and ultimately the well-being of pastoralists and pastoralist communities (Annex E).

FGDs. The study team conducted the FGDs with representatives from five key respondent groups: pastoralists participating in leasing, pastoralists who have not participated in leasing, dairies participating in leasing, dairies who have not participated in leasing, and representatives from communities where leasing is occurring. The study team designed these FGDs to provide insights into initial perceptions about leasing for use in developing qualitative data collection instruments for prospective data collection during Phase 2.

The study team used the desk review, mapping exercise, and the theory of change to:

- Identify and define relevant resilience capacities of individuals, households, and communities

- Narrow the focus of the Camel Leasing Activity to emphasize climatic shocks and stressors in the forms of droughts as the major events testing the resilience of those populations

The study team used the findings from the FGDs to:

- Refine the hypothesis that generating income from leasing can have positive, widespread household effects that build resilience capacities in the form of additional savings and investment in assets.

To understand change over time, the study team conducted Phase 2 of the Camel Leasing Activity in three rounds. During Phase 2, the team conducted the following sub-activities:

Camel milk value chain analysis. The study team performed a value chain analysis of the camel milk market during Round 1 of Phase 2 to gain insight into how the camel milk market is structured in the Woqooyi Galbeed Region (Annex F).

Quantitative surveys. To understand the impact of leasing on pastoralists and how their lives changed over time, the study team conducted quantitative across all rounds of Phase 2 (i.e., Rounds 1 through 3) among leasing, non-leasing, and previously leasing pastoralists.

FGDs. To provide insights into perceptions and experiences about leasing, the study team conducted FGDs during Rounds 2 and 3 of Phase 2. FGD participants were leasing pastoralists, non-leasing pastoralists, previously leasing pastoralists, leasing dairies², non-leasing dairies, previously leasing dairies³, pastoralist community members, and Milk Market Committee members.

Exploratory case studies. To further understand individuals' experiences with leasing, the study team conducted exploratory case studies among six individuals during Rounds 2 and 3 of Phase 2 (Annex G).

Phase 3 involved analyzing the collected data to identify trends over time and disseminating the findings. The goal of disseminating the findings was to share the results and conclusions of the activity with key stakeholders and the development community in ways that are relatable and accessible to a general audience. The dissemination also aimed to:

1. Provide audiences with the key takeaways of the study, as well as a mechanism for learning more about the results of the study, should they desire additional information
2. Ensure that the audiences receive the information in a manner that helps improve their understanding (Table I)
3. Reach traditional (e.g., USAID, local government representatives, implementing partners) and non-traditional (e.g., pastoralists, dairies, communities) audiences with targeted dissemination mechanisms.

² Dairies were excluded from the FGDs during Round 3 of data collection because of concerns about overburdening the dairies.

³ The study team included previously leasing pastoralists and dairies because of the increased prominence of representatives from these groups and the importance of understanding why they no longer practiced leasing. The inclusion of milk market representatives stemmed from the importance of this group of people as demonstrated through the completion of the Camel Milk Value Chain Analysis.

TABLE I. DISSEMINATION PRODUCTS

Main Target Audience	Tactics	Summary
<ul style="list-style-type: none"> Development practitioners and technical specialists who are interested in evidence and programming regarding resilience, camel pastoralism, or the camel milk value chain Local, sub-national, and national government entities 	Final report	Documentation of activity methods and findings, including recommendations for future research, is consolidated and is publicly available at ResilienceLinks.org.
	Agrilinks activity page and related posts	There is a collection of seven Camel Leasing Activity posts and reports that contribute to learning for the global development community.
	Presentation to the Horn of Africa Regional Livestock & Pastoralism working group	Delivery of a live virtual presentation to the Horn of Africa Regional Livestock & Pastoralism working group in March 2022 will inform regional practitioners of the methodology, findings, limitations, and recommendations for future research.
	Case study handout	The handouts present individual stories of six people who are participating or have participated in leasing arrangements.
	Findings summary (three pages)	The summary was released in English and Somali to inform key audiences of the methodology and high-level findings. Both versions of the summary are available at Agrilinks.org and RTI.org.
	Leasing explainer video	The video was released early in the study in order to lay the foundation for future communications by clearly explaining the practice of leasing in an engaging and accessible way.
	Leasing story video	The video was released at the end of the study, thereby allowing viewers to hear directly from a Somali pastoralist and dairy owner about their leasing experiences.
	Recorded webinar	The webinar allows for future information gathering for those who are interested in the study. Information includes its purpose, methodology, findings, limitations, and recommendations for future research. The webinar is available at Agrilinks.org.
<ul style="list-style-type: none"> Pastoralists, dairies, and communities where leasing is occurring or may occur 	Local radio	A recorded interview in the Somali language with an expert involved in the study will inform local audiences of the findings, including perceived challenges and risks. The interview will be repeated four times over one month.

DEVELOPMENT IMPACT OBJECTIVES

Because this is a research study, there is only one standard performance indicator relevant to the activity: *EG.3.2-7: Number of technologies, practices, and approaches under various phases of research, development, and uptake as a result of United States Government (USG) assistance.* The activity achieved the performance indicator target of one: *Referring to the study being social science research that is in Phase 2: Under field testing as a result of USG assistance.* Similarly, all findings, observations, experiences, and lessons learned gained through research and as they relate to local extension and advisory services systems are presented in this Camel Leasing Activity Final Report.

ACTIVITY SIGNIFICANCE

Somalia has been experiencing a seasonal shift over the past 15 years. In 2019, the *gu* rains were delayed and an abnormally long *jilaal* season followed (UNDP, n.d.). This seasonal shift resulted in widespread crop failure and a decline in livestock productivity and pushed many communities into food insecurity crises. Erratic and insufficient rains are increasingly becoming a pattern in the region, further supporting calls for economic diversification for pastoralists. Many contemporary news sources categorize Somalia as in a state of “climate emergency” and note that most of the population are ill-equipped to survive with late timed rains and more frequent and longer periods of the dry seasons (Tahir, 2019). As climate change continues to shock ecosystems, there is time to recover (UNDP, n.d.).

The changing environment in the region is increasingly hostile against pastoralists, particularly those who are seeking consistent water sources for livestock herds. The changing seasons and prolonged dry seasons have led to drought; when rains do occur, they are often accompanied by flash flooding, which worsens food insecurity. Encouraging pastoralists to diversify their income, reduce their expenses through interactions, and use the leasing program can potentially reduce the effects of environmental shocks and stressors to a large portion of the Somali population.

The nutritional properties of camel milk and the camel’s unique ability to produce milk during drought has created an increased demand for camel milk and suppliers are looking to send more milk to market. The camel milk market links a broad range of actors, including fodder importers, veterinary service providers, pastoralists, dairies, rural consumers, transporters, aggregators, market agents, milk vendors, and urban and peri-urban consumers. Leasing has the potential to be a mutually beneficial practice to enhance the resilience of both camel-herding pastoralists and dairies when drought and other climate-related shocks and stressors occur.

The Camel Leasing Activity increased the understanding of leasing practices and stakeholders and overcoming unanticipated challenges such as COVID-19. Adaptive management and collaborative decision-making with USAID played a key role in the activity’s success.

IMPORTANT RESEARCH FINDINGS

The small sample size limits the ability to generalize findings from this study. The findings outlined here should not be interpreted as evidence of impact, but rather learnings to inform future work. The three research questions and their findings are discussed in the remainder of this section of the report.

What impact does leasing have on the welfare and resilience capacities of pastoral households and communities?

Leasing pastoralists generally felt that participating in leasing helps them to better react to shocks and stressors compared to when they were not leasing camels.

Although most pastoralists indicated that they did not have plans to prepare for future shocks and stressors, those who did were most likely to purchase assets and save money. Pastoralists also described constructing community water points and hiring vehicles to look for grass and feed for the herds.

For most leasing pastoralists, leasing camels provides at least half of their monthly household income, and they reported being able to save more money because of leasing.

Most leasing pastoralists report that they can send their children to school because of income generated from leasing. In addition, more pastoralists who lease are sending their daughters to school than those who do not lease (54% compared with 46%).

Leasing creates job opportunities in communities that contribute to welfare and resilience.

Camel owner associations are emerging, and pastoralists expressed a greater willingness to work together, thus creating an increased ability to maintain or invest in communal assets.

What is the “business case” for the leasing model for dairy companies?

The main reason why dairies are choosing to lease is to increase milk production and milk sales, which in turn increase profit.

Leasing dairies appear to produce more milk than non-leasing dairies, and leasing dairies have increased their milk production over time.

Leasing dairies report having accumulated more assets since leasing; assets most commonly include more camels, water reservoirs, and fodder production equipment.

To what extent do Somali social networks influence the leasing model?

Social networks established with pastoralists are important for dairies because these relationships can provide opportunities to access other pastoralists and grow their leasing business.

Pastoralists emphasize the need for due diligence by taking the time to assess the capacity of the dairy farmer before establishing a lease.

Social networks with community members can serve as brokers in the establishment or contest of agreements to reduce conflicts between pastoralists and dairies.

Observations of Potential Unintended Consequences

Experiences among pastoralists were not universal, and responses from FGDs reflected some of the negative attitudes toward leasing. These responses from FGDs are presented as follows:

Some pastoralists are dissatisfied with the overmilking of their camels and the care provided by the dairies.

Pastoralists report that their household’s camel milk consumption has decreased.

Because dairies buy grazing land and fenced-in pastures, grazing land has decreased for use by pastoralists.

Dairies are vulnerable to the various shocks, stressors, and risks that threaten the resilience of their herds.

Small-scale milk sellers are being pushed out of the market (particularly women who used to get their milk from pastoralists to sell). The competition between dairies and milk market traders also extends to donor support and funding; milk market traders and dairies are both vying for the same donor support to grow their businesses.

COMMENTS AND RECOMMENDATIONS

The study team used the findings from Phase 1 and Phase 2 of the activity to develop a list of comments and recommendations, which are presented as follows:

For pastoralists, leasing is a viable option to help better prepare and react to shocks and stressors such as droughts. Through leasing, pastoralists may have the opportunity to increase their income and invest in assets. Pastoralists can use this increased income and assets to support their families and communities. The dairies can also provide opportunities for employment to community members.

To increase participation among non-leasing pastoralists, there should be consideration of policies and procedures to ensure adequate care of the leased camels (including limiting milking) and increased incentives. Non-leasing pastoralists should be offered enough incentives to make the investment worth the risk. Non-leasing pastoralists noted that they need to ensure that the dairies have the expertise and commitment to ensure the safety of their herds.

Non-leasing pastoralists recommended that the dairies should purchase their milk from pastoralists with agreeable prices at their homestead but should not lease their camels. Pastoralists have been more recently establishing relationships directly with dairies through out-grower schemes, where the pastoralists sell the fresh milk directly to the dairies on a daily basis at a farm gate price for cash. This out-grower scheme was not evaluated during this activity; however, the findings from the FGDs suggest that non-leasing pastoralists may prefer this method.

For dairies, leasing provides an opportunity to increase milk production and milk sales. The increase in profit can be reinvested into the dairies in the form of growing the herd, building water reservoirs, and purchasing fodder production equipment.

Dairies are inclined to participate in leasing and benefit from their social networks. Dairies should have an opportunity to assess the health of camel herds prior to leasing and establish a relationship with the leasing pastoralist. Responses from non-leasing dairies suggest the needs for government support and investment for leasing. Dairies noted these needs in terms of financial support to subsidize the cost of the operating environment, and the lack of legal structures to support leasing contracts. With the ongoing risk of the COVID-19 pandemic and emerging shocks and stressors, such as droughts or a locust invasion, having no financial backup to support leasing is risky for dairies.

There are members of the milk market value chain aside from the pastoralists and dairies whose interests should be considered. Careful consideration should be given on how leasing impacts milk market representatives. Including third party vendors in leasing agreements may improve the competitiveness of milk market representatives. Leasing does not replace the need for assistance to rural communities to support rearing camels and responding to shocks and stressors. Community members requested support for milk refrigeration and milk market traders asked for support for more modern kits with better hygiene and storage and preservation equipment so they can store milk for long-term sale.

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ANNEX A. STUDY REPORT

**FEED THE FUTURE SOMALIA CAMEL LEASING TO IMPACT
RESILIENCE ACTIVITY**

MARCH 2022

STUDY REPORT



Study Report

Feed the Future Somalia Camel Leasing to Impact Resilience Activity

Cooperative Agreement 720BFS19CA00007

March 2022

Prepared for

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Cover photograph: A pastoralist tends to his camel near Salahley, Somaliland. Photo credit: iZone for USAID

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Table of Contents

Executive Summary	1
Introduction and Background	3
Shocks	4
Phase 1	5
Phase 2	6
Results.....	9
Description of Participants.....	9
Context of Shocks.....	11
What impact does leasing have on the welfare and resilience capacities of pastoral households and communities?	13
What is the “business case” for the leasing model for dairy companies?.....	18
To what extent do Somali social networks influence the leasing model?.....	25
Observations of Potential Unintended Consequences.....	29
Data Challenges and Limitations	31
Recommendations and Conclusions	32
References.....	33

Figures

Figure A-1. Study timeline	4
Figure A-2. Household Demographics	10
Figure A-3. Number of camels owned and number of camels lactating.....	11
Figure A-4. Challenges experienced by pastoralists and dairies.....	12
Figure A-5. Household perceived ability to react to shocks when leasing compared with not leasing.....	13
Figure A-6. Percentage of pastoralist households able to save cash	14
Figure A-7. Average number of assets owned, by leasing status.....	15
Figure A-8. Responses from pastoralists when asked if they sent their children to school as a result of leasing	16
Figure A-9. School enrollment for pastoralist households, disaggregated by sex.....	17
Figure A-10. Girls’ school enrollment for ever-leasing pastoralist households over time	17
Figure A-11. Primary reason why ever-leasing dairies began leasing camels.....	18
Figure A-12. Change in dairy monthly profit since starting leasing	19
Figure A-13. Ability of dairies to access more credit when participating in leasing	19
Figure A-14. How leasing dairies have adjusted their business to support leasing.....	20
Figure A-15. Dairies accumulated more assets when participating in leasing.....	21
Figure A-16. Number of camels owned by dairies	22
Figure A-17. Price of milk	23
Figure A-18. Milk Production.....	24

Figure A-19. Pastoralist characteristics that are most important to dairies when establishing leasing arrangements	25
Figure A-20. Average number of pastoralists and camels involved in leases with dairies.....	26
Figure A-21. Ever-leasing pastoralists' satisfaction with leasing.....	29
Figure A-22. Responses from ever-leasing pastoralists and dairies when asked if they would lease again in the future.....	29

Tables

Table A-1. Phase I FGD Participants.....	6
Table A-2. Phase 2 Pastoralist Survey Participants.....	8
Table A-3. Phase 2 Dairy Survey Participants.....	8
Table A-4. Phase 2 FGD Participants.....	9

Acronyms

AOR	Agreement Officer's Representative
COVID-19	Coronavirus Disease 2019
FGD	Focus Group Discussion
GEEL	Growth, Enterprise, Employment and Livelihoods
HACOF	Horn Africa Consultants Firm
IRB	Institutional Review Board
KII	Key Informant Interview
L	Liter
USAID	United States Agency for International Development
USD	U.S. Dollar
USG	United States Government

EXECUTIVE SUMMARY

In response to a severe drought in Somalia in 2016 and 2017, the United States Agency for International Development's (USAID's) Somalia Growth, Enterprise, Employment and Livelihoods (GEEL) project piloted the practice of camel leasing¹ to mitigate impacts on the livestock sector. Under a leasing arrangement, commercial dairies lease a lactating camel from a camel-herding pastoralist (henceforth referred to as “pastoralists”), and in exchange provide the pastoralist with a monthly payment and a guarantee that the camel's health and well-being will be maintained through the provision of food, water, and veterinary services. Leasing has the potential to be a mutually beneficial practice to enhance the resilience of both pastoralists and dairies.

The Feed the Future Somalia Camel Leasing to Impact Resilience Activity (henceforth referred to as the Somalia Camel Leasing Activity) was a 33-month activity from June 2019 through March 2022 and was supported by USAID and implemented by RTI International. Through a phased and mixed-methods approach, the Camel Leasing Activity explored the potential impact on resilience and resilience capacities of leasing on pastoralist households, dairies, and communities.

Phase I of the activity aimed to provide a deeper understanding on how leasing works in the region. Phase I included a desk review, a mapping exercise, the development of a theory of change, and focus group discussions (FGDs). The desk review consisted of secondary data sources and key informant interviews (KIIs) with experts in camel pastoralism, livestock leasing, and resilience. The desk review provided an overview of the demographics, social dynamics, existing political system, agro-pastoralist economy, climate and environment, and security contexts that may influence leasing. The results from the mapping exercise identified leasing dairies and pastoralists and indicated that the highest concentration of leasing dairies and pastoralists was in the Woqooyi Galbeed Region. Therefore, Phase 2 of the activity focused on that specific region. The theory of change outlined the pathways through which leasing can impact resilience and served as the basis to develop data collection tools and approaches. Lastly, the FGDs helped refine the hypothesis that generating income from leasing can have positive, widespread household effects that build resilience capacities in the form of additional savings and investing in assets.

The study team incorporated the findings from the Phase I study (USAID & RTI International, 2020) into the Phase 2 study, which used a mixed-methods longitudinal exploratory study design, involving a value chain analysis, quantitative surveys, FGDs, and exploratory case studies. During Phase 3 of the study, the team analyzed all of the collected data and disseminated the findings.

The findings from Phase 2 include quantitative data points from 46 leasing pastoralist surveys, 51 previously leasing pastoralist surveys, and 594 non-leasing pastoralist surveys and from 40 leasing dairies, 25 previously leasing dairies, and 48 non-leasing dairies over three rounds of data collection. It is important to note that several respondents changed study arm over time, resulting in inconsistencies in sample sizes for each study arm in the surveys. For clarity, the numerators for each statistic (n) are included in the findings outlined in this study report. The findings also include qualitative data from FGDs among these groups of pastoralists and dairies, as well as community members and Milk Market Committee members. The small sample size limits the ability to generalize the study findings. The findings outlined in this study report should not be interpreted as evidence of impact, but rather learnings to inform future work.

The three research questions and their findings are discussed as follows.

¹ It is important to note that when “leasing,” “non-leasing,” and “previously leasing” appear in this report, these words and phrases are referring to camel leasing.

What impact does leasing have on the welfare and resilience capacities of pastoral households and communities?

Leasing pastoralists generally felt that participating in leasing helps them to better react to shocks and stressors compared to when they were not leasing camels.

Although most pastoralists indicated that they did not have plans to prepare for future shocks and stressors, those who did were most likely to purchase assets and save money. Pastoralists also described constructing community water points and hiring vehicles to look for grass and feed for the herds.

For most leasing pastoralists, leasing camels provides at least half of their monthly household income, and they reported being able to save more money because of leasing.

Most leasing pastoralists report that they can send their children to school because of income generated from leasing. In addition, more pastoralists who lease are sending their daughters to school than those who do not lease (54% compared with 46%).

Leasing creates job opportunities in communities that contribute to welfare and resilience.

Camel owner associations are emerging, and pastoralists expressed a greater willingness to work together, thus creating an increased ability to maintain or invest in communal assets.

What is the “business case” for the leasing model for dairy companies?

The main reason why dairies are choosing to lease is to increase milk production and milk sales, which in turn increase profit.

Leasing dairies appear to produce more milk than non-leasing dairies, and leasing dairies have increased their milk production over time.

Leasing dairies report having accumulated more assets since leasing; assets most commonly include more camels, water reservoirs, and fodder production equipment.

To what extent do Somali social networks influence the leasing model?

Social networks established with pastoralists are important for dairies because these relationships can provide opportunities to access other pastoralists and grow their leasing business.

Pastoralists emphasize the need for due diligence by taking the time to assess the capacity of the dairy farmer before establishing a lease.

Social networks with community members can serve as brokers in the establishment or contest of agreements to reduce conflicts between pastoralists and dairies.

Observations of Potential Unintended Consequences

Experiences among pastoralists were not universal, and responses from FGDs reflected some of the negative attitudes toward leasing. These responses from FGDs are presented as follows:

Some pastoralists are dissatisfied with the overmilking of their camels and the care provided by the dairies.

Pastoralists report that their household’s camel milk consumption has decreased.

Because dairies buy grazing land and fenced-in pastures, grazing land has decreased for use by pastoralists.

Dairies are vulnerable to the various shocks, stressors, and risks that threaten the resilience of their herds.

Small-scale milk sellers are being pushed out of the market (particularly women who used to get their milk from pastoralists to sell). The competition between dairies and milk market traders also extends to donor support and funding; milk market traders and dairies are both vying for the same donor support to grow their businesses.

INTRODUCTION AND BACKGROUND

USAID awarded the Camel Leasing Activity to RTI International as part of a collaborative effort to co-create, co-design, and co-invest innovative research and development interventions to address challenges to global food security. The 33-month activity (i.e., June 2019 through March 2022) was designed to explore potential impacts on resilience and resilience capacities of leasing on pastoralist, dairies, and communities in the Woqooyi Galbeed Region.

Starting in 2016 and continuing into 2017, a severe drought in the Horn of Africa threatened the well-being of Somalis and their camels. Hundreds of thousands of Somalis were food insecure and in dire need of humanitarian assistance (Food Security and Nutrition Analysis Unit–Somalia (FSNAU), 2017). Pastoralist households were unable to support their camel herds, forcing them to choose between selling their camels or letting them die. Anecdotal evidence suggests that 60% to 80% of Somali camels were lost to the drought. This loss of camels greatly impacts camel milk consumption, the camel milk value chain, and the overall well-being of pastoralists and dairies.

During this severe drought, USAID/Somalia sought innovative solutions to mitigate the impacts of the drought on the livestock industry. The GEEL project, which was implemented by the International Resources Group/Engility, a subsidiary of RTI International, piloted an effort to improve the commercial milk supply through the practice of leasing. The GEEL project helped negotiate leases of lactating camels that were held between dairy companies and pastoralists.

Leasing is a formal arrangement between camel milk dairies and pastoralists. Dairies lease lactating camels from pastoralists for a negotiated period and at an agreed upon level 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 regular payments (cash or in-kind) for their camels. **Leasing differs from the less formal practice of lending camels among family, friends, and clan members; camel lending has been occurring in the region for generations.**

Leasing's potential to maintain the camel milk market while protecting pastoralist livelihoods quickly gained the attention of dairies, pastoralists, and international development donors. This innovation could be beneficial to both parties of the lease while also being a potentially viable private sector–led solution to increase resilience when climate-related shocks and stressors occur.

Through a mixed-methods longitudinal exploratory study design, the Camel Leasing Activity specifically aimed to address the following three research questions:

CAMEL MILK

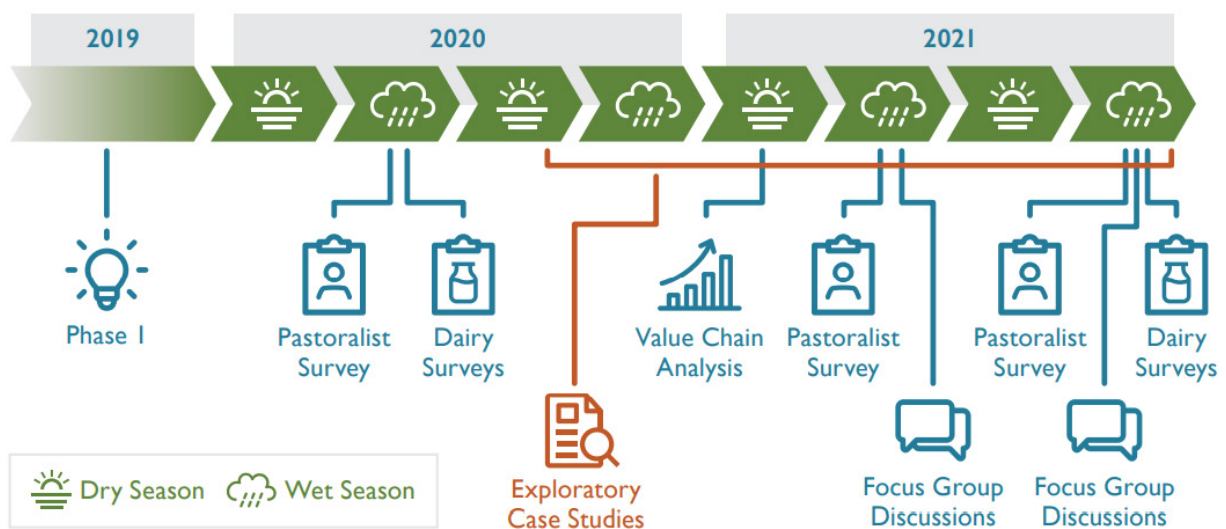
Camel milk plays an important role in the nutrition of arid-zone populations in several East African countries (Farah et al., 2007). By increasing dairy production during drier seasons (when livestock prices are low), pastoralists can diversify their income sources during dry and wet seasons (Herren, 1990). Economic indicators regarding camel milk suggest that the market is expanding in the region and positively effecting the broader economy through initiatives to improve efficiency, pasteurize, and otherwise utilize the milk. Camel milk has high degrees of “complexity, flexibility, and effectiveness” according to economic and agricultural experts (Nori et al., 2006).

RESEARCH QUESTIONS

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

The activity was implemented in the following two phases as shown in Figure A-1. Phase I was a retrospective analyses to understand the background and context for leasing. Phase 2 was a prospective analyses to better understand, over time, the impacts of leasing on camel-herding pastoralist households, dairies, and communities. During Phase 3 of the study, the team analyzed all of the collected data and disseminated the findings.

FIGURE A-1. STUDY TIMELINE



Shocks and Stressors

During 2016 and 2017, Somali households experienced extreme hardship because of severe drought and erratic rainfalls, resulting in the deaths of many camels, loss of income, and increased household hunger. During the activity timeline (2019 through 2022), no climate-related shocks and stressors were registered as significant events by the international community. However, in 2021 more than 80% of the country experienced drought conditions with an estimated 3.4 million people affected (United Nations Office for the Coordination of Humanitarian Affairs (OCHA), 2021). Specifically, the Woqooyi Galbeed Region experienced moderate drought conditions, resulting in some damage to crops and pastures and some water shortages (Food and Agricultural Organization of the United Nations, 2021). During 2022, Somalis are once again experiencing a worsening drought after a fourth consecutive failed rainfall season, with 90% of the country experiencing drought-like conditions and severe water shortages. Somali households have also experienced other shocks and stressors, including locust infestation of crops and an unidentified camel disease, which are continuing to threaten their livelihoods and well-being. Although the international community did not register a “significant” event, shocks and stressors were likely impacting the communities included in the study.

PHASE I

Phase I of the study focused on generating a strong foundational understanding of the historical practice of leasing among Somalis. The study team applied the knowledge gained and lessons learned from Phase I to adaptively manage the research and ensure that prospective portions of the study conducted during Phase 2 accurately reflected the situation on the ground to answer the research questions. To best understand the historical and contextual aspects regarding leasing in Somalia, the study team carried out several main sub-activities. These sub-activities are discussed in the remainder of this section.

Desk review. The team conducted the desk review of available resources to document the origins of leasing in Somalia and to identify the existing contextual factors that may facilitate or inhibit the success of the practice. Specifically, the study team reviewed more than 65 reports or online resources and conducted 19 interviews with experts about camel pastoralism, livestock leasing, and camel milk. A list of experts interviewed is presented in Annex B and the full desk review is included as Annex C of the final report.

Mapping exercise of dairies and pastoralists currently participating in leasing. The study team conducted the mapping exercise to appropriately orient the study's geographic focus. The study team first identified and contacted dairies that historically participated in leasing. This mapping exercise served as the basis for the survey sampling frames. Through a snowball technique, the team asked each dairy to identify other dairies. During the communications, the team also asked the dairies to provide contact information for leasing pastoralists. The study team overlaid the locations of the dairies on the most current livelihood zone maps (the most recent data available were from 2016) (Annex D). The geographic distribution of leasing dairies covered several livelihood zones while being centralized in a geographic region of Somaliland. In collaboration with USAID and partners, the study team decided to shift from a livelihood zone approach to focusing on the Woqooyi Galbeed Region because it had the highest concentration of leasing dairies. The team drew a 20-kilometer buffer around known leasing dairies to select villages nearby, and then randomly sampled 30 villages. Data collectors contacted village elders of the selected villages and asked them to share the names of pastoralists in their community. The Woqooyi Galbeed 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.

Theory of change. The study team generated a theory of change that reflected how the study hypothesized the practice of leasing would affect the resilience capacities and ultimately the well-being of pastoralists and pastoralist communities. The development of this theory of change was an iterative and collaborative effort involving RTI technical experts, USAID counterparts, and Somali colleagues. The theory of change is presented in both narrative and graphical formats in Annex E of the final report. The study team designed the theory of change as the basis to develop data collection tools and methods to address the study's research questions.

The study team used the desk review, mapping exercise, and the theory of change to:

- Identify and define relevant resilience capacities of individuals, households, and communities
- Narrow the focus of the Camel Leasing Activity to emphasize climatic shocks and stressors in the forms of droughts as the major events testing the resilience of those populations.

FGDs. The study team conducted five FGDs (Table A-1) with a total of 41 representatives from five key respondent groups: pastoralists participating in leasing, pastoralists who have not participated in leasing, dairies participating in leasing, dairies who have not participated in leasing, and representatives from communities where leasing is occurring. The study team designed these FGDs to provide insights

into initial perceptions about leasing for use in developing qualitative data collection instruments for prospective data collection during Phase 2. The study team used the findings from the FGDs to help refine the hypothesis that generating income from leasing can have positive, widespread household effects that build resilience capacities in the form of additional savings and investment in assets.

TABLE A-I. PHASE I FGD PARTICIPANTS

Group	Location	November 2019		
		Men	Women	Total
Leasing pastoralists	Salahley	7	1	8
Non-leasing pastoralists	Salahley	6	4	10
Leasing dairies	Hargeisa	7	0	7
Non-leasing dairies	Hargeisa	6	0	6
Community members	Salahley	0	10	10
Totals		26	15	41

FGD APPROACH

The study team conducted FGDs, held at mutually convenient locations, throughout the Camel Leasing Activity to obtain an in-depth understanding of experiences and perceptions of leasing from pastoralists and dairies. Participants in the FGDs were compensated for their time.

Before the FGDs were held, the study team tailored the instruments and guides to each respondent group and round of data collection (Annex H of the final report). Guides included a rationale for primary questions and examples of probing questions. RTI Technical Specialists, USAID counterparts, a Camel Leasing Livestock Specialist, and representatives from the data collection partner, Horn Africa Consultants Firm (HACOF) collaborated during the design and review of each guide. RTI’s internal Institutional Review Board (IRB) reviewed the guides, which were then translated into Somali and back-translated to English to ensure accuracy and integrity of the languages.

HACOF and RTI staff facilitated a multi-day training for the FGD facilitators and notetakers that included role-playing exercises to improve familiarity and comfort with using the guides. Supervision was present in person for the first training and was provided virtually (because of coronavirus disease 2019 [COVID-19] travel restrictions) for the subsequent training sessions.

HACOF and RTI staff used the results of the dairy and pastoralist mapping exercise to recruit 6 to 10 participants to take part in each FGD. Before engaging pastoralists or community members, HACOF staff engaged village elders to ensure their awareness of the study and the cooperation of participants.

HACOF and RTI staff ensured that the FGDs were audio recorded, notes were taken, and the recordings were transcribed and translated into English. HACOF and RTI staff used qualitative data analysis software to conduct pattern and content analyses.

PHASE 2

To understand change over time, the study team conducted the many Phase 2 sub-activities at multiple timepoints. These sub-activities are discussed in the remainder of this section.

Conducting qualitative surveys at three timepoints among pastoralists. The survey participants included leasing pastoralists, previously leasing pastoralists², and non-leasing pastoralists. The study team designed the surveys to help the team understand the impact of leasing on pastoralists and how their lives changed over time (Table A-2). However, the team identified an insufficient number of cases of leasing to allow any claims to be generalizable or measured with statistical significance; therefore, the findings discussed in this section of the report should not be interpreted as evidence of impact, but rather learnings.

The team used a panel approach for the survey data collection, during which attempts were made to collect data from the same pastoralists over the three different timepoints of data collection. This approach was intended to help with understanding how pastoralists cope with droughts or other climate-related shocks and stressors, as well as how the practice of leasing might affect their well-being over time.

Prior to the first pastoralist survey data collection in March 2020, COVID-19 was declared a global pandemic, and all planned data collection efforts were postponed. In May 2020, after monitoring the pandemic and assessing the implications on the study, data collection moved forward in the form of telephone-based surveys. Recognizing the inherent challenges with telephone-based data collection in general and specifically in the regional context, the study team redesigned the original survey instrument to be shorter and only focus on critical questions.

Round 2 of pastoralist survey data collection occurred in April 2021, once it was determined that the risk associated with COVID-19 in the region was no longer prohibitive to in-person data collection. This round of the survey re-introduced many of the original survey questions, along with additional suggestions from USAID and data collection partners. This survey instrument was estimated to take approximately 45 minutes to administer.

Round 3 of pastoralist survey data collection occurred in November 2021 with a shortened survey instrument designed to gather all of the necessary information without overburdening participants. This survey instrument was estimated to take approximately 25 minutes to administer.

QUANTITATIVE SURVEY INSTRUMENTS

RTI International, USAID, GEEL, local Camel Leasing Specialists, and data collection partners co-developed the quantitative survey instruments to ensure cultural appropriateness and inclusion of all necessary information (Annex I of the final report).

The study team translated the instruments to Somali and tested to ensure the syntax was appropriate for participants.

The study team uploaded the quantitative survey instruments to Tangerine (RTI International, 2022), an RTI developed Android-based data collection platform.

² Previously leasing pastoralists are individuals who self-identified as leasing at the beginning of the study and then later self-identified as non-leasing.

TABLE A-2. PHASE 2 PASTORALIST SURVEY PARTICIPANTS

Group ^a	May 2020			April 2021			November 2021		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
Leasing pastoralists	20	0	20	12	0	12	14	0	14
Previously leasing pastoralists	7	1	8	25	0	25	18	0	18
Non-leasing pastoralists	159	14	173	221	21	242	163	16	179
Totals	186	15	201	258	21	279	195	16	211

^a Although data collection used a panel approach, the leasing status of pastoralists often changed between rounds; thus, the number of individuals in each study arm was different during each round of data collection.

Conducting qualitative surveys at two timepoints among dairies. The survey participants included leasing dairies, previously leasing dairies³, and non-leasing dairies (Table A-3). The study team designed the surveys to help them understand the impact of leasing on dairies and how their business changed over time. Round 1 of the dairy surveys was telephone-based and occurred in September 2020. The final round of dairy surveys was in person and occurred in November 2021.

TABLE A-3. PHASE 2 DAIRY SURVEY PARTICIPANTS

Group	September 2020			November 2021		
	Men	Women	Total	Men	Women	Total
Leasing dairies	21	1	22	13	4	17
Previously leasing dairies	3	0	3	22	0	22
Non-leasing dairies	21	2	23	25	1	26
Totals	45	3	48	60	5	65

Conducting FGDs with representatives from seven key respondent groups⁴. The seven groups were leasing pastoralists, previously leasing pastoralists, non-leasing pastoralists, leasing dairies⁵, previously leasing dairies, non-leasing dairies, pastoralist community members, and Milk Market Committee members (Table A-4). The study team designed these FGDs to provide insights into perceptions and experiences regarding leasing. The team implemented the FGDs with the same methodology describes in during Phase I. During June and July 2021, a total of 48 individuals participated across the FGDs. Pastoralist participants were recruited from those who participated in the prospective quantitative survey. Non-leasing pastoralists and each type of dairy were randomly selected. Only a small number of milk market representatives were identified, so all of them were invited to participate in the FGD. In November 2021, a total of 39 individuals participated.

³ Previously leasing dairies are dairies that self-identified as leasing at the beginning of the study and then later self-identified as non-leasing.

⁴ Previously leasing pastoralists and dairies were included, given the increased prominence of representatives from these groups and the importance of understanding why they no longer practiced leasing. The inclusion of milk market representatives stemmed from the importance of this group of people as demonstrated through the completion of the Camel Milk Value Chain Analysis.

⁵ Dairies were excluded from the FGDs during Round 3 of data collection because of concerns regarding overburdening the dairies.

TABLE A-4. PHASE 2 FGD PARTICIPANTS

Group	Location	June 24–July 1, 2021			November 2021		
		Men	Women	Total	Men	Women	Total
Leasing pastoralists	Hargeisa	6	0	6	7	0	7
Previously leasing pastoralists	Hargeisa	5	0	5	6	0	6
Non-leasing pastoralists	Hargeisa	0	7	7	6	0	6
Leasing dairies	Hargeisa	5	1	6	—	—	—
Previously leasing dairies	Hargeisa	2	0	2	—	—	—
Non-leasing dairies	Hargeisa	6	0	6	—	—	—
Community members	Balligubadle	7	2	9	7	3	10
Milk Market Committee members	Hargeisa	0	7	7	0	10	10
Totals		31	17	48	26	13	39

Note: “—” in this table means that FGDs were not held among these groups in November 2021.

Conducting exploratory case studies. The study team conducted case studies among six individuals (i.e., three pastoralists and three dairy representatives) who were identified primarily through their engagement in the FGDs. The team developed a robust interview guide and ensured that it was translated into Somali for each respondent type (pastoralist or dairy) (Annex J of the final report). The team estimated that the case study interviews took between 60 and 90 minutes, and they were held at each participant’s dwelling or at the dairy. Interviewers were encouraged to cover as much material as possible while spending time delving into particularly interesting topics to fully capture the participant’s story. Interviewers used an audio recording device and a notetaker to collect the information during the interviews. Participants were compensated for their time. After conducting the interviews, the team ensured that the audio footage was transcribed and then translated into English and verified the information by using the notes from the interview. Case study write-ups are presented in Annex G of the final report.

Results

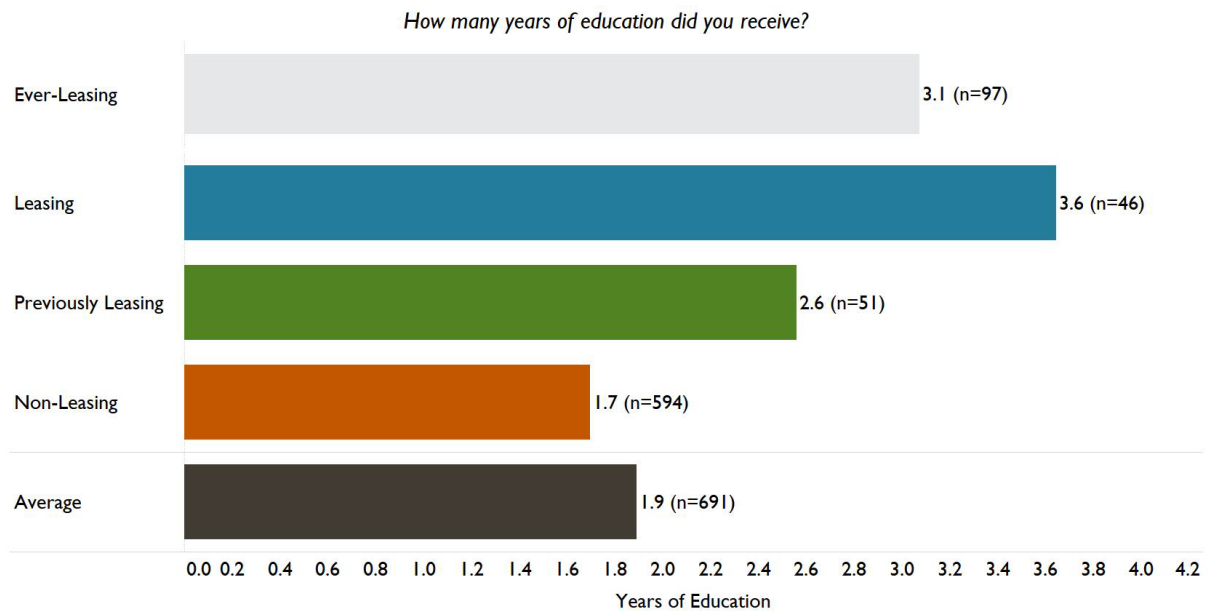
The results discussed in this section include quantitative and qualitative data spanning all three rounds of data collection, comparing responses from each study arm of leasing pastoralists, previously leasing pastoralists, non-leasing pastoralists, leasing dairies, previously leasing dairies, non-leasing dairies, community members, and Milk Market Committee members. Because of the small sample size of leasing and previously leasing study arms, comparisons have also been made between those who have ever participated in leasing (ever-leasing) and those who have never participated in leasing (non-leasing). Although data collection followed a panel approach, the small sample size required that several new pastoralists and dairies were added to the sample in later rounds. The true panel maintained through all three rounds consisted of 188 pastoralists and 41 dairies. It is important to note that pastoralists and dairies often changed their leasing status between rounds, which resulted in inconsistent sample sizes by study arm in each round.

Description of Participants

The data collectors obtained demographic information for pastoralists for each round of the survey. Based on the survey findings, most pastoralists in the sample (83.8%) permanently reside in their current location, and the remaining (14.2%) migrate seasonally. The data collectors reported that most pastoralists living in a traditional house (84.0%), with the remaining (16.0%) residing in other types of

dwelling units. The average age of a participant was 43 years with a standard deviation of 12 years. The participants reported that they had an average of 1.9 years of education, with a standard deviation of 3.7 years and a notable difference by study arm (Figure A-2). Leasing pastoralists on average had 1.9 years more education than non-leasing pastoralists. In terms of household composition, the average household size in the sample was 8.5 members, with a standard deviation of 3. The average number of children in a household was 4.3, with an average of 2.4 girls and 1.9 boys. Out of all participants, 91.8% were men.

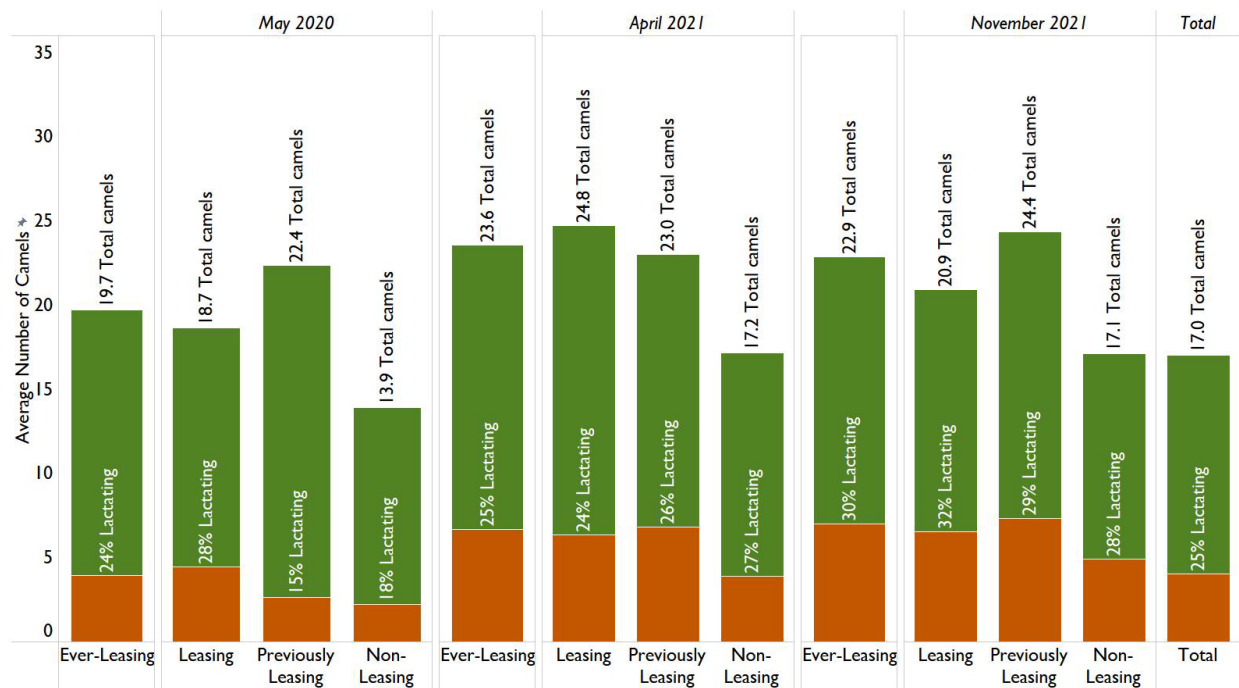
FIGURE A-2. HOUSEHOLD DEMOGRAPHICS



Note: Ever-leasing is a sum of the leasers and previous leasers.

When evaluating the impact of leasing on pastoralists’ well-being, it is important to first consider that leasing pastoralists in the sample were generally more economically secure than non-leasing pastoralists at the beginning of the study. These pastoralists may be less risk-averse to leasing assets and thus able to participate in leasing in the first place. For example, leasing pastoralists own more camels than non-leasing pastoralists, with an average of five more camels in their herds (Figure A-3), which would make leasing less risky because each individual camel would have less marginal value to a leasing pastoralist compared with a non-leasing pastoralist. Leasing pastoralists’ households also own slightly more other types of assets than non-leasing, with leasing pastoralists reporting an average of 3.1 assets compared with 2.8 for non-leasers.

FIGURE A-3. NUMBER OF CAMELS OWNED AND NUMBER OF CAMELS LACTATING

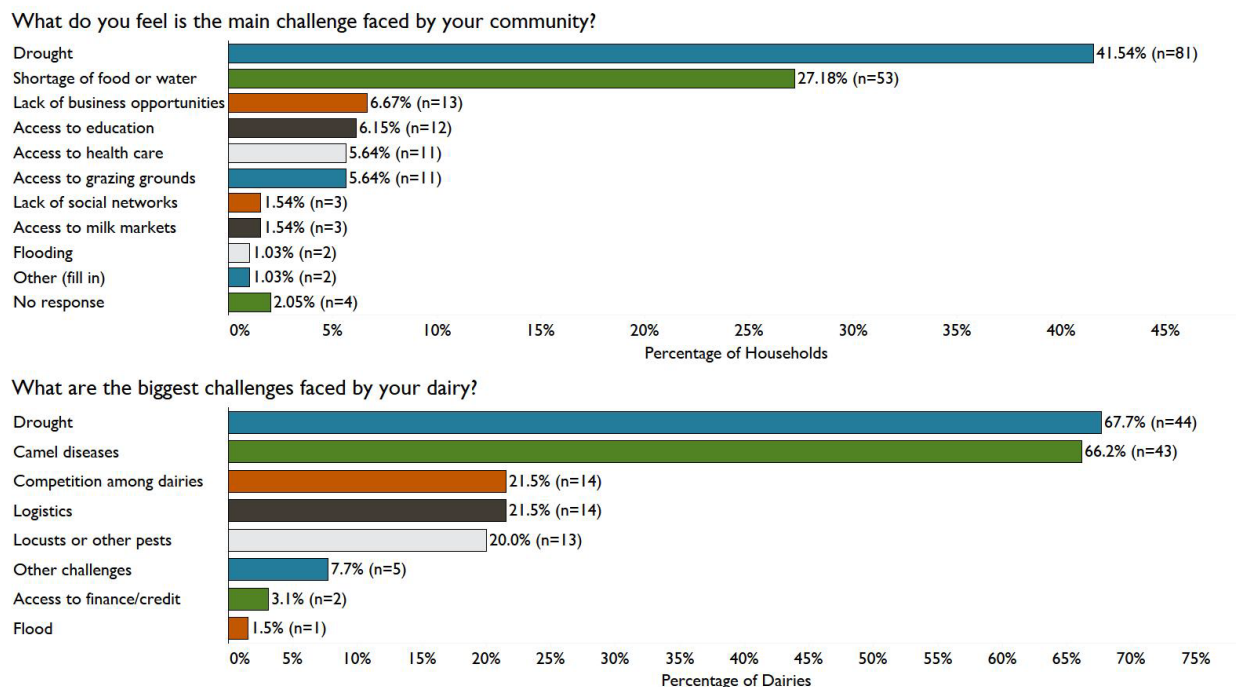


Note: Ever-leasing is a sum of the leasers and previous leasers.

Context of Shocks and Stressors

Natural shocks and stressors have had an important impact on pastoralists, dairies, milk market members, and communities. Most pastoralists surveyed reported experiencing at least one shock in the past three years; 84.2% (n=399) reported experiencing drought, 82.7% (n=392) reported crop pests, 24.1% (n=47) reported camel disease, 11.6% (n=55) reported depletion of pasture, and 6% (n=29) reported heavy storms and cyclones. In addition, 41.5% (n=81) of surveyed pastoralists and 67.7% (n=44) of dairies reported that drought was the main challenge that they experienced (Figure A-4). One leasing pastoralist noted that the drought crisis has become increasingly worse over the years, which the pastoralist credited to the effects of climate change. For pastoralist households, another major challenge is shortage of food and water, which has been exacerbated by the drought.

FIGURE A-4. CHALLENGES EXPERIENCED BY PASTORALISTS AND DAIRIES



During the FGDs, milk market representatives mentioned both drought and locust invasion as the most detrimental shocks and stressors to their business. These shocks and stressors destroyed pastures, leading to the loss of livestock and a shortage of milk to sell. The locust invasion has also been a great challenge because locusts have cleared vegetation and pasture and because sufficient remedies have not been developed or provided.

COVID-19

The COVID-19 pandemic was also a noted stressor to these challenges. As one leasing dairy said, the pandemic has crippled both dairies and pastoralists economically because it has curtailed movement, especially with curfews and all economic activities, thus leading to a deterioration of income and livelihoods for both pastoralists, dairies, and communities. The pandemic has also negatively affected purchasing power. As one leasing pastoralist said, although they do not import from the outside, the purchasing power of the public has weakened, thus decreasing milk purchases, while the cost of input goods, such as feeds, is increasing for dairies to maintain camels. Dairies and pastoralists indicated coming together to help their communities in response to COVID-19.

Additionally, during the quantitative surveys conducted in November 2021, both pastoralists and dairies mentioned that a camel disease was an additional challenge. Specifically, 35 pastoralists said their camel herds were affected by the mysterious disease, with 24 reporting camel death and 11 reporting decreased milk production caused by the disease. Regarding the responses from dairies, 66.0% (n=43) said their herd had been affected by the disease. The supply of milk had been halted because of suspicions regarding the safety of camel’s milk for consumption. Milk Market Committee members and pastoralists noted that people stopped buying camel milk and meat when a disease outbreak occurred. During the FGDs, the pastoralists and dairies expressed fears that the disease will spread.

Despite the high number of shocks and stressors experienced by households, out of all pastoralists surveyed, 19.6% (n=93) reported having plans to prepare for future shocks and stressors. Responses to shocks and stressors per both pastoralists and community members indicate taking communal approaches to absorb and adapt to these shock and stressors. Based on the survey findings, 65.6% (n=128) of pastoralists believed that their community was able to assist households experiencing

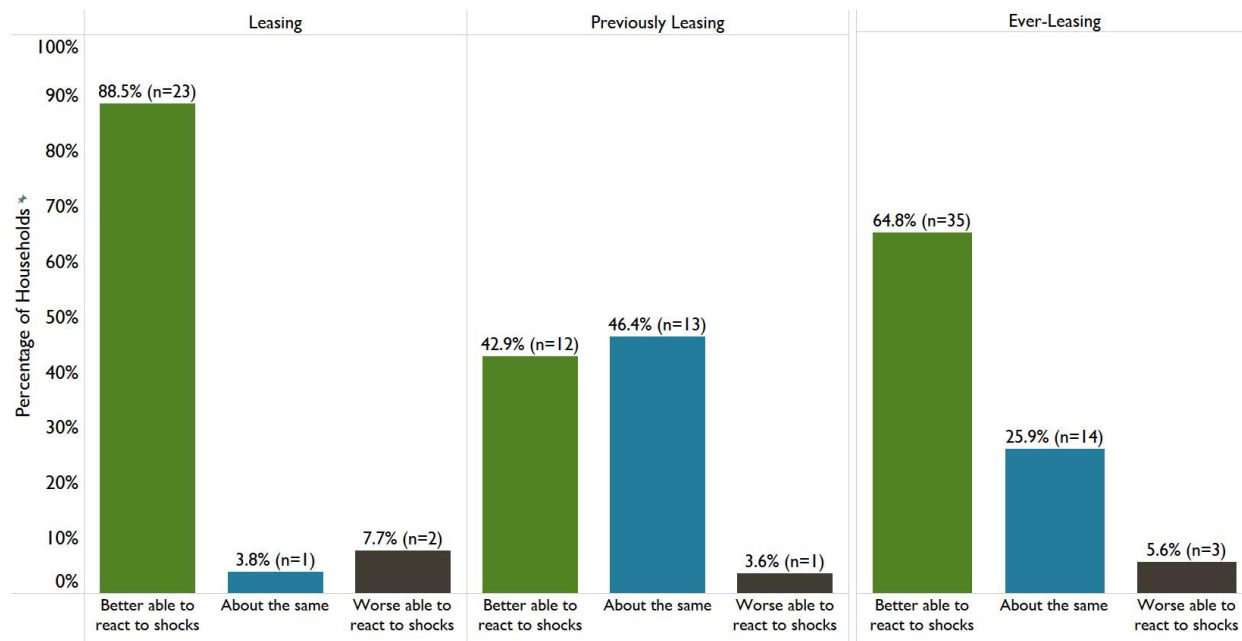
difficulties from shocks and stressors. Community members plan different approaches to agricultural activities so that during droughts, they can feed camels with stalks planted three or four years previously. A pastoralist also said that the community was building a water point for the livestock, where fodder will be planted on the farms to cope with limited water availability. Especially during summer months and dry seasons when livestock experience food shortages, the interviewed pastoralists said that they hire vehicles to look for grass or feed in other areas where they can move their herds.

What impact does leasing have on the welfare and resilience capacities of pastoral households and communities?

Based on the survey findings, pastoralists who lease camels or previously leased camels (ever-leasing) generally believed that participating in leasing helped them better react to shocks compared with when they were not leasing camels (64.8% [n=35]). However, when disaggregating the pastoralists by leasing and previously leasing, it appears that those who continuously lease had stronger feelings about their ability to react to shocks than those who previously leased (88.5% [n=23] compared with 42.9% [n=12]) (Figure A-5).

“In our case, when our milk suppliers in the rural areas were hit hard, we came together and assisted with fodder and feeds to enable their animals to survive as much as possible. Sometimes we support their children also through the hardship periods.”
Female member of the Milk Market Committee member

FIGURE A-5. HOUSEHOLD PERCEIVED ABILITY TO REACT TO SHOCKS WHEN LEASING COMPARED WITH NOT LEASING



Note: Ever-leasing is a sum of the leasers and previous leasers.

Although most pastoralists (79.5% [n=377]) indicated that they did not have plans to prepare for future shocks, those who said that they did have plans were most likely to save money (23.4% [n=34]) and purchase assets (38.6% [n=56]). Pastoralists also described constructing community water points and hiring vehicles to look for grass and feed for the herds.

Among ever-leasing pastoralists, the most important factor in making the decision to lease was compensation (56% [n=37]), and the second most important was that the camel will be well cared for (38% [n=25]). In addition, 89% (n=41) of leasing pastoralists plan to continue leasing, with the main

reason being to earn additional household income (91% [n=21]). The survey findings also showed that 39% (n=14) of previously leasing pastoralists would consider leasing again in the future, for the primary reason of earning additional household income. The findings from the study suggest that the main incentive of pastoralists to lease their camels is financial.

Out of the non-leasing pastoralists, 22.3% (n=120) reported that their reason for not leasing was they were not offered enough compensation. In return for their camels, 73.8% (n=326) of non-leasing pastoralists reported that they would require \$90 or more a month.

The median number of camels owned by a non-leasing household was 10, compared with 20 for ever-leasing households; of these, a median of two camels are lactating for non-leasing pastoralists compared with four camels for leasing pastoralists. Each individual camel has a higher marginal value to non-leasing pastoralists because each camel makes up a larger share of total milk production and asset ownership for the household. The hesitancy of non-leasing pastoralists to lease their camels to dairies demonstrates that in the current leasing market, the willingness to pay of leasing dairies is currently below that which non-leasing pastoralists are willing to risk by leasing. For non-leasing pastoralists to consider leasing, more incentives are required, which could include government regulation of leasing, higher monthly leasing payments, and greater commitment in leasing contracts regarding care of the leased camels.

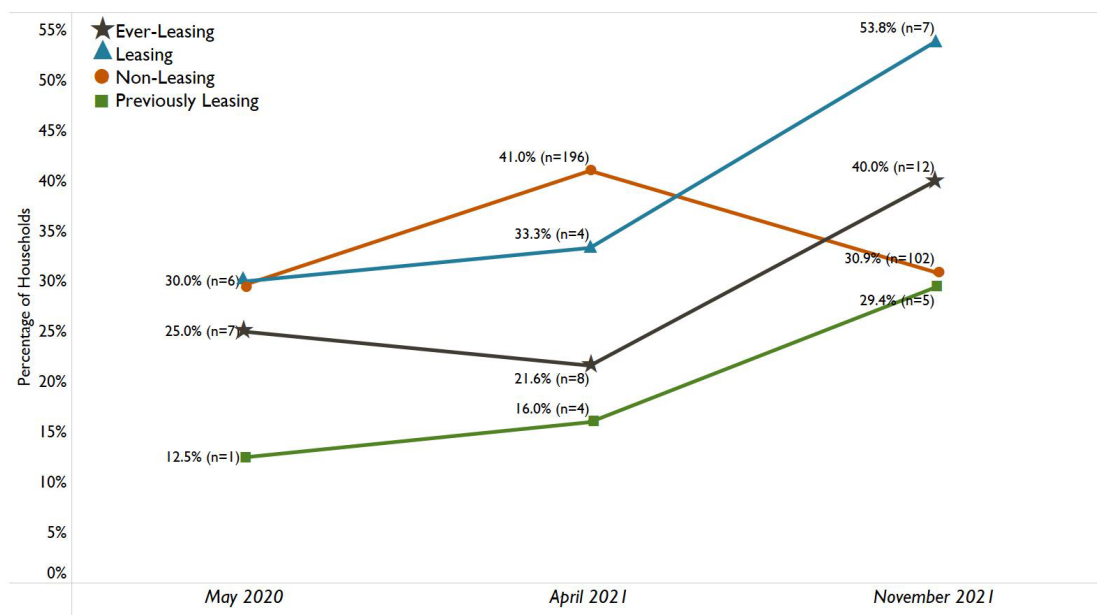
Saving Money

For most leasing pastoralists (71.7% [n=33]), leasing camels provides at least half of their monthly household income. Out of the leasing pastoralists, 65.4% (n=17) reported being able to save more money because of leasing, and 40.7% (n=22) of ever-leasing pastoralists reported that their households have been able to save more money from participating in the practice.

“Camel leasing would help you in getting finance to deal with pandemics, pasture, manage the farm, and move the family to a safe place. So, you have financial ability to solve these challenges.”
Male member of the leasing pastoralists group

Furthermore, the data show an upward trend over the course of the study regarding the proportion of leasing and previously leasing households that can save cash, whereas the proportion of non-leasing households able to save cash was the same in Rounds 1 and 3 (Figure A-6).

FIGURE A-6. PERCENTAGE OF PASTORALIST HOUSEHOLDS ABLE TO SAVE CASH

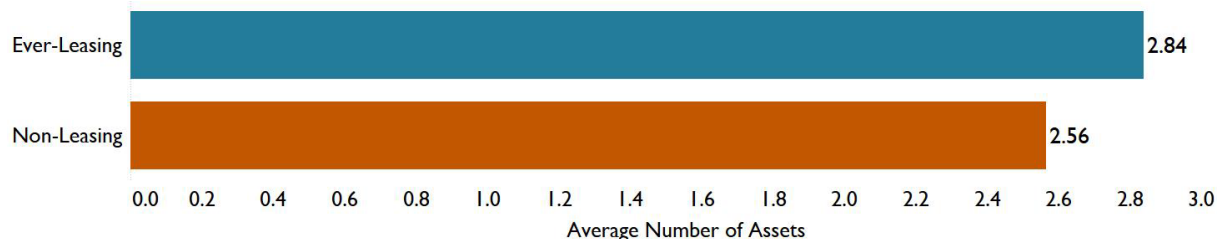


Note: Ever-leasing is a sum of the leasers and previous leasers.

Purchasing Assets

Out of the pastoralists who have ever leased, 31.5% (n=17) reported that their households had invested in other assets because of leasing. This response aligns with the reported number of assets owned across leasing groups. On average, pastoralists who had ever leased reported 2.84 assets compared with 2.56 among non-leasing pastoralists (Figure A-7). During an FGD, a leasing pastoralist explained that leasing contributed to an increase in savings, which enabled them to purchase more camels.

FIGURE A-7. AVERAGE NUMBER OF ASSETS OWNED, BY LEASING STATUS



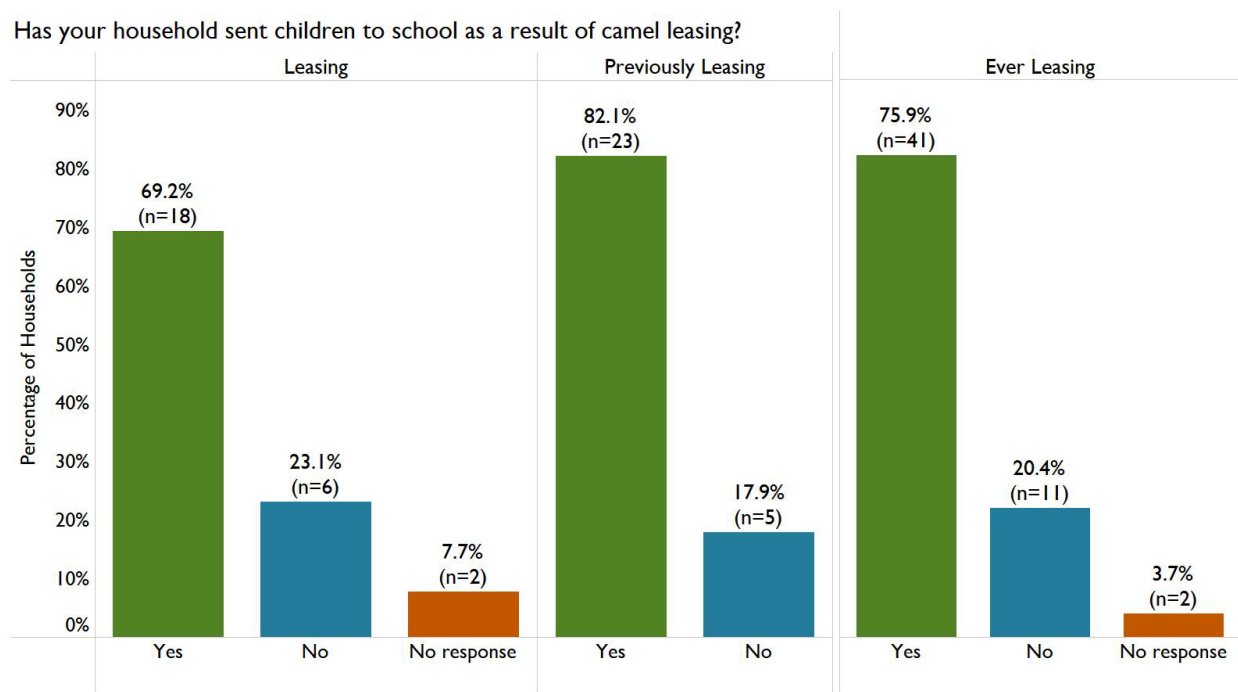
Note: Ever-leasing is a sum of the leasers and previous leasers.

Providing for Household Well-Being

Findings from this study suggest that earnings from leasing contribute to pastoralists' ability to care for their families. With the increased income, 73.0% (n=54) of ever-leasing pastoralists reported purchasing food as their main use of the income. An additional important way that leasing appears to positively impacted household well-being is an increase in school attendance among leasing pastoralists' children. Survey results showed that 75.9% (n=41) of ever-leasing pastoralists reported sending their children to school because of leasing (Figure A-8). During the FGDs, one leasing pastoralist discussed how their children's school fees are being paid for by the same camels their children used to trek after; others discussed the ability to send their children to the city to learn. Among the ever-leasing FGD participants, this was the first time they could send their children to school. A leasing pastoralist interviewed also discussed the healthier appearance of their children as they began schooling.

“Camel leasing enables the funding of children’s education. With that, we are able to send our kids to school and make savings and to purchase more camels from our savings. So, we have benefited a lot from camel leasing.”
Male member of the leasing pastoralists group

FIGURE A-8. RESPONSES FROM PASTORALISTS WHEN ASKED IF THEY SENT THEIR CHILDREN TO SCHOOL AS A RESULT OF LEASING



Note: Ever-leasing is a sum of the leasers and previous leasers.

Interestingly, the average percentage of girls enrolled in school among ever-leasing pastoralists was 54.2% compared with 46.3% among non-leasing pastoralists, representing a difference of 7.9% by leasing status (Figure A-9). Furthermore, when looking longitudinally at school enrollment rates of girls over the course of the study, the data show an upward trend among ever-leasing pastoralists (51.4% to 57.7%) (Figure A-10). This finding is meaningful because national estimates suggest that only 23% of Somali children are enrolled in primary school and the ratio of enrolled girls to boys is 0.54 (UNESCO, 2021).

FIGURE A-9. SCHOOL ENROLLMENT FOR PASTORALIST HOUSEHOLDS, DISAGGREGATED BY SEX

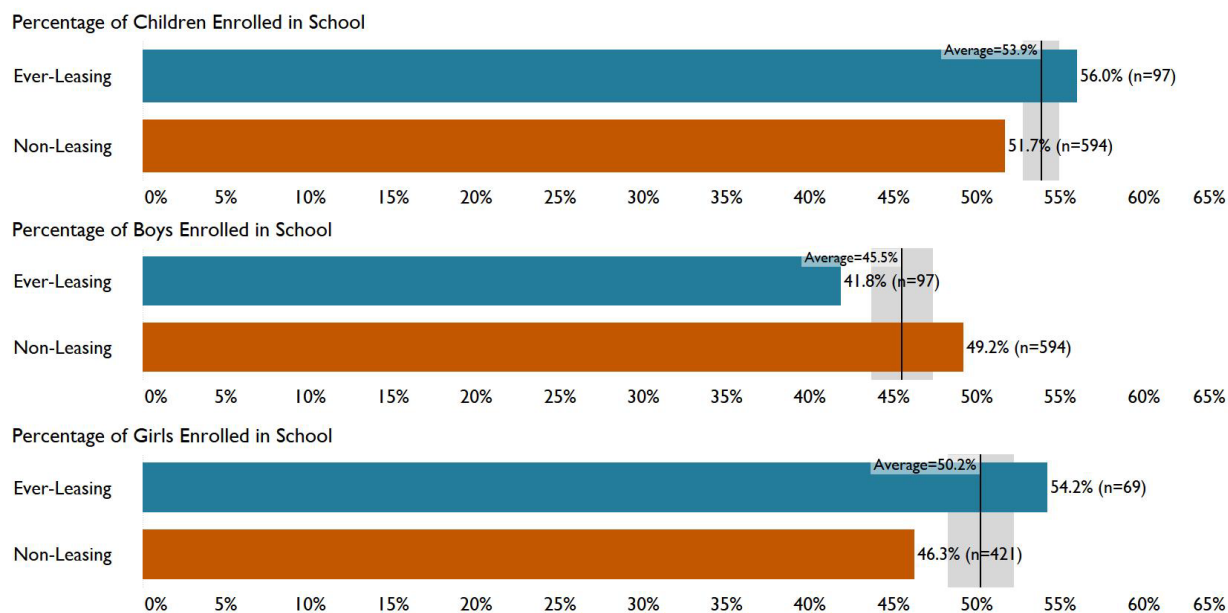
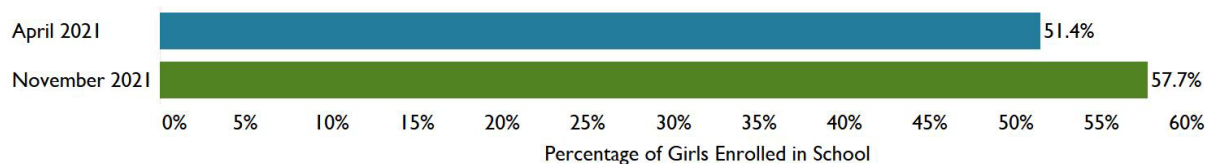


FIGURE A-10. GIRLS’ SCHOOL ENROLLMENT FOR EVER-LEASING PASTORALIST HOUSEHOLDS OVER TIME



Note: Ever-leasing is a sum of the leasers and previous leasers.

Impacting Community Resilience

Leasing may also have an influence on community resilience. Pastoralists and community members noted that camel owner associations are emerging, and there is greater willingness among pastoralists to work together. Out of the pastoralists surveyed, 69.2% (n=135) said that their community has committees or associations that meet regularly. Based on the responses to the survey questions, the ability of communities to maintain or invest in new communal assets has also increased. 26.4% (n=21) of pastoralists said their community was better able to take care of its assets than the year prior. In addition, 60.0% (n=117) of pastoralists reported that their community has communal assets such as schools and health facilities, and 80.3% (n=94) of those pastoralists believe that their community can take care of those assets.

Leasing can also create job opportunities in the community, contributing to welfare and resilience. Based on the survey responses, 21.2% (n=11) of dairies reported that leasing has created new jobs in their communities. When the dairy participants were asked to specify, they listed “milk sellers, drivers, and camel herders” and “fodder importers, truck drivers, and dairy vendors” as new employment opportunities created from leasing. In particular, camel herders and local camel experts have found employment in helping the dairies with

“A dairy farm with leased camels is established near or in a community. They can hire a man as a herdsman of the camels on the farm; drivers to transport milk; afterward, a salesman for milk. Space is rented to sell the milk. All these hires are a job in the community and an opportunity to earn income.”
Male member of the previously leasing pastoralists group

camel issues, including any ailments experienced by the camels. The dairies also employ youth for jobs such as herding, milking, and feeding the camels. During the November 2021 FGDs, the pastoralists mentioned that many youth and others in the community are still employed by the dairies.

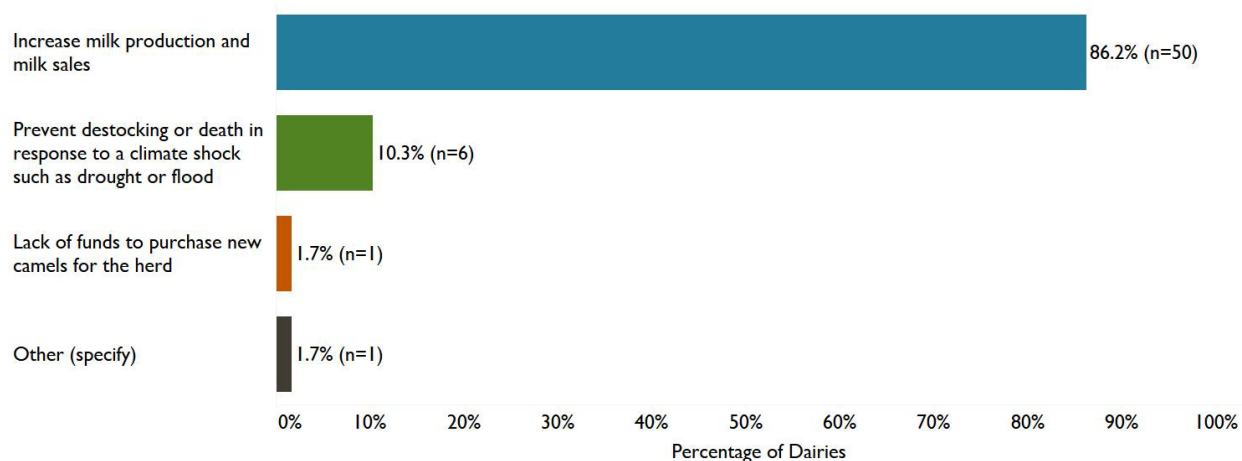
During the FGDs, female community members described the emergence of several small projects for capacity building and skills creation for women in their communities because of leasing. These small projects are in addition to micro-finance associations and village savings and loan associations that have also launched. One female community member discussed a group with 25 women members who are participating in savings and lending to help each other within their community. Leasing pastoralists also noted that women have gained a greater role in managing their families' incomes within their households. Women are consulted about the decision regarding leasing, creating dialogue at the household level; and they have taken responsibility to manage their families' budgets. Overall communities noted increased support in kinship with their relatives because of the new income-generation opportunity.

“In the previous times, our women were not consulted; now, however, women are taking greater responsibilities of following up when the money is due and how to budget for it. This was good for us as a household because in the past, most of us men spend the household income to buy *khats* (stimulants), but of late the money goes directly to the female spouse.”
Male member of the leasing pastoralists group

What is the “business case” for the leasing model for dairy companies?

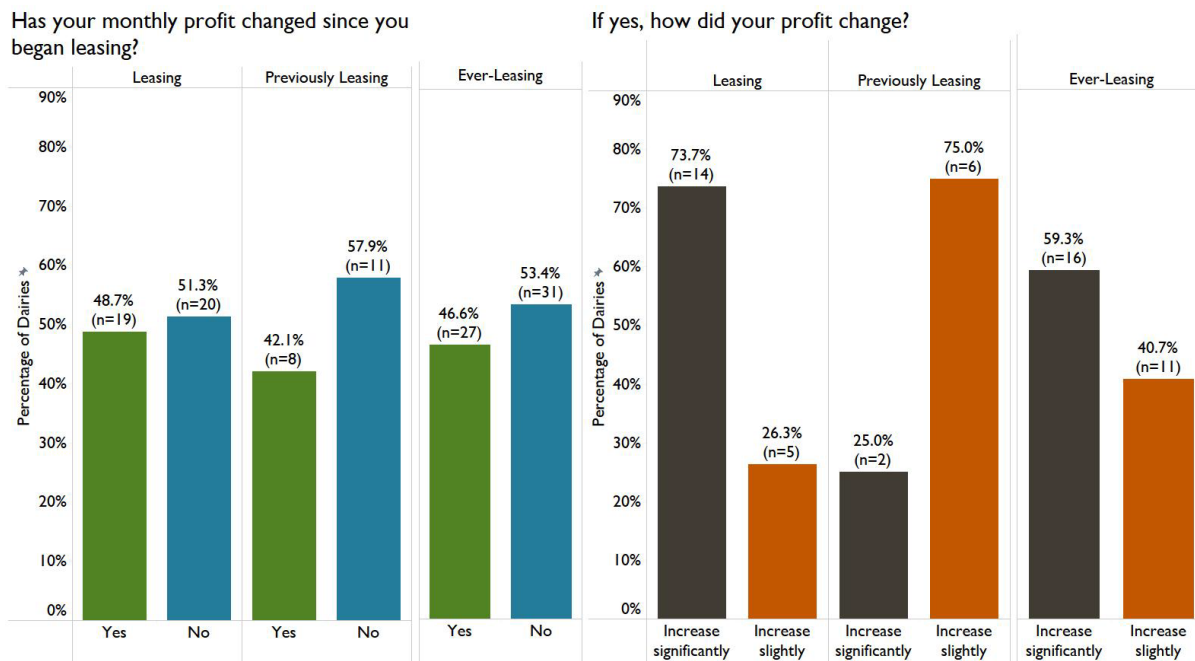
Leasing offers an opportunity for dairies to increase their milk sales thereby increasing their income. Most ever-leasing dairies (86.2% [n=50]) reported that the main reason why they began leasing was to increase milk production and milk sales (Figure A-11).

FIGURE A-11. PRIMARY REASON WHY EVER-LEASING DAIRIES BEGAN LEASING CAMELS



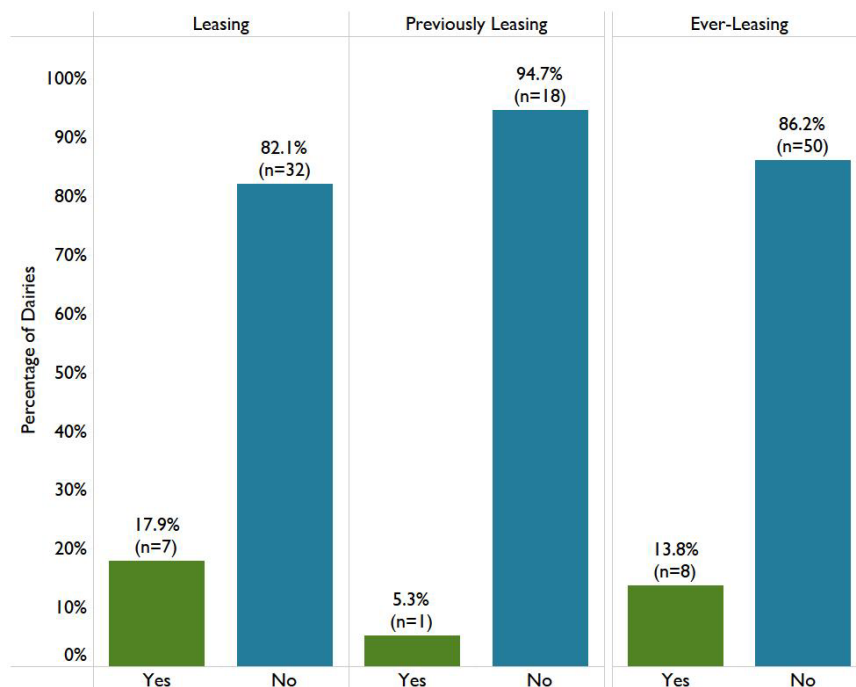
The survey data suggest that ever-leasing dairies have increased their profit and access to credit. Among ever-leasing dairies, 46.6% (n=27) reported that their profits had increased because of leasing. This change appears to be greatest for leasing dairies, with 73.7% (n=14) reporting a significant profit increase compared with 25.0% (n=2) of previously leasing dairies (Figure A-12). Additionally, 13.8% (n=8) of ever-leasing dairies reported being able to access more credit since leasing (Figure A-13).

FIGURE A-12. CHANGE IN DAIRY MONTHLY PROFIT SINCE STARTING LEASING



Note: Ever-leasing is a sum of the leasers and previous leasers.

FIGURE A-13. ABILITY OF DAIRIES TO ACCESS MORE CREDIT WHEN PARTICIPATING IN LEASING

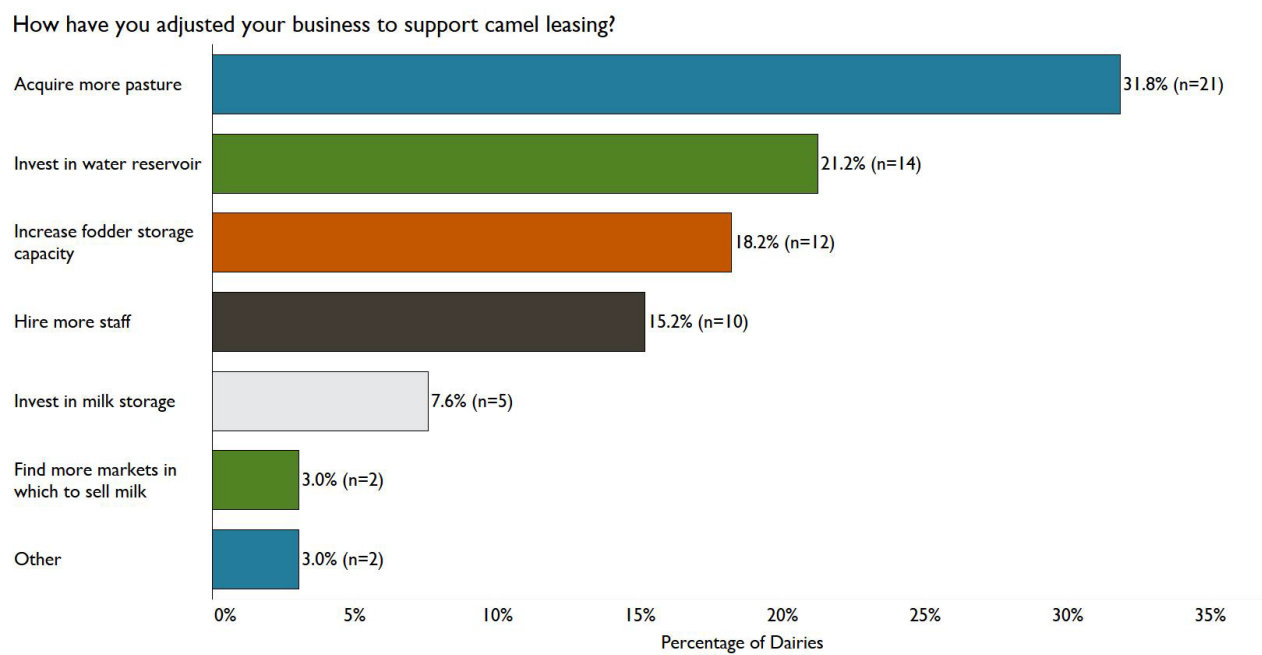


Note: Ever-leasing is a sum of the leasers and previous leasers.

Similar to pastoralists, dairies are vulnerable to the various shocks and risks that threaten the resilience of their herds. Dairies reported having taken multiple measures in the past to adapt to droughts or floods. The most common measures include migrating herds (57.5% [n=65]), investing in fodder storage

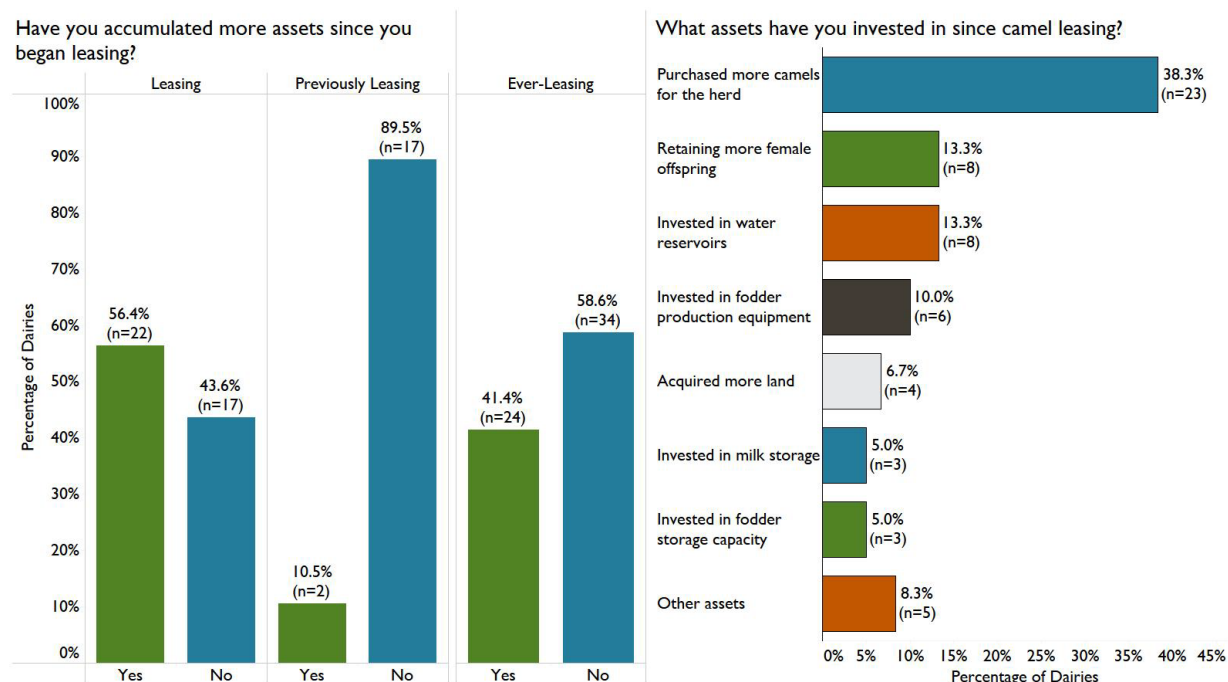
(54.0% [n=61]), and purchasing feed (41.6% [n=47]). Leasing dairies reported taking similar adaptive measures to participate in leasing (Figure A-14). The most common actions reported by leasing dairies were acquiring more pasture (31.8% [n=21]), investing in water reservoirs (21.2% [n=14]), and increasing fodder storage capacity (18.2% [n=12]).

FIGURE A-14. HOW LEASING DAIRIES HAVE ADJUSTED THEIR BUSINESS TO SUPPORT LEASING



Furthermore, 41.4% (n=24) of ever-leasing dairies reported having accumulated more assets since leasing, which most commonly include more camels, water reservoirs, and fodder production equipment (Figure A-15). There is a marked difference in accumulating assets between leasing and previously leasing dairies, with 56.4% (n=22) of leasing dairies reporting a much higher number of assets compared with 10.5% (n=2) of previously leasing dairies. By taking measures to support leased camels, leasing dairies demonstrate an ability to invest in more resources, accumulate assets, and support larger camel herds, which in turn makes their camel herds and dairy businesses more resilient to the effects of shocks. Responses from dairies corroborate this suggestion because 58.6% (n=34) of dairies that ever leased had reported that engaging in leasing had helped their business adapt to droughts.

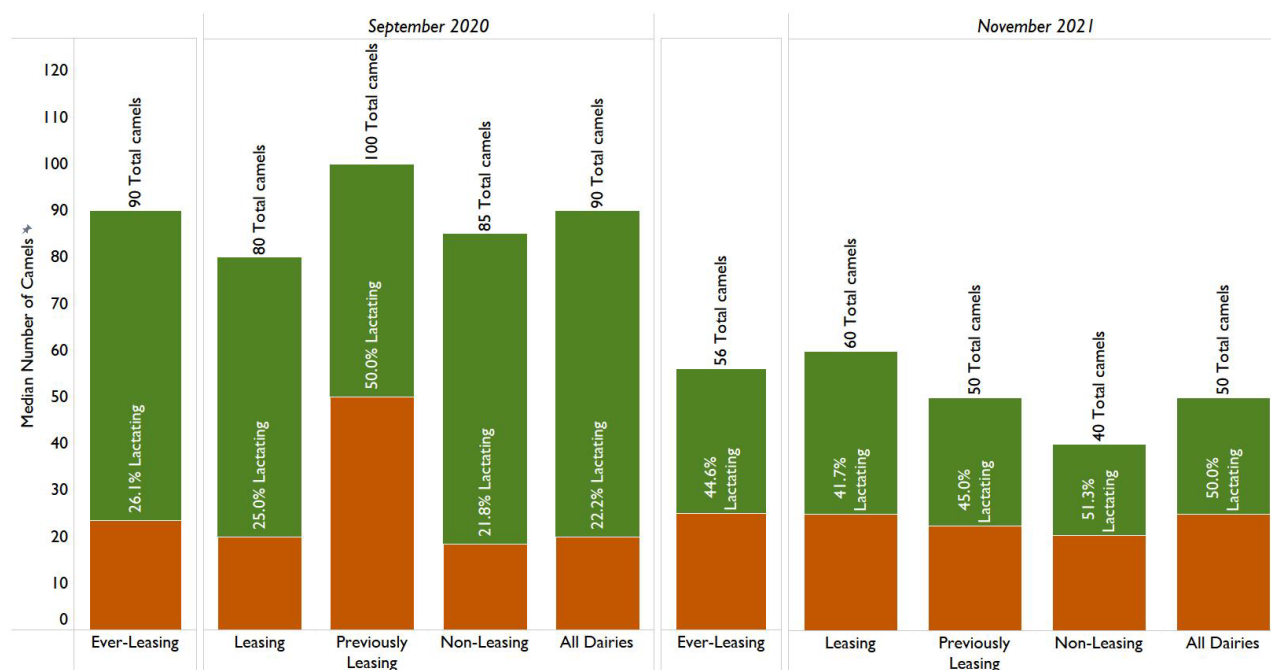
FIGURE A-15. DAIRIES ACCUMULATED MORE ASSETS WHEN PARTICIPATING IN LEASING



Note: Ever-leasing is a sum of the leasers and previous leasers.

Quantitative data collected in November 2021 suggest that a shock may currently be impacting the dairies' camel herds. In November 2021, all study arms reported a decrease in the median number of camels that dairies could currently support (Figure A-16). However, this impact seems to be smaller for leasing dairies compared with non-leasing dairies. Between rounds of data collection, the herd size that was able to be supported decreased by 3.3% for leasing dairies, by 21.4% for previously leasing dairies, and by 55.2% for non-leasing dairies. This finding indicates that leasing dairies may be able to better maintain the size of their herds when droughts occur compared with other study arms.

FIGURE A-16. NUMBER OF CAMELS OWNED BY DAIRIES

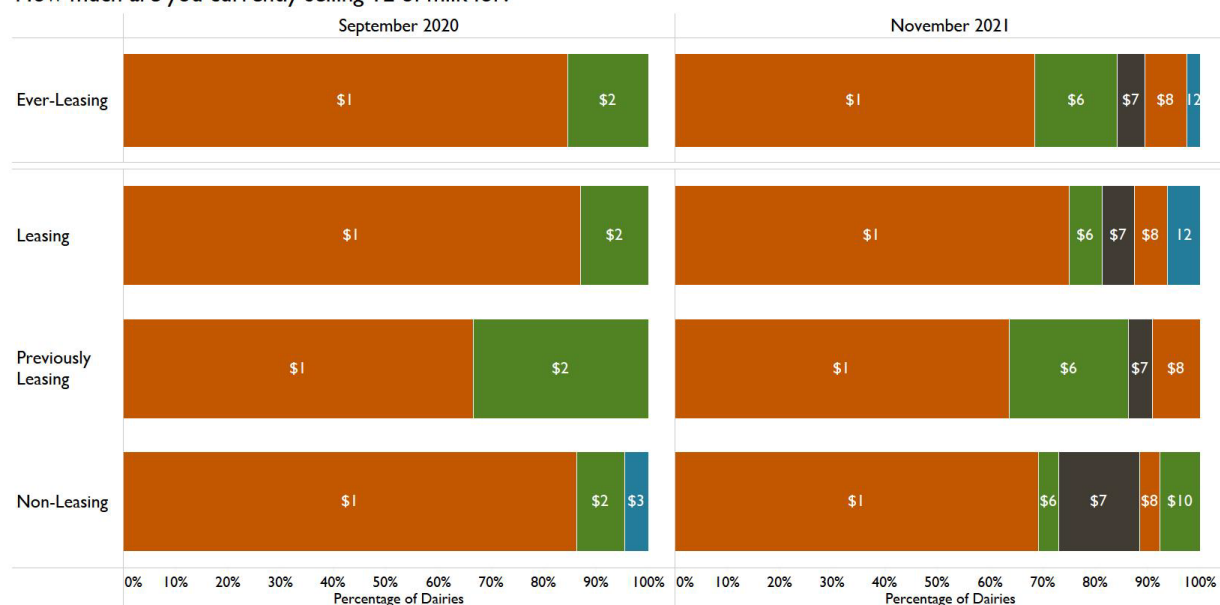


Note: Ever-leasing is a sum of the leasers and previous leasers.

Dairies are also impacted by business market conditions. The camel milk market is closely tied to seasons. Most dairies (69.0% [n=78]) reported that they expect prices to be different during dry and rainy seasons, and 72.3% (n=47) expected the quantity of milk produced to be different. Data from the dairy survey indicated that the average price in U.S. dollars (USD) for 1 liter (L) of milk has increased by more than 250% between rounds of data collection (Figure A-17), and 69.2% (n=36) of all dairies surveyed attributed leasing to an increase in milk prices. In addition, 52.3% (n=34) of dairies reported feeling an increased sense of competition in the camel milk market. When disaggregated by leasing status, 29.4% (n=5) of the leasing dairies reported an increased sense of competition in the camel milk market compared with 53.9% (n=14) of non-leasing dairies and 68.2% (n=15) of previously leasing dairies.

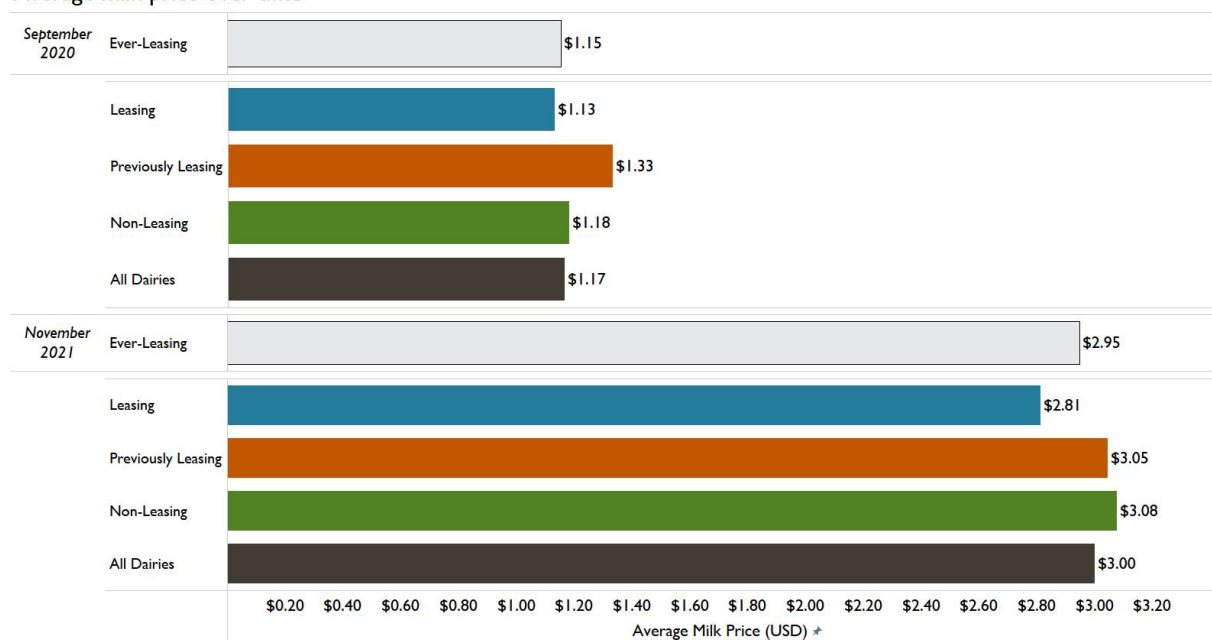
FIGURE A-17. PRICE OF MILK

How much are you currently selling 1L of milk for?



Note: Ever-leasing is a sum of the leasers and previous leasers.

Average milk price over time



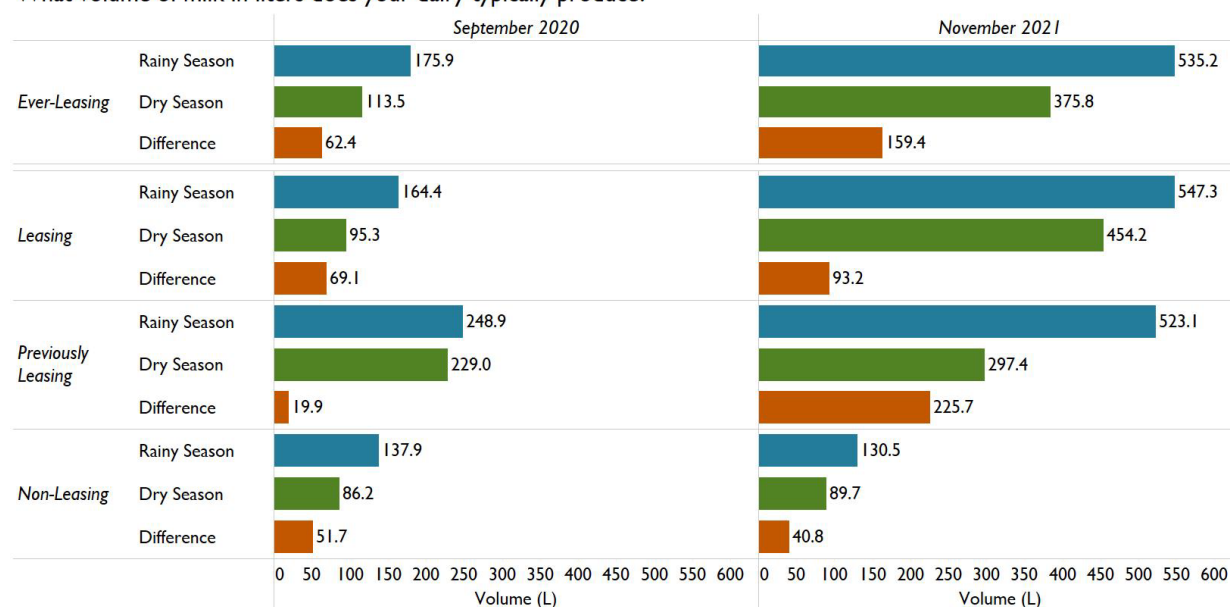
Note: Ever-leasing is a sum of the leasers and previous leasers.

Leasing dairies also appear to produce more milk than non-leasing dairies, regardless of season. Furthermore, these leasing dairies reported that they have increased their milk production over time because of leasing, whereas milk production for non-leasing dairies stayed approximately the same (Figure A-18). This increase in milk production could be attributed to the extra milk produced from leased camels, as well as from additional camels purchased for the herd with the profits from leasing. Because leasing dairies can support larger herds, they also typically own more female lactating camels than non-leasing dairies. In September 2020, ever-leasing dairies had a median of 23.5 (variance = 677.4) female lactating camels in their herds compared with a median of 18.5 (variance = 2929.4) for non-

leasing dairies. In November 2021, ever-leasing dairies had a median of 25 (variance = 305.4) female lactating camels compared with 20.5 (variance = 421.4) for non-leasing dairies. The consistent ability of leasing dairies to maintain large herds and increase milk production may demonstrate resilience capacity during shocks.

FIGURE A-18. MILK PRODUCTION

What volume of milk in liters does your dairy typically produce?



Note: Ever-leasing is a sum of the leasers and previous leasers.

Not all dairies viewed leasing positively. Non-leasing dairies were generally reticent to engage in leasing without some notable incentives and supports. Out of the non-leasing dairies surveyed, 18% (n=10) had considered leasing camels. Non-leasing dairies reported that to consider leasing, they would want to understand how the pastoralists screen for the health and well-being of their herds and would want to know the regional variations between the camels. As one dairy explained, when comparing camels from Burao, Wadala, and Hargeisa, not only do they differ physically, but they also differ in terms of their milk. Differences are also noted between camels living in mountain areas compared with those living in lowland areas. An assessment of the pastoralists' herds would help dairies anticipate camel health and milk production.

The responses from non-leasing dairies also suggested the need for investment for leasing and government support. Dairies noted these needs in terms of financial support to subsidize the cost of the operating environment and the lack of legal structures to support leasing contracts. With the ongoing risk of the COVID-19 pandemic and emerging stressors, such as droughts or a locust invasion, having no financial backup to support leasing is risky for dairies. One non-leasing dairy suggested a system of support such as those found in Ethiopia. Based on the explanation from the non-leasing dairy, if the government could provide subsidies or investment in the leasing process, then they would be more equipped to have resources such as a water supply, shelter, fodder, and pasture that are necessary to maintain leased herds, be profitable, and pay lessors.

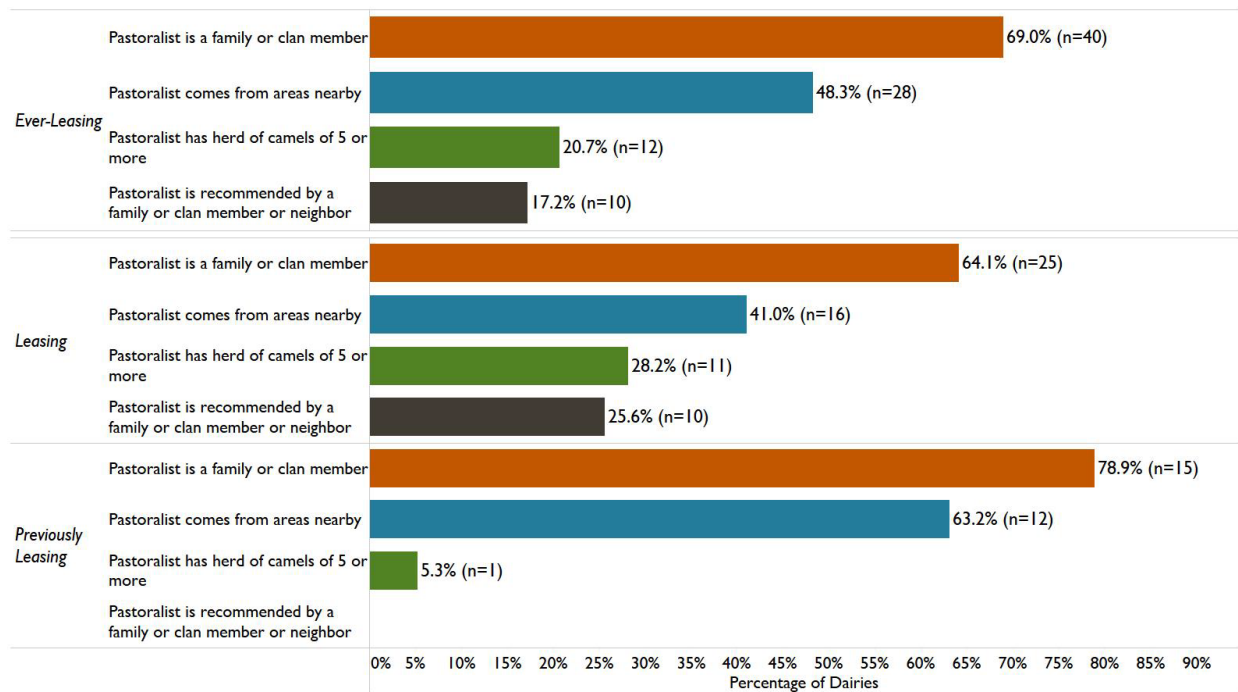
Overall, dairies appear to be satisfied with the practice of leasing, and they see leasing as a long-term investment. Most currently leasing dairies (87.5% [n=35]) plan to continue leasing in the future. Unlike previously leasing pastoralists, most previously leasing dairies intend to participate in leasing again, with

63% (n=12) saying that they would consider leasing in the future. Although just 18% (n=10) of non-leasing dairies said that they have considered leasing in the past, 47% (n=26) said that they would consider leasing in the future. These responses suggest that overall, dairies are satisfied with the leasing and intend to continue utilizing the practice in their business.

To what extent do Somali social networks influence the leasing model?

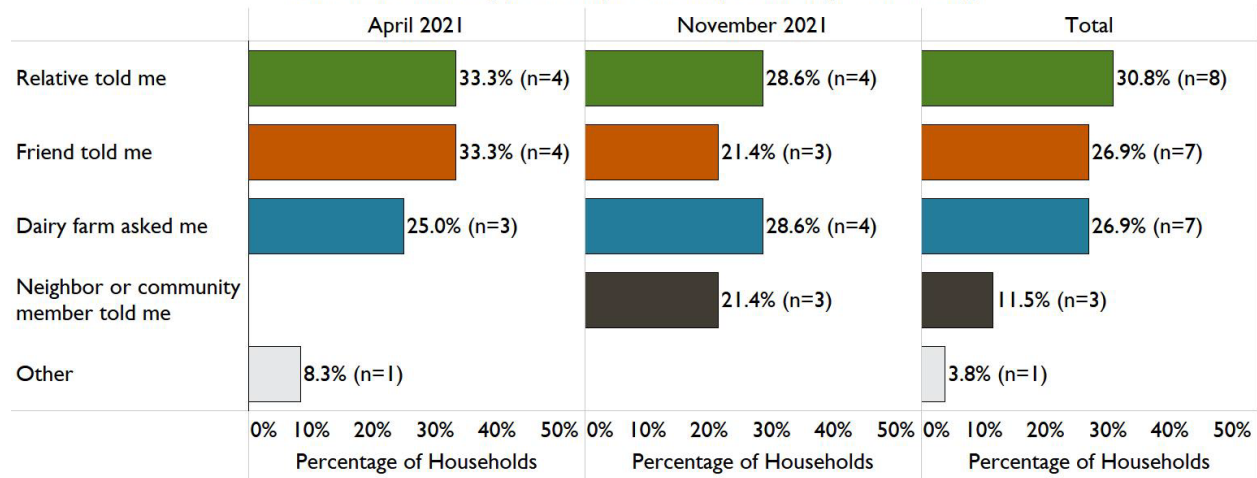
Social networks and community relationships are important components of leasing and business practices. When establishing leasing arrangements, dairies often reach out to pastoralists who are directly in their social network (62.1% [n=36]); pastoralists also contact dairies (60.3% [n=35]). There is no meaningful difference between leasing and previously leasing dairies when reporting how these connections are made. When choosing from whom to lease, most dairies (69.0% [n=40]) prefer that the leasing pastoralist is a family or clan member and comes from a nearby area (48.3% [n=28]) (Figure A-19). Most leasing pastoralists reported that a family or friends told them about leasing (57.7% [n=15]).

FIGURE A-19. PASTORALIST CHARACTERISTICS THAT ARE MOST IMPORTANT TO DAIRIES WHEN ESTABLISHING LEASING ARRANGEMENTS



Note: Ever-leasing is a sum of the leasers and previous leasers.

What is the main way you identified the dairy to whom you are leasing?

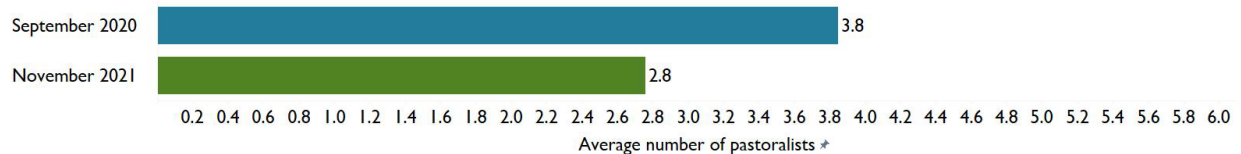


Data from the pastoralist surveys indicate that those who participate in leasing tend to lease all or most of their lactating camels, which suggests a high willingness to lease and a high degree of trust in the dairy farm among pastoralists who lease. According to the responses to survey questions, leasing pastoralists owned an average of 5.5 lactating camels (variance = 6.3) and reported leasing an average of 3.9 camels (variance = 24.7). Most pastoralists (81.5% [n=44]) only lease to one dairy farm at a time, and most dairies prefer to lease from a small number of pastoralists as well, with an average of 3.3 pastoralists leased from at a time. Over time, the data show a trend toward a larger number of camels leased from a smaller number of pastoralists (Figure A-20). In September 2020, ever-leasing dairies leased an average of 13.3 camels from 3.8 pastoralists compared with an average of 22.7 camels from 2.8 pastoralists in November 2021.

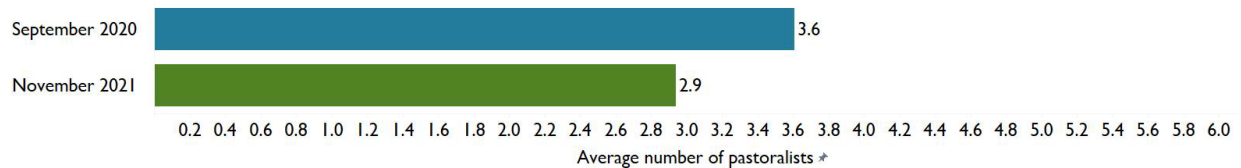
FIGURE A-20. AVERAGE NUMBER OF PASTORALISTS AND CAMELS INVOLVED IN LEASES WITH DAIRIES

Average number of pastoralists leased from at a time

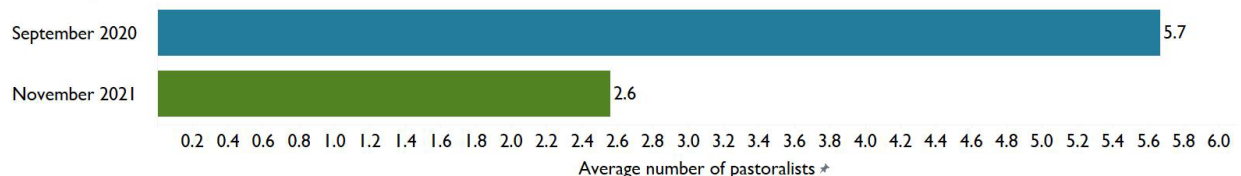
Ever-Leasing



Leasing



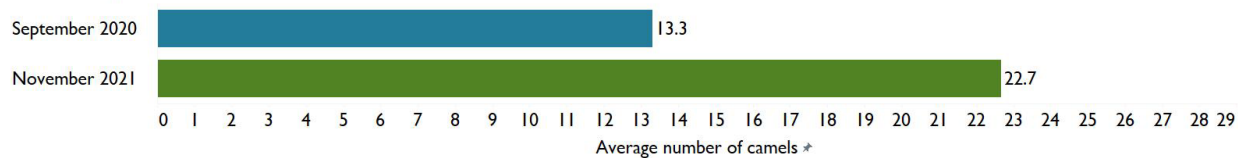
Previously Leasing



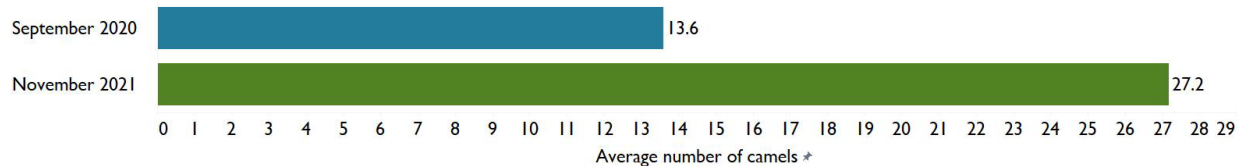
Note: Ever-leasing is a sum of the leasers and previous leasers.

Average number of camels leased at a time

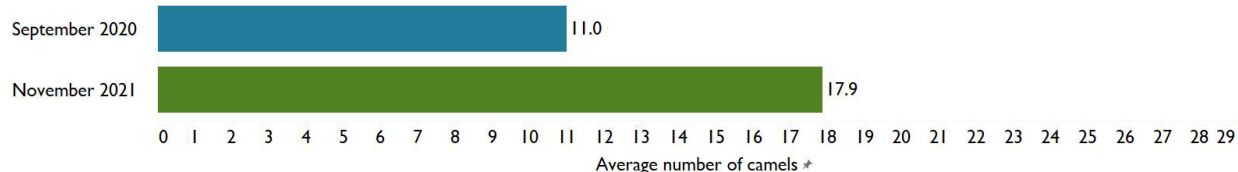
Ever-Leasing



Leasing



Previously Leasing



Note: Ever-leasing is a sum of the leasers and previous leasers.

Based on the survey responses, 70% (n=424) of non-leasing pastoralists reported that they never considering participating in leasing. During the FGDs, non-leasing pastoralists expressed concern about the treatment of their camels by dairies. To consider leasing, many of these pastoralists said that they would need to assess the dairies. This concern was also noted in the quantitative survey, in which 24.4% (n=131) of non-leasing pastoralists reported that they prefer to care for their camels themselves, and 18.1% (n=97) did not trust the dairy farms. Non-leasing pastoralists said that they need to ensure that the dairies have the expertise and commitment to ensure the safety of their herds.

“Earning money from it is not the issue, but are they going to treat my camels the same way I treat them? Because I care for them, take them to grazing field for pasture, milk them, keep my camels’ healthy by spraying them with pesticide, and treat and feed them well. It may happen that a dairy may not know how to treat them.”

Male member of the non-leasing pastoralists group

It is essential for dairies to have close working relationships with communities, including elders, officials, and pastoralists to sustain their business and aid in the care of their herds. Through these relationships, the camels are known in the community, and community members share information with the dairies about risks to their herd, as well as locations of pastures; dairies provide transportation access to pastoralists; and everyone shares resources and best practices for caring for their herds.

Networks with community members not only serve as a resource to both dairies and pastoralists in securing the safety of their herds, but they can also serve as brokers in establishing or contesting agreements to reduce conflicts between pastoralists and dairies. During the FGDs, leasing dairies said that leasing agreements with pastoralists can be designed with brokers or without outside involvement, and surveyed dairies reported that village elders or family members typically serve as witnesses to the leasing agreements. Although verbal agreements remain customary, leasing dairies prefer written agreements that bind both parties in case conflicts and disagreements arise. For pastoralists, a written leasing agreement also provides some safeguards because dairies are liable for negligence. However, in

“So far we have good relationships with the dairies, and the main issue here is how the dairy company you have an agreement with takes care of your camels. If you feel that the animals have been badly treated, then you will seek alternative dairy companies that have a reputation for particularly good care.”

Male member of the leasing pastoralist group

practice, 65.4% (n=17) of leasing pastoralists, 42.9% (n=12) of previously leasing pastoralists, 67.5% (n=27) of leasing dairies, and 79.0% (n=15) of previously leasing dairies have most recently established oral leasing agreements.

Some non-leasing pastoralists are not aware of the opportunity for written leasing agreements. During the FGDs, non-leasing pastoralists reported that they would like to see both written and verbal agreements proposed. One non-leasing pastoralist said that they were interested in leasing but did not have confidence in the process and wanted assurances that the camels would receive good care. Several non-leasing pastoralists expressed a higher inclination to lease to someone interested and committed to their terms, preferably someone with close blood ties. Out of the non-leasing pastoralists surveyed, 27.4% (n=167) said they would consider leasing in the future.

During the FGDs, some non-leasing pastoralists also suggested that dairies should purchase milk directly from the pastoralists at agreeable prices at their homestead rather than leasing their camels. They believe that this process would be more profitable for dairy owners and allow for better care of their camels.

Most pastoralists and dairies reported that they have not experienced a lease-related conflict, and all who had experienced a conflict report resolving it peacefully. Leasing relationships tend to continue as long as both parties want to continue with the lease. For leasing pastoralists, the average length of a leasing agreement was 12.6 months, with a standard deviation of five months; for previously leasing, the average length was slightly shorter at eight months, with a standard deviation of five months. Survey responses from the dairies showed that most leasing agreements have not changed over time; for those that have changed their agreements (16.9% [n=10]), this most commonly involves shortening the length of the agreement (50.0% [n=5]) or changing the payment amount (40.0% [n=4]). Some examples when changes to leasing agreements have occurred are as follows:

“If increasing costs of taking care of the camels especially when the drought situation becomes harder, the dairy people usually inform us about this, and we discuss amicably and agree to reduce the rates temporarily because they are either shifting the camels to a new location or buying a farm to enable the herd to survive the drought and for herd continue producing milk. In such a drought period, you only prioritize for your camel to survive rather than thinking of the money you were getting.”

Male member of the leasing pastoralist group

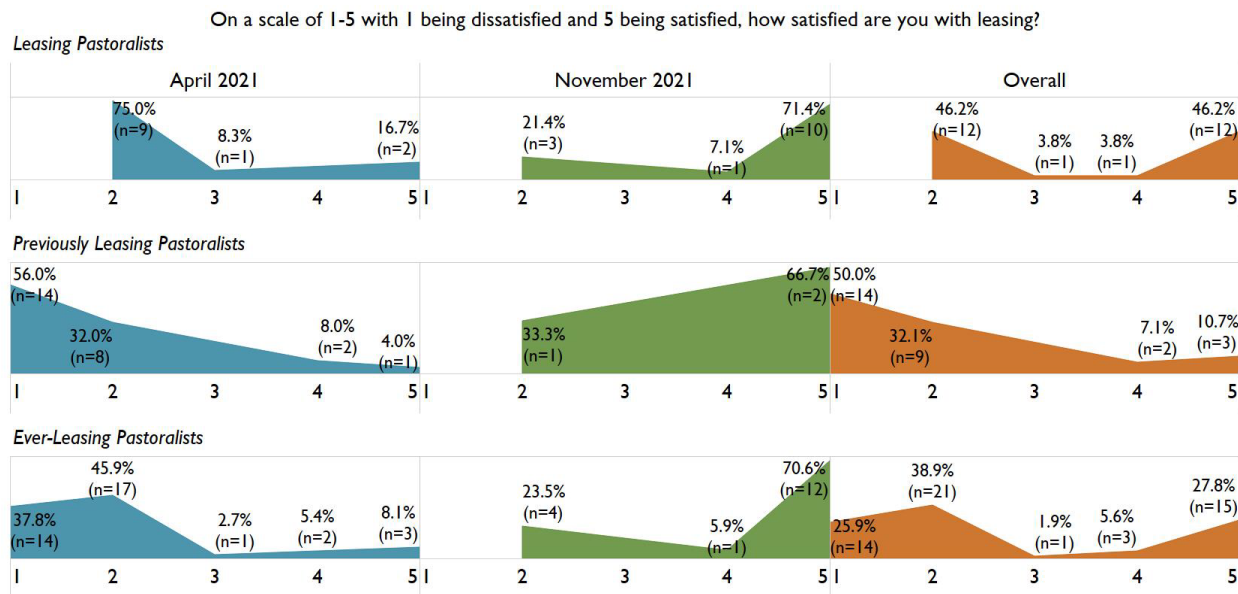
- Camels produce less milk because of the reduced availability of fodder.
- Gestation reasons for producing less milk.
- The amount of milk produced in the market has increased, leading to a reduction in milk price.
- Costs have increased for taking care of the camels, especially during drought situations.
- The dairy’s capacity weakens, therefore, it is unable to care for the camel or sell the milk.

Based on the findings of the surveys, the leasing pastoralists were satisfied with leasing (50% [n=13]), and their satisfaction increased over time (78.5% [n=11]) (Figure A-21). For leasing pastoralists who plan to stop leasing, they reported that it was because the camel either stopped lactating or died. However, previously leasing pastoralists were generally dissatisfied with leasing (82% [n=23]) and did not wish to resume participating (61.1% [n=22]). However, the majority of both leasing and previously leasing dairies report positive outcomes and plan to continue leasing in the future (Figure A-22).

“I was forced to stop camel leasing. The camel was milked five times a day, and the young calves were starved of milk or were not fed on milk properly. Initially, I thought I would make profit from it, and I used to buy milk from my camels while I used the money for my children, but I stopped camel leasing. I don’t generate as much money now as before because half of the milk is for my family’s consumption and the rest is taken to the market for sale. But I am conducting my own business with assets under my custody.”

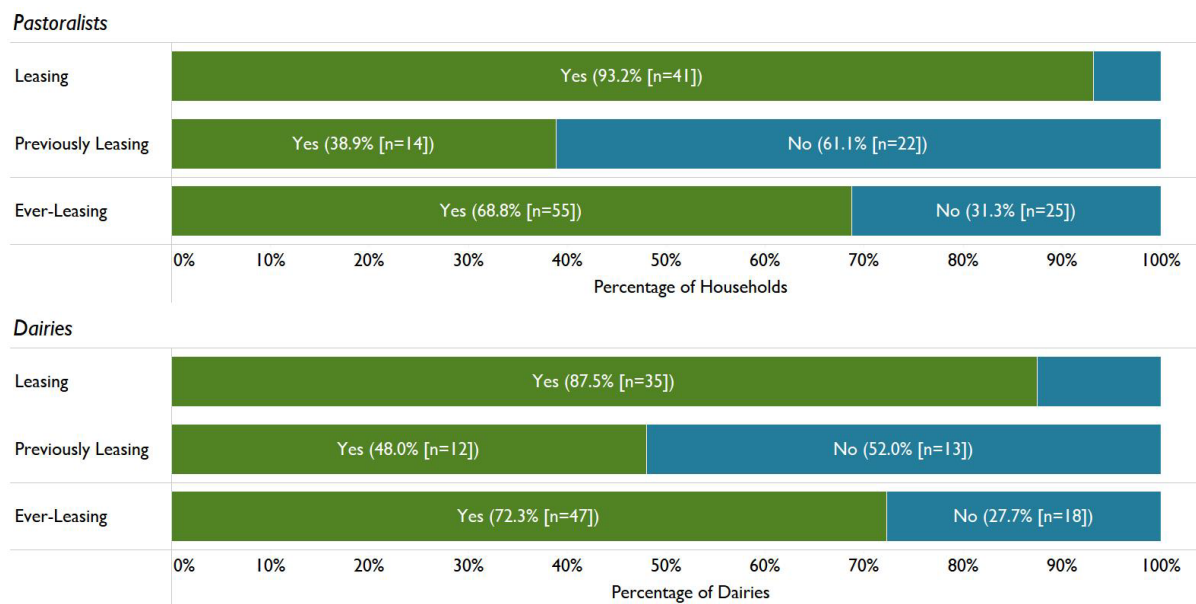
Male member of the previously leasing pastoralists group

FIGURE A-21. EVER-LEASING PASTORALISTS' SATISFACTION WITH LEASING



Note: Ever-leasing is a sum of the leasers and previous leasers.

FIGURE A-22. RESPONSES FROM EVER-LEASING PASTORALISTS AND DAIRIES WHEN ASKED IF THEY WOULD LEASE AGAIN IN THE FUTURE



Note: Ever-leasing is a sum of the leasers and previous leasers.

Observations of Potential Unintended Consequences

Leasing is generally viewed as an advantageous endeavor for pastoral and dairies. For pastoralists, leasing has led to positive changes in income, and the ability to save cash and purchase assets. For dairies, leasing provided an opportunity to maintain consistent milk sales, generate profits, and invest in improving their farms. However, leasing has led to some unintended consequences for pastoralist households, communities, and dairies.

A major concern among pastoralists is the assurance that their camels are provided with good care. During the FGDs of previously leasing pastoralists, they specifically expressed concerns about the health of calves. The milk meant for growing calves is sold when leasing new calves; therefore, they may not receive the nutrients they need for their growth. Previously leasing pastoralists also fear that without the ability to maintain oversight of the care provided by dairies, their camels may be over-milked. Responses from both the pastoralist and dairy surveys indicated that camel health and camel death are the main sources of conflict between leasing pastoralists and dairies.

Another impact is on the availability of milk in pastoralist communities. Although milk can be plentiful for some communities, others see a decrease because of leasing, which supplies milk more to urban consumers. One previously leasing pastoralist said that because the milk is being primarily delivered to the city, there is less available for household members and even the people who look after the camels. Most pastoralists (68% [n=315]) in all rounds reported that their household's camel milk consumption has decreased in the past year.

There is also an impact on the availability of grazing land for pastoralists. Dairies have the money to buy large areas of grazing land and plots, thus reducing the grazing lands for the pastoralists. Where pastoralists agree to vacate their grazing lands in exchange for money, they become displaced, which further affects pastoralists who have nowhere to graze their animals because dairies have fenced the best pastures. This issue also creates risks for pastoralists who herd other livestock such as goats. Based on the responses from community members during the FGDs, large dairy herds sometimes trample on the goats in grazing lands that have shared access.

There are also inherent risks to dairies that participate in leasing. Dairies can incur losses through the process because of the cost of operation with the dearth of inputs such as water, especially during the dry season. If a camel becomes sick and its milk is no longer safe for human consumption, then lessors and lessees must determine who should bear the responsibility for the animal's care and medication.

The most notable unintended negative impact of leasing is the pushing out of small milk sellers (particularly, women who used to get their milk from pastoralists to sell) from the market. Women have traditionally played an important role in the milk marketplace as milk market representatives. Their role in the milk marketplace has been viewed as a source of autonomy in decisions involving selling milk at the marketplace because they are more informed on market rates and set their prices to make a profit and pay their suppliers. However, with the emergence of leasing, milk market representatives have been unable to keep up with the dairies because they have access to resources, including a constant supply of milk and refrigeration facilities. During the interviews, some milk market representatives said that dairies are encroaching on the pastoralists from which they purchase milk by taking vehicles deep into areas where they buy their milk and are buying all of the available milk. Thus, these small-scale sellers are unable to get enough milk to sell at the market.

"I am among the poor women who carry milk and take it door to door in the neighborhoods. Whenever I go to a household or a business to sell milk to them, I usually find that the dairy company has already delivered milk. They are strangling our livelihood, to be honest. If there is anyone who can do anything about this, we request a level playing field instead of what is happening currently."

Female member of the milk market group

Leasing has also influenced the quality of milk and a shift in consumer taste to milk produced by dairies as opposed to the pastoralists. During the interviews, milk market representatives and non-leasing pastoralists said that the milk from dairies is more readily consumed because of their price and accessibility compared to that produced by non-leasing dairies. According to the non-leasing pastoralists, price and accessibility have negatively affected poor rural pastoralists because people have a greater preference to purchase milk from dairies.

The competition between dairies and milk market traders also extends to donor support and funding. One milk market representative said that there was a time when organizations supported women who were engaged in the milk market; however, the amount of funding that these women dairies has received has attracted more attention from more international donors.

Data Challenges and Limitations

The number of identified instances of leasing was smaller than anticipated; therefore, it was not possible to reach the sample size needed to develop the planned statistical models. Because of this issue, the study team adapted the activity to focus more deeply on qualitative components and shifted the aim to generate learnings for future opportunities, rather than measure impact.

Identifying and contacting study participants was a huge challenge. Because no database of camel leases exists, the study team relied on self-identification of leasing status among camel-herding pastoralists and dairies. Out of the 39 leasing and previously leasing pastoralists that were included in all three rounds of the pastoralist survey, only 6 (15.4%) maintained the same leasing status throughout the life of the Camel Leasing Activity, but 15 (38.5%) changed their leasing status during each round of the survey.

As the activity progressed, it became apparent that there was confusion in distinguishing the formal practice of leasing and the informal practice of camel lending (pastoralists loan camels to family members, friends, or community members). This learning led to the refinement and reinforcement of the leasing definition used for the activity.

Maintaining a panel of study participants over time also proved to be a challenge. There were five reasons for this. First, camel-herding pastoralists and dairies changed their self-identified leasing status. Second, migratory and semi-nomadic lifestyles of camel-herding pastoralists made it difficult and often prohibitive to reach participants (These factors included challenges with crossing the border into Ethiopia, the security challenges in some areas of Somalia, and the cost–benefit analysis of time and logistics associated with reaching pastoralists who had traveled great distances in areas with poor infrastructure. The study team had timed the data collection effort to coincide with seasonal transitions, intended to favor pastoralists being near their primary residence, but that did not always occur.) Third, telephones were turned off or were going unanswered when data collectors reached out for screening or scheduling purposes. Fourth, telephones had changed hands, either to another person in the household or to another household entirely. Lastly, some camel-herding pastoralists did not want to continue participating in the study.

Feedback from data collectors and observed data irregularities indicated that some survey modules, such as the food security index, were too complicated and time consuming to be collected practically. This feedback led to the adaptive decision to focus on collecting data on how leasing directly affects camel-herding pastoralists, rather than indicators such as the Household Food Insecurity Access Scale. However, even with these adaptations, feedback from the data collectors indicated that the survey was too long and complicated, making it difficult to administer with the target populations.

During Round 3 of the FGDs and Round 2 of the case study interviews, participants referenced an unidentified disease affecting many camels in the Woqooyi Galbeed Region. This disease, though unlikely to be climate related, was an unanticipated shock to both camel-herding pastoralists and dairies and led to the termination of some leasing agreements, which resulted in a leasing status change for some participants.

“There is also another negative effect for poor people who depended on vending milk because they have been pushed out of the market by people with bigger finances and logistics. Even for us, the community members have experienced some negative effects because in the past, milk was available for us everywhere for consumption, but now, we have less milk available, and we must get into long queues to get milk. Milk is prioritized for the city dwellers, hence we lose out.”

Female member of community group

During the activity timeline, no climate-related shocks were registered as significant events by the international community. However, some participants indicated that they experienced drought during the timeline, as well as floods and locust infestations. Although the international community did not register a “significant” event, shocks were likely impacting the communities included in the study.

Key adaptations were required after the introduction and continued presence of COVID-19. The study team shortened the surveys and implemented them by telephone rather than in person. Collecting data over the telephone exacerbated the challenges with maintaining a panel of study participants. For instance, some participants rely on telephones from family members or neighbors, telephone numbers were disconnected, and there was a lack of trust between the data collectors and participants. An additional adaptation involved moving from in-person training and supervision by U.S.-based researchers to virtual platforms and local consultants, which were leveraged to ensure quality.

A key learning was that telephone-based data collection should be avoided, and in-person data collection should be heavily emphasized. The decision was made to delay future data collection until in-person data collection could safely resume.

RECOMMENDATIONS AND CONCLUSIONS

For pastoralists, leasing is a viable option to help better prepare and react to shocks and stressors such as droughts. Through leasing, pastoralists may have the opportunity to increase their income and invest in assets. Pastoralists can use this increased income and assets to support their families and communities. The dairies also can provide opportunity for employment of community members.

To increase participation among non-leasing pastoralists, there should be consideration of policies and procedures to ensure adequate care of the leased camels (including limiting milking) and increased incentive. Non-leasing pastoralists should be offered enough incentives to make the investment worth the risk. Based on the findings of the FGDs, non-leasing pastoralists said that they need to ensure that the dairies have the expertise and commitment to ensure the safety of their herds.

For dairies, leasing provides an opportunity to increase milk production and milk sales. The increase in profit can be reinvested into the dairies in the form of growing the herds, building water reservoirs, and purchasing fodder production equipment.

Based on the findings of the survey and FGDs, dairies are inclined to participate in leasing and benefit from their social networks. Dairies also should have an opportunity to assess the health of camel herds prior to leasing and establish a relationship with the leasing pastoralist. The responses from non-leasing dairies during the FGDs suggest the need for government support and investment for leasing. Dairies noted the need for government engagement in terms of financial support to subsidize the cost of the operating environment, as well as developing legal structures to support leasing contracts. With the ongoing risk of the COVID-19 pandemic and emerging stressors, such as droughts or a locust invasion, having no financial backup in place to support leasing is risky for dairies.

Non-leasing pastoralists recommended that the dairies should purchase their milk from pastoralists with agreeable prices at their homestead but should not lease their camels. Pastoralists are more recently establishing relationships directly with dairies 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. This out-grower scheme was not evaluated during this activity. However, some of the responses during the FGDs suggest that non-leasing pastoralists may prefer this method.

“All parties that can assist the poor women milk vendors who have been affected one way or the other by the shift in the ways milk is being marketed, and assist them with associations and funds so that they can also continue to earn livelihoods and develop.”

Male community member

There are members of the milk market value chain, aside from the pastoralists and dairies, whose interests should be considered. Careful consideration should be given to how leasing impacts milk market representatives. Leasing does not replace the need for assistance to rural communities to support the rearing of camels and responding to shocks and stressors. Community members requested support for milk refrigeration and milk market traders asked for support for more modern kits with better hygiene and storage and preservation equipment so they can store milk for long-term sale.

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ANNEX B. KEY INFORMANT INTERVIEW PARTICIPANTS

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Mohamed Eidle Elmi	Livestock Specialist	GEEL	September 2, 2019
Dr. Abdul Kareem Essa	Livestock Specialist	Camel Leasing Activity	September 2, 2019
Mustafe Ali Du'ale	Camel Dairy Farm Owner	Ramad and Galool Dairy	September 2, 2019
Mohamed Abdillahi	Program Management Specialist—Economic Growth and Camel Leasing Activity Alternate Agreement Officer's Representative (AOR)	Somalia Economic Growth Team U.S. Agency for International Development (USAID)/Kenya and East Africa	September 3, 2019
Mohamed Hassan	Managing Director	Horn Africa Consultants Firm (HACOF)	September 3, 2019
Jami Montgomery	Camel Leasing Activity AOR	USAID Center for Resilience	September 13, 2019
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Ahmed Mohamud	Livelihood Specialist	FSNAU	October 30, 2019
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Andy Catley	Research Director and Associate Professor	Friedman School of Nutrition, Tufts University	November 26, 2019
Michele Nori	Tropical Agronomist	University of Florence	January 16, 2020

ANNEX C. DESK REVIEW REPORT



FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative

SOMALIA CAMEL LEASING TO IMPACT RESILIENCE ACTIVITY

SEPTEMBER 2019

Desk Review report



USAID
FROM THE AMERICAN PEOPLE

IRTI
INTERNATIONAL

Desk Review Report

Feed the Future Somalia Camel Leasing to Impact Resilience Activity

Cooperative Agreement 720BFSI9CA00007

September 2019

Prepared for

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Cover photograph: A pastoralist and dairy farmer in Somalia stands with his leased camel as it grazes on his farm. Photo credit: Micah Frumkin/RTI International.

TABLE OF CONTENTS

Acronyms	3
Figures and Tables	4
Introduction	5
Research Questions	6
Somalia Context	7
Demographics	7
Social Dynamics	8
Political System	9
Agro-Pastoralist Economy.....	10
Climate and Environment.....	11
Security.....	12
Camel Leasing as a Model	13
History and Evolution of Camel Leasing	13
Assumptions and Hypotheses	14
Study Design Considerations	15
Resilience Capacities	16
Shocks, Stresses, and Well-being.....	17
Gender and Social Dynamics	20
Private Sector	20
Livelihood Zones.....	21
Other Key Terms	24
Summary	25
Potential Challenges and Data limitations	26
Accessibility	26
Participant Selection	26
Attrition	27
References	28

ACRONYMS

AMISOM	African Union Mission in Somalia
AOR	Agreement Officer's Representative
FAO	Food and Agriculture Organization of the United Nations
FEWS NET	Famine Early Warning System Network
FGD	Focus Group Discussion
FGS	Federal Government of Somalia
FSNAU	Food Security and Nutrition Analysis Unit
GDP	Gross Domestic Product
GEEL	USAID/Somalia Growth, Enterprise, Employment, and Livelihoods Program
HACOF	Horn Africa Consultants Firm
HDDS	Household Dietary Diversity Score
HFIAS	Household Food Insecurity Access Scale
HHS	Household Hunger Scale
IDP	Internally Displaced Person
IRG	International Resources Group
PRIME	Pastoralist Areas Resilience Improvement through Market Expansion
RMS	Resilience Recurrent Monitoring Survey
TANGO	Technical Assistance to Non-Governmental Organizations
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
USD	U.S. Dollars

FIGURES AND TABLES

Figure 1. Longitudinal mixed-methods approach 6
FIGURE 1. FSNAU 2016 LIVELIHOOD ZONES (ON LEFT) AND THE GEEL PROJECT DAIRY FARM LOCATIONS (ON RIGHT).....22

Table 1. Dissemination Products 8
TABLE 1. LIVELIHOOD ZONES OF INTEREST23
TABLE 2. RESILIENCE GUIDING QUESTIONS AND ANSWERS25

INTRODUCTION

The United States Agency for International Development (USAID) awarded the Feed the Future Somalia Camel Leasing to Impact Resilience Activity to RTI International by as part of a collaborative effort to co-create, co-design, and co-invest in innovative research and development interventions to address challenges to global food security. The 26-month activity, spanning from June 2019 through August 2021, is intended to assess the impacts of camel leasing on resilience and the resilience capacities of pastoralist households, communities, and the dairy industry in areas of Somalia.

During Somalia's severe drought in 2016 and 2017, USAID/Somalia supported the adaptation and piloting of several project activities to mitigate the impacts of drought on the livestock industry. One activity supported the commercial milk supply by introducing camel leasing. During this pilot effort, the USAID/Somalia Growth, Enterprise, Employment, and Livelihoods (GEEL) program, implemented by the International Resources Group (IRG)/Engility, a subsidiary of RTI, facilitated the negotiation of leases for lactating camels between dairy companies and pastoralists. Under this arrangement, the dairy companies covered the management costs for the leased animals (i.e., feed, water, and veterinary services), and pastoralists received a fixed portion of the dairy companies' profits from milk sales.

Substantial research exists regarding other types of pastoral drought mitigation and coping strategies (e.g., destocking, fodder production, increased migration); however, camel leasing is a relatively new strategy for mitigating drought. Therefore, little to no evidence exists regarding camel leasing's impact, acceptability, and potential for expansion or replication. The Camel Leasing to Impact Resilience Activity will use a mixed-methods approach, employing focus group discussions (FGDs) and case studies, combined with a panel survey of pastoralist households over three seasons in up to two livelihood zones. This approach will be used to assess the effectiveness of camel leasing as an approach to mitigate the impacts of drought and contribute to the resilience of pastoral households in Somalia.

Through this work, the RTI research team will explore in more detail the benefits of camel leasing to pastoral households, learn more about the incentives of—and benefits to—dairy companies that participate, and identify any unintended positive or negative consequences of camel leasing for pastoral households and communities. The research team will test the hypothesis that camel leasing can be a win-win strategy for pastoral households and communities and for dairy companies, particularly in mitigating the impacts of shocks and stresses. For pastoralists, leasing can improve resilience by protecting assets (i.e., pastoralists maintain long-term ownership of the animals), providing a predictable cash transfer, and reducing household expenditures for livestock management. For dairy companies, leasing can support dairy market resilience by protecting the commercial supply of camel milk.

The research team conducted this desk review to gain a deeper understanding of the context and systems within which camel leasing is operating in Somalia. This desk review is structured according to the

The team structured the desk review based on the three primary research questions, with additional sub-questions to be answered when possible. Note: The research questions and sub-

questions are presented in the following textbox. The desk review briefly explores the socio-economic, political, and environmental dynamics that affect camel leasing and the history of the camel leasing model. The desk review also considers key factors for the design of our study methodology, including measuring shocks and well-being, understanding resilience capacities and social dynamics, and defining key terms. The review concludes with a discussion of the potential challenges for the study. This report is meant to serve as a starting point for the research team, our USAID collaborators, and other stakeholders. The research team will revisit this review periodically throughout the study as additional relevant information and data become available.

RESEARCH QUESTIONS

What impact does camel leasing have on the welfare and resilience capacities of pastoral households and communities?

- Under what circumstances, or with what incentives, are pastoral households willing to lease their camels to dairy companies?
- Does camel leasing reduce the impacts of shocks on households and communities? If so, how?
- Does camel leasing have a significant direct or indirect (through the strengthening of resilience capacities) impact on household well-being over time? If so, how?
- To what extent does camel leasing build the resilience capacities of participating households, extended families, and communities?
- Does camel leasing have any unintended or negative impacts on households and communities (for example, reduced household consumption of milk)? Can these consequences be mitigated?

What is the “business case” for the camel leasing model for dairy companies?

- What are the incentives (e.g., financial, social) for dairy companies to lease camels from pastoralists?
- How does the camel leasing model impact their business? How does it fit into a broader set of adaptive measures they take to mitigate drought?
- Would they continue, or are they continuing, to use camel leasing in their business, and, if so, under what conditions?

To what extent do Somali social networks influence the camel leasing model?

- Does the model have implications for either scalability within Somalia or replicability in pastoral regions in other countries?
- How do pre-existing relationships (clan or individual) influence the decision of dairy companies and pastoralists to lease camels?
- How are lease terms negotiated, recorded, and enforced?
- How are disputes resolved?
- Have the perspectives of pastoralists and dairy businesses changed through the leasing relationship?
- Have leasing terms changed over time (e.g., with renewals)?
- To what extent did GEEL influence or facilitate the decision to lease or renew?

SOMALIA CONTEXT

Working in Somalia presents a unique set of challenges and considerations. This section of the desk review report provides an overview of the demographics, social dynamics, the existing political system, the agro-pastoralist economy, climate and environment, and security contexts that may affect camel leasing.

Demographics

It has been more than 30 years since an official census was conducted in Somalia;⁹ therefore, it is difficult to accurately describe the demographics of the current Somali population. The World Bank estimates that 15,008,154 people live in Somalia, with an estimated 60%¹⁰ to 70%¹¹ living as nomadic pastoralists.¹² The Borgen Project estimates that more than 70% of Somalia's population is aged 30 years and younger, with a median age of 18 years.¹³ The average household has 5.9 people,¹⁴ and the national unemployment rate is 67%. Urbanization is estimated at a 4.23% annual rate change, with just over 2 million people residing in and around Mogadishu.¹⁵ Somalia remains one of the poorest countries in the world, with a Gross Domestic Product (GDP) per capital of \$493.97 (U.S. dollars [USD]).¹⁶

Enrollment and retention rates for education are estimated at 30%.¹⁷ However, for pastoralists, only 22% of children receive a formal education—fewer than half of whom are girls. Consequently, literacy rates only reach 37.8% across the population. Girls are often subjected to gender expectations, fulfilling roles that “do not need education such as housework, cleaning, and cooking.”¹⁸ In Somalia, literacy rates for men are nearly double those of women (49.7% and 25.8%, respectively). Researchers have noted that literacy may play a role in pastoralists' hesitation to engage in formal agreements with set terms over a period of time.¹⁹

The United Nations High Commissioner for Refugees estimates that 1.7 million people in Somalia have an “urgent need for humanitarian assistance.”²⁰ Compounding this need, an additional 39,000 new internally displaced persons (IDPs) were identified in June 2019, bringing the total number of Somali IDPs to 192,000. Nearly 30%, or approximately 72,000, were displaced due to droughts throughout the country.²¹ The United Nations estimates that 6.2 million people experience “acute food insecurity,” with an additional 700,000 abandoning their

⁹ Robertson, Malla and Oing 2017

¹⁰ Jibrell 2014

¹¹ Cline 2018

¹² World Bank 2018

¹³ CIA 2018

¹⁴ United Nations, Department of Economic and Social Affairs, Population Division 2017

¹⁵ CIA 2018

¹⁶ World Bank 2013

¹⁷ UNICEF 2018

¹⁸ Cline 2018

¹⁹ Gundel, Clans in Somalia 2009

²⁰ Somali Federal Republic Ministry of Health; World Health Organization 2019

²¹ Somali Federal Republic Ministry of Health; World Health Organization 2019

homes and/or traditional pastoralist routes to search for food, while 1.1 million people are in “protracted displacement”.²²

Social Dynamics

Somalia is considered to be an ethnocentric state, with an estimated 85% of the population identifying as “Somali.” However, strong clan relationships and delineations divide the people of Somalia into strict differing identities. These clan-families are divided into noble clans, including the Darood, Hawiye, Dir, and Isaaq clans, and then pastoralist clans, including the Digil-Mirifle and Rahanweyne clans. The clan-families are also differentiated by their accents and language patterns: noble clans speak Af-Maxaa-tiri and agro-pastoralist clans speak Af-Maay-tiri. The primary differences in the clan-families relate to occupation and geographic divisions: pastoralist clans tend to herd livestock and move around from pasture to pasture, whereas noble clans are more stationary and focus on growing food. The clans were separated during the British and Italian Somalia occupations, but the strong clan association indicates that borders, particularly international political borders, are fairly arbitrary, especially in agro-pastoralist clans.²³

The bulk of social relationships are divided along clan lines. Experts disagree on the exact clan breakdowns, but most experts agree that the clan system is in a constant process of relative change. The most consistent understanding of the hierarchy is clan-family (largest groups), clan, sub-clan, primary lineage, and mag-paying/diya-paying group. The mag-paying or diya-paying, is considered to be the “most important level of social organization for each individual,” and encompasses four to eight generations of families.²⁴ Gundel stated that “the clan-system is the most important constituent social factor among the nomadic-pastoralist Somalis” and is so strong that family members can intervene on a pastoralist’s behalf if he or she is too far away from home to manage a problem²⁵. Gundel also noted that the clan is where trust is established for entire communities, and actions against one member will be interpreted as being against all. Diya groups, meaning blood wealth groups, exist in each of the major Somali clans. Diya groups justify revenge actions, often violent, as maintaining customary laws²⁶. These groups often take action against women seen as moving outside the clan’s traditional roles.²⁷

The prevailing system that enforces customary laws and dictates societal norms across clans and political borders in Somalia is known as xeer (also spelled xheer).²⁸ Traditional social structures, particularly a patrilineal system, ensure that xeer laws are followed and interpreted. It is estimated that xeer laws resolve between 80% to 90% of all disputes and criminal cases in Somalia.²⁹ Despite its prevalence, xeer conflicts with most international human rights standards and in places where Al Shabab maintains an active presence, Sharia law has replaced xeer laws.³⁰ Al Shabab, meaning “the Youth” in English, is an Islamist insurgent group based in Somalia

²² United Nations 2017

²³ Gundel, Clans in Somalia 2009

²⁴ Gundel 2006

²⁵ Gundel 2009

²⁶ Gundel 2009

²⁷ Gundel 2006

²⁸ Gundel 2009; Clans in Somalia 2009

²⁹ Clans in Somalia 2009

³⁰ UNDP 2019

seeking to transform Somalia into an Islamic State with Sharia law.³¹ Traditional authorities (akin to head chiefs) are responsible for juridico-political decisions when the xeer laws are not clear. Traditional authorities are always male clan elders and actively continue to “severely marginalize women in decision making.”³²

Outside of Mogadishu, the clans run their territory; there is no centralized government.³³ Clans create and maintain their own justice systems through the traditional authorities and xeer laws, and institute community-based organizations, including mutual insurance, life event celebrations, savings and credit facilities, social assistance facilities, public goods and services, and protection.³⁴ The clan system is an oral society, looking out for another through in-person meetings and interactions on a daily basis. The autonomous nature of the clans makes it difficult to determine precise demographic information.

Political System

Somalia is emerging from nearly two decades of civil war, exacerbated by prolonged droughts and a number of major famines. Dictator Mohamed Siad Barre came to power in October 1969 and ruled until 1991 when he was overthrown during a coup.³⁵ Following Dictator Barre’s removal from power, 20 years of civil war broke out between the Somali Salvation Democratic Front (mostly Majeerteen clan) and the Somali National Movement (mostly the Isaaq clan) and the repercussions of Dictator Barre’s war on Ethiopia saw hundreds of thousands of refugees enter Somalia.³⁶ Clan allegiances and dynamics took over as alliances were formed and broken during power struggles. In December 1992, the United States attempted to lead an international force intervention that imposed an “uneasy peace” and distributed much-needed famine relief.³⁷ In March 1993, 15 Somali factions signed peace and disarmament treaties in Addis Ababa, but continued fighting saw the withdrawal of peacekeeping forces in 1994 and the rise of the self-declared autonomous states of Somaliland and Puntland (neither of which is internationally recognized).

A series of efforts to establish a federal government and re-unify the country saw the creation of the Federal Government of Somalia (FGS) the swearing in of the first formal Parliament and election of President Hassan Sheikh Mohamud in 2012.³⁸ The FGS, alongside the United Nations and several high-profile peacekeeping operations, is attempting to restore government functions and policy across the country. Somalia was official recognized by the United States in January of 2013, although Somaliland and Puntland were not. The United States and other international organizations continue to offer support for drought and famine victims through funding, technical expertise, and numerous development projects. However, attacks from the still-prominent Al Shabab terrorist group, rampant corruption, and a series of semi-autonomous states make this goal difficult.

³¹ Center for Interantional Security and Cooperation at Stanford 2019

³² Gundel 2006

³³ ITPCM International Commentary 2013

³⁴ Bernier and Meinzen-Dick, Resilience and Social Capital 2014

³⁵ Lewis and Janzen 2019

³⁶ Lewis and Janzen 2019

³⁷ Lewis and Janzen 2019

³⁸ Lewis and Janzen 2019

Agro-Pastoralist Economy

To combat the effects of the civil war and to improve the lives of the Somali people, an estimated USD\$1.3 billion has been invested in the country through various international development processes since 2001.³⁹ An additional USD\$1.4 billion comes from remittances on an annual basis. Humanitarian aid has surged to nearly USD\$800 million each year (peaking in 2011). Despite these figures, only 8% of development aid has been distributed via the FGS Treasury, as international organizations prioritize food security, refugee stabilization and support, and anti-terrorism initiatives.

Somalia once had a golden age of economic prosperity, but former Dictator Barre focused on a number of socialization policies titled “scientific socialism” that were characterized by the nationalization of “banks, insurance firms, oil companies, and large industrial firms”.⁴⁰ Dictator Barre also established state-controlled cooperatives and a greatly weakened Somalia’s economy. Today, approximately 60% of Somalia’s economy is agriculturally based, with most focusing on livestock raising, rather than crop farming.⁴¹ Somalia has limited mineral resources, but large areas of pastures are used to hold more than 7 million camels.⁴²

Camels are uniquely able to adapt to semi-arid lands and are used for many purposes, including dairy production, meat, livestock trade, and transportation of water, people, and goods.⁴³ Camels are viewed as a sign of wealth and can be used for dowries, compensation for injuries or slights during clan disputes, and can be borrowed against using indigenous financial institutions. Camels allow for a fluid exchange of property across family and clan lines. Somali pastoralists have been trading livestock at the international level for centuries⁴⁴ with limited impacts from external factors, notably the Somali civil war. However, in 2001, a ban on livestock from Somalia was implemented across the globe, effectively halting and “considerabl[y] shock[ing]” the Somali pastoral system.⁴⁵ The shock of the livestock ban demonstrates the integrated nature of Somalia in the global economy and forced pastoralists to turn to camel milk as an alternative means of economic security and profit.

Camel milk was originally only used for household consumption or exchanged as a gift to establish and keep family ties and social support mechanism. Although camel milk has played an important role in the nutrition of arid-zone populations in several East African countries, traditionally camel milk was consumed only by pastoralists and their families.⁴⁶ By increasing the dairy production during the drier seasons (when livestock prices are low), pastoralists can diversify their income sources and obtain the highest prices during both dry and wet seasons.⁴⁷ The concept of selling camel milk in Somalia is traced to women looking to develop an adaptive strategy to generate income and provide a coping mechanism against critical situations.⁴⁸ Economic indicators regarding camel milk indicate that the market is expanding in Somalia and

³⁹ Aid Coordination Unit Office of Prime Minister Federal Republic of Somalia 2017

⁴⁰ Lewis and Janzen 2019

⁴¹ Lewis and Janzen 2019

⁴² Food and Agricultural Organization of the United Nations 2016

⁴³ Guliye, et al. 2007

⁴⁴ Ploeg and L. 2006

⁴⁵ Ploeg and L. 2006

⁴⁶ Farah, et al. 2007

⁴⁷ Herren 1990

⁴⁸ Ploeg and L. 2006

positively effecting the broader economy through initiatives to improve efficiency, pasteurize, and otherwise utilize the milk. Camel milk has high degrees of “complexity, flexibility, and effectiveness” according to economic and agricultural experts.⁴⁹

Pastoralists are not limited to camel milk to respond to shocks and periods of droughts. Many pastoralists throughout the Horn of Africa employ destocking as a form of emergency shock response.⁵⁰ Experts argue that destocking has environmental benefits, purchasing power, and welfare benefits, but the process must be well timed in relation to the shock and with minimal effects on the environment. The Food and Agriculture Organization (FAO) of the United Nations discusses the destocking process in relation to periods of extreme drought, with pastoralists having to search for days to access water and/or pasture for their animals before the herds perish.⁵¹ Pastoralists are desperate to save their herds and livelihoods; however, they often sell their animals as a last resort to gain enough income for the remainder of the herd and the family to survive. Livestock sellers have told experts and international organizations that they would welcome the opportunity to “invest the cash received in the purchase of productive assets...which are critical for transporting water across long distances.”⁵² This argument suggests that camel leasing would not only be welcomed by pastoralists, but would also provide opportunities for herd continuation and longevity without increasing the risk to pastoralist families.

Climate and Environment

Despite the country’s proximity to the equator, the climate in Somalia ranges from arid to semi-arid.⁵³ The gu season, known in English as the first rainy season, takes place from April through June, and the dayr season (second rainy season) occurs from October through December. The country experiences two dry periods: the jilaal (meaning main) occurs from December through March and xagaa (meaning second) takes place from June through September. The Government of Somalia prioritizes and manages its responses to climate change and environmental shocks with the National Development Plan 2017–2019, which is aligned with several international agreements focusing on climate change and disaster risk reduction (Paris Agreement on Climate Change, the Sendai Framework on Disaster Risk Reduction, and the 2030 Agenda for Sustainable Development).⁵⁴

The framework focuses on allocating and prioritizing areas for intervention and funding support throughout Somalia, taking into account that an estimated 6.2 million people are in critical need of humanitarian assistance due to ongoing droughts in Somalia.⁵⁵ Thus far, interventions have prevented country-wide famines, but the risk remains high as flash flooding after periods of drought are becoming a new normal. Somalia has been experiencing a seasonal shift over the past 15 years. In 2019, the gu rains were delayed and an abnormally long jilaal season followed.⁵⁶ This resulted in widespread crop failure, a decline in livestock productivity, and

⁴⁹ Ploeg and L. 2006

⁵⁰ Morton and Barton 2002

⁵¹ Food and Agriculture Organization of the United Nations 2016

⁵² Food and Agriculture Organization of the United Nations 2016

⁵³ Lewis and Janzen 2019

⁵⁴ UNDP 2019

⁵⁵ UNDP 2019

⁵⁶ UNDP 2019

pushed many communities into food insecurity crises. Erratic and insufficient rains are increasingly becoming a pattern in Somalia, further supporting calls for economic diversification for pastoralists. Many contemporary news sources categorize Somalia as in a state of “climate emergency” and note that most of the population are ill-equipped to survive with late timed rains and more frequent and longer periods of the dry seasons.⁵⁷ As climate change continues to shock ecosystems, there is less and less time to recover.⁵⁸

The Famine Early Warning System Network (FEWS NET) and the Food Security and Nutrition Analysis Unit (FSNAU) noted in their most recent annual Somalia food security bulletin that the north–central pastoral areas are still attempting to recover from the 2017 drought period, during which many pastoralist families engaged in destocking and maximizing their available credit to try and survive the shock.⁵⁹ Forecasted seasonal changes for the 2019–2020 harvest cycle anticipate average dry seasons, allowing for some food security improvements. However, the seasonal changes may again be delayed until late December 2019. Overall, temperatures continue to rise from 10 years ago, and cumulative rainfalls are projected to range between 60% and 80% of normal. Extremely poor livestock body conditions continue to be a threat for pastoralists and herd sizes, although water sources are currently prevalent because the dry season has ended.

The changing environment in Somalia is increasingly hostile against pastoralists, particularly those who are seeking consistent water sources for livestock herds. The changing seasons and prolonged dry seasons have led to drought; when rains do occur, they often are accompanied by flash flooding, which worsens food insecurity. Encouraging pastoralists to diversify their income, reduce their expenses through interactions, and use the camel leasing program can potentially reduce the effects of environmental shocks to a large portion of the Somali population.

Security

The primary cause of instability in Somalia remains threats and effects from Al Shabab attacks. The group once controlled Mogadishu and large portions of the Somali countryside, but the African Union–led military campaign regained control over Mogadishu and continues to battle for territory.⁶⁰ Al Shabab’s defeat by Ethiopian forces in 2006 radicalized the group and provided an opportunity for the remaining leadership to regroup and strengthen their forces while in exile in Southern Somalia. Al Shabab forces grew from 400 in 2006 to more than 9,000 as of 2015.⁶¹ Al Shabab aligned itself with Al Qaeda in 2012.

In response, the United Nations Security Council authorized the African Union to deploy a peacekeeping force, known as the African Union Mission in Somalia (AMISOM), starting in 2007. Currently, AMISOM is a multi-country force of 20,000 troops. Talk of withdrawing troops began in 2017, but the United Nations Security Council and several military and government experts cautioned that the removal of troops would lead to the collapse of the Somali Government. Much of the southern regions of Somalia remain under Al Shabab control. There have been attempts by Al Shabab to move upwards, toward Puntland and Somaliland, but

⁵⁷ Tahir 2019

⁵⁸ UNDP 2019

⁵⁹ FSNAU; FEWS NET Somalia 2019

⁶⁰ Felter, Masters and Sergie 2019

⁶¹ Center for Prevention Action at the Council for Foreign Relations 2019

so far, the group has been unable to break through troop lines.⁶² As this study plans to focus in the camel pastoralist livelihoods zones, the interactions and direct threats from Al Shabab are anticipated to be minimal.

Conversely, ongoing border disputes and clashes between Puntland and Somaliland may have a larger impact on our research activity. Sanaag and Sool are disputed regions between the Puntland and Somaliland autonomous states. Traditionally part of Somaliland, Puntland laid claim to the area in 1998 based on tribal affiliations with the dominant Darod clans.⁶³ Clashes between Somaliland and Puntland soldiers are ongoing, with most contemporary reports citing mid-2018 as the last deadly fighting instance.⁶⁴ Reports of increased artillery and mortar shelling around Tukaraq, a strategically located town that has become “a front line in the battle for control,” have been ongoing since June 2018.⁶⁵ Ethiopia is actively attempting to mediate the situation between the leaders of Somaliland and Puntland, but an agreement has not yet been reached.

The security complexities in Somalia pose many challenges to the camel leasing project. For instance, the ability to cross key political borders that intersect the chosen livelihood zones safely and repeatedly raises questions about the geographic composition of the pastoralists. Although the research team will strive to be inclusive of tribes and pastoralist patterns, the ongoing violence on the Puntland and Somaliland border disrupts previous herding patterns. The heavy implications of tribal affiliation also suggest that any enumerators involved in the data collection process must be of specific demographics, depending on their area of assignment. The inability to safely cross borders more directly impacts external lead researchers, who will not have the necessary demographic background to conduct critical data collection processes. To mitigate these challenges, the selected livelihood zones, data collection firm, and ability to scale the camel leasing efforts will be carefully reviewed and amended as appropriate to ensure the project’s success and the safety of everyone involved.

CAMEL LEASING AS A MODEL

As previously discussed, camel leasing in Somalia was introduced through the GEEL program and appears on the surface to have been innovative and successful. To truly understand the extent and scale of success, the research team examined some of the history of the practice and identified some underlying assumptions and hypotheses.

History and Evolution of Camel Leasing

According to GEEL project documents and informal conversations, and as stated in RTI’s Camel Leasing Concept Note:

During a severe drought in 2016–2017, USAID/Somalia requested the GEEL project to identify ways to modify activities to mitigate the effects of the drought on the targeted value chains, including livestock and dairy. As part of a package of support services to dairy companies, GEEL introduced leasing of camels from pastoral households as a way to mitigate the impact of the drought on the commercial milk supply. Although leasing was already occurring on a very small

⁶² BBC News 2017

⁶³ Muse 2012

⁶⁴ Hassan 2018

⁶⁵ International Crisis Group 2018

scale, few dairy businesses and even fewer pastoralists knew or understood the practice of leasing animals. To expand the use of leases, the GEEL project leveraged its relationships with dairy companies and pastoralists to encourage them to adopt leasing of lactating camels as one measure to reduce the impact of the drought on their businesses and herds. Under this arrangement, the dairy companies covered the management costs for the leased animals (feed, water, and veterinary services) and pastoralists received a fixed portion of the dairy companies' profits from milk sales. In total, the leasing model was introduced to 42 dairy companies and an estimated 2,800 pastoral households by early 2018. Although the initial leases have ended, 38 of the companies reported that they are continuing to lease animals during subsequent dry seasons. This initial information points to the likelihood that the model could be scaled and employed in "normal" dry seasons as well as during shocks.

Based on conversations with GEEL project staff in Hargeisa, Mustafe Ali of Ramad and Galool Dairy outside of Hargeisa, camel leasing could also be referring to the common practice of camel lending, which was already occurring before involvement from the GEEL project. There is a nuanced difference between camel leasing and camel lending; therefore, the terminology used could have important implications for framing our research questions if camel lending has already been occurring at a larger scale than anticipated. According to interviews and as previously mentioned, it is—and has been—fairly commonplace among families and clans to lend camels in times of need with the expectation of reciprocation in the future. For example, if a pastoralist has multiple lactating camels and his cousin has none currently lactating, then the pastoralist may temporarily lend a camel to his cousin, and vice versa if or when the roles are reversed. Such lending appears to be very informal Sharia-based lending without any documented agreement and likely without even witnesses to an oral agreement.

Lending shifts into leasing when a private-sector dairy is involved, making it more of a business transaction than dependent on familial or clan dynamics. Such leases might be formally documented arrangements or less formal agreements between a pastoralist and a dairy farm in the presence of witnesses. To date, the research team has not seen any documented evidence of formal leases prior to the GEEL project's introduction of camel leasing. Interestingly, one anecdote noted the potential value of a lease, such that when one pastoralist's camel was no longer producing milk, the pastoralist's cousin loaned a lactating camel to provide to the dairy farm in order to keep the lease intact. Such examples blur the lines between formal and informal leasing and lending.

Currently, the research team does not have precise numbers of pastoralist leasing agreements in place across Somalia, though a data collection effort is underway to collect that information and map both dairies and pastoralists participating in camel leasing. One key informant dairy owner indicated that there are many more pastoralists interested in establishing a lease than the farm is currently capable of providing. That farm is currently scaling up its operations and intends to open a dedicated camel leasing facility over doubling its leasing capacity, though the owner still does not anticipate being able to meet the demand of pastoralists in his community.

Assumptions and Hypotheses

Some assumptions and hypotheses related to the camel leasing model piloted by the GEEL project surfaced through conversations with GEEL project staff, a dairy farm, and USAID. These assumptions and hypotheses are presented in this subsection of the report so they can be used

for reference during instrument and methodology design. Camel leasing is positively associated with the following items:

- Increased stability of the camel milk market through more consistent supply even during drought periods. An increased supply increases availability and access, which would likely result in increased nutrition and food security in both rural and urban communities.
- Growth, or at least stability, of camel dairy farms with the rippling effect of job growth and increased spending within the communities where the dairy farms operate.
- Individual pastoralists, pastoralist households, and associated communities have increased resilience capacities, resulting in stable or improved well-being, especially when challenged by shocks and stresses.
- Camel pastoralists participating in camel leasing receive a steady income, and there is a reduced risk of having to destock in the face of a drought or lose a camel to illness.
- The demonstrated steady income from the camel lease could be leveraged to better access credit.

More negative assumptions or hypotheses associated with camel leasing include the following:

- There is the potential for pastoral households to lease their lactating camels instead of keeping them close, thereby diminishing potential nutrition at the household level.
- It is advantageous for dairies to sell milk where they can get the best price. This may mean they have to shift their milk sales to urban centers, thereby leaving rural communities priced out of the market and decreasing food security or nutrition of rural communities.
- According to Campbell Dunlop, the Senior Agricultural Value Chains Specialist for the GEEL project, one hectare of irrigated land is much more valuable when used to cultivate high-value fruits and vegetables than fodder for sale. However, fodder grown under irrigation for use in a dairy farm, when figures are worked back from milk sales, may be a comparatively high value as that of fruits and vegetables. Farms may choose to convert irrigated land from crops to fodder and could mean fewer crops grown in rural communities, thereby reducing food diversity, nutrition, and resilience capacities.
- Camel leasing might only be available to specific pastoralists or types of pastoralists, thereby preventing the potential benefits from reaching the poorest of the poor.
- Camel leasing might only be viable within specific clan, family, and/or community dynamics, thereby preventing scalability.

STUDY DESIGN CONSIDERATIONS

The Camel Leasing to Impact Resilience Activity has been designed as a mixed-methods study, with recurring household data collection over three seasons complemented by two rounds of FGDs and six case studies. To design data collection instruments and protocols that allow the research team to answer the stated research questions, we need to more fully understand how to conceptualize camel leasing as a resilience capacity. The research team must also identify the shocks and stresses that could affect camel leasing, determine how camel leasing may serve as a source of resilience, and further identify key parameters and definitions.

Resilience Capacities

USAID’s Resilience Capacity Measurement Guidance Note 3⁶⁶ provides a foundation for situating camel leasing in a resilience measurement framework. The guidance note defines “resilience” as the ability of people, households, communities, countries, and systems to mitigate, adapt to, and recover from shocks and stresses in a manner that reduces chronic vulnerability and facilitates inclusive growth. “Resilience capacities” are defined as the potential for proactive measures to be taken to manage the impacts of shocks and stresses, or the sources of resilience that enable protected or improved well-being outcomes. Although other definitions of resilience exist in the literature, the research team will adopt USAID’s definition as our working definition for the camel leasing to impact activity.

Resilience capacities can be further classified into categories to reflect different dimensions that operate at different levels, as defined in USAID’s Resilience Capacity Measurement Guidance Note 3, which is presented as follows:

Capacity Category	Example
An absorptive capacity is the ability to minimize exposure sensitivity to shocks and stresses through preventative measures and appropriate coping strategies to avoid permanent, negative impacts.	Crop insurance, climate, or weather information
An adaptive capacity is the ability to make informed choices and changes in livelihood and other strategies in response to longer term social, economic, and environmental change.	Adopting new agricultural practices, diversifying income sources, and participating in producer organizations or trade networks
A transformative capacity relates to the governance mechanisms, policies and regulations, cultural and gender norms, community networks, and formal and informal social protection mechanisms that constitute the enabling environment for system change.	Extension services; market, flood protection, or water infrastructure; and gender equity and inclusion

Resilience capacities can be considered at different, though overlapping, levels: individual, household, community, regional, and national. For example, savings, credit, and assets may be a household-level resilience capacity, whereas market information, agricultural practices, or business skills may be considered community-level capacities. Regional or national capacities may focus more on information and infrastructure systems, and the larger enabling environment in terms of policies and regulations, civil society, and cultural norms around social equity and inclusion.⁶⁷

At the individual level, psychosocial factors can play a large role in how individuals experience shocks and stresses. For example, people’s aspirations and confidence to adapt may affect their choice to use other resilience capacities. These psychosocial capacities can be described by a belief in free will, a sense of individual power, and exposure to alternatives to the status quo.

⁶⁶ Vaughn, 2018

⁶⁷ Vaughn 2018

At the community level, social capital is the concept of the codes, norms, trust, and perceptions of embeddedness that exist between individuals and community groups. Bonding social capital (the bonds between community members), bridging social capital (bonds between communities), and linking social capital (networks between individuals or groups across formal or institutional boundaries) may interact with other resilience capacities in ways that amplify or downplay their effects in mitigating shocks and stresses.⁶⁸ All three types may exist simultaneously in a community.⁶⁹

In light of these definitions, camel leasing as a model could be considered as a resilience capacity in several ways. For example, one key informant interview pointed to camel leasing as a transformative source of resilience, which then plays out at the individual, household, and community levels in different ways as they respond to shocks and stresses. Another way of viewing camel leasing could be as a form of income diversification, an adaptive capacity, which allows pastoralists to diversify their income. As another example, camel leasing could also resemble crop insurance, an absorptive capacity, as a method of ensuring that a pastoralist household can continue to draw income from a camel—even when crop failures occur.⁷⁰

Shocks, Stresses, and Well-being

Shocks and Stresses

One key aspect of the research conducted for the desk review was to gain a better understanding of whether engaging in camel leasing reduces the impacts of shocks on households and communities, and if so, why and how. “Shocks” are defined in USAID’s guidance on resilience measurement⁷¹ as “external short-term deviations from long-term trends that have substantial negative effects on people’s current state of well-being, level of assets, livelihoods, safety, or their ability to withstand future shocks.” “Stresses” are defined as “long-term trends or pressures that undermine the stability of a system and increase vulnerability within it.” Shocks and stresses stem from many causes, including geophysical or meteorological (drought, flooding), biological (cholera, influenza), technological (nuclear disaster), or human-

⁶⁸ Vaughn 2018

⁶⁹ Bernier and Meinzen-Dick, Resilience and Social Capital 2014

⁷⁰ Knips 2004

⁷¹ Sagara 2018

induced (terrorism, gender-based violence). Moreover, shocks and stresses can vary in terms as scale (covariate or idiosyncratic) and duration (acute or chronic), and they can interact in complex, interdependent ways. USAID defines “covariate events” as those that affect large numbers of people in a geographic area, whereas “idiosyncratic events” are defined as those that affect specific individuals or households within a community. “Acute shocks” are considered to be events with a rapid onset and last for a short duration, whereas “chronic stresses” are considered to be events with a slow onset and continue over a protracted duration of time. Stresses and shocks can be measured in a variety of ways, including using primary and secondary data, subjective and objective data, and layering several types of data to triangulate the extent of the shock or stress and the households’ experience during the event and through recovery.

In the context of camel leasing, the research team expects erratic rainfall as an acute, covariate shock and drought as a chronic, covariate stress to play large roles in a pastoralist household’s decision to engage in and their experience with camel leasing. The outbreak of disease, prevalence of theft, experience of extreme poverty, and changes to migration patterns are other shocks and stresses that could affect a household’s decision to lease, and in turn may be mitigated by their experience with leasing.

During the recent Somalia Resilience Recurrent Monitoring Survey, respondents were asked about their experiences with 23 different shocks, varying from climate, crop, and livestock shocks to conflict, economic, health, and employment shocks.⁷² The Ethiopia Pastoralist Areas Resilience Improvement

EXAMPLE SHOCKS TO MEASURE

The following types of shocks are from the Somalia Recurrent Monitoring Survey and the Ethiopia Pastoralist Areas Resilience Improvement through Market Expansion (PRIME) Project Impact Evaluation:

Climate Shocks

- Drought and/or variable rainfall
- Floods and/or heavy rain

Crops and Livestock Shocks

- Reduced soil productivity
- Livestock disease
- Crop disease and pests
- Very bad harvest

Deforestation and Fire

- Deforestation
- Fire

Conflict Shocks

- Military conflict
- Inter-village conflict and/or resource disputes
- Inter village conflict and/or other disputes
- Intra-village or clan conflict/theft
- Conflict related to theft of crops or livestock

Economic Shocks

- Increased food prices
- Trade disruptions
- Sharp increases in input prices
- Sharp drop in livestock or crop prices
- No demand for agricultural or livestock production

Health Shocks

- Measles outbreak
- Cholera or diarrheal outbreaks
- Chronic illness

Employment Shocks

- Migration of main income earner
- Displacement of household

⁷² TANGO International 2019

through Market Expansion (PRIME) Project Impact Evaluation recurring monitoring survey considered 12 shocks, primarily related to drought.⁷³ Both the Somalia and Ethiopia recurrent monitoring surveys incorporated secondary (or objective) data from the FEWS NET on climate, crop, and livestock shocks, with primary data collected during survey questionnaires about households' exposure to the shocks in their analyses. The PRIME analysis also assigned shock exposure levels from the FEWS NET data to the surveyed households. During the instrument and analytical design phase, the research team will consider whether to use secondary data sources such as FEWS NET or the African Flood and Drought Monitor as direct variables in our quantitative analysis or as contextual information to complement our primary data.⁷⁴

Well-being

Measuring resilience capacities requires researchers to identify an indicator of well-being. Researchers may choose to index resilience capacities to food security, household assets, poverty, or other measures that represent development outcomes of interest.⁷⁵ The choice of a well-being indicator should consider the time sensitivity and time horizon on the research, the measurement error associated with different variables, and whether multiple well-being outcomes are appropriate.⁷⁶

The Somalia and Ethiopia recurrent monitoring surveys evaluated household food security in addition to other household characteristics as indicators of well-being. "Food security" is defined as a state in which "all people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life."⁷⁷ Common indicators of household food security include the household dietary diversity score (HDDS), household food insecurity access scale (HFIAS), and the household hunger scale (HHS).⁷⁸ HDDS, HFIAS, and HHS are index-based approaches that have been developed from data collection methods first used in the United States and have been adapted to developing country contexts. The HDDS illuminates a household's ability to access food as well as its socioeconomic status based on the previous 24 hours.⁷⁹ Researchers can use the HFIAS to assess the prevalence of household food insecurity in terms of access to food and to detect changes in household food insecurity in a population over time.⁸⁰ The HHS is directly derived from the HFIAS and reflects the more severe range of household food insecurity as characterized by food deprivation and actual hunger.⁸¹ FAO's short Resilience Index and Measurement Guide combines questions from these indices to help balance questionnaire length while collecting more detailed information about the types of foods that households may be consuming.⁸²

⁷³ Smith, Frankenberger and Nelson 2018

⁷⁴ US Agency for International Development n.d.; Princeton University n.d.

⁷⁵ Constas, Frankenberger and Hodinott 2014

⁷⁶ Sagara 2018

⁷⁷ USAID, 1992, as cited in Coates, Swindale and Bilinsky 2007

⁷⁸ Sagara 2018

⁷⁹ INDDEX Project 2018

⁸⁰ Coates, Swindale and Bilinsky 2007

⁸¹ Ballard, et al. 2011

⁸² Food and Agriculture Organization 2016

In the context of the camel leasing research activity, the research team will likely consider household food insecurity as a primary indicator of household well-being, given its prevalence in similar research studies in Somalia and Ethiopia, as well as a key indicator for the FSNAU and FEWS NET reports, such as the Food Security Outlook Report.⁸³ When choosing which index is most appropriate, the research team will balance the length of the survey questionnaire and complexity of indicator calculations. In the case of the Somalia Resilience Recurrent Monitoring Survey (RMS), the choice of the HFIAS allowed estimations for both the HFIAS and the HHS. Mercy Corps and Technical Assistance to Non-Governmental Organizations (TANGO) International's Exploratory Evidence on the Determinants of Resilience to Food Security Shocks in Southern Somalia found that pastoralist households had lower HDDSs than farmers and that this was typically the case because pastoralists' traditional food sources do not include many items measured by the HDDS scale.⁸⁴

Gender and Social Dynamics

Clan structures, as previously mentioned, are extremely complex and dynamic. Understanding which clans are present in our research area may have a bearing particularly on the organization of our FGDs and identifying where pastoralists are during follow-up seasons for data collection. It is important to note that clan elders keep track of the whereabouts of their family members so that they may find them in the case that a group is obliged to pay a blood compensation, the members can be located to pay their share⁸⁵. Gender considerations will also come into play because the structure of Somali culture is built on the patrilineal clan system, which defines the role of women in terms of domestic and informal labor, while formal positions of authority are for men only.⁸⁶ Somalia ranks in the bottom one-third of measures of women's empowerment for which data are available in the United Nations Development Programme's (UNDP's) human development reports; the gender inequality index of 0.776 (1 = inequality) is the fourth highest globally.⁸⁷ However, limited society views the role of women, they are strong contributors to household income, in some cases up to 70%.⁸⁸ It is important to note in the context of camel leasing that approximately 40% of Somalia's GDP is based on the informal livestock sector and that women largely manage the sale and exchange of livestock products such as milk and ghee.⁸⁹ In the context of camel leasing, it will be important to consider how to convene women during FGDs to understand better how leasing a household's camel affects their ability to sell the milk and whether the income from leasing is used in the same or different ways as the income from direct milk sales.

Private Sector

Most of the more recent guidance on resilience in development contexts reviewed for this report focuses mainly on household and community resilience, with little or no mention of the

⁸³ FEWS NET and FSNAU 2019

⁸⁴ Mohamud and Kurtz 2013

⁸⁵ Gundel, Clans in Somalia 2009

⁸⁶ USAID/Somalia 2014

⁸⁷ UNDP Somalia 2014, UNDP 2018

⁸⁸ USAID/Somalia 2014

⁸⁹ UNDP Somalia 2014, Somalia GEEL 2016

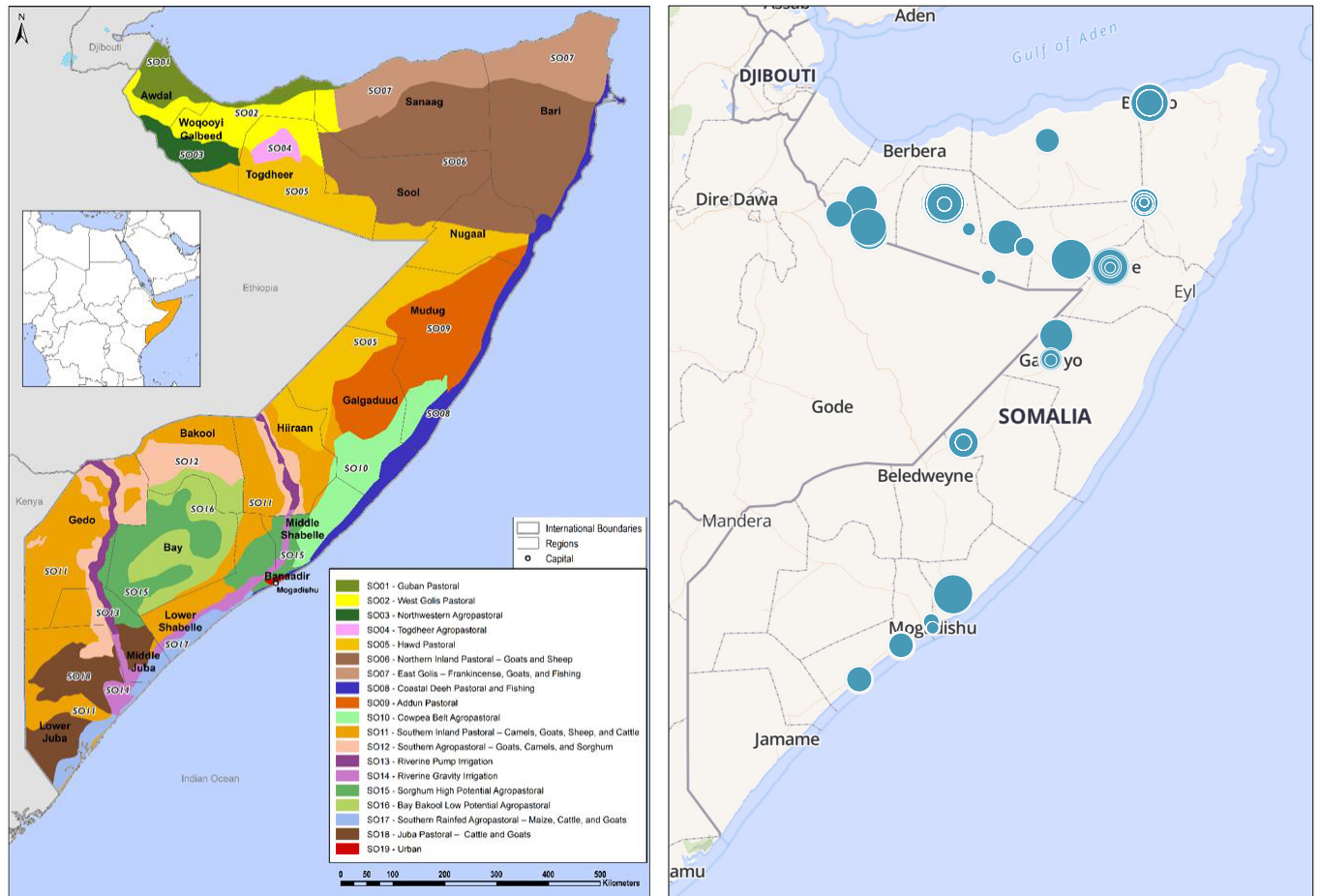
private sector. However, the private sector can be viewed through several lens. For instance, camel milk dairies are agri-businesses with individuals who own them and make decisions about their operations. These individuals are susceptible to shocks and stresses, as are their business operations; therefore, they rely on resilience capacities in the same way that households may. The private sector can also be viewed from a systemic level, in much the same way that USAID market systems development programming emphasizes enhancing the system by reducing risk and transaction costs between and among actors to build trust and accrue value. Although our study design does not allow for us to track the progression of dairies and estimate the impacts of shocks and stresses on a particular resilience indicator in the same way that we plan to for households, we will seek to understand how camel leasing fits into their business models as a strategy to grow their business, diversify their production inputs (lactating camels), and otherwise maintain their businesses viability in the face of shocks and stresses.

Livelihood Zones

FSNAU, with FEWS NET, generate livelihood zone maps and analyses to provide information about the status of food security on a geographic basis in Somalia. These baseline livelihood profiles, last updated in 2016, are meant to help development practitioners and humanitarian workers understand who is vulnerable, to which hazards, and why, as well as households' capacities to adapt to economic stress, such as failed crops and livestock production. A livelihood zone is a geographic area within which people share broadly the same patterns of access to food (i.e., they grow the same crops, keep the same types of livestock). Livelihood zones also share broadly the same access to markets. Patterns of livelihood vary from one area to another. Local factors, such as climate, soil, and access to markets, all influence livelihood patterns. The livelihood profiles offer an analysis of livelihoods and food security on a geographical basis and include an analysis of the predominant markets, wealth and assets, population size, sources of income, sources of food, season patterns, and exposure to hazards and conflict.⁹⁰

⁹⁰ FSNAU-Somalia 2016

FIGURE 2. FSNAU 2016 LIVELIHOOD ZONES (ON LEFT) AND THE GEEL PROJECT DAIRY FARM LOCATIONS (ON RIGHT)



There are 18 baseline livelihood zones, of which the research team plans to select up to two for the purposes of this research activity. The research team is currently collecting information regarding the locations of dairy farms that have engaged in leasing in the past year in order to inform our selection of those zones. Preliminary data from the GEEL project are shown in **Figure I** (on left) against the current livelihood zone map (on right). The approximate locations of these farms are in seven zones:

1. SO03: Northwest Agro-pastoral
2. SO04: Togdheer Agro-pastoral
3. SO05: Hawd Pastoral
4. SO06: Northern Inland Pastoral—Goats and Sheep
5. SO07: East Golis—Frankincense, Goats, and Fishing
6. SO15: Bay-Shabelle High Potential Agro-pastoral
7. SO17: Southern Rainfed—Maize, Cattle, and Goats.

The matrix shown in **Table I** provides a quick snapshot of each zone. If the mapping data indicate large numbers of farms in other zones, then the research team will update the matrix with additional zones.

TABLE 2. LIVELIHOOD ZONES OF INTEREST

Zone	Livelihood System	Estimated Population (2014)	Rain Patterns	Lean Season	Main Economic Activities	Most Important Source of Cash	Wealth Breakdown	Top 3 Hazards
SO03: Northwest Agro-pastoral	Agro-pastoral	47,946	1 extended rainy season with 2 peaks	Mid-February through mid-June	Sorghum and maize cultivation, and cattle production	Dairy and live animal sales from camels and cattle	Poor: 30% Middle: 50% Better off: 20%	Drought, food price inflation, and civil insecurity (clan rivalry)
SO04: Togdheer Agro-pastoral	Agro-pastoral	17,052	2 rainy seasons; 2 dry seasons	Mid-May through mid-June	Crop cultivation and livestock herding	Dairy and live animal sales from sheep, goats, cattle, and camels	Poor: 30% Middle: 50% Better off: 20%	Erratic rainfall and drought, disease, and food price inflation
So05: Hawd Pastoral	Pastoral	334,378	2 rainy seasons; 2 dry seasons	Mid-August through October; March through mid-April	Live animal trade of sheep, goats, and camels	Live animal sales from sheep, goats, and camels; dairy sales	Poor: 30% Middle: 50% Better off: 20%	Drought, erratic rains, and food price inflation
SO06: Northern Inland Pastoral	Pastoral	580,583	2 rainy seasons; 2 dry seasons	August through mid-October; March	Sheep and goat production, smaller camel herds	Dairy, live animal, and hide sales	Poor: 30% Middle: 50% Better off: 20%	Erratic rainfall and drought, environmental degradation, and livestock disease
SO07 East Golis	Pastoral	255,750	2 rainy seasons; 2 dry seasons	March	Frankincense production; goat, sheep, and camel production	Frankincense sales; live animal, dairy, and hide sales and export	Poor: 30–40% Middle: 45–50% Better off: 10–20%	Drought, storms and strong winds, and termites
SO15 Bay-Shabelle High Potential Agro-pastoral	Agro-pastoral	811,759	2 rainy seasons; 2 dry seasons	Mid-May through July; mid-November through December	Crop and livestock production	Cattle, goat, and camel sales	Poor: 30% Middle: 55% Better off: 15%	Drought, civil insecurity and market closures, and crop and livestock diseases
SO17 Southern Rainfed	Agro-pastoral	200,290	2 rainy seasons; 2 dry seasons	April through July; October through December	Crop production, cattle, sheep, and goat production, and camel herding	Maize and other crop sales; dairy sales	Poor: 25–30% Middle: 50–60% Better off: 15–20%	Drought, insecurity, and livestock disease

Other Key Terms

There are many other key terms that the research team will be defining for our research, including pastoralism, urban, rural, and peri-urban, and what comprises a camel lease. The remainder of this subsection discusses some possible definitions.

Pastoral and Agro-Pastoralism

There are varying ways to define pastoralism and agro-pastoralism, generally according to the primary livelihood activity of the population in a given geographic area. The FSNAU in the Somalia Livelihood Profiles defines “pastoralism” as zones in which rainfall and ecology can support only livestock herding. In the pastoral zones, wealth is determined by the type and number of livestock owned—although livestock are also an important component of the household economy in other types of livelihood zones. Camels are particularly valuable assets in the pastoral and agro-pastoral livelihood zones.

“Agro-pastoralism” is defined as semi-arid areas where the rainfall supports cultivation of cereals, but where livestock herding is also a substantial, if not dominant, component of livelihoods. In the agro-pastoral and agricultural zones, wealth is determined by the amount of land cultivated, the types of crops cultivated, and the types and numbers of livestock owned.⁹¹

The Ethiopia PRIME RMS categorized households according to whether they were pastoralist, agro-pastoralist, and non-pastoralist. Pastoralists were those households for which livestock production and sales is the primary livelihood activity. Agro-pastoralists were those for which crop production and sales are the primary livelihood activities, and for which livestock production and sales are additional livelihood activities. Non-pastoralists are those for which livestock production and sales are not sources of food or income. The study also included households for which livestock production and sales are declared a livelihood activity, but the primary sources of food and income are wage labor, self-employment unrelated to crop or livestock production, remittances, gifts, inheritances, or assistance from friends, neighbors, or relatives from an outside organization in the non-pastoralist category.⁹² In Mercy Corps and TANGO International’s Exploratory Evidence on the Determinants of Resilience to Food Security Shocks in Southern Somalia, the authors noted that “pastoralists” are defined as households that generate more than 50% of their food and income from livestock. The authors also noted that in practice, many of those they call pastoralists are agro-pastoralists who also rely on cultivating crops for a smaller share of their livelihoods.⁹³

Urban, Peri-urban, and Rural

It is also common in resilience studies to categorize households according to whether they are “urban,” “peri-urban,” or “rural.” The specific methodologies regarding how researchers categorized households this way in the Somalia and Ethiopia RMSs are unclear. The literature acknowledges that the boundaries between these three classifications are blurry, and they often

⁹¹ FSNAU-Somalia 2016

⁹² Smith, Frankenberger and Nelson 2018

⁹³ Mohamud and Kurtz 2013

operate on multi-dimensional continuum of physical location, economic activity, demographics, and socio-psychological factors. Researchers characterize “peri-urban environments” as places of social compression and dynamic change that can play a mediating role between rural and urban zones.⁹⁴ Although the researchers do not offer specific definitions of “urban,” “peri-urban,” or “rural,” they suggest that urbanization is a process of concentration and intensification of human life and activity, which is uneven across space and time.⁹⁵ Researchers and practitioners also recognize that resilience, although often first thought of in pastoral and rural areas, can take different forms requiring different sets of measurements in peri-urban and urban areas.⁹⁶ For our study, we are focused on collecting data from households that own camels and may or may not be engaging in leasing. During retrospective FGDs, the research team will seek to understand whether many of these households consider themselves to be residents of more concentrated areas of population.

Summary

In light of these previously mentioned definitions and terms, the research team finds it helpful to follow the guidance from the first Resilience Measurement Practical Guidance Note to apply resilience thinking to camel leasing to summarize the previous discussion and to assist in designing our qualitative and quantitative instruments.⁹⁷ **Table 2** lists the guiding questions and answers as they relate to camel leasing.

TABLE 3. RESILIENCE GUIDING QUESTIONS AND ANSWERS

Guiding Question	Camel Leasing Model
Resilience for whom? The target populations and their attributes that include location (urban, peri-urban, rural), demographic factors (sex, age, ethnicity) and livelihood (agriculture, trade, unskilled labor)	The team expects the target households to be those with primarily pastoral-based livelihoods located in rural or peri-urban areas.
Resilience of what? The enabling environment, including formal and informal institutions, infrastructure, social, ecological and economic factors, that impact the target population’s ability to anticipate, absorb and adapt to risks	Pastoralism as a livelihood strategy, particularly as it relates to private sector actors in the dairy market system.
Resilience to what? The complex and compounding shocks and stresses that impact people’s capacities to achieve development outcomes	Resilience primarily to drought and erratic rainfall, as the primary hazard in our livelihood zones of interest.
Resilience through what? The absorptive, adaptive, and transformative capacities that strengthen the ability of target populations to mitigate risk	The camel-leasing model can be a transformative source of resilience as a system that affects individuals, households, and communities. It can also be an adaptive capacity in the form of diversification. Camel leasing could also resemble crop insurance, an absorptive capacity.

⁹⁴ Mercy Corps n.d.

⁹⁵ Iaquina and Drescher 2000

⁹⁶ Mercy Corps n.d.

⁹⁷ Vaughan and Henly-Shepard 2018

Guiding Question	Camel Leasing Model
Resilience to <i>what end</i>? The primary well-being or development outcomes for which we want to build resilience	Maintained or increased food security of target households

POTENTIAL CHALLENGES AND DATA LIMITATIONS

This desk review is meant to serve as a guide and foundation for refining the data collection methodologies to answer our research questions. The literature reviewed and key informant interviews point to a number of potential challenges that may limit our findings. We raise these considerations here as a basis for discussion with USAID, our data collection partners, and other stakeholders as we begin to implement our research.

Accessibility

One challenge raised by our data collection partner, the Horn Africa Consultants Firm (HACOF) and reinforced by our Livestock Specialist Consultant, and Livestock Specialists Dr. Abdile and Mohamed Eidle for the GEEL project, involves the accessibility of pastoralist households. Given that the head of household tends to the herd as it grazes, it can be very difficult to convene a group of heads of households together in an urban center where geographic diversity could be represented. Instead, the key respondents advise that enumerators may need to meet them in their communities. Given the geographic size of our potential livelihood zones, in particular the Hawd Pastoral (SO05) and Northern Inland Pastoral (SO06) zones, the research team may be challenged to maintain representativeness across even a single livelihood zone during qualitative data collection. As the study was designed, we planned for one set of retrospective FGDs in each of two selected livelihood zones. An alternate strategy may be to focus on one livelihood zone and gather multiple perspectives those engaged in camel leasing and those who are not engaged in camel leasing in the community to unpack the effects of the model on others in the community.

Participant Selection

For the quantitative portion of the data collection effort, it appears as though the distinction between the target population (camel leasers) and the comparison group (non-leasers) may not be as clear as originally anticipated. Initial assumptions were that non-leasers were uninterested in or unaware of camel-leasing opportunities. However, according to conversations with Mohammed Yusuf and Mohammed Eidle of the GEEL project, Mostafe Ali of Ramad, and Galool Dairy near Hargeisa, pastoralists in that community were not participating in camel leasing because of the lack of the dairy farms' capacity to accept leases from all interested parties. As dairy farms continue to grow their investment in land and irrigation infrastructure, as promoted by the GEEL project in some cases, and more leases are established, we anticipate that there will be some comparison group members who move into the intervention group. Additionally, non-leasers may have previously held leases, which may further subdivide the comparison group. As the research team continues to collect information about the current dairy farms engaging in leasing, the numbers of leases they hold, and their locations, we will further specify the protocols used for selecting the intervention and comparison groups.

As the supply of leases from dairy farms appears to be the driving force of participating in the model (as opposed to the demand of pastoralists), the research team may find it more accessible to use the dairy farms as access points to both populations. Using the dairy farms will reduce the randomization of and representativeness of households across livelihood zones. Moreover, although the research team is identifying additional dairy farms participating in leasing arrangements beyond those supported by the GEEL project, most may be related to the GEEL project, limiting the extrapolation of findings more broadly to households and communities who have not received the same project support.

Similarly, key informants Mohammed Yusuf of the GEEL project, and our Consultant Livestock Specialist raised the challenge that, given the role that women play in households, convening a group of women for focus groups is going to be challenging, according to Somali nationals. Mohamed Abdillahi, our alternate Agreement Officer's Representative (AOR), reaffirmed this potential gender-based challenge regarding data collection. However, the research team recognizes the importance of gender in overall household resilience strategies, and we will continue to seek ways to explore gender, when feasible.

Attrition

Attrition is always a challenge with longitudinal studies; therefore, the research team anticipates that this study will not be any different. The Somalia RMS explored the use of telephone-based surveys to minimize attrition, though still experienced attrition rates of 28% between the baseline and final round of data collection. Although we are not planning to conduct telephone-based surveys at this time, the research team will work with our data collection partner, HACOF, to establish consistent relationships between enumerators and households to maintain participation over the course of the three seasons. The research team could also explore financial compensation or seek methods of sharing findings of our research with those households and communities through the GEEL project or other means to continue the engagement.

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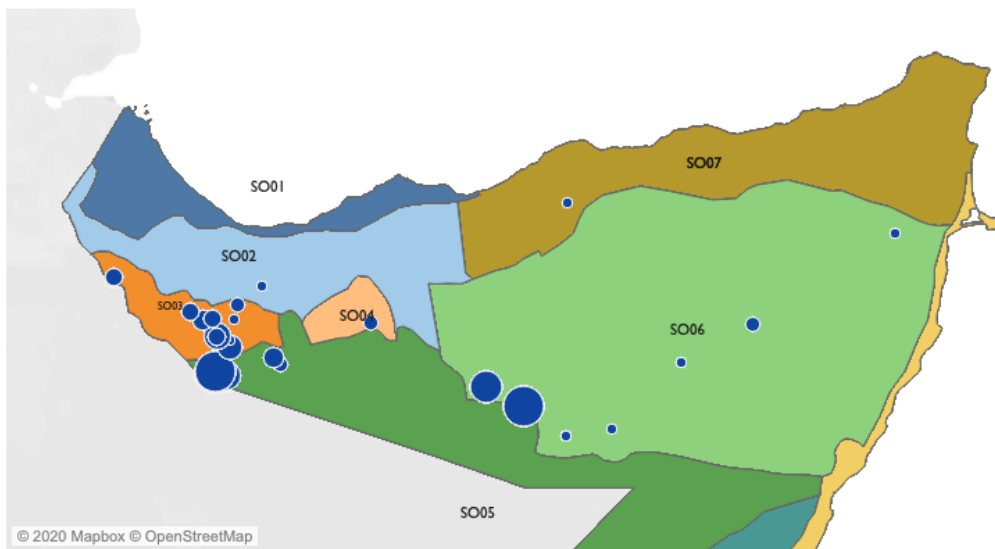
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ANNEX D. MAPS OF VERIFIED DAIRY FARMS

Verified Leasing Dairy Farms by Region



Verified Leasing Dairy Farms by Livelihood Zone



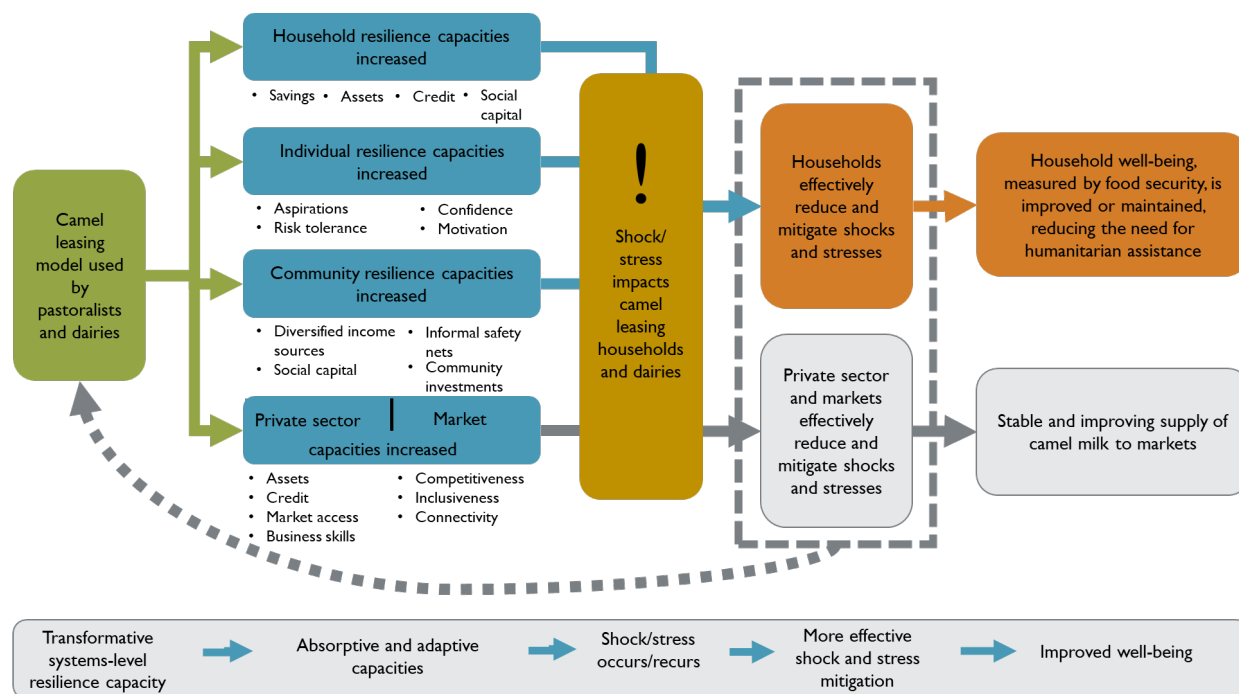
Somalia Livelihood Zones

- SO01: Cuban Pastoral
- SO02: West Golis Pastoral
- SO03: Northwestern Agropastoral
- SO04: Togdheer Agropastoral
- SO05: Hawd Pastoral
- SO06: Northern Inland Pastoral – Goats and Sheep
- SO07: East Golis – Frankincense, Goats, and Fishing

ANNEX E. CAMEL LEASING THEORY OF CHANGE

The theory of change is presented in a narrative format and in a visual representation (**Figure E-1**). The study team hypothesizes that the camel leasing model can be a winning strategy for pastoralist households, individuals, communities, and dairies to mitigate shocks and stressors. From a **household perspective**, engaging in camel leasing means that households can receive a steady cash flow for an asset, thereby enabling them to build up their savings and potentially acquire new assets, while avoiding the need to sell off a valuable household asset during times of shocks or stressors. Similarly, leasing a camel reduces the burden on pastoralists to find water and fodder for lactating camels during periods of drought, when such resources are scarce, likely increasing the overall health and viability of the entire herd. Leasing a camel to a business also provides a record of ownership of its camel and a business transaction that could be used to acquire credit for other household activities. Moreover, depending on how the lessees and lessors are connected and negotiate the arrangement, leasing can be a source of bonding, bridging, and linking social capital between the household and members within or beyond their communities.

FIGURE E-1. CAMEL LEASING THEORY OF CHANGE



In addition to the potential beneficial effects on household resilience capacities, the study team hypothesizes that **individuals** within leasing households may experience increases in their own resilience capacities. Individuals may experience renewed confidence in the household's and their own abilities to weather shocks and stressors because the experience of camel leasing buffered the negative effects of shocks and stressors, thereby increasing their tolerance for risk and opening up new avenues of aspiration and motivation to make other investments and life changes. In the long term, these enhanced resilience capacities may enable individuals and households to recover from shocks and stressors quicker, maintain their household well-being, and invest in mitigation strategies to lessen future effects and increase overall well-being.

From a **community** perspective, camel leasing may enable pastoralists and dairies to strengthen and expand their relationships beyond traditional clan or familial ties, thereby increasing their bridging, bonding, and linking social capital across and beyond the community. The new business model could

bring additional resources into the community in the form of steadier cash flows for pastoralists, increased milk volumes for sale, and new employment opportunities for community members. Taken together, the enhanced social capital and new community-level resources may create opportunities to diversify income sources, thereby enabling the growth of informal safety nets and investments in community assets or infrastructure such as schools or clinics.

At the **private-sector** level, the dairy companies using camel leasing could increase their milk volume sales and their ability to offer milk during droughts when competitors have limited supplies, which could expand or open new markets that they were previously unable to penetrate. Increased sales could also enable dairies to accumulate more assets, such as water reservoirs, and more land to grow fodder or to increase herd sizes or to invest in new dairy processing facilities. Increased and consistent milk sales could also enable dairies to acquire more credit, thereby enhancing their ability to expand and build their business skills.

The overall camel milk market also benefits from new and different players entering and competing in the market by increasing redundancies and reducing the impacts of disruptions during shocks and stressors. Therefore, when a climate shock or stressors such as erratic rainfall or drought occurs, each set of players has new and enhanced resilience capacities from which to draw, thereby lessening the impacts of the shock or stressor and resulting in stabilized or enhanced food security outcomes and markets. The study team sees this process as a virtuous cycle, in which continued engagement in the camel leasing model builds resilience capacities over time, thereby lessening the impacts of subsequent shocks and stressors.

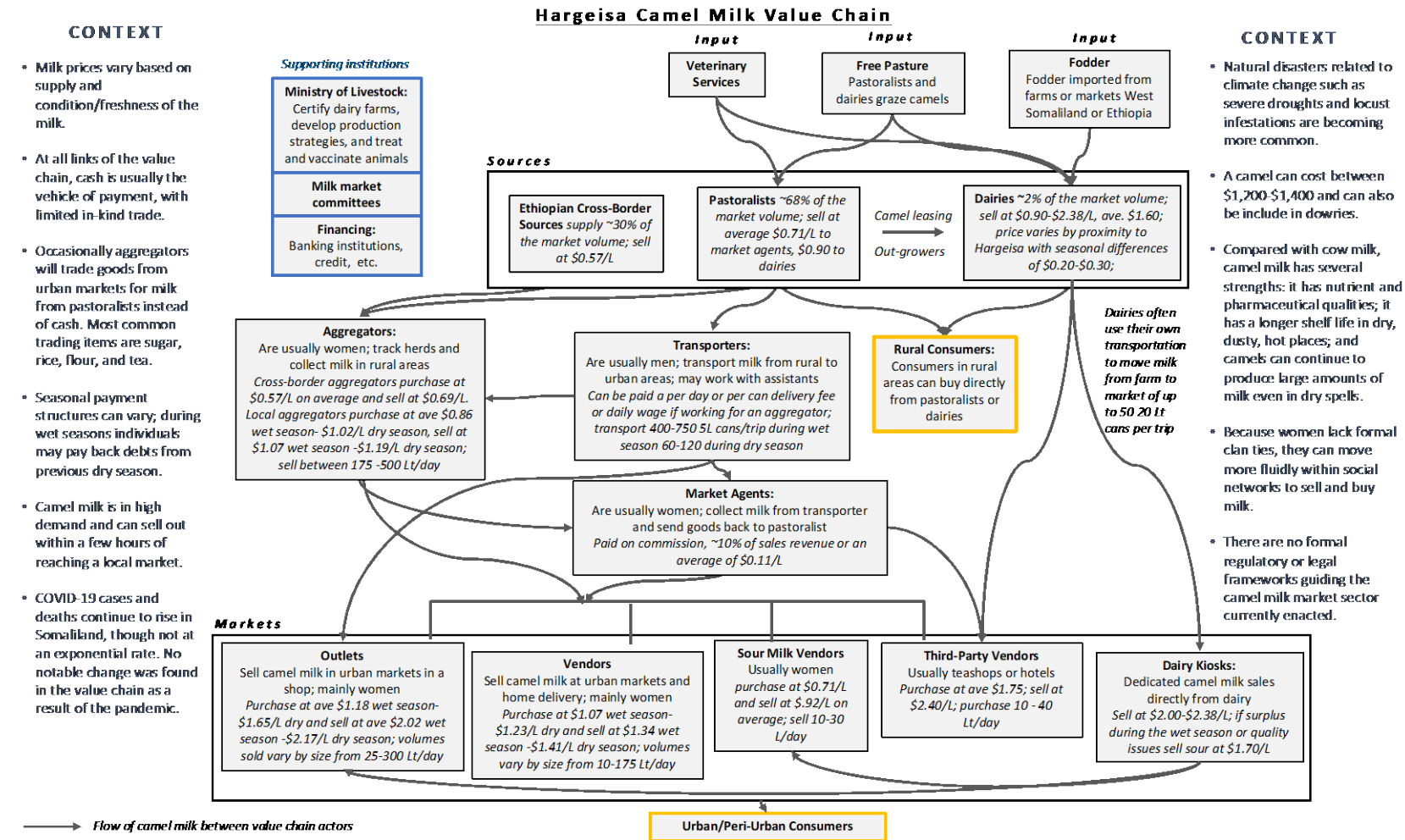
The study team is exploring the impacts of camel leasing and ensuing resilience capacities on the well-being of individuals and households as measured through food security. The assumption is that as resilience capacities increase because of camel leasing, individuals and households can maintain or increase their levels of access to and consumption of foods when shocks and stressors occur and throughout the recovery period. It is important to note that measuring the effects of enhanced resilience capacities on the community, private sector, and markets falls beyond the scope of this research.

The study team recognizes that there are other factors and interactive effects on households, communities, and the private sector stemming from camel leasing. For example, it is unknown whether the practice of camel leasing is reaching the poorest households, the extent to which camel leasing affects livelihoods for women and youth, or whether land conflicts are heightened by increased dairy herd sizes. Similarly, a question remains regarding whether camel leasing is a viable practice beyond Somali borders, such as in other countries or regions where clan-based social systems are less prevalent.

ANNEX F. THE HARGEISA CAMEL MILK VALUE CHAIN

A map of the Hargeisa value chain is provided as Figure F-I.

FIGURE F-I. THE HARGEISA CAMEL MILK VALUE CHAIN



Note: COVID-19 = coronavirus disease 2019; L = liter.

**ANNEX G. SOMALIA CAMEL LEASING TO IMPACT
RESILIENCE ACTIVITY—CAMEL LEASING EXPERIENCES**



Somalia Camel Leasing to Impact Resilience Activity

CAMEL LEASING EXPERIENCES

The Feed the Future Somalia Camel Leasing to Impact Resilience Activity was a multi-year mixed methods research study funded by the United States Agency for International Development (USAID) and implemented by RTI International. Part of Feed the Future, the U.S. Government's global hunger and food security initiative, the study looked at the potential impacts of camel leasing on the resilience and well-being of Somali camel-herding pastoralists, pastoralist communities, and camel milk dairies.

This series of case studies highlights the experiences of several pastoralists and dairies engaged in camel leasing. These individuals' experiences illustrate some of the outcomes of camel leasing arrangements – the full study findings, which include data collected on both risks and benefits, can be found at rti.org/impact/camel-leasing.





ABDI HAARUUN GUURE

PASTORALIST
PREVIOUSLY LEASING

Personality Profile

Mr. Abdi Haaruun Guure and his family live near Salahlay, about 90 km from Hargeisa, the capital of Somaliland and the biggest city in the region. He owns and operates a small family farm and tends a herd of 40 camels with the support of his wife, seven children, daughter-in-law, and two grandchildren. It is a second-generation farm established by his father, though the land and the lineage of his camel herd go back generations.

Background

Mr. Guure shared that tending camels is a difficult way to make a living. “You don’t see your home for 12 months,” with periods of time in which no one is buying milk and there are no financial benefits. One year during a drought, Mr. Guure’s camels were not able to produce enough milk to feed their own calves. He and his family had to roam far with their herd in search of water and fodder, taking shelter at night and at times going days without food as he searched for his camels, which had wandered off. Now, even when there is no drought and the situation is better, he still struggles to sell his milk due to competition from large dairies, decreasing milk prices, and challenges getting his milk to market.

Experience

In 2019, Mr. Guure began leasing his camels. He was the first in his community to explore the practice after hearing about it from another pastoralist. When a small dairy opened up on the neighboring farm, he approached the dairy owner and was told, “If your camel yields a lot of milk, then I will lease your camels.” They negotiated a price, reached an

agreement, and began a leasing arrangement. Since it was a neighboring farm, Mr. Guure was able to keep an eye on his camels, making sure they were treated well and not over-milked, which was a major concern of his family. He considered the experience a great success that enabled him to shift from “paying for the costs [of maintaining a camel] to getting a monthly fee and using it to resolve our challenges.” In the end, camel leasing provided him enough money to “dig a well, pay for the children’s education, support the livelihood of the family, and [obtain] other necessities the family needed.”

Challenges

Mr. Guure tried to start his own small dairy by leasing camels from other pastoralists, but found that it was too challenging, particularly the logistics of getting a truck to pick up and deliver the milk. He was also unable to finalize any leasing arrangements with other pastoralists, as they could not agree on the details of the lease, such as appropriate compensation. Even the lease he held with the neighboring dairy came to an end for a similar reason; the dairy owner returned the camel, stating that he could not handle the cost because the lease payment was too high. This is the struggle across his community, he said, with many pastoralists interested in beginning to lease but unable to find dairies that can compensate them at agreeable rates.

Future Plans

Mr. Guure is eager to get back into camel leasing and calls it “a good practice.” He thinks that when “both parties reach an agreement, it will be unstoppable.” In the meantime, Mr. Guure and his family will continue to maintain their farm and herd while focusing on other resilience capacities to protect themselves from future droughts or other unanticipated shocks. They are already using their new well to maintain water, growing and storing fodder for future years, keeping their herd penned in and close to home to focus on the farm, and keeping a traditional diet for the camels to ensure the highest-quality milk that demands the best prices possible.



MUSTAPHA OMER JIBRIL

DAIRY OWNER
PREVIOUSLY LEASING

Personality Profile

Dr. Mustapha Omer Jibril is the owner of Barwaaqo Dairy Farm, located near Salahlay and about 90 km from Hargeisa, the capital of Somaliland. Dr. Jibril studied veterinary science, disaster risk management, and sustainable development, and has been operating the Barwaaqo Dairy since 2020 with the support of his wife and five children. He currently tends to a herd of 120 camels, including 30 lactating camels, with the help of three employees.

Background

Dr. Jibril shared that operating a dairy farm is “not an easy job.” His business faces challenges including unstable milk prices and periods of drought. During droughts it becomes “very difficult to effectively operate the dairy farm due to high costs,” which include extra water, medicine, and supplements for the camels. The camels also produce less milk and “[the milk] loses quality, which results in a loss in the market.” As a result, the business is unable to profit. When it rains, the business is able to recover, but the rainy seasons bring additional challenges due to volatile milk prices and difficulties in transporting the milk to market.

Experience

Dr. Jibril began leasing camels when he was first starting Barwaaqo Dairy in early 2020. He had heard about camel leasing from pastoralists in the community. “They told us about this practice where we can get a constant supply of milk and also raise income for the pastoralists,” he said. This idea appealed to Dr. Jibril as he could “double the amount of milk we have,” increase income for his business, and benefit the pastoralists as well. He started by leasing five camels from two pastoralists, basing the leasing agreements on milk yield. By leasing camels instead of buying them, the dairy was able to save money, which Dr. Jibril intends to “reinvest into the dairy farm in hopes of increasing production capacity.”

While Barwaaqo Dairy does not currently have any camels under lease, Dr. Jibril considers camel leasing a “good practice” that “brings the community to work together” by benefiting both the dairy and the pastoralists. “Camels get taken care of and [pastoralists] get compensated,” he said. “That is a good thing, and it brings you

joy to know everyone shares and survives together.” He also feels that his business is better prepared for shocks: “Now that we have experienced and benefited from camel leasing, it will be one of the practices we shall use to resist the impact of droughts.”

Challenges

Dr. Jibril currently sources the dairy’s entire milk supply from his own camels and does not buy milk from any other source. He does not have any other source of income outside of that generated by the dairy farm, and as such, he is highly dependent on the productivity of his camels for his livelihood. While camel leasing has helped reduce the impact of droughts, the dairy still encounters challenges if the lessee is difficult to deal with, if there is low demand for milk, or if the leased camels yield less milk than expected.

Future Plans

Dr. Jibril hopes to resume camel leasing soon at Barwaaqo Dairy Farm and feels he can “only benefit from it.” He feels that camel leasing helps the farm maintain good relations with the community and looks forward to helping the pastoralists by providing high-quality care for their camels, which they may not have the resources to provide themselves. As a veterinarian, he ensures the camels have access to natural and fresh pasture, treatment for disease, and good hygiene practices, which in turn ensures a high quality of milk for his customers. Quality milk “successfully attracts and retains customers,” which is key to the success of any dairy farm. Dr. Jibril says he has “high hopes” for the future of his business.





MUUSE MOHAMED MOHAMOUD

PASTORALIST
CURRENTLY LEASING

Personality Profile

Mr. Muuse Mohamed Mohamoud is a husband, father of nine, community elder, and pastoralist in Somaliland. He has been camel herding since he was eight years old. He currently owns four camels he purchased with money earned from selling a small bull.

Background

Camel herding is a long-standing tradition in Mr. Mohamoud's family. He recalls traveling long distances, even as a child, to herd camels. Because many pastoral children relied on the camels' milk for nourishment, they were often taken along for the journey. As an adult, Mr. Mohamoud traveled far distances to acquire water and feed for his camels, and during times of drought he traveled closer to the capital to access food aid for his family from the United Nations World Food Programme. Mr. Mohamoud

reflected on the hard life of camel herding and the relief he experienced through camel leasing: "Camel herding is something beyond your control; it is basically running with animals," he said. "We used to move a lot for pasture and that was the main challenge for us until camel leasing became a reality, and that is what people prefer now."

Experience

Mr. Mohamoud explained that there are two types of camel leasing: "One [in which] the camel is taken away from you and the other type where you keep and feed it yourself and they just come to collect the milk." Using the second method, he leases his camels to a dairy farm near Salahley for 8-13 months at a time depending on how long they lactate. He prefers leasing to a nearby dairy farm using a verbal agreement because the dairy farm owner is from his community and is well known. "Dairy farm owners bought some land and farms here and they needed constant milk, so they proposed that we lease our camel to them and that is how it all started," he said.

Mr. Mohamoud explains that there is trust between him and the dairy farm owners, and he has not encountered any problems with camel leasing. "The dealings with the dairy farm are very good," he said. "Their money is in cash and it is very reliable as you get paid at the end of every month."

Before he began camel leasing, his main challenge was traveling distances to obtain water and feed for his camels. Camel leasing has provided Mr. Mohamoud an opportunity to feed his camels during droughts, enabling him to access support and aid from local organizations near the capital. Without camel leasing, Mr. Mohamoud finds camel herding exhausting. "I am tired," he said.

Challenges

Mr. Mohamoud cautions that camel care during leasing depends on the farm you lease to. "Some [dairy farms] take good care of the camel – treating it as if it is one of their own," he said. "And then there are some who just milk the camel. Luckily, I personally dealt with a very good farm. There are some [pastoralists] whose calves died or got very ill [while being leased]. They took their camels back from [the dairy farm]."

Future Plans

Mr. Mohamoud plans to have his sons take over camel herding and will encourage them to lease their camels as well. "Camel leasing is a necessity," he said. "I believe we are better prepared for droughts or shock. [Because of camel leasing], if drought occurs, I have savings that can cover our needs, whether it is water or food." Mr. Mohamoud intends to increase his camel herd size and notes that the community is enthusiastic about camel leasing now that they have seen the benefits.





MUSTAFA ALI DU'ALLE

DAIRY OWNER
CURRENTLY LEASING



Personality Profile

Mr. Mustafa Ali Du'alle, also known as Mustafa Deek, is the owner and founder of a 400-hectar dairy farm called Ramad and Galool. The farm, where he lives with two wives and 13 children, is located between Salahlay and Qoolcadey, approximately 55 km from Hargeisa.

Background

A college graduate with a medical degree, Mr. Du'alle started a water drilling business before shifting to raising camels in 2010. He began camel leasing around 2014 during a drought. His neighbors owned a camel but were unable to feed it, so he offered to keep it for them and provide it with food, and in exchange he paid them. What started as a gesture of aid became a business proposition that went from two to 12 leased camels over four years. He put it simply: "The benefit we're both getting out of this attracted me to the idea. [People] who couldn't afford managing their camel are benefiting while their camel is kept for them. We benefit business-wise and the camel benefits by getting taken care of and getting grains to eat."

Experience

Mr. Du'alle keeps more than 300 camels, some exclusively for sale and others for milk. He owns most of the camels but leases dozens; he has 45 employees and an annual revenue of \$180,000 to \$200,000. A respected elder in the community, Mr. Du'alle's dairy farm has created many jobs through camel breeding, farming, and water drilling.

Du'alle pays the pastoralists who lease to him \$40-\$50 dollars per month whether the camel is large or small, and whether it produces a lot of milk or not. "I own a lot of camels, but I prefer to lease instead of buy them because when the milk dries up, you can return it and the pastoralist will bring you a new lactating one," he said. He believes camel leasing is very beneficial. "If [pastoralists] have four lactating camels, [their] family can drink milk from two of them and lease the other two," he explained. "The money will cover other needs of the family. It makes me very happy."

Mr. Du'alle says he and the pastoralists he leases from are also better prepared for drought. "We planted enough and have water too, so both the owners of the leased camel and our camel can survive," he said. With camel leasing, Mr. Du'alle is able to reinvest in his dairy farm and buy more land for expansion. He is also able to give back to his community. "I give them water, I lease their camels, I give them fodder, and create jobs for them," he said.

He knows his business will flourish because he ensures the quality of the milk. Mr. Du'alle's staff is trained to understand the importance of milk hygiene, whereas pastoralists who own camels might not be skilled in good hygiene practices.

Challenges

While Mr. Du'alle finds camel leasing to be a worthy investment, there are complaints from camel owners concerning their monthly payments. "They think their camel brings a lot more than what they receive," he said. "However, we solve it the Somali way." The "Somali way" includes bringing the issue up to the community to solve rather than involving a court or other authority. If the owner is still dissatisfied, "there's no contract that prevents a family from taking back their camel if they see fit," he explained.

Maintaining a dairy farm also requires a lot of investment. "You need a lot of grains, water, and medical supplies to tend to the animals," he said. Lack of money to invest in maintaining and expanding the farm can impede Mr. Du'alle's ability to lease camels.

Future Plans

Although he does not publicize his farm through media channels, Mr. Du'alle still receives new customers. "If we did [publicize], plenty of people would have shown up with hundreds of camels," he said. While his farm currently cannot handle hundreds of camels, Mr. Du'alle is preparing for that moment and believes that one day, his farm will be able to lease that amount. In the future, Mr. Du'alle hopes to find an overseas buyer for camel milk to enable him to lease more camels.



AHMED ALI OMAR

PASTORALIST

CURRENTLY LEASING



Personality Profile

Mr. Ahmed Ali Omar, a husband and father of five, is an avid gardener who lives in Hundule, about 40 km away from Hargeisa, with his family. A third-generation pastoralist since the age of 10, Mr. Omar owns four camels that he plans to pass on to his children one day.



Background

Mr. Omar describes pastoralism candidly: “Camel herding is hard, but it does not really matter whether it is hard or easy. Since it’s the profession you chose, you will find a way to work with it.” Mr. Omar believes that camel herding can never be a one-person job. “[It’s] as if the camel was born with that word [with],” he said. “If you are herding the camel you would say ‘herd it *with* me.’ If you are milking, breeding, or watering it you would also ask someone to water it *with* you.” Mr. Omar recalls severe droughts during which his animals died because he had little help and could not travel far distances with his young family.



Experience

In 2017, Mr. Omar heard about camel leasing through word of mouth. He does not know where it started but heard that it worked for others, so he gave it a try. He contacted a local dairy farm and came to a verbal agreement. This was the first of many dairy farms he engaged, and he now works with two other dairy farms concurrently.

He leases three camels for 8-10 months at a turn. So far, he describes camel leasing as elevating his living standard. “I have lost nothing; I only gain,” he said. With camel

leasing, Mr. Omar has been able to buy three more camels and pay off family expenses, most notably his children’s school fees. Since he began camel leasing, Omar says he is better prepared to handle droughts and is resilient during hard times.

According to Mr. Omar, life is better since he began camel leasing. The most beneficial thing is “having the milk be sold while you can still consume some of the milk, because before, you could only use it and not be able to sell it in the towns, so this opportunity [camel leasing] made it easy,” he said.



Challenges

Mr. Omar did not note any challenges with camel leasing. Needing help to herd camels was his biggest challenge prior to camel leasing. Now that Mr. Omar leases his camels, the burden of camel herding has been lessened, making what is usually at least a two-person job very conquerable.



Future Plans

With camel leasing, Mr. Omar has increased his overall income, food supply, and has fostered new community linkages. “At the moment, until I find something better, at least, camel leasing has made my life better,” he said.

Looking forward, “I plan to improve everything I have now,” he said. He plans to purchase more camels, increase his wealth, and engage more community dairy farms nearby. “Most of the community is convinced it is good and people are joining in,” he said. “That makes me happy.” In the future, Mr. Omar hopes to stop herding and pass his inheritance along to his family.



MOHAMED JAMA IRIIR

DAIRY OWNER
CURRENTLY LEASING

Personality Profile

Mr. Mohamed Jama Iriir is the owner of the Iriir Dairy Farm, a small camel dairy located near Salahlay about 90 km from Hargeisa, the capital of Somaliland. After receiving his Master of Business Administration from Abaarso University, he bought one square kilometer of land and established the farm in 2017. Mr. Iriir is married, has 18 children, and currently tends to a herd of 23 camels on his farm with the help of three employees.

Background

Mr. Iriir relies on the success of his dairy farm for his livelihood. Dairy farming is a rain-dependent business, as a sufficient water supply is necessary to support the camels and their milk production. In times of drought, the milk supply is reduced, and it becomes difficult to produce enough to meet demand, resulting in financial loss. “The financial challenge is one of the biggest challenges faced by any dairy farm in Somaliland,” he said. “We are constantly praying to God for rain, since we depend on it.” COVID-19 also had a negative effect on business, as milk sales declined due to social distancing and lost consumer income from business closures. Despite these difficulties, Iriir Dairy works to ensure that the milk meets high quality standards through good hygiene practices, sufficient grass and fodder, and regular veterinary care visits to maintain the health of the camels.

Experience

Mr. Iriir began leasing camels in 2018, when the farm was struggling to produce enough to meet high demand in the milk market. Camel leasing appealed to him as a cheaper and easier alternative to buying additional camels in order to increase production. He began by leasing six camels, and he usually holds one or two different leases at a given time. He only leases from two pastoralists he knows and trusts, who either lease him their own camels or those of other pastoralists.

Mr. Iriir expressed that he feels “really happy to have started leasing camels, because both parties benefit from it.” The dairy has gained a consistent supply of milk and increased income, which makes the farm “better prepared to handle unexpected shocks.” During periods of drought when the milk supply is low, leasing camels has helped him generate income to better care for both the leased camels and his own. He feels that camel leasing has “also benefited the community by raising the economy,” as well as the pastoralists as “they are getting paid, and their children are getting educated.” Overall, Mr. Iriir views camel leasing as a mutually beneficial practice for all parties. “It makes me proud to help the pastoralists and the community, and also benefit from it myself,” he said.

Challenges

Mr. Iriir has encountered challenges in trying to grow his business. He expressed that currently “the limited market capacity is holding us back,” along with an excess supply of milk in the market, which surpasses demand, thus lowering the price. Furthermore, the current state of road infrastructure in Somaliland impedes his ability to get milk to market before it spoils. The dirt roads are often not well-maintained, and become muddy when it rains, which delays vehicles and risks milk going sour. Another challenge lies in maintaining relationships between the dairy and the community. Mr. Iriir has encountered leasing disputes with some pastoralists, such as disagreement on the leasing price. “If you are not on good terms with the community, that is a big challenge,” he explained.

Future Plans

Mr. Iriir plans to continue leasing camels and feels that the practice has benefited his business overall. So far, the increase in income has helped cover the cost of milk production, and he hopes to be able to start investing in other assets soon. He shared that camel leasing has also changed the way he thinks about his business, with the idea that “you can lease camels instead of buying them and use that money to invest in other assets, other small businesses, or you invest back into your business.” The Iriir Dairy currently owns a milk stand in Hargeisa and aims to export camel milk internationally in the future.





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ANNEX H. QUALITATIVE SURVEY INSTRUMENTS

Prior to every FGD the moderator beginning the below introduction, the notetaker begins recording, notes the time, and notes the number and sex of participants present.

Date	
Facilitator Name	
Notetaker Name	
Number of Male Participants	
Number of Female Participants	
Start Time	
End Time	

Hello, my name is _____ and I will be the moderator for this focus group interview. These are/this is my assistant moderator(s) _____. Welcome and thank you for joining us in this conversation. The purpose of this focus group is to hear from you about your knowledge of a recent practice known as camel leasing. If you are not familiar, camel leasing is an agreement between a pastoralist and dairy farm. A pastoralist temporarily provides the dairy with a lactating camel in exchange for a monthly payment and a guarantee that the camel's health and wellbeing will be maintained through the provision of food, water, shelter, and veterinary services. The information you provide will be used in a research study funded by the United States Agency for International Development and conducted by a research institute, RTI International, in an attempt to understand the potential benefits and consequences of this practice, and the ability for it to be introduced more broadly across Somalia/Somaliland and neighboring countries. Should you wish to receive more information about this study, you may contact Micah Frumkin, the principal investigator, at RTI (mfrumkin@rti.org).

You were selected to participate in this focus group interview because you are a pastoralist who is currently leasing at least one camel. This focus group will take approximately 120 minutes and at the end we will provide each of you \$XX in compensation for your time. Aside from this compensation, and your loss of time from participating, we do not see any other benefits or risks to your participation, but please let us know if you perceive any risks.

Throughout the following conversation, please keep in mind that everyone is encouraged to share their ideas and the results will only be stronger if everyone participates. There are no wrong answers, and everyone's perspective is equally valued. While disagreements may occur, and may be valuable, personal attacks will not be tolerated. Lastly, we request that none of the ideas shared during the discussion be shared outside of this group in order to maintain the privacy of each participant. On that note, while we will keep your contributions to the focus group anonymous, we cannot guarantee the confidentiality of your responses since others in the room will also hear and may share what they heard beyond this room.

With your permission, we will record today's conversation and _____ will be taking notes to complement the recording. After the focus group ends, we will transcribe the notes and recording into a transcript of the conversation. We are conducting several similar focus groups and the transcripts will all be analyzed by our research partners RTI and incorporated into the broader research study. None of your names or personal information will be included with the study data and your privacy will be maintained to the greatest degree possible. Your participation in this focus group is entirely voluntary and there will be no consequences should you choose not to participate. You are free to stop participating or to leave at any time.

The moderator will then ask each participant to confirm that they consent to participate in the focus group based on the information presented to them.

Camel Leasing to Impact Resilience

Focus Group Discussion Guide

November 2019

Community Members Group

Questions with Rationale and Probing Questions

Note that the rationale and probing questions below are meant to provide additional context for the facilitator. Not every question is intended to be asked explicitly. Rather, probing questions should be used to help guide the conversations as appropriate to gather as much information as possible.

1. In 2016 and 2017 Somaliland experienced severe droughts that created hardships for many pastoralist households and communities. Since then the rains have remained erratic, including long dry seasons and an early Dayr this year. Have you found that these extreme and unpredictable weather events are negatively affecting or have negatively affected your household or community?

- **Rationale:** This is meant to be an intro question getting the group thinking about droughts and their experiences.

2. During periods of drought and erratic rainfall, what does your household do to adapt and maintain stability?

- **Rationale:** This question is exploring household ability to adapt to shocks and stresses, specifically that of periods of drought and erratic rainfall
- **Probing Questions** (as needed and as time allows):
 - Do you change the types of foods that you eat?
 - Do you reduce the amount of food that you eat?
 - Do you sell assets? Livestock- camels? Goats? Other household assets?
 - Seek other employment?
 - Remove children from school?

3. Have you heard about camel leasing before this discussion?

- **Rationale:** Understand the extent to which the camel leasing model is known by general community members, and whether the model is spreading primarily through existing social relationships or as a result of exposure to GEEL or another development project.
- **Probing Questions** (as needed and as time allows):
 - How did you hear about camel leasing? From family members, clan members, neighbors, the GEEL project, or another development project? Other?
 - Are other members of your family, sub-clan, clan, or maag-paying group participating in leasing to your knowledge?
 - If you know people participating in camel leasing, are there any similarities among them? For example, do they all have similar herd sizes or hold similar status in the community? Do they all belong to the same clan?

4. During periods of drought and erratic rainfall, do you think that the practice of camel leasing could help your community get through that time? If so how?

- **Rationale:** This question is exploring the relationship between camel leasing and household ability to adapt to shocks and stresses, specifically that of periods of drought and erratic rainfall.
- **Probing Questions** (as needed and as time allows):
 - Would the lease make you more likely or less likely to sell a camel or lose a camel due to illness during a drought?
 - Would the lease make you more likely or less likely to maintain cash flows during a drought?
 - Would the lease affect your ability to eat the foods you like to eat throughout the year?

5. If you are aware of camel leasing occurring in your community, have you noticed any changes?

- **Rationale:** This question is exploring the knowledge of any changes as a result of the camel leasing model in terms of social, economic, and resilience (in terms of response to drought) dynamics
- **Probing Questions** (as needed and as time allows):
 - What effect has the presence of camel leasing had on the lives of women in your communities?
 - What effect has the presence of camel leasing had on the lives of young people in your communities?
 - Are the benefits directly or indirectly reaching the poorest households in your community? Direct Example: The poorest households are participating in leasing and receiving the same benefits as others in the community. Indirect Example: Households that participate in camel leasing are able to better help their neighbors in times of need by providing food, water, or other kinds of help.
 - Are you aware of any households changing their camel milk consumption because they are leasing a camel to a dairy?
 - Has anything changed about the amount of milk available in markets, or the price of milk?
 - Has anything changed about the way that most households are able to adapt to drought and erratic rainfall? Other shocks (illness in the family)?
 - Has anything changed about the way that participating dairies are able to adapt to drought and erratic rainfall since camel leasing started in the community?

6. Do you have any other concluding thoughts or ideas you would like to share today?

Moderator thanks all participants for their contributions and ends the meeting.

Camel Leasing to Impact Resilience

Focus Group Discussion Guide

November 2019

Leasing Pastoralists Group

Questions with Rationale and Probing Questions

Note that the rationale and probing questions below are meant to provide additional context for the facilitator. Not every question is intended to be asked explicitly. Rather, probing questions should be used to help guide the conversations as appropriate to gather as much information as possible.

1. In 2016 and 2017 Somaliland experienced severe droughts that created hardships for many pastoralist households and communities. Since then the rains have remained erratic, including long dry seasons and an early Dayr this year. Have you found that these extreme and unpredictable weather events are negatively affecting or have negatively affected your household or community?

- **Rationale:** This is meant to be an intro question getting the group thinking about droughts and their experiences.

2. During periods of drought and erratic rainfall, what does your household do to adapt and maintain stability?

- **Rationale:** This question is exploring household ability to adapt to shocks and stresses, specifically that of periods of drought and erratic rainfall
- **Probing Questions** (as needed and as time allows):
 - Do you change the types of foods that you eat?
 - Do you reduce the amount of food that you eat?
 - Do you sell assets? Livestock- camels? Goats? Other household assets?
 - Seek other employment?
 - Remove children from school?

3. To what extent has camel leasing affected your household's ability to adapt to periods of drought and erratic rainfall?

- **Rationale:** This question is exploring the relationship between camel leasing and household ability to adapt to shocks and stresses, specifically that of periods of drought and erratic rainfall
- **Probing Questions** (as needed and as time allows):
 - Are you more likely or less likely to sell a camel or lose a camel to illness during a drought?
 - Are you more able or less able to maintain cash flows during a drought?

Has camel leasing affected your ability to eat the foods you would like to eat throughout the year?

4. Why did you first begin leasing camels?

- **Rationale:** Understanding the circumstances under which camel leasing is initiated is important to determine whether it is in reaction to a shock as well as the potential of it expanding beyond Somalia. We need to understand whether there were financial, social, or other incentives to leasing.
- **Probing Questions** (as needed and as time allows):
 - Were there particular financial or social incentives that encouraged you to start leasing camels? If so, what?

- How did you first hear about the concept of camel leasing?
 - Approached by a dairy?
 - Through my family/clan/community?
- When was this, and what was happening in Somalia/Somaliland at the time (weather, etc.)?

5. What criteria do you have when deciding whether or not to lease a camel to a dairy?

- **Rationale:** This question is used to understand underlying factors that a pastoralist is looking for in order to engage in camel leasing. It should reflect financial, social, geographic, and business factors. Are pastoralists only leasing within their community/clan? Do they need a certain number of camels before they would lease? How do they ensure they are set up for success?
- **Probing Questions** (as needed and as time allows):
 - Does the dairy owner need to be someone within your family? Clan? Sub-clan? Community?
 - Would you lease to more than one dairy at a time?
 - Is there a minimum or maximum lease duration you prefer?
 - Is there a minimum monthly payment you need to receive? How much?
 - Is there a minimum number or portion of lactating camels you need to keep in your herd?
 - Would proximity to the dairy affect your decision?

6. What happens once a lease is established?

- **Rationale:** This question will provide insight into the management and implementation of the leasing agreement and how it is enacted to ensure mutual benefit. We are particularly interested in examples where a lease might need to be enforced or disputes resolved.
- **Probing Questions** (as needed and as time allows):
 - What if a camel no longer produces sufficient milk? What if you have no other lactating camels in your herd?
 - What if a dairy does not pay you on time or in the correct amount?
 - Can a lease be terminated early?
 - What kind of disputes might arise and how are they resolved?
 - Do you ever visit your camels to inspect their health?

7. In what ways has camel leasing impacted your household?

- **Rationale:** This question relates directly back to one of the secondary research questions and is important for understanding household resilience. We are looking for positive and negative impacts which may be financial, social, or other in nature. To the extent possible, tie it back in to adapting to climate issues such as drought and erratic rainfall
- **Probing Questions** (as needed and as time allows):
 - What has been the greatest benefit to your business as a result of camel leasing?
 - Ex: Increased income, herd expansion, access to credit, diversification of income
 - Have you experienced any negative consequences as a result of camel leasing?
 - Ex: Decreased camel milk consumption, smaller perceived herd size, strained relations with your family/clan/community?

8. To what extent has the presence of camel leasing had an impact on your community?

- **Rationale:** This question is designed to inform the team about community-level impacts of camel leasing either to corroborate information from community-level focus groups or to provide this information if those focus groups are unable to be completed. This question should ideally provide some information on gender, 'poorest of the poor', and food security or income.
- **Probing Questions** (as needed and as time allows):
 - What effect has the presence of camel leasing had on the lives of women in your communities?
 - Are the benefits directly or indirectly reaching the poorest households in your community? Direct Example: The poorest households are participating in leasing and receiving the same benefits as others in the community. Indirect Example: Households that participate in camel leasing are able to better help their neighbors in times of need by providing food, water, or other kinds of help.
 - Are you aware of any households changing their camel milk consumption because they are leasing a camel to a dairy?
 - Has anything changed about the way that most households adapt or respond to drought and erratic rainfall since camel leasing started in the community?

9. Do you have any other concluding thoughts or ideas you would like to share today?

- **Rationale:** Recognizing that we have limited time and therefore a limited number of questions we can pose, we want to encourage participants to share additional thoughts that may be relevant or useful for the study

Moderator thanks all participants for their contributions and ends the meeting.

Camel Leasing to Impact Resilience

Focus Group Discussion Guide

November 2019

Non-Leasing Pastoralists Group

Questions with Rationale and Probing Questions

Note that the rationale and probing questions below are meant to provide additional context for the facilitator. Not every question is intended to be asked explicitly. Rather, probing questions should be used to help guide the conversations as appropriate to gather as much information as possible.

1. **In 2016 and 2017 Somaliland experienced severe droughts that created hardships for many pastoralist households and communities. Since then the rains have remained erratic, including long dry seasons and an early Dayr this year. Have you found that these extreme and unpredictable weather events are negatively affecting or have negatively affected your household or community?**
 - **Rationale:** This is meant to be an intro question getting the group thinking about droughts and their experiences.
2. **During periods of drought and erratic rainfall, what does your household do to adapt and maintain stability?**
 - **Rationale:** This question is exploring household ability to adapt to shocks and stresses, specifically that of periods of drought and erratic rainfall
 - **Probing Questions** (as needed and as time allows):
 - Do you change the types of foods that you eat?
 - Do you reduce the amount of food that you eat?
 - Do you sell assets? Livestock- camels? Goats? Other household assets?
 - Seek other employment?
 - Remove children from school?
3. **During periods of drought and erratic rainfall, do you think that camel leases could help your household get through that time? If so how?**
 - **Rationale:** This question is exploring potential changes in households' ability to adapt to shocks and stresses, specifically that of periods of drought and erratic rainfall due to camel leasing
 - **Probing Questions** (as needed and as time allows):
 - Would the lease make you more likely or less likely to sell a camel or lose a camel due to illness during a drought?
 - Would the lease make you more likely or less likely to maintain cash flows during a drought?
 - Would the lease affect your ability to eat the foods you like to eat throughout the year?
4. **Have you heard about camel leasing before?**
 - **Rationale:** Understand the extent to which the camel leasing model is known by non-participant pastoralists, and whether the model is spreading primarily through existing social relationships or as a result of exposure to GEEL or another development project.
 - **Probing Questions** (as needed and as time allows):
 - How did you hear about camel leasing? From family members, clan members, neighbors, the GEEL project, or another development project? Other?

- Are other members of your family, sub-clan, clan, or maag-paying group participating in leasing to your knowledge?
- Have you participated in leasing before? Why did you stop?
- Have you ever borrowed or loaned a camel without a lease agreement? Why?

5. Who do you know or think typically engages in camel leasing?

- **Rationale:** Follow-up question to further understand the extent to which the camel leasing model is spreading primarily through existing social relationships or as a result of exposure to GEEL or another development project. Also explores underlying geographic and social dynamics associated with camel leasing including who may or may not be invited to participate.
- **Probing Questions** (as needed and as time allows):
 - Would you establish a lease with a dairy run by a family member, sub-clan, clan, or maag-paying group member, or with someone from outside these relationships?
 - Would geography or proximity to a participating dairy affect your decision?
 - If so, what distance would make you begin to reconsider participating?

6. If you have heard about camel leasing before, or from our explanation earlier, what are your impressions of the model?

- **Rationale:** This question relates directly back to one of the secondary research questions and is important for understanding private sector resilience and the potential sustainability of the camel leasing model. We are looking for positive and negative impacts which may be financial, social, or other in nature.
- **Probing Questions** (as needed and as time allows):
 - Do you see potential positive benefits from dairy leasing or know participants who have benefitted?
 - Ex: Increased household cash flow, ability to maintain ownership of a camel during periods of stress or shock
 - Do you see negative effects of participating in camel leasing or know participants who have experienced negative effects?
 - Ex: Reduced access to milk for household milk consumption, strained relations with family/clan/community, or challenges reacting to changes in weather and rainfall?

7. From your perspective, what criteria should be in a leasing agreement for you to participate?

- **Rationale:** Understand what non-participant pastoralists may be looking for in order to participate- what kinds of financial, social, or other incentives may affect their decision to engage and what risk mitigation mechanisms they may be looking for.
- **Probing Questions** (as needed and as time allows):
 - A minimum or maximum lease duration?
 - A minimum amount of monthly payment? How much?
 - Any certain kinds of witnesses needed when leases are established (family, clan chief, elder, etc.)?
 - Other?

8. How do you think your household might be different if it were engaging in camel leasing?

- **Rationale:** Understand the extent to which non-leasing pastoralists are interested in camel leasing and what skills or assets they perceive as necessary to be successful with leasing.
- **Probing Questions** (as needed and as time allows):

- *Would you have increased income?*
- *Would you expand your herd?*
- *Would you do something other than herd camels (wage labor, cultivate crops, other?)*
- *Would you have changed the amount of milk you sell? Consume?*
- *Would you need to gain new skills?*
- *Would you face any constraints or obstacles to engaging in leasing?*

9. If camel leasing is occurring in your community, have you noticed any changes?

- **Rationale:** *This question is exploring the knowledge of any changes as a result of the camel leasing model in terms of social, economic, and resilience (in terms of response to drought) dynamics*
- **Probing Questions** *(as needed and as time allows):*
 - *What effect has the presence of camel leasing had on the lives of women in your communities?*
 - *What effect has the presence of camel leasing had on the lives of young people in your communities?*
 - *Are the benefits directly or indirectly reaching the poorest households in your community? Direct Example: The poorest households are participating in leasing and receiving the same benefits as others in the community. Indirect Example: Households that participate in camel leasing are able to better help their neighbors in times of need by providing food, water, or other kinds of help.*
 - *Are you aware of any households changing their camel milk consumption because they are leasing a camel to a dairy?*
 - *Has anything changed about the amount of milk available in markets, or the price of milk?*
 - *Has anything changed about the way that most households are able to adapt to drought and erratic rainfall since camel leasing started in the community?*

10. Do you have any other concluding thoughts or ideas you would like to share today?

Moderator thanks all participants for their contributions and ends the meeting.

Camel Leasing to Impact Resilience

Focus Group Discussion Guide

November 2019

Leasing Dairies Group

Questions with Rationale and Probing Questions

Note that the rationale and probing questions below are meant to provide additional context for the facilitator. Not every question is intended to be asked explicitly. Rather, probing questions should be used to help guide the conversations as appropriate to gather as much information as possible.

1. Why did you first begin leasing camels?

- **Rationale:** Understanding the circumstances under which camel leasing is initiated is important to determine whether it is in reaction to a shock as well as the potential of it expanding beyond Somalia. We need to understand whether there were financial, social, or other incentives to leasing. We would also like to determine whether GEEL supported the inception, whether it was a ripple effect, or whether it started organically.
- **Probing Questions** (as needed and as time allows):
 - Were there particular financial or social incentives that encouraged you to start leasing camels? Ex. You would receive money from leasing consistently and right away, you were already considering selling a camel, other members of your clan encouraged you to try leasing, the dairy proposing the lease was a family/clan member.
 - How did you first hear about the concept of camel leasing?
 - Other dairies/pastoralists?
 - GEEL or another development project?
 - When was this, and what was happening in Somalia/Somaliland at the time (weather, etc.)?

2. From whom do you typically lease camels?

- **Rationale:** This question is used to understand underlying geographic and social dynamics associated with camel leasing including who may or may not be invited to participate. Are dairies only leasing within their community/clan or looking beyond? Is there a particular pastoralist profile that dairies are looking for? It will also help identify dairy preferences which may be useful to understand scalability
- **Probing Questions** (as needed and as time allows):
 - Do you usually only establish a lease with someone from your family? Clan? Sub-clan? Community?
 - Are there circumstances under which you would consider establishing a lease with someone outside your clan, etc.?
 - Does geography or proximity to your dairy affect your decision?
 - i. If so, what distance would make you begin to question participation?
 - Does the pastoralist need to have a certain number of camels in their herd?
 - Would you prefer to lease one camel each from multiple pastoralists or multiple camels from one single pastoralist?

3. What criteria must be met for you to establish a lease for a camel?

- **Rationale:** Similar to the last question, we are trying to better understand camel leases and what dairies are looking for in order to participate. As a business they will not want to enter into a risky venture so need to ensure they are positioned for success and protected from risk

- **Probing Questions** (as needed and as time allows):
 - Are any certain kinds of witnesses needed when leases are established (family, clan chief, elder, etc.)?
 - How much milk must a camel produce in a day?
 - After what age/period (number of calves) is a camel no longer viable?
 - Is there a minimum or maximum lease duration?
 - Other?

4. What happens once a lease is established? Describe the process.

- **Rationale:** This question will provide insight into the management and implementation of the leasing agreement and how it is enacted to ensure mutual benefit. We are particularly interested in examples where a lease might need to be enforced or disputes resolved.
- **Probing Questions** (as needed and as time allows):
 - What if a camel no longer produces sufficient milk?
 - Can a lease be terminated early?
 - What kind of disputes might arise and how are they resolved?

5. To what extent has camel leasing affected your business' ability to adapt to periods of drought and erratic rainfall?

- **Rationale:** This question is exploring dairies' ability to adapt to shocks and stresses, specifically that of periods of drought and erratic rainfall
- **Probing Questions** (as needed and as time allows):
 - Has anything changed about the amount of milk available in markets, or the price of milk?
 - Aside from camel leasing, what other actions do you take to maintain a strong business during instability?
 - Since participating in camel leasing, are you more or less willing to take calculated risks to grow your business than you were prior to leasing camels?

6. In what other ways has camel leasing impacted your business?

- **Rationale:** This question relates directly back to one of the secondary research questions and is important for understanding private sector resilience and the potential sustainability of the camel leasing model. We are looking for positive and negative impacts which may be financial, social, or other in nature. To the extent possible, tie it back in to adapting to climate issues such as drought and erratic rainfall
- **Probing Questions** (as needed and as time allows):
 - What has been the greatest benefit to your business as a result of camel leasing?
 - Ex: Increased milk production, income, investment in your land or new technology
 - Have you experienced any negative consequences or challenges as a result of camel leasing?
 - Ex: Financial difficulties, inability to care for your herd or leased camels, strained relations with your family/clan/community, or challenges reacting to changes in weather and rainfall?

7. To what extent has the presence of camel leasing had an impact on your community?

- **Rationale:** This question is designed to inform the team about community-level impacts of camel leasing either to corroborate information from community-level focus groups or to provide

this information if those focus groups are unable to be completed. This question should ideally provide some information on gender, 'poorest of the poor', and food security or income.

- **Probing Questions** (as needed and as time allows):
 - *What effect has the presence of camel leasing had on the lives of women in your communities?*
 - *What effect has the presence of camel leasing had on the lives of young people in your communities?*
 - *Are the benefits directly or indirectly reaching the poorest households in your community? Direct Example: The poorest households are participating in leasing and receiving the same benefits as others in the community. Indirect Example: Households that participate in camel leasing are able to better help their neighbors in times of need by providing food, water, or other kinds of help.*
 - *Are you aware of any households changing their camel milk consumption because they are leasing a camel to a dairy?*
 - *Has anything changed about the amount of milk available in markets, or the price of milk?*
 - *Has anything changed about the way that most households adapt or respond to drought and erratic rainfall since camel leasing started in the community?*

8. Do you have any other concluding thoughts or ideas you would like to share today?

- **Rationale:** *Recognizing that we have limited time and therefore a limited number of questions we can pose, we want to encourage participants to share additional thoughts that may be relevant or useful for the study*

Moderator thanks all participants for their contributions and ends the meeting.

Camel Leasing to Impact Resilience

Focus Group Discussion Guide

November 2019

Non-Leasing Dairies Group

Questions with Rationale and Probing Questions

Note that the rationale and probing questions below are meant to provide additional context for the facilitator. Not every question is intended to be asked explicitly. Rather, probing questions should be used to help guide the conversations as appropriate to gather as much information as possible.

1. Have you heard about camel leasing before?

- **Rationale:** Understand the extent to which the camel leasing model is known by dairies, and whether the model is spreading through existing social relationships or as a result of exposure to GEEL or another development project.
- **Probing Questions** (as needed and as time allows):
 - How did you hear about camel leasing? From family members, clan members, neighbors, the GEEL project, or another development project? Other?
 - Are other members of your family, sub-clan, clan, or maag-paying group participating in leasing to your knowledge?
 - Have you participated in leasing before? Why did you stop?
 - Have you ever borrowed or loaned a camel without a lease agreement? Why?

2. If you have heard about camel leasing before, or from our explanation earlier, what are your impressions of the model?

- **Rationale:** This question relates directly back to one of the secondary research questions and is important for understanding private sector resilience and the potential sustainability of the camel leasing model. We are looking for positive and negative impacts which may be financial, social, or other in nature.
- **Probing Questions** (as needed and as time allows):
 - Do you see potential positive benefits from dairy leasing or know participants who have benefitted?
 - Ex: Increased milk production, income, investment in land or new technology
 - Do you see negative effects of participating in camel leasing or know participants who have experienced negative effects?
 - Ex: Financial difficulties, inability to care for the herd or leased camels, strained relations with family/clan/community, or challenges reacting to changes in weather and rainfall?

3. From your perspective, what criteria would need to be present in a leasing agreement for you to participate?

- **Rationale:** Understand what non-participant dairies may be looking for in order to participate. What kinds of financial, social, or other incentives may affect their decision to engage and what risk mitigation mechanisms they may be looking for.
- **Probing Questions** (as needed and as time allows):
 - Quantity of milk produced by a camel in day?
 - Certain age (number of calves)?
 - A minimum or maximum lease duration?

- Any certain kinds of witnesses needed when leases are established (family, clan chief, elder, etc.)?
- Other?

4. Based on your knowledge of camel leasing, what factors might affect who you choose to establish a leasing arrangement with?

- **Rationale:** Follow-up question to further understand the extent to which the camel leasing model is spreading primarily through existing social relationships or as a result of exposure to GEEL or another development project. Also explores underlying geographic and social dynamics associated with camel leasing including who may or may not be invited to participate. Are dairies only leasing within their community/clan or looking beyond? Is there a particular pastoralist profile that dairies are looking for?
- **Probing Questions** (as needed and as time allows):
 - Would you establish a lease with a family member, sub-clan, clan, or maag-paying group member, or with someone from outside these relationships?
 - Do you think that geography or proximity to your dairy would affect your decision?
 - If so, what distance would make you begin to question participation?
 - Would the pastoralist need to have a certain number of camels in their herd?
 - Would you prefer to lease one camel each from multiple pastoralists or multiple camels from one single pastoralist?

5. How do you think your business might be different if it were engaging in camel leasing?

- **Rationale:** Understand the extent to which non-leasing dairies are interested in camel leasing and what skills or assets they perceive as necessary to be successful with leasing.
- **Probing Questions** (as needed and as time allows):
 - Would you invest in new land? New technologies? Additional workers?
 - Would you have changed the volume of milk sold?
 - Would you have increased income?
 - Would you need to gain new skills?
 - Would you need to access agricultural credit to support leases?
 - Would you face any constraints or obstacles to engaging in leasing?

6. How do you think participating in camel leasing might have affected your business operations during periods of drought and erratic rainfall?

- **Rationale:** This question is exploring dairies' ability to adapt to shocks and stresses, specifically that of periods of drought and erratic rainfall
- **Probing Questions** (as needed and as time allows):
 - What actions do you take currently to maintain a strong business during instability such as drought and erratic rainfall?

7. In what ways might the presence of camel leasing in your community affect your community?

- **Rationale:** This question is exploring the knowledge of any changes as a result of the camel leasing model in terms of social, economic, and resilience (in terms of response to drought) dynamics
- **Probing Questions** (as needed and as time allows):
 - What effect might the presence of camel leasing have on the lives of women in your communities?

- *What effect might the presence of camel leasing have on the lives of young people in your communities?*
- *Would the benefits directly or indirectly reach the poorest households in your community? Direct Example: The poorest households might participate in leasing and receive the same benefits as others in the community. Indirect Example: Households that participate in camel leasing might be able to better help their neighbors in times of need by providing food, water, or other kinds of help.*
- *Would households change their camel milk consumption because they are leasing a camel to a dairy?*
- *Would anything change about the amount of milk available in markets, or the price of milk?*
- *Would anything change about the way that most households are able to adapt to drought and erratic rainfall if camel leasing started in the community?*
- *Would anything change about the way that participating dairies are able to adapt to drought and erratic rainfall if camel leasing started in the community?*

8. Do you have any other concluding thoughts or ideas you would like to share today?

Moderator thanks all participants for their contributions and ends the meeting.

Camel Leasing to Impact Resilience

Focus Group Discussion Guide

June 2021

Community Members Group

Questions with Rationale and Probing Questions

Note that the rationale and probing questions below are meant to provide additional context for the facilitator. Not every question is intended to be asked explicitly. Rather, probing questions should be used to help guide the conversations as appropriate to gather as much information as possible. The facilitator should listen carefully to respondents' initial answers to the main question and guide the conversation using the probing questions as follow-ups to their responses.

1. Camel milk has been a growing market in Somaliland. What changes have you seen in the camel milk market or industry in the last five years?

- **Rationale:** Evidence from our research to date points to a shift from only pastoralists traditionally consuming camel milk to a growing commercial market over the last two decades. This question explores community members' experiences with the development of the camel milk market.
- **Probing Questions** (as needed and as time allows):
 - Have you or your household changed your consumption?
 - Have you chosen to engage in the camel milk market as a seller or other person in the market as a result of the changes?

2. Camel milk is in high demand, especially during the dry season when supplies go down. What solutions do you see to increasing supplies?

- **Rationale:** This question will explore broader community perceptions of the functioning of the camel milk value chain writ large, and probe whether camel leasing or other pastoralist/dairy arrangements are well-known.
- **Probing Questions** (as needed and as time allows):
 - Do you see dairies expanding their operations?
 - Are pastoralists changing their practices or growing their herds?

3. Are you aware of the practice of camel leasing? If so, have you noticed any changes to your household or your community's ability to maintain your desired consumption levels of camel milk?

- **Rationale:** As dairies develop their businesses, it is possible that they are bypassing traditional rural markets in favor of direct marketing in larger urban and peri-urban areas. This question explores whether community members have experienced changes in access to milk as well as broader community changes as a result of leasing taking place in the surrounding areas.
- **Probing Questions** (as needed and as time allows):
 - When did you first become aware of leasing?
 - Have there been changes to access to pasture land by pastoralists as a result of leasing?
 - Have you noticed any other changes as a result of leasing in your area?

4. Are you aware of challenges between camel milk dairies and pastoralists in your community? If so, what might they be?

- **Rationale:** This question is related to our study's first research question on the impact of camel leasing on the welfare and resilience capacities of pastoral communities.

- **Probing Questions** (as needed and as time allows):
 - Access to land?
 - Competition for markets?
 - Other challenges or conflicts you've noticed?
 - In general, are the challenges or conflicts resolved? If so, how?
5. **Are you aware of other income-generating arrangements than camel leasing, such as pastoralists selling milk directly to dairies, or households lending camels?**
- **Rationale:** *Our value chain analysis points towards outgrower models as another business strategy dairies are using; this question explores whether dairies and pastoralists are pursuing or maintaining other such business strategies to grow their businesses or ensure consistent milk supplies, and if so, what other approaches may be used and whether they are used simultaneously to camel leasing.*
 - **Probing Questions** (as needed and as time allows):
 - Have you seen dairies and pastoralists sharing, co-owning, or co-managing camels?
 - How do the benefits or challenges of these arrangements differ from your perception of camel leasing?
6. **Directed to milk market committee members: Dairies are increasingly supplying more camel milk to markets. Do you have the ability to engage directly with dairies as vendors of their product?**
- **Rationale:** *The value chain analysis also pointed towards a dynamic of dairies selling milk directly in urban and peri-urban markets through their own kiosks, bypassing the usual aggregator, transporter, agent, vendor models. Milk market committees organize vendors; we are interested in exploring how new connections may be fostered between dairies and milk market committees.*
 - **Probing Questions** (as needed and as time allows):
 - If yes, how did those relationships come about?
 - If no, would you like to engage directly with dairies?
 - How do you imagine you would do so?
7. **How has your household's ability to react to shocks (such as flood, drought, severe illness, death of livestock) changed in the last year? In addition, how has your community's ability to react to shocks changed in the last year?**
- **Rationale:** *This question explores whether households and communities are experiencing changes in their ability to react to shocks and stresses, for comparison to leasing and non-leasing pastoralists to determine whether leasing may affect households' and communities' resilience capacities.*
 - **Probing Questions** (as needed and as time allows):
 - In what ways has your household's ability to react changed? Saved more money? Access to more or different assets? Leaned on family or clan members or other community members?
 - In what ways has your community's ability to react changed? Has access to support from NGOs, government, or others changed? New investments in the last year, such as schools or medical facilities? New access to information about oncoming shocks?
 - Do you have plans to prepare for future shocks?
 - Why or why not?
8. **The COVID-19 pandemic has been a shock for many people around the world beginning in March 2020. What effects has your household felt as a result of COVID-19?**

- **Rationale:** *This question supplements question 7 above with specific information related to the shock of COVID-19 and its relationship to the camel milk market.*
- **Probing Questions** *(as needed and as time allows):*
 - Has your household changed your consumption of camel milk as a result of COVID-19? Increased or decreased? Changed the members of the household who consume camel milk?
 - Have you noticed price changes to camel milk due to COVID-19?
 - Any other changes related to the camel milk market?

9. Do you have any other concluding thoughts or ideas you'd like to share today?

Moderator thanks all participants for their contributions and ends the meeting.

Camel Leasing to Impact Resilience

Focus Group Discussion Guide

June 2021

Leasing Pastoralists Group

Questions with Rationale and Probing Questions

Note that the rationale and probing questions below are meant to provide additional context for the facilitator. Not every question is intended to be asked explicitly. Rather, probing questions should be used to help guide the conversations as appropriate to gather as much information as possible. The facilitator should listen carefully to respondents' initial answers to the main question and guide the conversation using the probing questions as follow-ups to their responses.

1. Who in your household makes decisions about your camel herd?

- **Rationale:** Ph2 results show that male heads of households are primarily making the decision to sell milk for leasing and PLP households, but elder females in the household are primarily making decisions to sell milk in non-leasing households. We are exploring more information about how the decisions are made in the different study arms.
- **Probing Questions** (as needed and as time allows):
 - Who makes decisions about leasing?
 - Who makes decisions about selling milk?
 - Migrating?

2. Does your household engage in other arrangements with your camels besides leasing?

- **Rationale:** Our value chain analysis points towards outgrower models as another business strategy dairies are using; this question explores whether pastoralists are also engaging, and if so, what other approaches may be used.
- **Probing Questions** (as needed and as time allows):
 - For example, do you provide milk under an agreement to a dairy farm?
 - Do you share camels with other households or lend them?
 - If so, what benefits do you get from these arrangements?
 - Is one arrangement more beneficial than another?

3. Do you feel that leasing camels is a risky endeavor?

- **Rationale:** Evidence from Ph2 results show that leasing pastoralists are more likely to state that they didn't feel that powerful people were in control of their lives, vs. other groups, aspects of individual resilience capacities.
- **Probing Questions** (as needed and as time allows):
 - Do you feel that you have certainty in the outcome of leasing camels?
 - What are the risks associated with leasing camels?
 - Have you ever lost a camel that was being leased? What happened in that case?

4. How has leasing camels affected your households' cash flow?

- **Rationale:** Evidence from the Ph2 results show more than 50% of the leasing pastoralists had more than half their income from leasing, and another 42% had approximately half their income

from leasing. We would like to learn more about how this income has affected the overall cash flow of the household.

- **Probing Questions** (as needed and as time allows):
 - Did it replace an income source? Augment an income source?
 - What other changes has your household experienced because of leasing?
 - For example, are you sending more children to school?
 - Are members of the household choosing to start new income-generating activities? Investing in assets or saving more?

5. How has your household's consumption of camel milk changed since starting leasing?

a. Rationale: Ph2 and Ph1 results both show most leasing pastoralists are spending the income from leasing on food. This question seeks to understand how the nutrition of the family has changed- i.e. are they replacing camel milk consumption with food consumption?

b. Probing Questions (as needed and as time allows):

- i. Are you buying or consuming new or different food since starting leasing?
- ii. What factors have affected this change?
- iii. Have you sold more to markets and had less for consumption?
- iv. Has your household purchased different amounts of milk for consumption?

6. The last year has presented many challenges in Somaliland, including COVID-19, erratic rainfall patterns, and locust infestations affecting crops and fodder. To what extent was your household affected by these challenges?

• **Rationale:** This question explores whether households and communities are experiencing changes in their ability to react to shocks and stresses, for comparison to non-leasing and previously-leasing pastoralists and community members to determine whether leasing may affect households' and communities' resilience capacities.

• **Probing Questions** (as needed and as time allows):

- To what extent was your community affected by these challenges?
- Did camel leasing help or hurt your household's or community's ability to address these challenges during this period?
- Did your relationships with other market actors in the camel milk chain (such as transporters, market agents, aggregators, vendors) help or hurt your household's or community's ability to address these challenges during this period?

7. How has your household's ability to react to shocks (such as flood, drought, severe illness, death of livestock) changed as a result of leasing?

• **Rationale:** Ph2 results show that 11/12 leasing pastoralists are better able to react to shocks as a result of leasing. In this question, we're looking for more information about how camel leasing enabled them to better react to shocks.

• **Probing Questions** (as needed and as time allows):

- In what ways has your household's ability to react changed? Saved more money? Access to more or different assets? Leaned on family or clan members or other community members?
- In what ways has your community's ability to react changed? Has access to support from NGOs, government, or others changed? New investments in the last year, such as schools or medical facilities? New access to information about oncoming shocks?
- Are you able to better support your community members and neighbors during times of shock and stress?

- Do you have plans to prepare for future shocks?
- Why or why not?

8. Have you entered into leases with more than one dairy farm? How have those arrangements been different from one another?

- **Rationale:** *In Ph2 we learned that many leasing dairies are entering into multiple agreements, but we lack information on how many different dairies and how the agreements may differ.*
- **Probing Questions** *(as needed and as time allows):*
 - How many dairies do you have agreements with?
 - Did you identify them differently?
 - Do you lease the same number of camels to each dairy, or different amounts?
 - Do the durations differ?
 - Do payments differ?
 - Do agreement types differ (written vs. oral)?
 - Does your existing social relationship to them affect the terms with the dairy?

9. Are you satisfied with leasing?

- **Rationale:** *In the Ph2 results most leasing pastoralists said they were satisfied at a level of 2 out of 5 with leasing. In this question, we are probing deeper to understand these data.*
- **Probing Questions** *(as needed and as time allows):*
 - What factors contribute to your level of satisfaction or dissatisfaction with leasing?
 - Do you intend to enter into new agreements in the future?
 - If you were going to enter into another agreement in the future, how would you like it to be different?

10. Would you recommend leasing to another pastoralist?

- **Rationale:** *This question is related to our subset of “social network” research questions and seeks to understand more about how pastoralists view leasing and how agreements could be adjusted to be more beneficial to their interests.*
- **Probing Questions** *(as needed and as time allows):*
 - Why or why not?
 - What advice would you give to a social connection who is considering leasing?

Moderator thanks all participants for their contributions and ends the meeting.

Camel Leasing to Impact Resilience Focus Group Discussion Guide June 2021 Previously Leasing Pastoralists Group

Questions with Rationale and Probing Questions

Note that the rationale and probing questions below are meant to provide additional context for the facilitator. Not every question is intended to be asked explicitly. Rather, probing questions should be used to help guide the conversations as appropriate to gather as much information as possible. The facilitator should listen carefully to respondents' initial answers to the main question and guide the conversation using the probing questions as follow-ups to their responses.

1. Who in your household makes decisions about your camel herd?

- **Rationale:** Ph2 results show that male heads of households are primarily making the decision to sell milk for leasing and PLP households, but elder females in the household are primarily making decisions to sell milk in non-leasing households. We are exploring more information about how the decisions are made in the different study arms.
- **Probing Questions** (as needed and as time allows):
 - Who makes decisions about leasing?
 - Who makes decisions about selling milk?
 - Migrating?

2. Does your household engage in other arrangements with your camels since stopping leasing?

- **Rationale:** Our value chain analysis points towards outgrower models as another business strategy dairies are using; this question explores whether pastoralists are also engaging, and if so, what other approaches may be used.
- **Probing Questions** (as needed and as time allows):
 - For example, do you provide milk under an agreement to a dairy farm?
 - Do you share camels with other households or lend them?
 - If so, what benefits do you get from these arrangements?
 - Is one arrangement more beneficial than another?

3. Do you feel that leasing camels is a risky endeavor?

- **Rationale:** Evidence from Ph2 results show that leasing pastoralists are more likely to state that they didn't feel that powerful people were in control of their lives, vs. other groups, aspects of individual resilience capacities.
- **Probing Questions** (as needed and as time allows):
 - Do you feel that you have certainty in the outcome of leasing camels?

4. How did leasing camels affect your households' cash flow?

- **Rationale:** Evidence from the Ph2 results show more than 50% of the leasing pastoralists had more than half their income from leasing, and another 42% had approximately half their income from leasing. We would like to learn more about how this kind of income may have affected the overall cash flow of previously leasing households
- **Probing Questions** (as needed and as time allows):
 - Did it replace an income source? Augment an income source?
 - How did ending your leases affect your cash flow?

5. How has your household's consumption of camel milk changed since stopping leasing?

- **Rationale:** Ph2 and Ph1 results both show most leasing pastoralists are spending the income from leasing on food. We want to understand how the nutrition of the family may have changed as a result of camel leasing- i.e. are they replacing camel milk consumption with food consumption?
- **Probing Questions** (as needed and as time allows):
 - Did you buy or consume new or different food when you started leasing?
 - Are you buying or consuming new or different food when stopping leasing?
 - What factors affected this change?
 - Did you sell more to markets and had less for consumption while leasing?
 - Did your household purchase different amounts of milk for consumption?

6. The last year has presented many challenges in Somaliland, including COVID-19, erratic rainfall patterns, and locust infestations affecting crops and fodder. To what extent was your household affected by these challenges?

- **Rationale:** This question explores whether households and communities are experiencing changes in their ability to react to shocks and stresses, for comparison to non-leasing and previously-leasing pastoralists and community members to determine whether leasing may affect households' and communities' resilience capacities.
- **Probing Questions** (as needed and as time allows):
 - To what extent was your community affected by these challenges?
 - Did camel leasing help or hurt your household's or community's ability to address these challenges during this period?
 - Did your relationships with other market actors in the camel milk chain (such as transporters, market agents, aggregators, vendors) help or hurt your household's or community's ability to address these challenges during this period?

7. What other changes did your household experience as a result of leasing?

- **Rationale:** This question seeks more information about how previously leasing pastoralists' lives changed during the lease and after, in connection with our first set of research questions around the welfare impacts of camel leasing.
- **Probing Questions** (as needed and as time allows):
 - For example, did you send more children to school?
 - Did members of the household choose to start new income-generating activities?
 - Did you invest in new assets or save more?
 - Why?
 - Was it harder for your household to continue/did your household stop engaging in these activities once you stopped leasing?

8. Did you enter into leases with more than one dairy farm? How were those arrangements different from one another?

- **Rationale:** In P2 we learned that many leasing dairies are entering into multiple agreements, but we need more information on how many different dairies and how the agreements differ.
- **Probing Questions** (as needed and as time allows):
 - How many dairies did you have agreements with?
 - Did you identify them differently?
 - Did you lease the same number of camels to each diary, or different amounts?
 - Did the durations differ?
 - Did payments differ?
 - Did agreement types differ (written vs. oral)?
 - Did your existing social relationship to them affect the terms with the dairy?

9. Were you satisfied with leasing?

- **Rationale:** *In the Ph2 results most previously leasing pastoralists said that they would not want to lease in the future.*
- **Probing Questions** *(as needed and as time allows):*
 - Why did you stop leasing?
 - What factors contributed to your level of satisfaction or dissatisfaction with leasing?
 - Do you intend to enter into new agreements in the future?
 - If you were going to enter into another agreement in the future, how would you like it to be different?

10. Would you recommend leasing to another pastoralist?

- **Rationale:** *This question is related to our subset of “social network” research questions and seeks to understand more about how pastoralists view leasing and how agreements could be adjusted to be more beneficial to their interests.*
- **Probing Questions** *(as needed and as time allows):*
 - Why or why not?
 - What advice would you give to a social connection who is considering leasing?

Moderator thanks all participants for their contributions and ends the meeting.

Camel Leasing to Impact Resilience

Focus Group Discussion Guide

June 2021

Non-Leasing Pastoralists Group

Questions with Rationale and Probing Questions

Note that the rationale and probing questions below are meant to provide additional context for the facilitator. Not every question is intended to be asked explicitly. Rather, probing questions should be used to help guide the conversations as appropriate to gather as much information as possible. The facilitator should listen carefully to respondents' initial answers to the main question and guide the conversation using the probing questions as follow-ups to their responses.

1. Who in your household makes decisions about your camel herd?

- **Rationale:** Ph2 results show that male heads of households are primarily making the decision to sell milk for leasing and previously-leasing households, but elder females in the household are primarily making decisions to sell milk in non-leasing households. We are exploring more information about how the decisions are made in the different study arms.
- **Probing Questions** (as needed and as time allows):
 - Who makes decisions about selling milk?
 - Migrating?

2. The last year has presented many challenges in Somaliland, including COVID-19, erratic rainfall patterns, and locust infestations affecting crops and fodder. To what extent was your household affected by these challenges? Your community?

- **Rationale:** This question explores whether households and communities are experiencing changes in their ability to react to shocks and stresses, for comparison to leasing and previously-leasing pastoralists and community members to determine whether leasing may affect households' and communities' resilience capacities.
- **Probing Questions** (as needed and as time allows):
 - To what extent was your community affected by these challenges?
 - Did your relationships with other market actors in the camel milk chain (such as transporters, market agents, aggregators, vendors) help or hurt your household's or community's ability to address these challenges during this period?

3. Does your household engage in income-generating arrangements with your camels that is not a leasing arrangement?

- **Rationale:** Our value chain analysis points towards outgrower models as another business strategy dairies are using; this question explores whether pastoralists are also engaging, and if so, what other approaches may be used.
- **Probing Questions** (as needed and as time allows):
 - For example, do you provide milk under an agreement to a dairy farm?
 - Do you share camels with other households or lend them?
 - If so, what benefits do you get from these arrangements?
 - Is one arrangement more beneficial than another?

4. Have you heard about camel leasing before today?

- **Rationale:** This question is used to determine the breadth and depth of awareness of camel leasing across dairies and will provide additional context to the next several questions exploring the practice further.
- **Probing Questions** (as needed and as time allows):
 - If so, from whom? What was shared with you?
 - Why have you not participated in leasing camels?
 - If so, do you feel that leasing camels is a risky endeavor?
 - Do you feel that you would have certainty in the outcome of leasing camels?

5. Has your household's consumption of milk changed in the last year?

- **Rationale:** Data from the phase 2 household results show that 80% of non-leasing pastoralists decreased their camel milk consumption in the last year. In this question, we're exploring the change further so we can compare to similar changes in leasing and previously leasing study arms.
- **Probing Questions** (as needed and as time allows):
 - What factors have affected this change?
 - Have you sold more to markets and had less for consumption?
 - Has your household purchased different amounts of milk for consumption?
 - Do you feel that any of these changes may be affected by the presence of camel leasing in your area?

6. How has your household's ability to react to shocks (such as flood, drought, severe illness, death of livestock) changed in the last year?

- **Rationale:** Ph2 results show that 111/2 leasing pastoralists are better able to react to shocks as a result of leasing. In this question, we're looking for more information about how non-leasing pastoralists may be changing their ability to react to shocks for comparison.
- **Probing Questions** (as needed and as time allows):
 - In what ways has your household's ability to react changed? Saved more money? Access to more or different assets? Leaned on family or clan members or other community members?
 - In what ways has your community's ability to react changed? Has access to support from NGOs, government, or others changed? New investments in the last year, such as schools or medical facilities? New access to information about oncoming shocks?
 - Are you able to better support your community members and neighbors during times of shock and stress?
 - Do you have plans to prepare for future shocks?
 - Why or why not?

7. If you were going to enter into a leasing agreement in the future, how would you approach it?

- **Rationale:** This question is related to our subset of "social network" research questions and seeks to clarify how pastoralists select dairies to lease to and the relationship of those pastoralists to the dairies. Prior data collection points to the importance of social networks for establishing a lease for a camel, but we have not yet fully defined these networks.
- **Probing Questions** (as needed and as time allows):
 - Where would you begin, if interested in starting to lease camels?
 - Village elders?
 - Friends? Family? Clan members?
 - Would this be a purely business decision, or are there social factors you would need to consider?
 - Are there any dairies that you would not be willing to lease camels to?

- What information would you need about a dairy before establishing a leasing agreement?
- Would you consider leasing in the future?

8. Do you have any other concluding thoughts or ideas you'd like to share today?

Moderator thanks all participants for their contributions and ends the meeting.

Camel Leasing to Impact Resilience

Focus Group Discussion Guide

June 2021

Leasing Dairies Group

Questions with Rationale and Probing Questions

Note that the rationale and probing questions below are meant to provide additional context for the facilitator. Not every question is intended to be asked explicitly. Rather, probing questions should be used to help guide the conversations as appropriate to gather as much information as possible. The facilitator should listen carefully to respondents' initial answers to the main question and guide the conversation using the probing questions as follow-ups to their responses.

1. In what ways has camel leasing affected your business?

- **Rationale:** This question relates directly back to one of the secondary research questions around the business case for camel leasing and is important for understanding private sector resilience and the potential sustainability of the camel leasing model. We are looking for positive and negative impacts which may be financial, social, or other in nature. To the extent possible, tie it back in to adapting to climate issues such as drought and erratic rainfall.
- **Probing Questions** (as needed and as time allows):
 - Has camel leasing helped to stabilize the volumes of milk sold across seasons?
Has it affected the cost of camel milk or the price you can sell the milk?
 - Have you increased the number of staff you have employed?
 - Have you invested in additional resources or assets?
 - Purchasing or cultivating more fodder
 - Expanding pastures
 - Building water reservoirs
 - Investing in cold storage facilities

2. What are the biggest risks or challenges associated with camel leasing?

- **Rationale:** This question is used to explore the potential obstacles that dairies might face when participating in camel leasing in order to better understand how dairies address or overcome these challenges or why they continue to pursue the practice. These risks or challenges may be financial, social, or other in nature.
- **Probing Questions** (as needed and as time allows):
 - Is there potential for having too many camels to support for the land you have available?
 - What potential is there for conflict with pastoralists or community members where you operate?
 - Are you ever concerned about having to care for leased camels during period of uncertainty such as drought?
 - Have you ever lost a camel under your care? How was that handled?

3. The last year has presented many challenges in Somaliland, including COVID-19, erratic rainfall patterns, and locust infestations affecting crops and fodder. How was your business affected by these challenges?

- **Rationale:** This question seeks to understand how resilient dairies are in the face of shocks and stresses, particularly as it relates to camel leasing as a method for increasing their resilience

capacities as businesses. The last year presented unanticipated shocks and challenges aside from just drought and this question explores the impact of those challenges, most notably COVID-19.

- **Probing Questions** (as needed and as time allows):
 - Did your business continue to operate or remain profitable? Did you have challenges ensuring it continued to operate or remain profitable?
 - Was it difficult to provide enough fodder and water for camels?
 - Did you have challenges meeting market demands for camel milk?
 - Did camel leasing support or hurt your business's ability to address these challenges during this period?

4. Are you satisfied with the leasing arrangements?

- **Rationale:** Previous data collection shows many of the leasing and previously leasing pastoralists stating that they are dissatisfied with the practice of camel leasing, even if they continue to participate. We are exploring whether the sentiment is the same for dairies or if they have a different perception.
- **Probing Questions** (as needed and as time allows):
 - What factors contribute to your level of satisfaction/dissatisfaction?
 - Do you feel that the pastoralists you lease camels from are satisfied with the arrangements?
 - What are some of the biggest complaints or frustrations that you have heard from pastoralists?

5. Has your approach to camel leasing changed since you started leasing?

- **Rationale:** From interviews and previous data collection efforts we have a good concept of how camel leasing began, but are trying to understand how approaches have evolved over time. This includes the mode of leasing arrangements as well as the intention and relationship around the leases.
- **Probing Questions** (as needed and as time allows):
 - Have you seen a shift in how camel leasing agreements are formalized?
 - Do you prefer written or oral agreements? Are you seeing an increasing number of written vs oral agreements?
 - Are witnesses observing agreements? Have those witnesses changed?
 - Have you seen any change in other aspects of leasing arrangements, such as how many camels are leased at a time, the duration of leases, the compensation for camels under a lease?
 - Have there been any changes in the type of pastoralist you are working with in terms of social relationship (friend, family, clan member, community member), age, gender, size of herd, or other factors?

6. Do you expect your interest in leasing camels to change as your business grows?

- **Rationale:** We are seeking to learn whether dairies perceive camel leasing as a long-term lucrative business model, as a temporary solution to challenging situations, or as a model for rapid business growth that will not be needed as the business grows.
- **Probing Questions** (as needed and as time allows):
 - Is camel leasing a long-term business model for your dairy, or is it a temporary investment? Please explain.
 - In what context would you decide to stop leasing camels?

7. Does your dairy engage in other arrangements with pastoralists or other camel milk producers besides camel leasing?

- **Rationale:** *Our value chain analysis points towards outgrower models as another business strategy dairies are using; this question explores whether dairies are pursuing or maintaining other such business strategies to grow their businesses or ensure consistent milk supplies, and if so, what other approaches may be used and whether they are used simultaneously to camel leasing.*
- **Probing Questions** (as needed and as time allows):
 - Do you have any informal or formal agreements with pastoralists to purchase milk from them?
 - Do you share, co-own, or co-manage any camels with pastoralists or other dairies or milk producers?
 - Other agreements?
 - If participating in other agreements:
 - What unique benefits do you receive from these agreements?
 - Is one approach more beneficial than another?
 - How do they compare to camel leasing?

8. We have heard from previous data collection that leasing arrangements tend to occur within social networks. Is that accurate from your perspective? How would you define your social network?

- **Rationale:** *This question is related to our subset of “social network” research questions and seeks to clarify how dairies select pastoralists to lease from and the relationship of those pastoralists to the dairies. Prior data collection points to the importance of social networks for establishing a lease for a camel, but we have not yet fully defined these networks.*
- **Probing Questions** (as needed and as time allows):
 - Are there any pastoralists from whom you are leasing a camel who are not a part of your social network?
 - Does your social network extend beyond your clan? Community?

9. Could you please describe your relationships with local community members and other actors in the camel milk value chain such as milk market committees?

- **Rationale:** *This question is looking to better understand the relationship of dairies to prominent community members and value chain actors. Better understanding this relationship will provide knowledge of how camel leasing might be affecting the value chain and communities focused on camel milk, as defined in our welfare and resilience capacity of pastoralists and communities research questions.*
- **Probing Questions** (as needed and as time allows):
 - What interactions do you have with community leaders in the places where you are selling milk?
 - To what extent do you interact with camel milk value chain actors such as aggregators, transporters, agents, etc.?
 - If you were to begin selling camel milk in a new community/market, who would you need to interact with before beginning to sell?

10. How does your participation in camel leasing affect your community?

- **Rationale:** *This question is designed to inform the team about community-level impacts of camel leasing from the perspective of dairies to triangulate information from pastoralists and key informants. We are looking for both positive and negative effects.*

- **Probing Questions** *(as needed and as time allows):*
 - What effect has the presence of camel leasing had on the lives of women or youth in your communities?
 - Are there any challenges with access to land for grazing of camels?
 - Has anything changed about the amounts or prices of milk available in local markets or rural areas?
 - Has anything changed about the way that most households adapt or respond to drought and erratic rainfall since camel leasing started in the community?

Moderator thanks all participants for their contributions and ends the meeting.

Camel Leasing to Impact Resilience

Focus Group Discussion Guide

June 2021

Previously Leasing Dairies Group

Questions with Rationale and Probing Questions

Note that the rationale and probing questions below are meant to provide additional context for the facilitator. Not every question is intended to be asked explicitly. Rather, probing questions should be used to help guide the conversations as appropriate to gather as much information as possible. The facilitator should listen carefully to respondents' initial answers to the main question and guide the conversation using the probing questions as follow-ups to their responses.

1. In what ways did camel leasing affect your business?

- **Rationale:** This question relates directly back to one of the secondary research questions around the business case for camel leasing and is important for understanding private sector resilience and the potential sustainability of the camel leasing model. We are looking for positive and negative impacts which may be financial, social, or other in nature. To the extent possible, tie it back in to adapting to climate issues such as drought and erratic rainfall.
- **Probing Questions** (as needed and as time allows):
 - Did camel leasing help to stabilize the volumes of milk sold across seasons?
 - Did it affect the cost of camel milk or the price you can sell the milk?
 - Did you increase the number of staff you employed?
 - Did you need to invest in additional resources or assets as a result of leasing?
 - Purchasing or cultivating more fodder
 - Expanding pastures
 - Building water reservoirs
 - Investing in cold storage facilities

2. Why did you stop leasing camels?

- **Rationale:** This question is used to understand the reasons that dairies would cease camel leasing activities, relating back to the business case for dairies to engage in leasing.
- **Probing Questions** (as needed and as time allows):
 - Was there a particular moment when you decided to stop leasing? If so, what was it?
 - Was stopping camel leasing part of a larger business strategy?
 - Did you choose to pursue an alternate strategy instead? If so, what was it?
 - What were the implications on your business to stopping leasing camels?

3. What were the biggest risks or challenges associated with camel leasing?

- **Rationale:** This question is used to explore the potential obstacles that dairies might face when participating in camel leasing in order to better understand how dairies address or overcome these challenges or why they continue to pursue the practice. These risks or challenges may be financial, social, or other in nature.
- **Probing Questions** (as needed and as time allows):
 - Was there potential for having too many camels to support for the land you have available?
 - What potential was there for conflict with pastoralists or community members where you operate?
 - Were you ever concerned about having leased camels during period of uncertainty such as drought?

4. The last year has presented many challenges in Somaliland, including COVID-19, erratic rainfall patterns, and locust infestations affecting crops and fodder. How was your business affected by these challenges?

- **Rationale** This question seeks to understand how resilient dairies are in the face of shocks and stresses, particularly as it relates to camel leasing as a method for increasing their resilience capacities as businesses. The last year presented unanticipated shocks and challenges aside from just drought and this question explores the impact of those challenges, most notably COVID-19. Information from previously-leasing dairies will be compared with leasing and non-leasing dairies.
- **Probing Questions** (as needed and as time allows):
 - If leasing camels at the time, did camel leasing help or hurt your business's ability to address these challenges during this period?
 - If no longer leasing at that time, how might camel leasing have helped or hurt your business's ability to address these challenges during this period?
 - Did your business continue to operate or remain profitable? Did you have challenges ensuring it continued to operate or remain profitable?
 - Did you have challenges meeting market demands for camel milk?
 - Was it difficult to provide enough fodder and water for camels?

5. Do your sales, sales prices, or profit margins change seasonally? If not, why is that?

- **Rationale:** We have seen from other data that seasonal fluctuations between the rainy and wet seasons can be challenging for dairies and the overall camel milk value chain. This is particularly true during unpredictable weather events such as extended dry seasons or drought.
- **Probing Questions** (as needed and as time allows):
 - What factors affect your sales, sales prices, or profit margins?
 - How do you know when to adjust the price of milk sold to consumers?
 - Are there business strategies or approaches you use to stabilize sales, sales prices, or profit margins?

6. Did you experience any conflicts with pastoralists or communities as a result of camel leasing?

- **Rationale:** This question probes into the pastoralist/community dynamics with dairies and the potential for conflict, while seeking to clarify whether conflict could be a driver for stopping leasing as a business strategy.
- **Probing Questions** (as needed and as time allows):
 - If so, please explain
 - Did you ever have challenges finding enough grazing land? Did that cause any conflict with pastoralists?
 - Was there ever competition for selling milk to consumers with pastoralists? Other dairies?

7. Were you satisfied with the leasing arrangements?

- **Rationale:** Previous data collection shows many of the leasing and previously leasing pastoralists stating that they are dissatisfied with the practice of camel leasing, even if they continue to participate. We are exploring whether the sentiment is the same for dairies or if they have a different perception. We assume that just because they stopped leasing does not mean that they were dissatisfied with the practice.
- **Probing Questions** (as needed and as time allows):
 - What factors contributed to your level of satisfaction/dissatisfaction?
 - Did you feel that the pastoralists you leased camels from were satisfied with the arrangements?

- What were some of the biggest complaints or frustrations that you have heard from pastoralists?

8. Would you consider leasing camels again in the future? If so, under what circumstances?

- **Rationale:** *This question builds on the last few questions and explores the perceptions of previously leasing dairies on the practice of camel leasing. We are looking for positive or negative perceptions and in particular about the resilience of dairies to mitigate the impacts of drought or other shocks through leasing.*
- **Probing Questions** (as needed and as time allows):
 - What would need to be different from your last experience leasing camels?
 - If you were to speak with another dairy which is considering starting camel leasing, what recommendations would you give them?

9. Besides camel leasing, does your dairy engage in other formal arrangements with pastoralists or other camel milk producers to obtain additional camel milk?

- **Rationale:** *Our value chain analysis points towards outgrower models as another business strategy dairies are using; this question explores whether dairies are pursuing or maintaining other such business strategies to grow their businesses or ensure consistent milk supplies, and if so, what other approaches may be used and whether they are used simultaneously to camel leasing.*
- **Probing Questions** (as needed and as time allows):
 - Do you have any informal or formal agreements with pastoralists to purchase milk from them?
 - Do you share, co-own, or co-manage any camels with pastoralists or other dairies or milk producers?
 - Other agreements?
 - If participating in other agreements:
 - What unique benefits do you receive from these agreements?
 - Is one approach more beneficial than another?
 - How do they compare to camel leasing?

10. Could you please describe your relationships with local community members and other actors in the camel milk value chain such as milk market committees?

- **Rationale:** *This question is looking to better understand the relationship of dairies to prominent community members and value chain actors. Better understanding this relationship will provide knowledge of how camel leasing might be affecting the value chain and communities focused on camel milk.*
- **Probing Questions** (as needed and as time allows):
 - What interactions do you have with leaders in the places where you are selling milk?
 - To what extent do you interact with camel milk value chain actors such as aggregators, transporters, agents, etc.?
 - If you were to begin selling camel milk in a new community/market, who would you need to interact with before beginning to sell?

Moderator thanks all participants for their contributions and ends the meeting.

Camel Leasing to Impact Resilience

Focus Group Discussion Guide

June 2021

Non-Leasing Dairies Group

Questions with Rationale and Probing Questions

Note that the rationale and probing questions below are meant to provide additional context for the facilitator. Not every question is intended to be asked explicitly. Rather, probing questions should be used to help guide the conversations as appropriate to gather as much information as possible. The facilitator should listen carefully to respondents' initial answers to the main question and guide the conversation using the probing questions as follow-ups to their responses.

1. The last year has presented many challenges in Somaliland, including COVID-19, erratic rainfall patterns, and locust infestations affecting crops and fodder. How was your business affected by these challenges?

- **Rationale:** This question seeks to understand how resilient dairies are in the face of shocks and stresses, particularly as it relates to camel leasing as a method for increasing their resilience capacities as businesses. The last year presented unanticipated shocks and challenges aside from just drought and this question explores the impact of those challenges, most notably COVID-19. Information from non-leasing dairies will be compared with leasing and previously leasing dairies.
- **Probing Questions** (as needed and as time allows):
 - Did your business continue to operate or remain profitable? Did you have challenges ensuring it continued to operate or remain profitable Did you have challenges meeting market demands for camel milk?
 - Was it difficult to provide enough fodder and water for camels?
 - Did you have challenges meeting market demands for camel milk?

2. Do your sales, sales prices, or profit margins change seasonally? If not, why is that?

- **Rationale:** We have seen from other data that seasonal fluctuations between the rainy and wet seasons can be challenging for dairies and the overall camel milk value chain. This is particularly true during unpredictable weather events such as extended dry seasons or drought.
- **Probing Questions** (as needed and as time allows):
 - What factors affect your sales, sales prices, or profit margins?
 - How do you know when to adjust the price of milk sold to consumers?
 - Are there business strategies or approaches you use to stabilize sales, sales prices, or profit margins?

3. Does your dairy engage in other arrangements with pastoralists or other camel milk producers to obtain additional camel milk?

- **Rationale:** Our value chain analysis points towards outgrower models as another business strategy dairies are using; this question explores whether dairies are pursuing or maintaining other such business strategies to grow their businesses or ensure consistent milk supplies, and if so, what other approaches may be used.
- **Probing Questions** (as needed and as time allows):
 - Do you have any formal agreements with pastoralists to purchase milk from them?
 - Do you share, co-own, or co-manage any camels with pastoralists or other dairies or milk producers?
 - Others?

- If participating in other formal agreements:
 - What unique benefits do you receive from these agreements?
 - Is one approach more beneficial than another?

4. Have you heard about camel leasing before today?

- **Rationale:** *This question is used to determine the breadth and depth of awareness of camel leasing across dairies and will provide additional context to the next several questions exploring the practice further.*
- **Probing Questions** (as needed and as time allows):
 - If so, from whom?
 - What was shared with you?

5. If you have heard about leasing before, or from our explanation earlier, what are your impressions of the model?

- **Rationale:** *Beyond just awareness of the practice of camel leasing, we are exploring the perception of the practice from non-leasers to help us understand why some dairies are participating and others are not.*
- **Probing Questions** (as needed and as time allows):
 - What concerns do you have about camel leasing?
 - What potential benefits do you see?
 - Do you feel that you would have certainty in the outcome of leasing camels?
 - Does this seem to be a reasonable business strategy for any dairy to use, or are there certain contexts where it would or would not be appropriate?
 - Would you consider leasing in the future?

6. How do you think your business might be different if it were engaged in camel leasing?

- **Rationale:** *This question builds on the last few questions and explores the perceptions of non-leasing dairies on the practice of camel leasing. We are looking for positive or negative perceptions and in particular responses about the resilience of dairies to mitigate the impacts of drought or other shocks.*
- **Probing Questions** (as needed and as time allows):
 - Would camel leasing increase the number of she-camels available for milking?
 - Would you need to increase the size of your business or your assets, such as more staff, water reservoirs, more land for grazing, fodder, cold storage, etc.?
 - Would you have felt the impacts of COVID-19 or other shocks and stresses as severely if you were leasing?

7. From your perspective, what criteria would need to be present in a leasing agreement for you to participate?

- **Rationale:** *This question is meant to help improve our understanding of the camel leasing model and identify potential areas of improvement from the perspective of non-leasing dairies who may choose to begin leasing in the future.*
- **Probing Questions** (as needed and as time allows):
 - Are there certain expectations you would have in terms of:
 - duration of leases,
 - number of pastoralists you would work with,
 - number of camels you would want or could support,
 - level of compensation paid to pastoralists,

- protection from risk?

8. Based on your knowledge of camel leasing, if you were to decide to start leasing, how would you find pastoralists to lease from?

- **Rationale:** *This question is related to our subset of “social network” research questions and seeks to clarify how dairies select pastoralists to lease from and the relationship of those pastoralists to the dairies. Prior data collection points to the importance of social networks for establishing a lease for a camel, but we have not yet fully defined these networks.*
- **Probing Questions** (as needed and as time allows):
 - Where would you begin, if interested in starting to lease camels?
 - Village elders?
 - Friends? Family? Clan members?
 - Would this be a purely business decision, or are there social factors you would need to consider?
 - Is there anyone that you would not be willing to lease camels from?
 - What information would you need about a pastoralist before establishing a leasing agreement?

9. Could you please describe your relationships with local community members and other actors in the camel milk value chain such as milk market committees?

- **Rationale:** *This question is looking to better understand the relationship of dairies to prominent community members and value chain actors. Better understanding this relationship will provide knowledge of how camel leasing might be affecting the value chain and communities focused on camel milk, as defined in our welfare and resilience capacity of pastoralists and communities research questions.*
- **Probing Questions** (as needed and as time allows):
 - What interactions do you have with leaders in the places where you are selling milk?
 - To what extent do you interact with camel milk value chain actors such as aggregators, transporters, agents, etc.?
 - If you were to begin selling camel milk in a new community/market, who would you need to interact with before beginning to sell?

10. Do you have any other concluding thoughts or ideas you would like to share today?

Moderator thanks all participants for their contributions and ends the meeting.

Camel Leasing to Impact Resilience Focus Group Discussion Guide November 2021 Community Members Group

Questions with Rationale and Probing Questions

Note that the rationale and probing questions below are meant to provide additional context for the facilitator. Not every question is intended to be asked explicitly. Rather, probing questions should be used to help guide the conversations as appropriate to gather as much information as possible. The facilitator should listen carefully to respondents' initial answers to the main question and guide the conversation using the probing questions as follow-ups to their responses.

1. Are you aware of the practice of camel leasing? If so, could you please explain it?

- **Rationale:** *With this question we are trying to understand community awareness of the practice as well as distinguish formal camel leasing from more traditional camel lending among family, friends, and community members.*
- **Probing Questions** (as needed and as time allows):
 - When did you first become aware of leasing?
 - How did you become aware of camel leasing?

Either confirm the correct definition or provide the correct one

2. What effects, if any, do you think camel leasing has had on your household or your community?

- **Rationale:** *This question will explore broader community perceptions of the positive and negative aspects of camel leasing on their community and community members. We are seeking to understand whether there is a ripple effect from pastoralists to communities or how the presence of dairies that support camel leasing might affect those communities. The question is intentionally broad as we are trying not to lead respondents at all, there will be more direct questions later in the focus group and we will revisit this question later on.*
- **Probing Questions** (as needed and as time allows):
 - Why do you attribute camel leasing with these effects on your community?

3. Over the last year, have you noticed any changes in your household's or community's ability to maintain your desired levels of camel milk consumption? If so, what were those changes?

- **Rationale:** *We have heard from other data that camel leasing and the increased presence of dairies may decrease access to camel milk locally as it is more lucrative to sell in larger cities. This question will explore whether community members feel that for their household or community.*
- **Probing Questions** (as needed and as time allows):
 - Was there an increase or decrease in camel milk consumption?
 - Were changes in camel milk consumption more strongly felt within your household or your community?
 - Why do you think these changes in consumption occurred?

4. Over the last year, have you noticed any changes in the way dairies interact with your community or pastoralists in your community? If so, how?

- **Rationale:** This question is exploring the extent to which camel leasing may have strengthened or weakened relationships with dairies. This also ties into reports that there are many dairies appearing and using grazing lands, which can cause conflict.
- **Probing Questions** (as needed and as time allows):
 - Were these changes positive or negative?
 - Have you noticed more dairies within your community?
 - Have any of these changes caused conflict within your communities?
 - Have dairies done anything to improve your community?
 - If there is a conflict between a dairy and a community member, how is that resolved?

5. Over the last year, have there been any changes in your community's ability to maintain or invest in new communal assets such as a well or community center?

- **Rationale:** Community resilience capacities are considered a critical aspect of overall resilience and a focus of the study. This question is meant to understand what community resilience capacities may have been put in place over the last year.
- **Probing Questions** (as needed and as time allows):
 - Have you experienced an increased or decreased ability to maintain or invest in communal assets?
 - What communal assets?
 - Why do you think this is the case?

6. Are you aware of challenges between camel milk dairies and pastoralists in your community? If so, what might they be?

- **Rationale:** The value chain analysis also pointed towards a dynamic of dairies selling milk directly in urban and peri-urban markets through their own kiosks, bypassing the usual aggregator, transporter, agent, vendor models. Milk market committees organize vendors; we are interested in exploring how new connections may be fostered between dairies and milk market committees.
- **Probing Questions** (as needed and as time allows):
 - If yes, how did those relationships come about?
 - If no, would you like to engage directly with dairies?
 - How do you imagine you would do so?

7. How has your household's ability to react to shocks (such as flood, drought, severe illness, death of livestock) changed in the last year? In addition, how has your community's ability to react to shocks changed in the last year?

- **Rationale:** This question explores whether households and communities are experiencing changes in their ability to react to shocks and stresses, for comparison to leasing and non-leasing pastoralists to determine whether leasing may affect households' and communities' resilience capacities.
- **Probing Questions** (as needed and as time allows):
 - In what ways has your household's ability to react changed? Saved more money? Access to more or different assets? Leaned on family or clan members or other community members?
 - In what ways has your community's ability to react changed? Has access to support from NGOs, government, or others changed? New investments in the last year, such as schools or medical facilities? New access to information about oncoming shocks?
 - Do you have plans to prepare for future shocks?
 - Why or why not?

8. What, if any, of the changes you identified in today’s conversation may have been the result of camel leasing occurring in your community?

- **Rationale:** *This question complements earlier questions and again probes into the relationship between changes in the community and camel leasing.*

9. Do you have any other concluding thoughts or ideas you’d like to share today?

Moderator thanks all participants for their contributions and ends the meeting.

Camel Leasing to Impact Resilience

Focus Group Discussion Guide

November 2021

Leasing Pastoralists Group

Questions with Rationale and Probing Questions

Note that the rationale and probing questions below are meant to provide additional context for the facilitator. Not every question is intended to be asked explicitly. Rather, probing questions should be used to help guide the conversations as appropriate to gather as much information as possible. The facilitator should listen carefully to respondents' initial answers to the main question and guide the conversation using the probing questions as follow-ups to their responses.

1. Have your perceptions of camel leasing changed over time since you began leasing? If so, how?

- **Rationale:** One of our key study questions asks how perspectives of those involved in camel leasing have changed over time. While we are getting a good sense of this information indirectly, we are seeking a more direct response.
- **Probing Questions** (as needed and as time allows):
 - Do you feel more positive or more negative about leasing your camels than you did when you began?
 - How is the practice of leasing your camels different from what you originally anticipated?
 - What would you change about camel leasing, if you could?

2. Has your leasing agreement with the dairy changed over time since you began leasing with them? If so, how?

- **Rationale:** We seek to understand how leases may have changed over time, such as a change in the payment mechanism or amount of payments or the duration of the lease. This would also include whether any leases have been renewed or terminated early.
- **Probing Questions** (as needed and as time allows):
 - Have the terms of your lease changed in any way?
 - Have you shortened or extended the length of the lease?
 - Was the lease terminated early or renewed?
 - Have the payment amounts or frequency changed?

3. Have your relationships with this dairy or other dairies changed over time since you began leasing camels? If so, how?

- **Rationale:** We have heard from pastoralists and dairies that even while there may not be open conflict, there may be some resentment or negative perceptions of dairies by pastoralists. While we are taking a neutral approach to the question, we are looking to learn whether the manner in which pastoralists view dairies has changed..
- **Probing Questions** (as needed and as time allows):
 - Has your relationship with the dairy with whom you hold a lease strengthened over time, or has it become more challenged?
 - How have your relationships with other dairies, who you do not lease camels to, changed over time? Do you have stronger or weaker relationships with them?
 - What are your current overall perceptions of camel milk dairies?

4. Has camel leasing had any impacts on your community? If so, in what ways?

a. **Rationale:** Camel leasing's impact on communities is a critical component of the research. Surveys will be asking more direct and targeted questions, but this focus group question is intended to allow participants to openly share their perspectives? We are looking for both positive and negative impacts. Some examples are provided as sub-probing questions, but should only be used if no other responses are being provided.

b. **Probing Questions** (as needed and as time allows):

- i. What positive effects has camel leasing had on the community?
 1. Increased employment or job opportunities
 2. Increased community investment in assets such as wells, schools, or community centers
 3. Increased ability for community members to support one another
- ii. What negative effects has camel leasing had on the community?
 1. Less camel milk available for purchase or consumption
 2. Price of camel milk has increased
 3. Urbanization/migration leading to community members leaving the community
 4. Conflict among community members or between dairies and the community in terms of available pasture

5. Has the way you sell camel milk changed since you began leasing camels? If so, how?

• **Rationale:** In earlier focus groups and surveys we have been hearing about alternative models to selling milk, such as outgrower models where pastoralists bring milk to a dairy who then brings it to market. This is an effort to understand how milk sales have adjusted over time and potentially learn of new mechanisms for selling milk.

• **Probing Questions** (as needed and as time allows):

- How have you traditionally sold camel milk? Are you still using the same approach, or are you selling milk differently now?
- Are you selling milk primarily locally or are you bringing it to larger markets?
- Are you selling milk primarily to other pastoralists or community households or are you selling to businesses who then sell it to consumers?
- Are you selling milk as an individual household or as a collective?

6. Has camel leasing changed the way that your household saves or spends money? If so, how?

• **Rationale:** We have asked a similar question in previous focus groups and are adjusting the question to understand more about whether or how money is being saved or spent, particularly in ways that might lead to stronger resilience in the face of shocks and stress.

• **Probing Questions** (as needed and as time allows):

- Do you feel that you have more or less money available for household needs than you did before you began leasing camels?
- If less money, why do you think that is?
- If more money, how are you using that money?
 - Paying school fees for children
 - Investing in household assets
 - Saving money for future needs

7. The last year has presented many challenges in Somaliland, including COVID-19, erratic rainfall patterns, locust infestations affecting crops and fodder, and more recently an unknown disease affecting camels. To what extent was your household affected by these challenges?

- **Rationale:** This question explores whether households and communities are experiencing changes in their ability to react to shocks and stresses, for comparison to non-leasing and previously-leasing pastoralists and community members to determine whether leasing may affect households' and communities' resilience capacities.
- **Probing Questions** (as needed and as time allows):
 - To what extent was your community affected by these challenges?
 - Did camel leasing help or hurt your household's or community's ability to address these challenges during this period?
 - Did your relationships with other market actors in the camel milk chain (such as transporters, market agents, aggregators, vendors) help or hurt your household's or community's ability to address these challenges during this period?

8. How has your household's ability to react to shocks (such as flood, drought, severe illness, death of livestock) changed as a result of camel leasing?

- **Rationale:** Ph2 results show that 1112 leasing pastoralists are better able to react to shocks as a result of leasing. In this question, we're looking for more information about how camel leasing enabled them to better react to shocks.
- **Probing Questions** (as needed and as time allows):
 - In what ways has your household's ability to react changed? Saved more money? Access to more or different assets? Leaned on family or clan members or other community members?
 - In what ways has your community's ability to react changed? Has access to support from NGOs, government, or others changed? New investments in the last year, such as schools or medical facilities? New access to information about oncoming shocks?
 - Are you able to better support your community members and neighbors during times of shock and stress?
 - Do you have plans to prepare for future shocks?
 - Why or why not?

9. Has your participation in camel leasing changed the way that you view the future? If so, how?

- **Rationale:** Some of the anticipated resilience capacities associated with camel leasing are increased risk tolerance, aspirations, confidence, and motivation. While we are asking a series of more direct questions through a household survey, we are looking for pastoralists to identify how they might have changed the way they view the future as a catch-all for the various capacities mentioned earlier.
- **Probing Questions** (as needed and as time allows):
 - Do you feel that camel leasing has changed how confident you feel in your ability to cope with future shocks and stresses such as droughts, locusts, or unanticipated disease?
 - Do you feel that camel leasing has changed the way that you view your financial security and ability to take financial risks?
 - Do you feel that you have an increased level of control over your life as a result of camel leasing?

10. Would you recommend leasing to other pastoralists?

- **Rationale:** *This question is related to our subset of “social network” research questions and seeks to understand more about how pastoralists view leasing and how agreements could be adjusted to be more beneficial to their interests.*
- **Probing Questions** *(as needed and as time allows):*
 - Why or why not?
 - What advice would you give to a social connection who is considering leasing?

Moderator thanks all participants for their contributions and ends the meeting.

Camel Leasing to Impact Resilience

Focus Group Discussion Guide

November 2021

Previously Leasing Pastoralists Group

Questions with Rationale and Probing Questions

Note that the rationale and probing questions below are meant to provide additional context for the facilitator. Not every question is intended to be asked explicitly. Rather, probing questions should be used to help guide the conversations as appropriate to gather as much information as possible. The facilitator should listen carefully to respondents' initial answers to the main question and guide the conversation using the probing questions as follow-ups to their responses.

1. Have your perceptions of camel leasing changed over time since you began leasing? If so, how?

- **Rationale:** One of our key study questions asks how perspectives of those involved in camel leasing have changed over time. While we are getting a good sense of this information indirectly, we are seeking a more direct response.
- **Probing Questions** (as needed and as time allows):
 - Do you feel more positive or more negative about leasing your camels than you did when you began?
 - How was the practice of leasing your camels different from what you originally anticipated?
 - What would you change about camel leasing, if you could?

2. Does your household engage in other arrangements with your camels since stopping leasing?

- **Rationale:** Our value chain analysis points towards outgrower models as another business strategy dairies are using; this question explores whether pastoralists are also engaging, and if so, what other approaches may be used.
- **Probing Questions** (as needed and as time allows):
 - For example, do you provide milk under an agreement to a dairy farm?
 - Do you share camels with other households or lend them?
 - If so, what benefits do you get from these arrangements?
 - Is one arrangement more beneficial than another?

3. Has the way you sell camel milk changed since you participated in leasing camels? If so, how?

- **Rationale:** In earlier focus groups and surveys we have been hearing about alternative models to selling milk, such as outgrower models where pastoralists bring milk to a dairy who then brings it to market. This is an effort to understand how milk sales have adjusted over time and potentially learn of new mechanisms for selling milk.
- **Probing Questions** (as needed and as time allows):
 - How have you traditionally sold camel milk? Are you still using the same approach, or are you selling milk differently now?
 - Are you selling milk primarily locally or are you bringing it to larger markets?
 - Are you selling milk primarily to other pastoralists or community households or are you selling to businesses who then sell it to consumers?
 - Are you selling milk as an individual household or as a collective?

4. Have your relationships with dairies changed over time since you participated in camel leasing? If so, how?

- **Rationale:** *We have heard from pastoralists and dairies that even while there may not be open conflict, there may be some resentment or negative perceptions of dairies by pastoralists. While we are taking a neutral approach to the question, we are looking to learn whether the manner in which pastoralists view dairies has changed.*
- **Probing Questions** (as needed and as time allows):
 - Has your relationship with the dairy with whom you held a lease strengthened over time, or has it become more challenged?
 - How have your relationships with other dairies, who you did not lease camels to, changed over time? Do you have stronger or weaker relationships with them?
 - What are your current overall perceptions of camel milk dairies?

5. Has camel leasing had any impacts on your community? If so, in what ways?

- **Rationale:** *Camel leasing's impact on communities is a critical component of the research. Surveys will be asking more direct and targeted question, but this focus group question is intended to allow participants to openly share their perspectives? We are looking for both positive and negative impacts. Some examples are provided as sub-probing questions, but should only be used if no other responses are being provided.*
- **Probing Questions** (as needed and as time allows):
 - What positive effects has camel leasing had on the community?
 - Increased employment or job opportunities
 - Increased community investment in assets such as wells, schools, or community centers
 - Increased ability for community members to support one another
 - What negative effects has camel leasing had on the community?
 - Less camel milk available for purchase or consumption
 - Price of camel milk has increased
 - Urbanization/migration leading to community members leaving the community
 - Conflict among community members or between dairies and the community in terms of available pasture.

6. The last year has presented many challenges in Somaliland, including COVID-19, erratic rainfall patterns, and locust infestations affecting crops and fodder. To what extent was your household affected by these challenges?

- **Rationale:** *This question explores whether households and communities are experiencing changes in their ability to react to shocks and stresses, for comparison to non-leasing and previously-leasing pastoralists and community members to determine whether leasing may affect households' and communities' resilience capacities.*
- **Probing Questions** (as needed and as time allows):
 - To what extent was your community affected by these challenges?
 - Did camel leasing help or hurt your household's or community's ability to address these challenges during this period?
 - Did your relationships with other market actors in the camel milk chain (such as transporters, market agents, aggregators, vendors) help or hurt your household's or community's ability to address these challenges during this period?

7. How has your household’s ability to react to shocks (such as flood, drought, severe illness, death of livestock) changed as a result of camel leasing?

- **Rationale:** *Ph2 results show that 1112 leasing pastoralists are better able to react to shocks as a result of leasing. In this question, we’re looking for more information about how camel leasing enabled them to better react to shocks.*
- **Probing Questions** *(as needed and as time allows):*
 - In what ways has your household’s ability to react changed? Saved more money? Access to more or different assets? Leaned on family or clan members or other community members?
 - In what ways has your community’s ability to react changed? Has access to support from NGOs, government, or others changed? New investments in the last year, such as schools or medical facilities? New access to information about oncoming shocks?
 - Are you able to better support your community members and neighbors during times of shock and stress?
 - Do you have plans to prepare for future shocks?
 - Why or why not?

8. Has your participation in camel leasing changed the way that you view the future? If so, how?

- **Rationale:** *Some of the anticipated resilience capacities associated with camel leasing are increased risk tolerance, aspirations, confidence, and motivation. While we are asking a series of more direct questions through a household survey, we are looking for pastoralists to identify how they might have changed the way they view the future as a catch-all for the various capacities mentioned earlier.*
- **Probing Questions** *(as needed and as time allows):*
 - Do you feel that camel leasing has changed how confident you feel in your ability to cope with future shocks and stresses such as droughts, locusts, or unanticipated disease?
 - Do you feel that camel leasing has changed the way that you view your financial security and ability to take financial risks?
 - Do you feel that you have an increased level of control over your life as a result of camel leasing?

9. Would you recommend leasing to another pastoralist?

- **Rationale:** *This question is related to our subset of “social network” research questions and seeks to understand more about how pastoralists view leasing and how agreements could be adjusted to be more beneficial to their interests.*
- **Probing Questions** *(as needed and as time allows):*
 - Why or why not?
 - What advice would you give to a social connection who is considering leasing?

Moderator thanks all participants for their contributions and ends the meeting.

Camel Leasing to Impact Resilience

Focus Group Discussion Guide

November 2021

Non-Leasing Pastoralists Group

Questions with Rationale and Probing Questions

Note that the rationale and probing questions below are meant to provide additional context for the facilitator. Not every question is intended to be asked explicitly. Rather, probing questions should be used to help guide the conversations as appropriate to gather as much information as possible. The facilitator should listen carefully to respondents' initial answers to the main question and guide the conversation using the probing questions as follow-ups to their responses.

1. Have you heard about camel leasing before today?

- **Rationale:** This question is used to determine the breadth and depth of awareness of camel leasing across dairies and will provide additional context to the next several questions exploring the practice further.
- **Probing Questions** (as needed and as time allows):
 - If so, from whom? What was shared with you?
 - Why have you not participated in leasing camels?
 - If so, do you feel that leasing camels is a risky endeavor?
 - Do you feel that you would have certainty in the outcome of leasing camels?

2. If you were going to enter into a leasing agreement in the future, how would you approach it?

- **Rationale:** This question is related to our subset of “social network” research questions and seeks to clarify how pastoralists select dairies to lease to and the relationship of those pastoralists to the dairies. Prior data collection points to the importance of social networks for establishing a lease for a camel, but we have not yet fully defined these networks.
- **Probing Questions** (as needed and as time allows):
 - Where would you begin, if interested in starting to lease camels?
 - Village elders?
 - Friends? Family? Clan members?
 - Would this be a purely business decision, or are there social factors you would need to consider?
 - Are there any dairies that you would not be willing to lease camels to?
 - What information would you need about a dairy before establishing a leasing agreement?
 - Would you consider leasing in the future?

3. Does your household engage in income-generating arrangements with your camels that is not a leasing arrangement?

- **Rationale:** Our value chain analysis points towards outgrower models as another business strategy dairies are using; this question explores whether pastoralists are also engaging, and if so, what other approaches may be used.
- **Probing Questions** (as needed and as time allows):
 - For example, do you provide milk under an agreement to a dairy farm?
 - Do you share camels with other households or lend them?
 - If so, what benefits do you get from these arrangements?

- Is one arrangement more beneficial than another?

4. Has the way you sell camel milk changed over the last year? If so, how?

- **Rationale:** In earlier focus groups and surveys we have been hearing about alternative models to selling milk, such as outgrower models where pastoralists bring milk to a dairy who then brings it to market. This is an effort to understand how milk sales have adjusted over time and potentially learn of new mechanisms for selling milk.
- **Probing Questions** (as needed and as time allows):
 - How have you traditionally sold camel milk? Are you still using the same approach, or are you selling milk differently now?
 - Are you selling milk primarily locally or are you bringing it to larger markets?
 - Are you selling milk primarily to other pastoralists or community households or are you selling to businesses who then sell it to consumers?
 - Are you selling milk as an individual household or as a collective?

5. The last year has presented many challenges in Somaliland, including COVID-19, erratic rainfall patterns, locust infestations affecting crops and fodder, and an unidentified disease affecting camels? Your community?

- **Rationale:** This question explores whether households and communities are experiencing changes in their ability to react to shocks and stresses, for comparison to leasing and previously-leasing pastoralists and community members to determine whether leasing may affect households' and communities' resilience capacities.
- **Probing Questions** (as needed and as time allows):
 - To what extent was your community affected by these challenges?
 - Did your relationships with other market actors in the camel milk chain (such as transporters, market agents, aggregators, vendors) help or hurt your household's or community's ability to address these challenges during this period?

6. Has your household's ability to react to shocks (such as flood, drought, severe illness, death of livestock) changed in the last year? If so, how?

- **Rationale:** Ph2 results show that 11/12 leasing pastoralists are better able to react to shocks as a result of leasing. In this question, we're looking for more information about how non-leasing pastoralists may be changing their ability to react to shocks for comparison.
- **Probing Questions** (as needed and as time allows):
 - In what ways has your household's ability to react changed? Saved more money? Access to more or different assets? Leaned on family or clan members or other community members?
 - In what ways has your community's ability to react changed? Has access to support from NGOs, government, or others changed? New investments in the last year, such as schools or medical facilities? New access to information about oncoming shocks?
 - Are you able to better support your community members and neighbors during times of shock and stress?
 - Do you have plans to prepare for future shocks?
 - Why or why not?

7. Has camel leasing had any impacts on your community? If so, in what ways?

- a. **Rationale:** Camel leasing's impact on communities is a critical component of the research. Surveys will be asking more direct and targeted question, but this focus group question is intended to allow participants to openly share their perspectives? We are looking for both positive and negative

impacts. Some examples are provided as sub-probing questions, but should only be used if no other responses are being provided.

b. Probing Questions *(as needed and as time allows):*

- i. What positive effects has camel leasing had on the community?
 1. Increased employment or job opportunities
 2. Increased community investment in assets such as wells, schools, or community centers
 3. Increased ability for community members to support one another
- ii. What negative effects has camel leasing had on the community?
 1. Less camel milk available for purchase or consumption
 2. Price of camel milk has increased
 3. Urbanization/migration leading to community members leaving the community
 4. Conflict among community members or between dairies and the community in terms of available pasture

8. Do you have any other concluding thoughts or ideas you'd like to share today?

Moderator thanks all participants for their contributions and ends the meeting.

Camel Leasing to Impact Resilience

Focus Group Discussion Guide

November 2021

Milk Market Representatives Group

Questions with Rationale and Probing Questions

Note that the rationale and probing questions below are meant to provide additional context for the facilitator. Not every question is intended to be asked explicitly. Rather, probing questions should be used to help guide the conversations as appropriate to gather as much information as possible. The facilitator should listen carefully to respondents' initial answers to the main question and guide the conversation using the probing questions as follow-ups to their responses.

- 1. Have you seen any significant changes in the camel milk market or camel milk industry in the last few years? If so, can you please describe them? What do you think might have caused them?**
 - **Rationale:** This question is attempting to confirm responses from others in regard to how the milk markets have changed and to identify new responses for how the market might be shifting. These women are unique in their perspective in this regard. The following questions will ask more direct questions on this topic while this one is intentionally broad.
 - **Probing Questions** (as needed and as time allows):
 - What do you think might have caused the changes you identified?
- 2. Have you noticed any significant changes in the availability or quality of camel milk available for sale at markets in the last few years? If so, can you please explain?**
 - **Rationale:** This question will explore three critical aspects of camel milk sales and potential changes. Availability, quality, and price (in a prompt). Understanding how the milk market perceives these topics is important to understanding broader changes in the industry.
 - **Probing Questions** (as needed and as time allows):
 - Is it more or less challenging to find milk to sell at the market?
 - Has the quality of milk available for you to sell changed at all?
 - How might any of the changes mentioned affected the price of camel milk?
- 3. Have you noticed any changes in who you purchase milk from or sell milk to? If so, can you please explain?**
 - **Rationale:** We are hearing from various sources that there is an influx of dairies in the region and that this may be affecting how milk is sold. We are attempting to hear from milk vendors at the market whether this is the case as well as what their relationships with these actors might be.
 - **Probing Questions** (as needed and as time allows):
 - Have there been any changes in pastoralist's ability to bring milk to the market?
 - Have you noticed any increases in dairies attempting to sell you milk or purchase milk?
 - Have there been any changes in other vendors, such as hotels or restaurants, purchasing milk at the markets?
- 4. Has there been any change in the amount of competition that you experience when purchasing camel milk to resell or when selling the milk at market?**
 - **Rationale:** Similar to the previous question, instead of asking about their clientele we are asking about their competition.

- **Probing Questions** (as needed and as time allows):
 - Has the presence of dairies affected your ability to purchase or sell camel milk?
 - Have you found that there has been an increase in the number of dairies selling milk in your area?

5. Are you aware of the practice of camel leasing? If so, what impacts do you think camel leasing might have on the camel milk market or camel milk industry?

- **Rationale:** As dairies develop their businesses, it is possible that they are bypassing traditional rural markets in favor of direct marketing in larger urban and peri-urban areas. This question explores whether community members have experienced changes in access to milk as well as broader community changes as a result of leasing taking place in the surrounding areas.
- **Probing Questions** (as needed and as time allows):
 - When did you first become aware of leasing?
 - How did you first learn about camel leasing?
 - Have you noticed any other changes as a result of leasing in your area?

6. Have shocks such as irregular rainfall patterns, locusts, or camel diseases affected your ability to sell camel milk over the last year? If so, how?

- **Rationale:** This question explores whether markets are experiencing changes in their ability to react to shocks and stresses. This will be analyzed in relation to other data on resilience capacities from households and dairies.
- **Probing Questions** (as needed and as time allows):
 - Were any shocks more impactful than others? If so, which was most impactful?
 - How did you cope with these shocks?
 - Have you fully recovered from the shocks?
 - Was your community able to support you during this time?
 - Were you able to support others in your community during this time?
 - Do you have plans to prepare for future shocks?

7. Do you have any other concluding thoughts or ideas you'd like to share today?

Moderator thanks all participants for their contributions and ends the meeting.

ANNEX I. QUANTITATIVE SURVEY INSTRUMENTS

Camel Leasing to Impact Resilience Survey Questionnaires May 2020 *Pastoralists Group*

Questions asked to all surveyed pastoralists

1. Are you responsible for making household decisions?
2. Are you the head of household?
3. Does your household currently lease any camels to a dairy?
4. Has your household leased camels to a dairy in the past three years and stopped?
5. How many camels do you have that are currently lactating?
6. How many camels does your household currently own?
7. How many female members of your household aged 5-14 are currently enrolled in school?
8. How many male members of your household aged 5-14 are currently enrolled in school?
9. How many members of your household are below the age of 18?
10. How many people currently live in the household?
11. How many years of education did you receive?
12. In the past 30 days, did you or any household member go a whole day and night without eating anything because there was not enough food? How often?
13. In the past 30 days, did you or any household member go to sleep at night hungry because there was not enough food? How often?
14. In the past 30 days, did you or any household member have to eat a limited variety of foods due to a lack of resources? How often?
15. In the past 30 days, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food? How often?
16. In the past 30 days, did you or any household member have to eat fewer meals in a day because there was not enough food? How often?
17. In the past 30 days, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food? How often?
18. In the past 30 days, did you worry that your household would not have enough food? How often?
19. In the past 30 days, was there ever no food to eat of any kind in your house because of lack of resources to get food? How often?
20. In the past 30 days, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources? How often?
21. Is your household able to save cash?
22. What is the single most important source of income for your household?

Questions only asked to leasing pastoralists

1. When your current lease(s) are up, do you plan to continue leasing in the future?
2. Survey questions asked to previously leasing
3. What is the main reason you would consider leasing again in the future?
4. What is the top reason that you chose to stop leasing camels?
5. When did you stop leasing camels?
6. Would you consider leasing again in the future? If so, under what circumstances?

Questions only asked to non-leasing pastoralists

1. Have you ever considered leasing a camel?
2. What is the minimum compensation you would accept in order to lease a camel?
3. Why did you not lease your camel?

**Camel Leasing to Impact Resilience
Survey Questionnaires
April 2021
Pastoralists Group**

Questions asked to all surveyed pastoralists

1. Are any members of your household engaged in savings groups?
2. Are you currently producing camel milk for sale?
3. Are you responsible for making household decisions?
4. Are you the head of household?
5. Do you agree or disagree with the following statement: I can mostly determine what will happen in my life
6. Do you agree or disagree with the following statement: I feel like what happens in my life is mostly determined by powerful people
7. Do you agree or disagree with the following statement: It is not always wise for me to plan too far ahead because many things turn out to be a matter of good or bad fortune
8. Do you agree or disagree with the following statement: When I get what I want, it is usually because I worked hard for it
9. Do you have any plans to prepare for future shocks?
10. Do you sell your camel milk to people nearby or do you travel to them?
11. Do you typically sell or trade your milk for cash, credit, or goods?
12. Does your household currently lease any camels to a dairy?
13. For how much money are you selling 1 [UNIT] of milk?
14. Has anything significant happened in your life over the last six months? What happened?
15. Has your household borrowed credit in the last two years?
16. Has your household leased camels to a dairy in the past three years and stopped?
17. Has your household's consumption of camel milk increased or decreased in the last year?
18. Have you ever sold your camel milk?
19. How do you determine where to buy your camel milk from?
20. How do you plan to prepare for future shocks?
21. How many [UNITS] of camel milk does your household consume on average in a day?
22. How many camels do you have that are currently lactating?
23. How many camels does your household currently own?
24. How many female members of your household aged 5-14 are currently enrolled in school?
25. How many male members of your household aged 5-14 are currently enrolled in school?
26. How many members of your household are male?
27. How many members of your household below the age of 18 are female?
28. How many people currently live in the household?
29. How many years of education did you receive?
30. How much camel milk do you typically buy daily in [UNITS]?
31. How much of your camel milk do you typically sell?
32. How much of your daily consumption in [UNITS] is from milk that you buy?
33. How much of your daily consumption in [UNITS] is from milk that your herd produces?
34. In the past 30 days, did you or any household member go a whole day and night without eating anything because there was not enough food? How often?
35. In the past 30 days, did you or any household member go to sleep at night hungry because there was not enough food? How often?

36. In the past 30 days, was there ever no food to eat of any kind in your house because of lack of resources to get food? How often?
37. Is it always the same seller?
38. Is the price of milk now different in the dry or rainy season?
39. Is your household able to save cash?
40. What assets are owned by the household?
41. What is the current residential status of your household?
42. What is the single most important source of income for your household?
43. What is your current dwelling unit?
44. Where do you buy your camel milk from?
45. Which shocks has your household experienced within the last 3 years?
46. Who decides how much milk to sell?
47. Who do you sell your camel milk to?

Questions only asked to leasing and previously leasing pastoralists

1. Compared to when you started leasing, do you think your household is better or worse able to react to shocks?
2. Do/Did you lease camels to more than one dairy farm?
3. Has your household sent children to school as a result of camel leasing?
4. Have you experienced any disputes related to leasing camels?
5. How do/did you receive payment for your leased camels?
6. How many camels do/did you lease?
7. Is/was the leasing agreement that you have with the dairy farm(s) written or oral?
8. On a scale of 1-5 with 1 being dissatisfied and 5 being satisfied, how satisfied are you with leasing?
9. Since you started leasing camels, has your household been able to save more money?
10. Since you started leasing your camels, has your household invested in other assets?
11. Since you started leasing, has your household's consumption of camel milk increased or decreased?
12. Was the dispute resolved peacefully?
13. What has been the use of the main income that you've received for leasing camels?
14. What is the top reason that you chose to begin leasing camels?
15. What is/was the average length of your leasing agreement in months?
16. What is/was the most important factor to you in making the decision to lease?
17. What share of your monthly household income is/was from leasing camels?
18. When did you start leasing camels?

Questions only asked to leasing pastoralists

1. What is the main reason you plan to continue leasing?
2. What is the main reason you plan to discontinue leasing?
3. What is the main way that you identified the dairy farm to whom you are leasing?
4. When your current lease(s) are up, do you plan to continue leasing in the future?

Questions only asked to previously leasing pastoralists

1. Do you still have a relationship with the dairy farms to whom you leased?
2. What is the main reason you would consider leasing again in the future?
3. What is the top reason that you chose to stop leasing camels?
4. When did you stop leasing camels?
5. Would you consider leasing again in the future? If so, under what circumstances?

Questions only asked to non-leasing pastoralists

1. What do you think would be the most important factor to you in making the decision to lease?
2. What is the minimum compensation you would accept in order to lease a camel?
3. What would you be willing to accept in exchange for camel leasing?
4. Why did you not lease your camel?

**Camel Leasing to Impact Resilience
Survey Questionnaires
November 2021
Pastoralists Group**

Questions asked to all surveyed pastoralists

1. Are there community assets in your village/community, such as schools, health facilities, or community gathering spaces?
2. Are you responsible for making household decisions?
3. Are you the head of household?
4. Do you agree or disagree that your community is capable of peacefully resolving disputes within the community?
5. Do you agree or disagree with the following statement: I can mostly determine what will happen in my life
6. Do you agree or disagree with the following statement: I feel like what happens in my life is mostly determined by powerful people
7. Do you agree or disagree with the following statement: It is not always wise for me to plan too far ahead because many things turn out to be a matter of good or bad fortune
8. Do you agree or disagree with the following statement: My community is able to assist households experiencing difficulties from drought, floods or pests.
9. Do you agree or disagree with the following statement: When I get what I want, it is usually because I worked hard for it
10. Do you believe that the ability of the village/community to take care of its assets is better or worse compared to last year?
11. Do you believe that your village/community is capable of taking care of its assets (schools, health facilities, etc.)?
12. Do you have any plans to prepare for future shocks?
13. Does your household currently lease any camels to a dairy?
14. Does your village/community have committees or associations that meet regularly?
15. Has anything significant happened in your life over the last six months? What happened?
16. Has your camel herd been affected by the camel disease? If yes, how?
17. Has your household borrowed credit in the last two years?
18. Has your household leased camels to a dairy in the past three years and stopped?
19. Have you ever sold your camel milk?
20. How do you determine where to buy your camel milk from?
21. How do you plan to prepare for future shocks?
22. How many [UNITS] of camel milk does your household consume on average in a day?
23. How many camels do you have that are currently lactating?
24. How many camels does your household currently own?
25. How many female members of your household aged 5-14 are currently enrolled in school?
26. How many male members of your household aged 5-14 are currently enrolled in school?
27. How many members of your household are male?
28. How many members of your household below the age of 18 are female?
29. How many people currently live in the household?
30. How many years of education did you receive?
31. How much of your daily consumption in [UNITS] is from milk that your herd produces?
32. In the past 30 days, did you or any household member go a whole day and night without eating anything because there was not enough food? How often?

33. In the past 30 days, did you or any household member go to sleep at night hungry because there was not enough food? How often?
34. In the past 30 days, was there ever no food to eat of any kind in your house because of lack of resources to get food? How often?
35. In your community, do you believe that there is social discrimination against some groups or residents?
36. Is it always the same seller?
37. Is your household able to save cash?
38. Is your village or community able to react to droughts and floods better than this time last year or worse than this time last year?
39. What assets are owned by the household?
40. What do you feel is the main challenge currently faced by your village or community?
41. What is the current residential status of your household?
42. What is the single most important source of income for your household?
43. What is your current dwelling unit?
44. Where do you buy your camel milk from?
45. Which shocks has your household experienced within the last 3 years?

Questions only asked to leasing and previously leasing pastoralists

1. Compared to when you started leasing, do you think your household is better or worse able to react to shocks?
2. Do/Did you lease camels to more than one dairy farm?
3. Has your household sent children to school as a result of camel leasing?
4. Have you experienced any disputes related to leasing camels?
5. How do/did you receive payment for your leased camels?
6. How many camels do/did you lease?
7. Is/was the leasing agreement that you have with the dairy farm(s) written or oral?
8. On a scale of 1-5 with 1 being dissatisfied and 5 being satisfied, how satisfied are you with leasing?
9. Since you started leasing camels, has your household been able to save more money?
10. Since you started leasing your camels, has your household invested in other assets?
11. Was the dispute resolved peacefully?
12. What has been the use of the main income that you've received for leasing camels?
13. What is the top reason that you chose to begin leasing camels?
14. What is/was the average length of your leasing agreement in months?
15. What is/was the most important factor to you in making the decision to lease?
16. What share of your monthly household income is/was from leasing camels?
17. When did you start leasing camels?

Questions only asked to leasing pastoralists

1. What is the main reason you plan to continue leasing?
2. What is the main reason you plan to discontinue leasing?
3. What is the main way that you identified the dairy farm to whom you are leasing?
4. When your current lease(s) are up, do you plan to continue leasing in the future?

Questions only asked to previously leasing pastoralists

1. Do you still have a relationship with the dairy farms to whom you leased?
2. What is the main reason you would consider leasing again in the future?
3. What is the top reason that you chose to stop leasing camels?
4. When did you stop leasing camels?

5. Would you consider leasing again in the future? If so, under what circumstances?

Questions only asked to non-leasing pastoralists

1. What do you think would be the most important factor to you in making the decision to lease?
2. What is the minimum compensation you would accept in order to lease a camel?
3. What would you be willing to accept in exchange for camel leasing?
4. Why did you not lease your camel?

**Camel Leasing to Impact Resilience
Survey Questionnaires
September 2020
Dairy Group**

Questions asked to all surveyed dairies

1. Are you currently leasing camels?
2. Do you expect the price of camel milk during the dry season to be about the same or different from the price of camel milk during the rainy season?
3. Does your milk volume in liters/cups fluctuate each week?
4. Has camel leasing affected the community in which you operate? How so?
5. Have you changed anything about the way you do your business since the onset of COVID-19?
6. Have you leased camels in the past and then stopped?
7. How many female lactating camels on average are part of your herd for your dairy business?
8. How much are you selling 1L/cup of milk for this week?
9. What is the maximum herd size that your dairy can support currently, including adult female camels, calves, and bulls?
10. What steps have you taken in the past to adapt to drought or other climate related events?
11. What volume in liters/cups of milk does your dairy typically produce in the dry season?
12. What volume in liters/cups of milk does your dairy typically produce in the rainy season?

Questions asked to leasing and previously leasing dairies

1. Are there typically witnesses to leasing agreements?
2. Do you assess a camel's overall health prior to entering in a lease?
3. Do you establish the amount of milk in liters produced by a camel before leasing?
4. Do you feel that engaging in camel leasing helps your business adapt to drought or other climate-related events?
5. Do you feel that engaging in camel leasing helps your community adapt to drought or other climate-related events?
6. Do/Did you lease from camel owners who do not migrate and are settled in a town?
7. Do/Did you lease from pastoralists with migrating herds?
8. Have you accumulated more assets since you began leasing? If yes, what kinds of assets?
9. Have you been able to access more credit since you began leasing?
10. Have you changed the terms of your leasing agreements over time since you began leasing? How so?
11. Have you ever experienced a lease-related conflict with a pastoralist?
12. Have you ever experienced a lease-related conflict with community members?
13. Have you renewed any of your leases since you began leasing? If so, how many?
14. How did you formalize your most recent lease agreement?
15. How did you resolve the disputes?
16. How do you identify pastoralists from whom to lease?
17. How many camels do/did you lease?
18. How many pastoralists do/did you lease from?
19. How much, on average, do you pay per month for a leased camel during the Deyr or Gu (rainy) season?
20. How much, on average, do you pay per month for a leased camel during the Xagaa or Jilaal (Dry) season?
21. Were there periods when you began leasing and stopped and started again? When were the other periods that you leased?

22. What are the reasons that you chose to begin leasing camels?
23. What is the longest lease you have ever held?
24. What is the top reason that you chose to begin leasing camels?
25. What is/was the average length of your leasing agreement in months?
26. What was the source of the conflict?
27. When choosing from whom to lease, what characteristics are most important to you?
28. When did you start leasing camels?
29. Who typically witnesses/witnessed your lease agreement?
30. Would you prefer to lease 10 camels from 1 pastoralist or 1 camel from 10 pastoralists?

Questions asked to leasing dairies

1. Do you plan to continue leasing in the future?
2. Has your monthly profit changed because you began leasing?
3. Have you needed to adjust your business to support camel leasing?
4. In what ways have you adjusted your business to support camel leasing?
5. What is the top reason that you would choose to stop leasing camels?
6. Why would you choose to stop leasing camels?

Questions asked to previously leasing dairies

1. When did you stop leasing camels?
2. When you were leasing, did your monthly profit change because you began leasing? How so?
3. Why did you choose to stop leasing camels?

Questions asked to previously leasing and non-leasing dairies

1. What is the top reason that you chose to stop leasing camels?
2. What is the top reason that you would choose to begin leasing?
3. Would you consider leasing again in the future? If so, under what circumstances?

Questions asked to non-leasing dairies

1. Are there pastoralists or dairies in your community that have participated in camel leasing?
2. Are you familiar with other pastoralists or dairies that have participated in camel leasing?
3. Have you considered leasing camels in the past and decided not to lease?
4. How has camel leasing affected your business?
5. If you were to participate in CL in the future, what characteristics would you feel are most important to you?
6. What is the top reason that you did not begin leasing?

**Camel Leasing to Impact Resilience
Survey Questionnaires
November 2021
Dairy Group**

Questions asked to all surveyed dairies

1. Are you currently leasing camels?
2. Are you feeling an increased sense of competition in the camel milk market?
3. Do you agree or disagree with the following statement: I can mostly determine what will happen in my life
4. Do you agree or disagree with the following statement: I feel like what happens in my life is mostly determined by powerful people
5. Do you agree or disagree with the following statement: It is not always wise for me to plan too far ahead because many things turn out to be a matter of good or bad fortune
6. Do you agree or disagree with the following statement: When I get what I want, it is usually because I worked hard for it
7. Do you expect the price of camel milk during the dry season to be about the same or different from the price of camel milk during the rainy season?
8. Do you expect the quantity of camel milk during the dry season to be about the same or different from the price of camel milk during the rainy season?
9. Does your milk volume in liters/cups fluctuate each week?
10. Has camel leasing affected the community in which you operate? How so?
11. Have you changed anything about the way you do your business since the onset of COVID-19?
12. Have you leased camels in the past and then stopped?
13. How many female lactating camels on average are part of your herd for your dairy business?
14. How many new camel milk dairies are you aware that have opened in the past year?
15. How much are you selling 1L/cup of milk for this week?
16. What are the biggest challenges faced by your dairy?
17. What is the maximum herd size that your dairy can support currently, including adult female camels, calves, and bulls?
18. What steps have you taken in the past to adapt to drought or other climate related events?
19. What volume in liters/cups of milk does your dairy typically produce in the dry season?
20. What volume in liters/cups of milk does your dairy typically produce in the rainy season?
21. Where do you sell milk?
22. Would government regulation of camel leasing affect your decision to lease camels?

Questions asked to leasing and previously leasing dairies

1. Are there typically witnesses to leasing agreements?
2. Do you assess a camel's overall health prior to entering in a lease?
3. Do you establish the amount of milk in liters produced by a camel before leasing?
4. Do you feel that engaging in camel leasing helps your business adapt to drought or other climate-related events?
5. Do you feel that engaging in camel leasing helps your community adapt to drought or other climate-related events?
6. Do/Did you lease from camel owners who do not migrate and are settled in a town?
7. Do/Did you lease from pastoralists with migrating herds?
8. Have you accumulated more assets since you began leasing? If yes, what kinds of assets?
9. Have you been able to access more credit since you began leasing?

10. Have you changed the terms of your leasing agreements over time since you began leasing? How so?
11. Have you ever experienced a lease-related conflict with a pastoralist?
12. Have you ever experienced a lease-related conflict with community members?
13. Have you renewed any of your leases since you began leasing? If so, how many?
14. How did you formalize your most recent lease agreement?
15. How did you resolve the disputes?
16. How do you identify pastoralists from whom to lease?
17. How many camels do/did you lease?
18. How many pastoralists do/did you lease from?
19. How much, on average, do you pay per month for a leased camel during the Deyr or Gu (rainy) season?
20. How much, on average, do you pay per month for a leased camel during the Xagaa or Jilaal (Dry) season?
21. Were there periods when you began leasing and stopped and started again? When were the other periods that you leased?
22. What are the reasons that you chose to begin leasing camels?
23. What is the longest lease you have ever held?
24. What is the top reason that you chose to begin leasing camels?
25. What is/was the average length of your leasing agreement in months?
26. What was the source of the conflict?
27. When choosing from whom to lease, what characteristics are most important to you?
28. When did you start leasing camels?
29. Who typically witnesses/witnessed your lease agreement?
30. Would you prefer to lease 10 camels from 1 pastoralist or 1 camel from 10 pastoralists?

Questions asked to leasing dairies

1. Do you plan to continue leasing in the future?
2. Has your monthly profit changed because you began leasing?
3. Have you needed to adjust your business to support camel leasing?
4. In what ways have you adjusted your business to support camel leasing?
5. What is the top reason that you would choose to stop leasing camels?
6. Why would you choose to stop leasing camels?

Questions asked to previously leasing dairies

1. When did you stop leasing camels?
2. When you were leasing, did your monthly profit change because you began leasing? How so?
3. Why did you choose to stop leasing camels?

Questions asked to previously leasing and non-leasing dairies

1. What is the top reason that you chose to stop leasing camels?
2. What is the top reason that you would choose to begin leasing?
3. Would you consider leasing again in the future? If so, under what circumstances?

Questions asked to non-leasing dairies

1. Are there pastoralists or dairies in your community that have participated in camel leasing?
2. Are you familiar with other pastoralists or dairies that have participated in camel leasing?
3. Have you considered leasing camels in the past and decided not to lease?
4. How has camel leasing affected your business?

5. If you were to participate in CL in the future, what characteristics would you feel are most important to you?
6. What is the top reason that you did not begin leasing?

ANNEX J. CASE STUDY INTERVIEW GUIDES

Camel Leasing to Impact Resilience Case Study Interview Guides *Pastoralists Group*

1. Could you share some information about yourself?
 - Prompt for:
 - sex, age, education, marital status, children, etc.
 - Involvement in clan/community
 - Work besides camel herding
 - Where do you currently live?
2. We'd like to learn some more information about your life as a pastoralist herding camels.
 - Prompt for:
 - How old were you when you began tending your own herd?
 - Is camel herding a family tradition?
 - Do you consider it a difficult lifestyle? Why?
 - » Is it easier sometimes and more difficult at other times? Explain
 - » What are the biggest challenges to this lifestyle?
 - » How do the rains affect your lifestyle?
3. In the past, have you been impacted by shocks like drought or floods?
 - If so, how has it affected your wellbeing?
 - Have you been able to fully recover?
 - What are some of the things that helped you recover?
4. Is it challenging to earn enough money to support your family? Why?
 - When there isn't much money, what sacrifices do you have to make? (food, education, etc.)
5. How do those challenges affect you and your family?
6. What actions do you take to mitigate those challenges, or other shocks or stresses such as droughts or floods or locusts?
7. Do you plan to ever stop herding camels?
8. What would cause you to stop herding camels?
9. How big is your herd?
 - Proportion of males : females : calves
10. What happens with your camel milk?

- How much of it do you consume?
- How much do you sell?
 - Where do you sell it? (locally, urban centers, dairies)
 - How do you get it there?
 - How often do you take milk to be sold?
 - Do you feel that you get good prices for your milk?

11. Please tell us about your experience leasing camels to dairies

- When did you begin leasing camels to dairies?

12. What was happening in your life at the time? (looking for shocks/stresses)

- How would you describe your experience leasing camels to dairies?
- Why did you begin leasing camels to dairies?
- How did you first learn about camel leasing?
- How were you first connected to a dairy?
- Are you still leasing camels to that dairy?
- Have you ever leased camels to other dairies? If so, how many?
- Was the camel well taken care of during the lease?
- Have you ever lost a leased camel during the lease period?
 - If yes, how did you handle it?
 - *(If multiple leases ask these questions about the first one)*

13. How many camels did you lease?

14. What was the duration of that lease?

15. How was the lease arranged?

- Was there a formal signed leasing agreement? Could we see it?
- Was there a witness?

16. How were you compensated for leasing your camel?

17. Did you ever experience any complications or conflicts within the lease?

- Please explain the complication/conflict and how it was resolved

18. Tell us about the impacts camel leasing has had on your life

- How have you benefitted from leasing your camels?

19. If more money, how did you use that money?

- If other benefits, how did you leverage those benefits?
- Is there anything you are able to do as a result of the lease that you would not have been able to do otherwise?

20. How has camel leasing changed the way you think about the future?
 - Do you feel more optimistic?
21. Do you feel better prepared for unexpected shocks, such as a drought?
22. What are your plans for the future?
23. Were there any negative aspects of camel leasing?
24. Did you experience any disputes related to camel leasing? How were they resolved?
25. How do you think camel leasing has affected your family, friends, clan, or community?
 - How does that make you feel?

Camel Leasing to Impact Resilience Case Study Interview Guides Dairy Group

1. Please tell us a bit about yourself
 - Prompt for Age, education, marital status, children, etc.
 - Title/role/position at the dairy
 - Involvement in clan/community
2. Please tell us a bit about the dairy
 - Name and location of dairy
 - Number of years in operation
 - Size of dairy
 - Size of herd
 - Ratio of males to females to calves
 - Leased vs owned
 - Number of employees
 - Annual revenue
 - Multiple locations?
 - Assets
 - Reservoir on site?
 - Ability to grow and store excess fodder?
 - Cold storage on site?
 - Number of trucks/transport vehicles
 - Other key assets relevant to camel milk
 - Income streams aside from camel milk sales
3. Please tell us a bit about operating a camel milk dairy in Somaliland
 - What are the biggest challenges to operating a dairy in Somaliland?
 - Are there periods when the business is more challenging to operate than other periods?
 - How do the rains affect your business?
 - In the past, has your business been impacted by shocks?
 - If so, how have they affected your wellbeing?
 - Have your business been able to fully recover?
 - What are some of the things that helped your business recover?

- Where does most of the milk you sell come from?
- Own herd? Local pastoralists? Smaller dairies?
- Where do you sell your milk?
- To individuals? Local markets? Urban markets? Other aggregators?
- Do you process the camel milk or use it to make other products?
- How consistent is the price of milk?
- Does it change by season?
- How do you ensure high quality milk?

4. Please tell us a bit about your experience with camel leasing

- Can you explain, in your own words, what camel leasing is?
- How did you first hear about the practice of camel leasing?
- When was this, and what was happening in the world at the time? Drought, conflict, COVID, etc.
- What attracted you to the idea?
- Why did you decide to lease a camel and not purchase one?
- When did you begin leasing camels?
- How many camels did you lease at that time?
- How many camels are you currently leasing?
- What proportion of milk proceeds from leased camels go to the owners of the camels?
- How many different leases do you currently have or generally hold at a given time?
- Are you glad that you began leasing camels?
- Have you ever had any complications or conflicts associated with a lease?
 - If so, how was that resolved?
- Do you plan to continue leasing camels?
- What would prevent you from continuing to lease camels?
- How has camel leasing benefitted your business?
 - Has it allowed you better access to credit?
 - Has it allowed you to invest in more assets? Which assets?
- Has camel leasing changed the way you think about your business or your hopes for the future of your business?
- Do you feel that your business is better prepared to handle unexpected shocks such as a drought as a result of camel leasing?
- Have there been any negative aspects associated with camel leasing?

- Do you think that camel leasing arrangements has benefitted local pastoralists? Communities?
 - How does that make you feel?