

# MILK MATTERS FEASIBILITY STUDY

Hiran Region, South Central Somalia

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**Save the Children**



**unicef** 

Feasibility Study in Preparation for  
the “Milk Matters Pilot Project” in  
Beledweyne and Mataban Districts of  
Hiran Region, South Central Somalia



Federal Government  
of Somalia



Report prepared by the HSED Group Kenya



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Dr. Cosmas Mugambi

Director, the HSED Group

P.O. Box 76935-00620 Nairobi

Tel: +254721296963/+254710120355

Website: [www.hsed.co.ke](http://www.hsed.co.ke)

E-mail: [cosmas@hsed.co.ke](mailto:cosmas@hsed.co.ke)

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# LIST OF ABBREVIATIONS

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ADRA	Adventist Development Relief Agency
BRCiS	Building Resilient Communities in Somalia consortium
CAHW	Community animal health workers
CLTS	Community-led total sanitation
CRD	Center for Research and Dialogue
DRC	Danish Refugee Council
FAO	Food and Agriculture Organization of the United Nations
FGD	Focus group discussions
FSNAU	Food Security and Nutrition Analysis Unit Somalia
GAM	Global acute malnutrition
GDP	Gross domestic product
HH	Household
HSED	Health and Socioeconomic Development Consortium Limited, Kenya
IDP	Internally displaced people
IYCF	Infant and young child feeding
KII	Key informant interview
SAM	Severe acute malnutrition
SNS	Strengthening Nutrition Security in South Central Somalia Consortium
SomRep	Somalia resilience and social protection programme
SWOT	Strength, weaknesses, opportunities and threats
UNDP	United Nations Development Programme
UNICEF	United Nation International Children's Emergency Fund
US	United States
USD	United States dollar
WASH	Water, sanitation and hygiene
WHO	World Health Organization
WFP	World Food Programme

# GLOSSARY

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Dhiil	A traditional milking equipment locally used in Somalia.
Deegaan	An exclusive control by a group sharing similar language, identity or clan affiliation over a land area and natural resources.
Deyr	The secondary rainy season in Somalia, starting in September and extending to November.
Gu	The main rainy season in Somalia, starting from mid-April and ending in June.
Hagga	A cool, dry and rather cloudy season in Somalia, starting in July and ending in mid-September.
Jilal	A warm, sunny and dry season in Somalia, starting from December and ending in mid-April.
Koobo	750-millilitre tins used to measure milk for sale in Somalia.
Milk off-take	Amount of milk produced in each household.
NNIVO	Software for qualitative data analysis.
Tacaab	Smaller units of land in Somalia, equivalent to 1/16 of a hectare.

# EXECUTIVE SUMMARY

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The feasibility study for Milk Matters in Somalia's Hiran region aimed to analyse current livestock milk production, as well as households' use of it. The study also looks at livestock practices, milk handling and marketing practices, and the potential of milk to improve nutritional outcomes among children. The proposed programme's overall suitability, and the potential risks of its implementation in the region, were also addressed and relevant recommendations made.

The study was conducted from March to August 2016 and focused on three livelihood groups: pastoralists, agropastoralists and urban populations in Beledweyne and Mataban districts. The study population for this assessment included 1,534 quantitative survey respondents from 767 randomly selected households, as well as 41 milk traders, 28 key informants, and 16 focus group discussions involving community members.

The three population groups of interest to the study rely heavily on livestock for income and livelihood. Of the animal-owning households sampled, most had goats, followed by sheep, cows and camels. Cows and goats are major milk sources for families. On average, those with livestock produced 3.51 litres<sup>1</sup> of milk per day in *Gu*, and an average of 1.8 litres of

milk daily during *Jilal*. Pastoralist households recorded the highest volume, followed by agropastoralists and urban households.

There is a significant difference in the mean volumes of milk produced, consumed and sold between seasons. Households tend to prioritise selling milk rather than consuming it during the dry season - *Jilal* - when production is low and prices are high, while the reverse is true during *Gu*, the rainy season. During *Gu*, 41.8 per cent (1.47 litres daily) of milk produced is consumed by the family, the rest is sold. In contrast, during *Jilal*, 27.8 per cent (0.5 litres daily) of the milk produced is consumed at home, while 72.2 per cent is sold.

When milk is not sold, in four out of every five households it is consumed by children. The minimum recommended milk consumption<sup>2&3</sup> was witnessed in 85.9 per cent of households with high milk production (>3.51 litres in 24 hours) in *Gu*. Against this, minimum recommended milk consumption was reported in 44.8 per cent of households with high milk volume production (>1.8 litres in 24 hours) in *Jilal*. This indicates low milk consumption during dry seasons can be attributed to low production, either because there is less milk available for consumption for some households, or because less production leads to higher prices in local markets and a tendency among households to prioritise selling milk for income.

<sup>1</sup> The milk volumes reported in *Gu* were relatively low due to poor rains during the season, which did not allow full recovery by animals from the effects of the dry *Jilal* season. However, the figures reported allowed sufficient comparisons on milk production, consumption and sale as envisaged by the study.

<sup>2</sup> Daily intake of 200 millilitres (mls) of milk by children and 250 mls milk by adults is required to provide 25-33 percent of the daily protein requirement. Given an average of 7 members in each household in Hiran (with an assumption of 2 adult parents and 5 children in each household), a minimum of 1.5 litres of milk should be consumed in each household every day. High production is any volume over the seasons' mean value (3.51 Litres in *Gu* and 1.8 Litres in *Jilal*).

<sup>3</sup> Michaelsen, K.F., Hoppe, C., Ross, N., Kaested, P., Stougaard, M., Lauritzen, L., Mølgaard, C., Girma, T. & Friis, H. 2009. Choice of foods and ingredients for moderately malnourished children 6 months to 5 years of age. *Food Nutr. Bull.*, 30: S343-S404.

The importance of low milk production as a barrier to ensuring adequate consumption is affirmed through numerous studies.<sup>4a-4d</sup>

When milk is available, it is mixed with other complementary foods before being given to children in 71.2 per cent of households to ensure the food is smooth and palatable. Given that the prevalence of exclusive breastfeeding for children under six months is extremely low in South Central Somalia (at 21 per cent)<sup>5</sup>, with most infants receiving additional milk and other liquids, the availability of milk can be an important determinant of the nutritional status of mothers.

Decisions on milk use, including the amount to be consumed in families, are predominantly made by women/caregivers, as reported in more than three-quarters of the households visited. In the remaining quarter, they make those decisions in consultation with men. This asserts women's fundamental role in household milk consumption, which has important implications for nutritional outcomes.

Milk is handled, stored and transported to selling or distribution points by women in 64.2 per cent of households. Income from milk is largely used to purchase cereals and other food

items for household consumption. During dry seasons, the livestock species left behind for milking purposes are goats (in 75.9 per cent of households), since they are disease-resistant ruminants which are not reliant on pasture for grazing.

Milk supply, quality and transport challenges change drastically across seasons, with associated price fluctuations. There is limited milk production during the dry season, due to the widespread unavailability of water and fodder, and related livestock migration. This creates seasonal milk shortages in markets, which drives prices up. There is a 12.6 per cent increase in milk prices at the producer level as result of these seasonal changes, while a 23 per cent increase in milk prices is noted at the traders' level during the dry season.

During the study period, 476 households bought milk in *Gu*, while 436 households bought milk in *Jilal*. Of these, the majority were urban-based populations without livestock (49.6 per cent in *Gu* and 48.4 per cent in *Jilal*), followed by pastoralist households (25.4 per cent in *Gu* and 26.4 per cent in *Jilal*) and agropastoralist households (25.4 per cent in *Gu* and 26.4 per cent in *Jilal*). A higher proportion of households without female livestock species purchase milk than those with female livestock (70.5 per cent against 51.2 per cent in *Gu* and 61.8 per cent against 53.1 per cent in *Jilal*). There is no significant difference in the mean volume of milk purchased ( $P=0.547$ ) by households across the two seasons. This indicates that up to a quarter of pastoralist and agro-pastoralist households are reliant on purchase of milk to meet their domestic needs.

<sup>4</sup> <sup>a</sup> Sadler S and Catley A.2009. *Milk matters, The Role and Value of Milk in the Diets of Somali Pastoralist Children in Liben and Shinile, Ethiopia. Participatory Research for the Pastoralist Health and Nutrition Initiative.* < <http://fic.tufts.edu/assets/Milk-Matters-in-2009.pdf> >

<sup>4b</sup> Sadler K et al.2009. *A Literature Review of Pastoralist Nutrition and Programming Responses* < [http://www.fao.org/fileadmin/user\\_upload/drought/docs/Tufts%20Feinstein%20Ethiopia%20Milk%20Matters-A%20Literature%20Review%20of%20Pastoralist%20Nutrition%20and%20Programming%20Responses.pdf](http://www.fao.org/fileadmin/user_upload/drought/docs/Tufts%20Feinstein%20Ethiopia%20Milk%20Matters-A%20Literature%20Review%20of%20Pastoralist%20Nutrition%20and%20Programming%20Responses.pdf) >

<sup>4c</sup> Stites E and Mitchard E. 2011. *Milk Matters in Karamoja: Milk in Children's Diets and Household Livelihoods* < [http://www.fao.org/fileadmin/user\\_upload/drought/docs/MM-Karamoja.pdf](http://www.fao.org/fileadmin/user_upload/drought/docs/MM-Karamoja.pdf) >

<sup>4d</sup> Sadler S et al.2012. *Milk matters, The Impact of Dry Season Livestock Support on Milk Supply and Child Nutrition in Somali Region, Ethiopia.* < <https://www.usaid.gov/sites/default/files/documents/1860/Milk%20Matters.pdf> >

<sup>5</sup> Food Security and Nutrition Analysis Unit (FSNAU). 2017. *Somali Infant and Young Child Nutrition Assessment*

At the same time, almost half of all households with female livestock must buy milk during both *Gu* and *Jilal* seasons. Importantly, 29.5 per cent of households in *Gu* and 38.2 per cent of households in *Jilal* that do not own female livestock (and hence do not produce any milk) do not purchase any milk from the market. This indicates that there is a significant number of households that are currently not producing adequate milk to meet their domestic needs, even in rural (pastoralist and agro-pastoralist) areas.

From qualitative interviews, it emerged that goats' milk was preferred to cows' milk due to its nutritional value and ease of digestion. However, due to its limited production, only around a third of the households purchased goats' milk during *Gu* and *Jilal*, while the rest bought cows' milk.

## **Conclusion**

The Milk Matters approach is feasible in the Hiran region, due to constraints on milk consumption related to low production during dry seasons; high levels of livestock ownership; a broad understanding of milk's role in improving nutrition outcomes, especially among pastoralist families; and the potential for layering activities focused on livelihoods and resilience, as part of a wider approach. This could provide significant benefits in terms of improving food security and nutrition in targeted communities, as well as enhancing the sustainability of interventions in emergency and non-emergency contexts. The programme is accepted by communities,

as well as political, religious and community leaders. By mitigating possible security challenges, social conflicts and environmental hazards, the programme holds significant potential to enhance the nutrition and food security of communities in the region.

## **Recommendations**

The study provides a comprehensive set of recommendations aimed at ensuring the Milk Matters approach in Somalia, specifically the pilot project in Hiran, benefits the target communities and is as efficient and effective as possible. The proposed interventions offer a holistic approach to the problem of increasing milk availability for vulnerable populations, by focusing on dry seasons – through support for fodder, water and veterinary services – as well as rainy seasons, by encouraging the conversion of milk to longer-lasting products, and providing support for longer-term income-generating activities.

The recommendations are focused on women – given their central role in deciding household allocation of food and how that affects nutritional outcomes – but take a community-based approach, to enhance the acceptability and sustainability of the proposed interventions. They also seek to enhance inter-sectoral links between food security and nutrition interventions. Furthermore, given the nature of the Milk Matters approach, there is an inherent emphasis on boosting the resilience of children and households in selected communities.

The following are the key recommendations for the design of the pilot project in Hiran. A more detailed set of recommendations can be found on page 67.

## ***Programme interventions***

- Building on the positive results from interventions in the Somali region of Ethiopia, the Milk Matters pilot in Somalia should provide fodder and veterinary services support for milking animals that stay close to women and children during dry seasons. Based on available evidence, this is expected to significantly improve milk production, as well as children's milk consumption.
- Schemes to enhance community-level water availability should be incorporated as part of the overall programme approach. This is especially true given the recent drought in the region and its negative impact on milk production and livestock health. Water shortage was also documented as an important limitation on milk production by community members, as part of the Milk Matters project in Ethiopia.
- Given contextual realities, such as high levels of global acute malnutrition (GAM) among children and pregnant and lactating women (PLW), as well as low levels of exclusive breastfeeding and sub-optimal complementary feeding practices, the pilot project should be supported by a strong and clearly-defined infant and young child feeding (IYCF) strategy, including social and behaviour change communication (SBCC) components. In addition to conventional nutrition-related messaging, from the perspective of the pilot project, important areas of focus should include: i) encouraging the conversion of milk to products with a longer shelf-life (e.g. ghee and cheese), especially towards the end of rainy seasons; ii) promoting the role of milk in enhancing the nutritional status of PLW, which in turn can positively influence their perceived ability to exclusively breastfeed children under six months; and iii) encouraging women to devote more household income towards ensuring adequate nutrition for their children, through optimal complementary feeding.
- As discussed, women play a central role in deciding household-level milk allocation, as well as milk handling, storage, transportation and trading in Somalia. Therefore, the programme approach should be primarily focused on women, in terms of who to provide assistance to and who to target SBCC initiatives at, while also ensuring the adequate participation of men.
- Parallel to its focus on women, the programme's approach should be underpinned by a strong commitment to develop the capacity and participation of the community. This is crucial to maximizing the programme's impact and fostering its sustainability. Capacity development can include a range of basic skills directly related to the programme, for example fodder management, water management, rangeland and environmental management and market awareness, as well as enhanced awareness about optimal IYCF and nutrition. Further operational research, which adequately builds on collective development experience in Somalia, will help determine the specific form of these activities.
- Low household income is one of the underlying causes of malnutrition, globally. In the medium and long term, it is therefore important to develop strategies to supplement household income, as part

of the Milk Matters approach. This should include the distribution of milking animals through suitable mechanisms (including cash transfers) to poor households with no livestock, to enhance milk availability, as well as to strengthen potential income-generating opportunities. Importantly, there is a strong potential to expand milk production and add value through village savings and loan associations (VSLAs) and cooperatives, as well as exploring the development of links with the private sector, where relevant. Taken together, these interventions can serve to increase the resilience of targeted households against external stresses and shocks.

- Given the close association between nutrition programming on one hand, and food security and livelihood programming on the other, cross-sectoral links should be enhanced to the extent possible. Improving milk production and consumption among children – through fodder production and storage, water management, and veterinary services for livestock – provides a concrete “bridge” that can link interventions in the two sectors. For nutrition interventions, available evidence demonstrates that enhanced milk production and consumption can significantly augment nutrient intake. It has also been shown that by reducing the time spent searching for pasture and water for animals, women can often spend more time caring for their children. Therefore, nutrition interventions should aim to improve milk production at the household level as part of regular programming. As part of food security and livelihoods interventions, greater emphasis should be placed on ensuring consistent milk production

in households, especially during dry seasons. Such programmes also hold the potential to ensure nutrition outcomes are systematically tracked, by including nutrition-related indicators.

- Links with programmes focused on health, as well as water, sanitation and hygiene (WASH), should be promoted in order to maximize positive nutrition outcomes. Such links should be clearly documented in order to address considerations related to attribution and impact under the pilot project.

### ***Program Phasing***

Given the complexities inherent in the design of a multi-sectoral programme, a phased approach is recommended for the Milk Matters pilot project:

- Phase I, entailing support for animals that stay close to women and children (goats and cows) during seasonal migration, through the provision of fodder, water and veterinary services; IYCF and SBCC support; the mobilisation of women’s groups for improvement of milk production and enhanced nutrition outcomes; and the mobilisation of community groups focused on fodder management, water management, and rangeland and environmental management. To the extent possible, coordination with existing interventions focused on health and WASH should be promoted. It is recommended that the Phase I should run for a period of one year.
- Phase II, focusing on well-performing communities under Phase I, with the distribution of lactating animals to poor

and marginalised households with no livestock; the distribution of milk vouchers among urban populations (e.g. IDPs) that cannot effectively keep milking animals; the setting up of livestock infrastructure and enterprises through cooperatives and village savings and loans associations (VSLAs), with a view to enhancing income and economic opportunities during the rainy seasons that can increase savings available during dry seasons; the processing and value addition of livestock products, including through developing partnerships with public and private stakeholders; and phasing out support for Phase I interventions, as community capacity in select areas – including fodder, water and rangeland management – improves.

# SECTION 1: INTRODUCTION

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## 1.1 CONTEXT OF THE FEASIBILITY STUDY

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Nutrition is one of the most vital contributors to child survival and early development. Malnutrition results from an inadequate intake of calories, micronutrients, and high-quality protein.<sup>6&7</sup> Research increasingly demonstrates that animal-source foods provide complete protein, energy, and an array of micronutrients that are often limited or unavailable in the rural peasant diet.<sup>8</sup> Milk is a major source of dietary energy, high-quality protein and fat. It can make a significant contribution to meeting nutritional requirements.<sup>9</sup> Despite livestock milk being a vital component of pastoralist households' diets, children in pastoralist communities of Africa are reported to be prone to malnutrition.

The critical window for adequate child growth and cognitive development is between conception and 24 months of age, which is why many recent international nutrition initiatives focus on the first 1,000 days of life. The components of milk that are thought to

be particularly important to supporting child growth are protein, minerals and lactose. Milk-based food products have also been used successfully in the treatment of moderate and severe malnutrition in children. Milk fat contributes about half of the energy in whole milk. For this reason, animal milk can play an important role in the diets of infants and young children in populations with an extremely low fat intake, and where the availability of other sources food is limited.<sup>11</sup>

The Milk Matters concept is a joint venture between the Feinstein International Centre at Tufts University, Save the Children USA and Save the Children UK, initially implemented in Ethiopia. It aims to improve the nutritional status of children in pastoralist/semi-pastoralist areas in the Horn of Africa through improved livelihood programming. The first phase of Milk Matters examined the role of milk in the diets of children in pastoralist communities, how the seasonal availability of milk in these communities might be associated with the nutritional status of children, and priority interventions that could reduce vulnerability to malnutrition in this group<sup>4</sup>.

This pilot project seeks to help communities and households improve their children's health and nutrition, and maintain it during drought, dry seasons, conflict and mobility in Somalia. It is expected that this intervention will provide animal health, fodder and water inputs, as well as nutrition education. Success

6 Black, R.E., L.H. Allen, Z.A. Bhutta, L.E. Caulfield, M. de Onis, M. Essati, C. Mathers, and J. Rivera. 2008. *Maternal and child Undernutrition: global and regional exposures and health consequences*. *Lancet*, (371): 243-260.

7 Victoria C. et al. 2008. *Maternal and Child Undernutrition: consequences for adult health and human capital*. *The Lancet*, Vol. 371: 340-57.

8 Scrimshaw N. 1994. *The Consequences of Hidden Hunger for Individuals and Societies*. *Food and Nutrition*, 15: 3-23.

9 Food and Agriculture Organization of the United Nations. 2016. *Milk and Dairy Products in Human Nutrition- Questions and Answers*. [Online] < [http://www.fao.org/fileadmin/user\\_upload/newsroom/docs/Milk%20and%20Dairy%20Q&A.pdf](http://www.fao.org/fileadmin/user_upload/newsroom/docs/Milk%20and%20Dairy%20Q&A.pdf) >

will be gauged on children’s improved and sustained nutritional status. The approach could apply to pastoralist and non-pastoralist zones, in areas where households keep livestock for milk. For both agencies, the potential success of the proposed pilot programme is significant.<sup>10</sup>

## 1.2 SOMALIA CONTEXT

Somalia, as an independent country, was created in 1960 from a former British protectorate and an Italian colony. It has a land area of about 638,000 square kilometres and it lies between longitudes 41° E and 51°24’ E and latitudes 3° 30’ N and 10°30’ S. It is bordered by Djibouti in the north-west, Ethiopia in the west and Kenya in the south-west. Somalia’s governance system collapsed following the overthrow of the military regime of President Muhammad Siad Barre in 1991<sup>11</sup>. To date, there are efforts to bring order and stability to the country through democratic processes, but this has only been partly realised. The civil war fragmented the country into three zones: the South Central region, Somaliland, and Puntland. Puntland and Somaliland are relatively stable; however, the South Central region of Somalia is the epicentre of the anarchy.

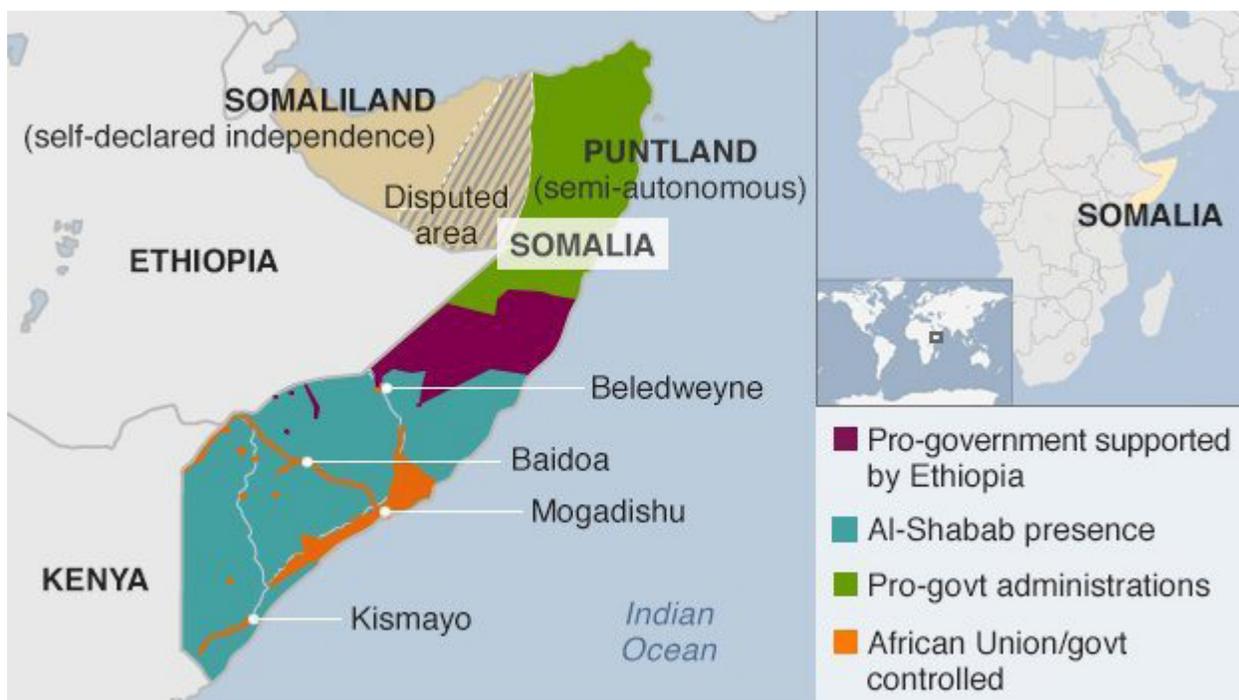


Figure 1.1: Map of the Republic of Somalia (Source: BBC Somalia, 2016)

The area known as South Central Somalia stretches from South Galkacayo down to Libooye, a border town between Kenya and Somalia. It is surrounded by the Indian Ocean on the east, in the north by the North Mudug area of Puntland, by Kenya in the south, and on the west by Ethiopia. South Central Somalia is the largest region of the country, endowed with fertile agricultural land

<sup>10</sup> Scope of work- UNICEF/Save the Children Consultancy for Feasibility study in preparation for 'Milk Matters Pilot Project'  
<sup>11</sup> The CIA World Factbook.2016. Web link: [https://www.cia.gov/library/publications/the-worldfactbook/geos/countrytemplate\\_so.html](https://www.cia.gov/library/publications/the-worldfactbook/geos/countrytemplate_so.html)

intersected by two rivers. The water from these two rivers makes this region the most fertile of Somalia. In addition, the area accommodates many livestock. The area also has a dense forest that is rich in natural resources.<sup>12</sup>

Somalia is the fourth poorest country in the world, with a per capita gross domestic product estimated at US\$284 in 2004.<sup>13</sup> In South Central Somalia, where the region of Hiran is located, 89 per cent of the population live below the poverty line. A 2002 socioeconomic survey by the World Bank shows that Hiran was the fourth poorest region in Somalia, accounting for a regional per capita income of US\$150 (figure 3.2).<sup>14</sup>

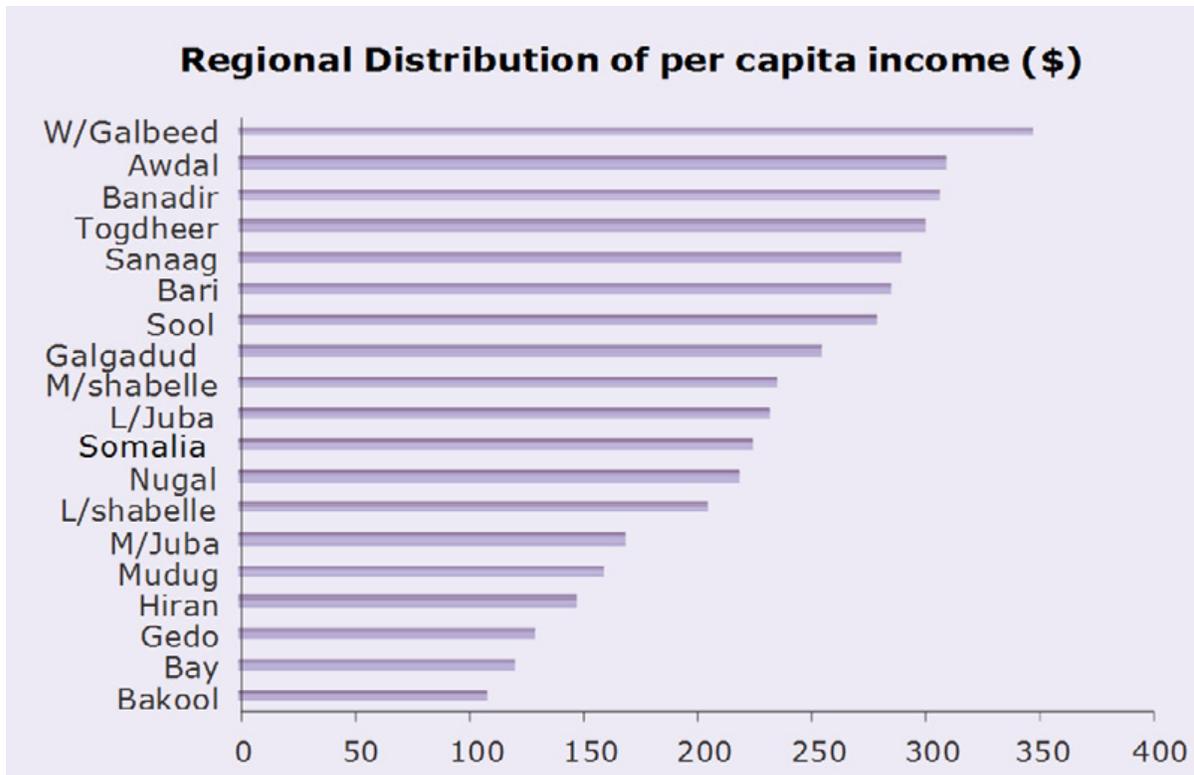


Figure 1.2: Regional distribution of per capita income in Somalia, 2002 (Source: World Bank, 2002)

Somalia generally has an arid to semi-arid climate. It has definite wet and dry seasons, without any large seasonal temperature change. Rainfall is considered the most important meteorological element affecting life in Somalia. In particular, variations from season to season, and within the season, are what determine the successes of agricultural activities. The year is subdivided into four seasons as follows: *Jilal*, *Gu*, *Hagga* and *Deyr*.<sup>15</sup>

The main livelihood systems in Somalia are pastoral, agro-pastoral and farming, which rely on adequate rainfall. Given 20 years of conflict, these systems are highly vulnerable to shocks, such as consecutive seasons of rain failure, droughts, floods and inflation, which all have a direct impact on the food security and nutrition situation of the population. Somalia's population is faced

<sup>12</sup> Socio-economic assessment of South Central Somalia, UNDP (2004)

<sup>13</sup> Ocha, 2014. Somalia humanitarian needs overview.

<sup>14</sup> World Bank, 2002. Social economic Survey of Somalia in 2002.

<sup>15</sup> [http://old.faoswalim.org/climate\\_of\\_somalia](http://old.faoswalim.org/climate_of_somalia)

with a chronic nutrition crisis, with global acute malnutrition rates (GAM) in most parts exceeding the emergency threshold of 15 per cent<sup>16</sup>.

One of the main contributing causes of malnutrition in Somalia is co-morbidity. However, it has been observed among the pastoral population that when access to milk is reduced due to natural causes, acute malnutrition rates in that population tend to increase, and there is some form of recovery when milk access is increased. This is attributed to the fact that pastoral populations mainly rely on the consumption and sale of animals, and animal products such as milk, for subsistence and commercial purposes<sup>3</sup>.

Milk, the predominant food among the pastoral population, is a good source of high quality protein and micronutrients, as well as an important contributor to people's total energy intake. Consequently, increasing milk intake helps protect against acute malnutrition and stunting in young children. Studies conducted among other pastoral populations in Eastern Africa have noted the important contribution that livestock milk makes to the energy and nutrient requirements of pastoral populations, especially children. This observed relationship between seasonality and acute malnutrition rates among the pastoral population prompted FAO's Food Security and Nutrition Analysis Unit (FSNAU) to conduct detailed analysis to understand the main influencing factors affecting malnutrition in different seasons.

In a normal dry season, it was observed that

<sup>16</sup> Mwirigi L.M and Waweru J, Food Agriculture Organization of the United Nations-Somalia.2011. Seasonal Trends in Pastoral Malnutrition in Somalia. Web link: [www.enonline.net/fex/41/seasonal](http://www.enonline.net/fex/41/seasonal)

pastoralists migrate within their area in search of pasture and water as they await the seasonal rains. During this normal migration, the entire household will migrate together with their animals, so all household members will continue to benefit directly from livestock products. In situations where the area has experienced consecutive seasons of rainfall failure, resulting in scarcity of water and inadequate pasture, pastoral populations use coping strategies, such as abnormal migration out of their areas, and most cases are forced to be IDPs in other areas of the country. Abnormal migration is an extreme coping strategy and often results in families splitting up, so that the women and young children are left behind with a few lactating or weak animals. Meanwhile, the adult men and adolescent boys move great distances to areas outside their region, in search of water and pasture for their livestock.<sup>17</sup>

This splitting up of families negatively impacts food security and the nutritional situation of household members. Vulnerable groups left behind consequently experience reduced access to food, milk and animal products, and the income associated with livestock migration. Household food consumption decreases, with reduced income from the sale of milk and other animal products (such as meat, butter etc.) that are normally used to supplement food and buy non-food items. Furthermore, with limited milk available, market prices for milk rise, affecting those families who cannot afford to buy. Hence, this reduced consumption of milk and household income directly impacts the nutritional status of the children<sup>6</sup>.

<sup>17</sup> Mwirigi L.M and Waweru J, Food Agriculture Organization of the United Nations-Somalia.2011. Seasonal Trends in Pastoral Malnutrition in Somalia. Web link: [www.enonline.net/fex/41/seasonal](http://www.enonline.net/fex/41/seasonal)

## 1.3 PASTORAL LIVESTOCK PRODUCTION AND MANAGEMENT

Land in Hiran, just as in other regions of Somalia, exists in the following units: hectares and *Tacaabs*<sup>18</sup>. *Deegaan* – the exclusive control of land and the natural resources found there, by a group sharing a similar language, identity or clan affiliation – plays an important role in the dynamics of communal clan tenure. In many areas, clan presence and territorial land ownership do not match. The pastoral rangeland remains a common area, where claims on water and grazing areas are communal and possessed by clans, rather than individuals. However, in some pastoral areas, private claims of land ownership have been made.

Pastoral communities make up about 60 to 70 per cent of the Somali population<sup>19&20</sup>. Most pastoralists in Somalia are in the *Haud* and *Sool* plateau. Their livelihoods mainly depend on herding livestock, predominantly camels and goats, as well as good rains and pasture. Few who are living in the western part of Somaliland use farming systems as their main livelihood. This way of life is under increased threat because of recurring drought, environmental degradation and livestock depletion. Somali pastoralists rely on livestock as a source of income and sustenance.

Hiran region comprises three main livelihood groups: the pastoral (southern inland and *Hawd* pastoral) covering Mataban district;

<sup>18</sup> 16 *Tacaabs* = 1 Hectare

<sup>19</sup> Williams J and Cummings W. 2013. *WIDER Working Paper No. 2013/127, Education from the bottom up: UNICEF's education programme in Somalia, November 2013.*

<sup>20</sup> Najim M. 2013). *Changes in the species composition of pastoral herds in bay region, Somalia*

and the agro-pastoral and riverine livelihood systems, both of which cut across Beledweyne district. In this region, pastoral and agricultural life revolves around the four seasons, which are dictated by shifts in wind patterns. Like many other regions in South Central Somalia, Hiran has not escaped the effects of high-intensity civil conflict, which has affected people's livelihood means.

The major problems facing residents in this region are drought; insecurity, particularly in Mataban district; the high prices of staple foods; low prices for livestock and livestock products; as well as human and animal diseases. The main sources of income in this region are unskilled labour activities and the sale of: livestock and livestock products; crops; and bush products, such as charcoal, fire wood, building sticks and fodder. Food in the region is either independently produced, purchased or gifted.<sup>21</sup>

## 1.4 MALNUTRITION IN SOMALIA

Good nutrition is key to developing a healthy, productive population. Achieving good nutrition, particularly among women and children, has important short- and long-term health, educational and economic benefits for communities in urban and rural areas. It is estimated that nutrition interventions can reduce 45 per cent of all deaths among children under the age of five.<sup>22</sup>

Somalia has one of the highest under-five mortality rates in the world, at 137 in 1,000

<sup>21</sup> FSNAU. 2012. *Post Gu 2012 Presentation of Hiran Region.*

<sup>22</sup> FAO. 2016. *Pulses and the link between nutrition and health.* [Online] < <http://www.fao.org/pulses-2016/news/news-detail/en/c/386990/> >

live births, with the burden of mortality being typically higher in the south and central areas of the country. The leading causes of infant and child mortality are illnesses such as pneumonia (24 per cent), diarrhoea (19 per cent), and measles (12 per cent), as well as neonatal disorders (17 per cent). Malnutrition is an underlying factor in over a third of deaths.<sup>23</sup> Persistently high rates of acute and chronic malnutrition in the country are attributed to inadequate dietary intake, household food insecurity, diseases or comorbidity, inadequate care, unhealthy household environments and a lack of health services.

The country has one of the highest prevalence rates of acute malnutrition in the world, which routinely exacerbates during dry seasons and droughts. Communities in southern Somalia are worst affected, with 71 per cent of all acutely malnourished children being from this region. Stunting is also a problem in Somalia, with an estimated prevalence of 12 per cent, and the rate of underweight children at 13.4 per cent (16.7 per cent in South Central Somalia). In total, 66.5 per cent of children aged 6-59 months receive vitamin A, but the prevalence of iron deficiency among children (0-59 months) is estimated to be 59.3 per cent.<sup>24&25</sup>

<sup>23</sup> UNICEF Somalia.2016. *Somali country profile, Child and Maternal Health*. [Online]< <https://www.unicef.org/somalia/health.html>>

<sup>24</sup> FSNAU.2015. *Somalia Nutrition Analysis, Post Gu 2015 Technical Series Report No. VII 61 October 16, 2015.*

<sup>25</sup> FSNAU.2009. *National Micronutrient and Anthropometric Nutrition Survey Somalia 2009*

## 1.5 RATIONALE FOR THE FEASIBILITY STUDY

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In collaboration with UNICEF, Save the Children International is aiming to pilot a Milk Matters project, which will be implemented in Hiran, South Central Somalia in 2017. This will be implemented in coordination with partners, including Strengthening Nutrition Security in South-Central Somalia (SNS) Consortium, Building Resilient Communities in Somalia (BRCiS), the Somalia Resilience Programme (SomRep), and the Joint FAO-UNICEF-WFP Resilience Strategy. The scale and timeframe of the pilot is to be determined by the programme's components, selected based on this locally-oriented feasibility study. The communities in the selected pilot area are key to ensuring the approach is acceptable, and that it is effective in supporting sustained coping strategies for, and the wellbeing of, their families. It will be implemented with collaborating partners, and designed and implemented based on the results of this feasibility study.

The Milk Matters framework was developed by Tufts/Feinstein and Save the Children in Ethiopia to improve the availability, accessibility, and children's consumption of household milk. The programme aims to ensure livestock milk availability to complement nutrition for children aged six months to five years, without compromising

on exclusive breastfeeding for children aged below six months. The envisaged Milk Matters pilot in Somalia seeks to help communities and households improve their children's health and nutrition, and maintain it during drought, dry seasons and other shocks. The availability of milk will diversify dietary intake in both quality and adequacy. Success will be gauged by the improved and sustained nutritional status of children, by monitoring participating children's anthropometric measurements, milk consumption and infection status. Key indicators of interest will be: milk production per animal (milk off-take), the percentage of children receiving milk, the amount of milk consumed by children, children's nutritional status, possible confounding variables (such as infections) during the periods of interest, health-seeking behaviour; and WASH indicators in households.

The approach could apply to pastoralist, as well as non-pastoralist, communities, where households keep livestock for milk. For both agencies, the potential reach of this approach, given a successful pilot and robust documentation of lessons learned, is significant.

## **1.6 OBJECTIVES OF THE FEASIBILITY STUDY**

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The objective of this study was to explore the viability of the Milk Matters pilot project along the following themes: concept compatibility; targeting of human population and livestock species; milk access and use; child health and nutrition; livestock inputs; milk marketing/enterprise; management, risk and sustainability. This assessment was guided by questions outlined in the feasibility assessment matrix, presented as Annex 4.

# SECTION 2: METHODOLOGY

## 2.1 STUDY SITES

This feasibility study was carried out in the Beledweyne and Mataban districts of Hiran region, in South Central Somalia. Hiran is an administrative region composed of Beledweyne, Buloburte, Mahas, Mataban and Jalalaqsi districts. It is bordered by the Somali region of Ethiopia to the northwest, as well as the Somaliland provinces of Galgadud to the northeast, Middle Shebelle to the south, and Bakool to the west.<sup>26</sup>

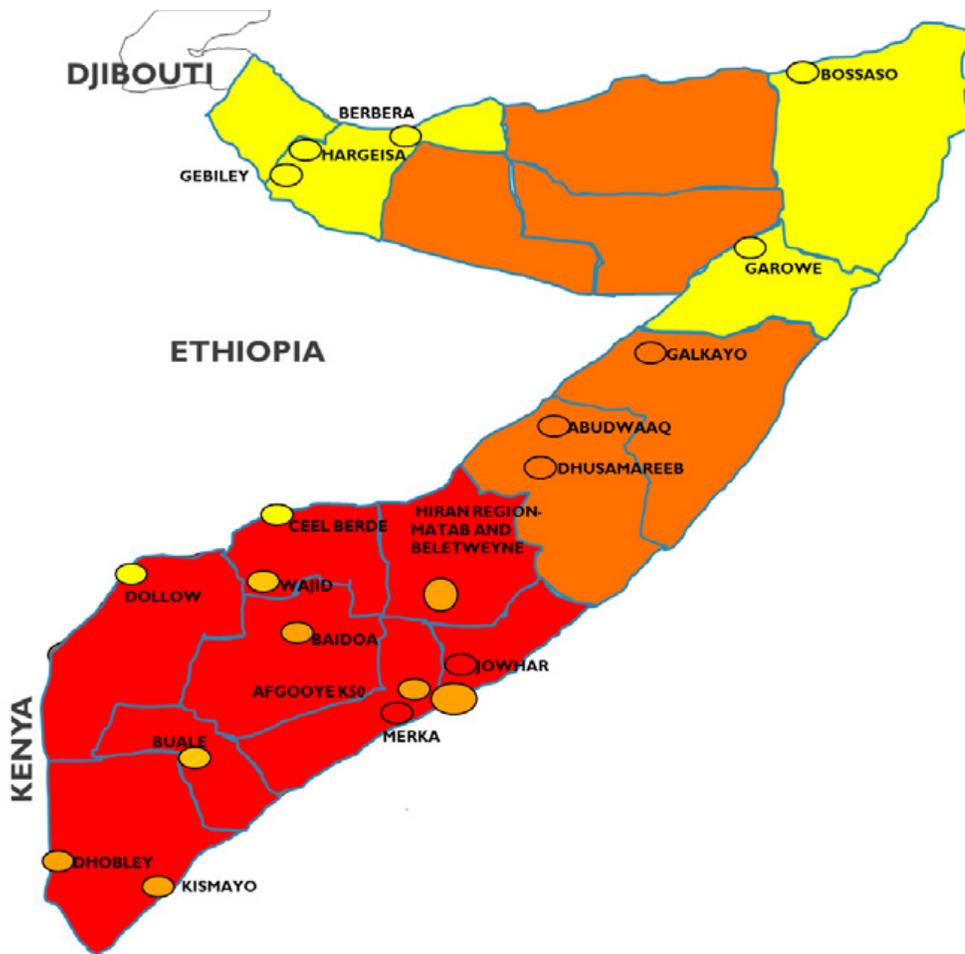


Figure 2.1: Location of Hiran region in Somalia

## 2.2 STUDY POPULATION

The target population for this feasibility study comprised community members, milk handlers and

<sup>26</sup> [http://reliefweb.int/sites/reliefweb.int/files/resources/121018\\_OCHASom\\_South\\_Central\\_A3.pdf](http://reliefweb.int/sites/reliefweb.int/files/resources/121018_OCHASom_South_Central_A3.pdf)

stakeholders from pastoralist communities, agro-pastoralists, and the urban communities in both districts. More specifically, the household survey targeted adults generally involved in milk production, handling and marketing, as well as making milk consumption decisions within households.

## 2.3 FEASIBILITY STUDY DESIGN AND DATA COLLECTION METHODS

This assessment was a comparative cross-sectional design, collecting data on milk practices during the months of March and April 2016 (*Jilal* season), and August 2016 (*Gu* season). A desk review of literature and programme documents preceded the development of data collection tools. During this initial phase of the assignment, the following tasks were performed: a joint briefing, an in-depth literature review, the fine-tuning of methodology and data collection tools, and the finalising of a detailed work plan and travel schedule. Quantitative data was collected through a household survey targeting household heads and senior females in the household, as well as milk vendors. Qualitative data was collected through focus group discussions (FGD) with men and women in the community, as well as key informant interviews (KIIs) with community and religious leaders, representatives of the business community in those targeted areas, healthcare workers, agricultural and livestock extension workers, and regional and district authorities.

## 2.4 SAMPLE SIZE AND SAMPLING APPROACH

### 2.4.1 Quantitative data collection

A sample size of 738 households was arrived at, based on Bill Godden (2004) sampling guidelines for infinite populations<sup>27</sup>.

$$\text{Equation 1: } SS_1 = \{Z^2 \times P \times (1-P)\} / C2 = \{1.96^2 \times 0.6 \times (1-0.6)\} / 0.05 = 369$$

Where:

$SS_1$  = Sample Size

Z = Z-value A (e.g., 1.96 for a 95 percent confidence level)

P = Livestock ownership in the country: estimated to be 60 per cent

C = Confidence interval=0.05

However, due to security challenges, the total number of accessible household in the region was 3,190<sup>28</sup>(See table 2.1 below). The sample size was adjusted to that of a finite population, as follows:

$$\text{Equation 2}^{12}: \text{Final } SS_2 = SS_1 / \{1 + (ss_1/\text{total population})\}$$

Where  $SS_2$ = The final sample size

$SS_1$ =369, from equation 1

Total population= 3,190 households

$$SS_2 = 369 / \{1 + (369/3,190)\} = 369 / 1.115 = 331 \text{ households}$$

Since we were using a multi-stage cluster sampling design, we further multiplied the sample size by a design effect for the multi-stage cluster sampling, which is 2<sup>29</sup>.

$$331 \text{ household} \times 2 = 664 \text{ Households}$$

A sample size of 664 households is further

<sup>27</sup> Bill Godden W. 2004. *Sample Size Formulas for finite and infinite populations.*

<sup>28</sup> All the secure villages in the 2 districts will be included in the feasibility study (Source: WHO Beledweyne office, 2015 census)

<sup>29</sup> Keith R and Broene P.2010. *Design effects for totals in multi-stage samples. Section on survey research methods – JSM 2010.*

inflated by 10 per cent, to cater for any errors that may arise.

331 x 110 per cent =364 households=730 households

In total, 730 households were included in the household survey, with respondents being the head of households (whether male or female) and senior females in the household, hence a total of 1,460 respondents.

District	Livelihood	Village	Total no. of households	No. of selected households
Beledweyne	Agropastoralists	Jawiil	200	48
		Tuulohiiraan	200	48
		Ceel Gal	150	34
		Ilkacadde	80	19
	Agropastoralists	Baaslaawe	70	19
		Lafoole	200	48
		Qooqane	100	23
		Dheriyow	65	18
		Shinnile	100	22
		Nuuriyow	120	28
	Urban populations	Gaduudow	130	30
		Magaalo	150	34
		Gabooyo	100	24
		Ceeljaalle	100	24
Doofil		50	13	
Hiili		100	23	
Ayaan		50	14	
Osman Alasow	50	15		
Mataban	Pastoralists	Bergadiid	200	48
		Qodqod	200	48
		Gerijir	130	31
		Coomaad	120	31
		Laamo	125	31
		Takaraale	150	34
		Hajohababis	100	23
<b>Total</b>			3,190	730

Table 2.1: Sampling for the households<sup>30</sup>

Systemic random sampling was used to identify every fifth household in each village for inclusion in quantitative household interviews (3,190/730 = 5).

All 41 milk vendors encountered during the field assessment were interviewed, using a separate quantitative questionnaire.

### 2.4.2 Qualitative data collection

A total of 28 key informant interviews and 16 focus group discussion sessions were carried out. Purposive and snowball sampling of key community and government stakeholders, including representatives of urban communities, was also undertaken to select key informants.

Convenience sampling was applied to select pastoralist, agropastoralist and urban communities, for inclusion in focus group discussions.

<sup>30</sup> Source: WHO Beledweyne office, 2015 census

Data collection method	Total	Mataban	Beledweyne	Sampling approach
Key informant interviews	30	12	18 Pastoralists: agropastoralists: urban population=6:6:6	Purposive and snowball approach
FGDs: 5 in an agropastoralist village set ups, 5 in urban set ups, 6 in pastoralist village set ups	16	6 Male: Female=3:3	10 Male: Female =5:5	Convenience Sampling

Table 2.2: Qualitative data

## 2.5 TRAINING OF SUPERVISORS AND ENUMERATORS

A three-day training session of supervisors and enumerators was carried out at Save the Children International's office in Beledweyne. UNICEF field office workers in Hiran also attended. The training was followed by a day pilot testing the data collection procedures and tools. The field work ran for 20 days, with Save the Children International and UNICEF supporting field work logistics and quality assurance.

## 2.6 DATA MANAGEMENT

Qualitative data was analysed using NNIVO 10 for Windows and a flow chart matrix to establish themes. Quantitative data was keyed into Microsoft Access databases and analysed using Statistical Package for Social Sciences (SPSS) version 21. Graphics were generated using Microsoft Excel version 2013.

## SECTION 3: STUDY FINDINGS

### 3.1 SOCIAL DEMOGRAPHIC BACKGROUND OF THE HOUSEHOLD RESPONDENTS

This study involved 41 milk traders, 28 key informants, community members in 16 focus group discussions, and 1,534 household survey respondents in the Hiran region. The survey was conducted with 260 households in Mataban district and 505 households in Beledweyne district. The focus of the study was on pastoralist and agropastoralist households, as well as urban populations, as illustrated in Figure 3.1. A list of villages visited is provided in Annex 3.

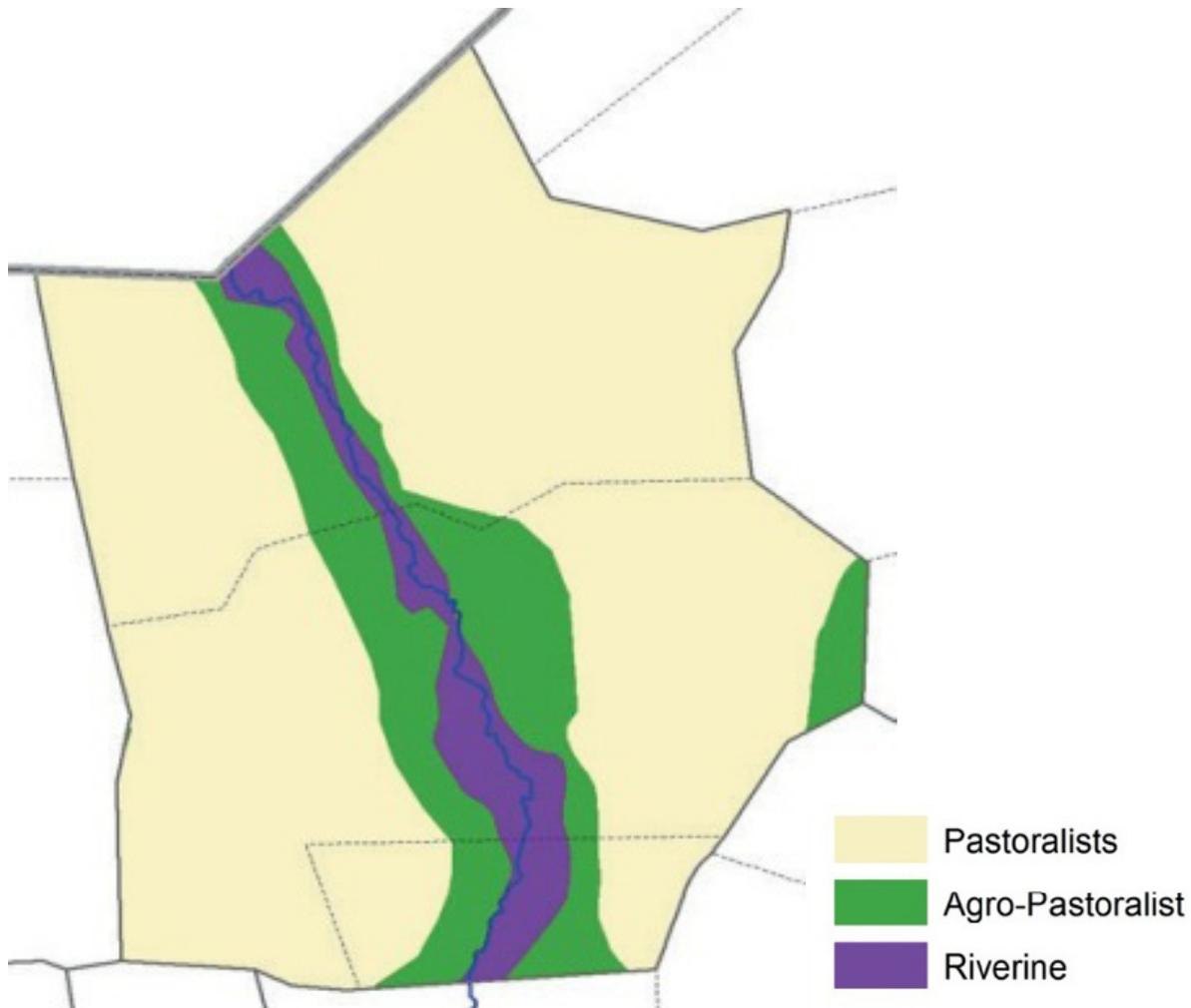


Figure 3.1: Livelihood zones in Hiran. Figure: (Source: FSNAU, 2015)\*\*There are IDPs and Urban populations in most urban centres/markets

More than half of the respondents in these households (55.7 per cent) were women. Interviews were conducted with heads of households (42.1 per cent), wives in case of male-headed households (54.7 per cent), sons, daughters and relatives of household heads. Household survey respondents were aged 18 to 92 years, with a mean age of 36.9 years (Table 3.1). There were between four and 13 occupants in each household, with families averaging seven members, including relatives who were elderly or displaced by conflict in other parts of the country.

Gender	Mataban	Beledweyne	Pastoralists	Agropastoralists	Urban population	Total
Female	55% (286)	56% (568)	54.9% (9235)	59.2% (284)	53.5% (335)	55.7% (854)
Male	45% (234)	44% (446)	45.1% (9193)	40.8% (196)	46.5% (291)	44.3% (680)
Total	33.9% (520)	66.1% (1,014)	27.9% (428)	19.2%(480)	40.8% (626)	100% (1,534)
Respondents relationship with the household head			Pastoralists	Agropastoralists	Urban population	Total
Head			13% (199)	14.4% (219)	14.7% (224)	42.1% (642)
Spouse			14% (213)	15.6% (238)	25.2% (384)	54.7% (835)
Son			0.3% (5)	0.5% (7)	0.7% (10)	1.4% (22)
Daughter			0.3% (4)	0.3% (4)	0.5% (8)	1.0%(16)
Relative			0.2% (3)	0.5% (8)	0% (0)	0.7%(11)
Age distribution for the respondents			Youngest respondent	Oldest respondent	Mean age	Std. Deviation
Pastoralists			18	92	38.3	14.1
Agropastoralists			18	90	34.5	14.0
Urban populations			18	89	37.8	15.3
Mataban			18	92	37.9	14.4
Beledweyne			18	90	36.3	14.8
Total			18	92	36.9	14.7
Household members			Pastoralists	Agropastoralists	Urban population	Total
Least number of household members			4	5	5	4
Highest number of household members			12	13	12	13
Mean number of household members			8	7	7	7

Table 3.1: Demographics

With the proposed programme targeting children with nutrition interventions, the study identified the number of children in the households and their ages. It found 6.4 per cent of the region's household population were children aged up to five years and 5.6 per cent were children aged six to 10 years, while 84.7 per cent of household members were aged 16 and above (Table 3.2).

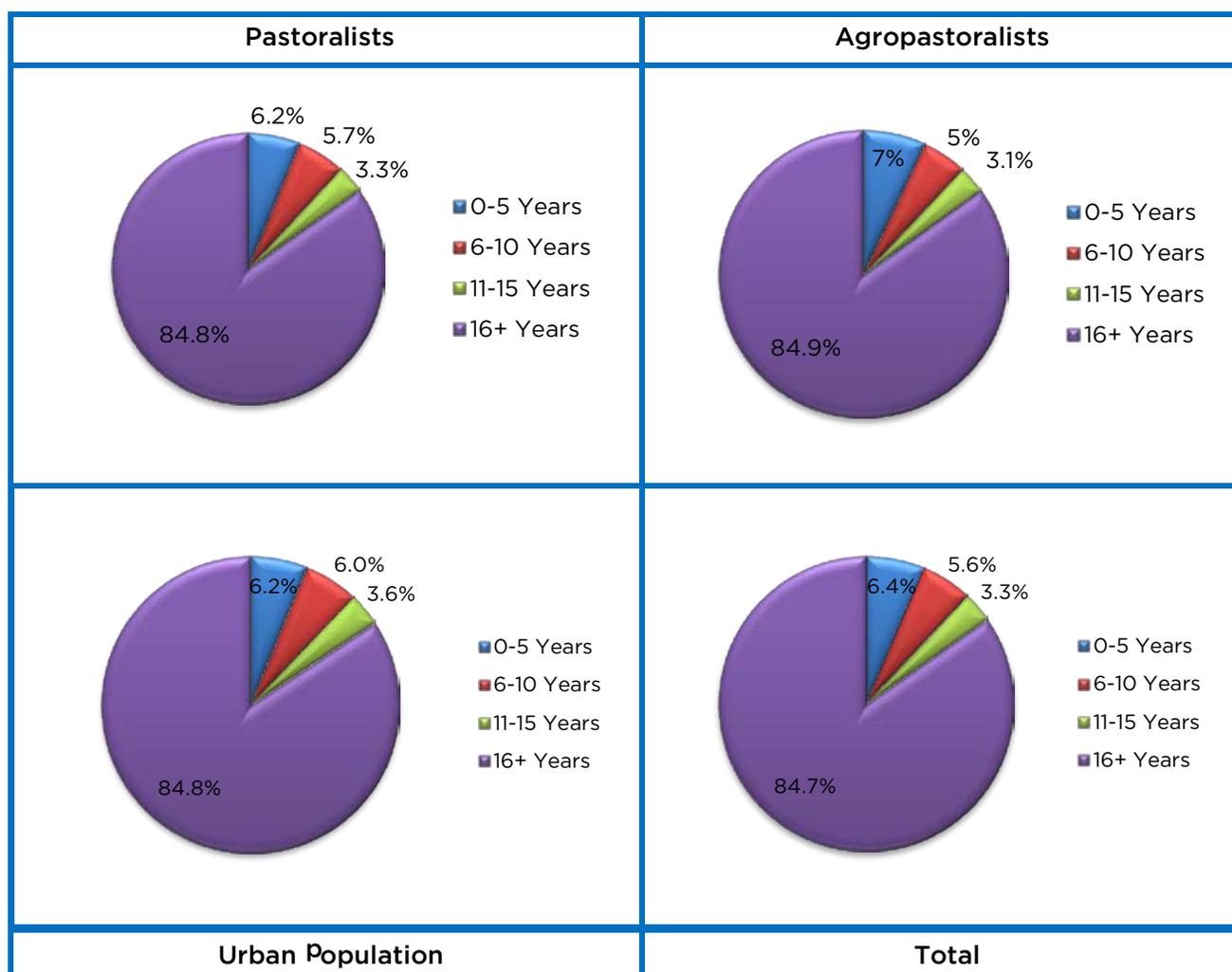


Table 3.2: Population structure

This study did not document income levels. However, a 2014 study of 200 households in Hiran by BRCIS<sup>31</sup> showed the main sources of income in the region as casual daily labour (32.8 per cent), livestock (22.5 per cent), agriculture (22.7 per cent) and petty trade (13.6 per cent). Income contribution was largely by men (87 per cent), and the largest proportion of household income (69.8 per cent) was spent on food. Households with lower total income dedicated greater percentages of their expenditure to food.

The UNDP/CRD social economic survey of South Central Somalia (2003)<sup>32</sup> classified income groups in Somalia as: lowest-level, low-level, mid-level and higher-level (Table 3.3). The lowest-level and low-level groups shared common characteristics, namely that all their income was spent on daily rations (hand-to-mouth) and other basic household necessities. These two groups are more vulnerable to shocks and seasonal changes, since they rarely have savings.

<sup>31</sup> BRCIS.2014. *Community baseline survey on resilience in South Central Somalia*. [Online].

<<https://www.nrc.no/globalassets/pdf/reports/community-baseline---a-survey-on-resilience-in-south-central-somalia.pdf>>

<sup>32</sup> UNDP and Center for Research and Dialogue.2004. *Socio-Economic Assessment of South Central Somalia, 2003*.

Income group	Daily income in Somali shillings
Lowest-level	-10,000 (equivalent to US \$0.60)
Low-level	-10,000 - 15,000 (equivalent to US \$0.90)
Mid-level	-Salaried/skilled employees of private companies -Mid-level traders -Families who receive remittances regularly
Higher-level	-Large-scale business men/women -Import/exporters

Source: CRD-Socio-economic assessment of South Central Somalia, 2003.

Table 3.3 Wealth groups in Somalia

### 3.2 LAND AVAILABILITY AND USE

One third (32.7 per cent) of pastoralist households claimed having land, while all (100 per cent) of the agropastoralist households reported to have land. In addition, 44 per cent of the urban population respondents said they had some land, albeit in places far from where they were settled (Figure 3.2)

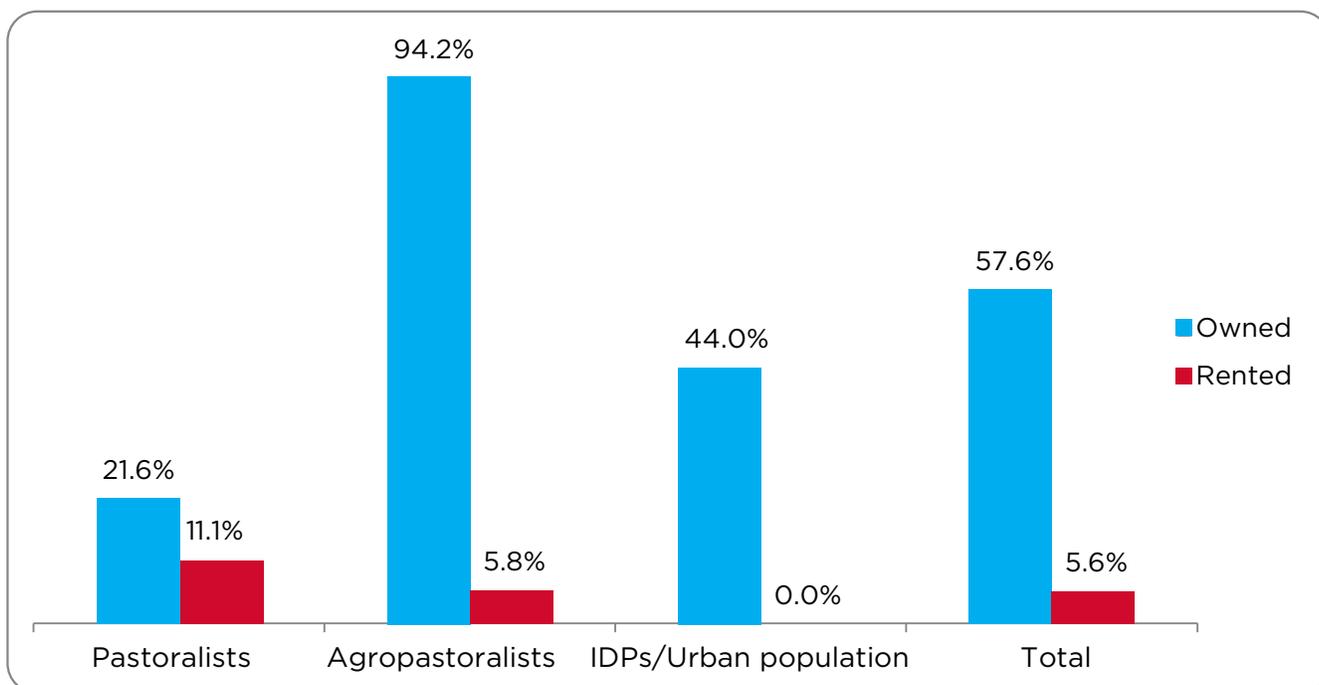


Figure 3.2: Households with land

In addition to the region's communal land, the reported size of land owned by households in the region ranges from 0.06 hectares to 45 hectares, with a mean of 1.6 hectares (Table 3.4).

Livelihood	Minimum	Maximum	Mean	Std. Deviation
Pastoralists	0.25	22	0.7	2.6
Agropastoralists	0.12	45	2.9	5.0
Urban populations	0.06	25	0.1	1.5
Total	0.06	45	1.6	4.1

Table 3.4: Land Size

Of that average 1.6 hectares, only about 0.7 hectares was used for livestock production purposes in *Gu*, precisely 0.5 hectares for grazing and 0.2 hectares for producing fodder for livestock (Figure 3.3). The pastoralists do not engage in any farming and, as such, have no land for fodder production.

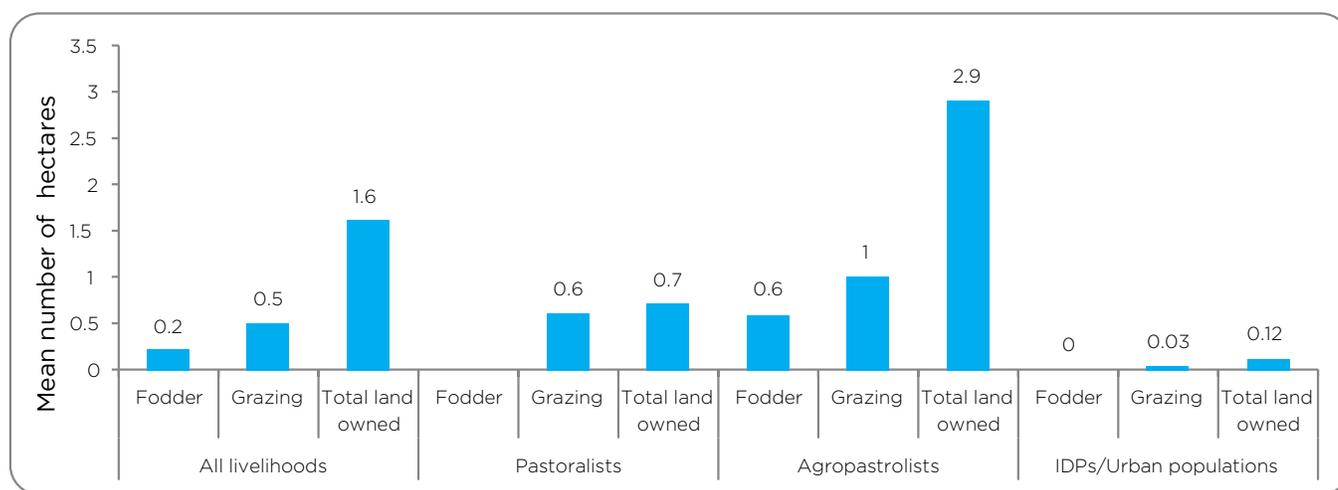


Figure 3.3: Mean number of hectares used for livestock purposes

### 3.3 LIVESTOCK OWNERSHIP

Of the sampled households, 72.4 per cent had goats, 41.2 per cent had cows, 44.6 per cent had camels and 23.8 per cent had sheep. Most (95.6 per cent) pastoralist households had one or more goats, while less than half (41.4 per cent) of urban households did (Figure 3.4).

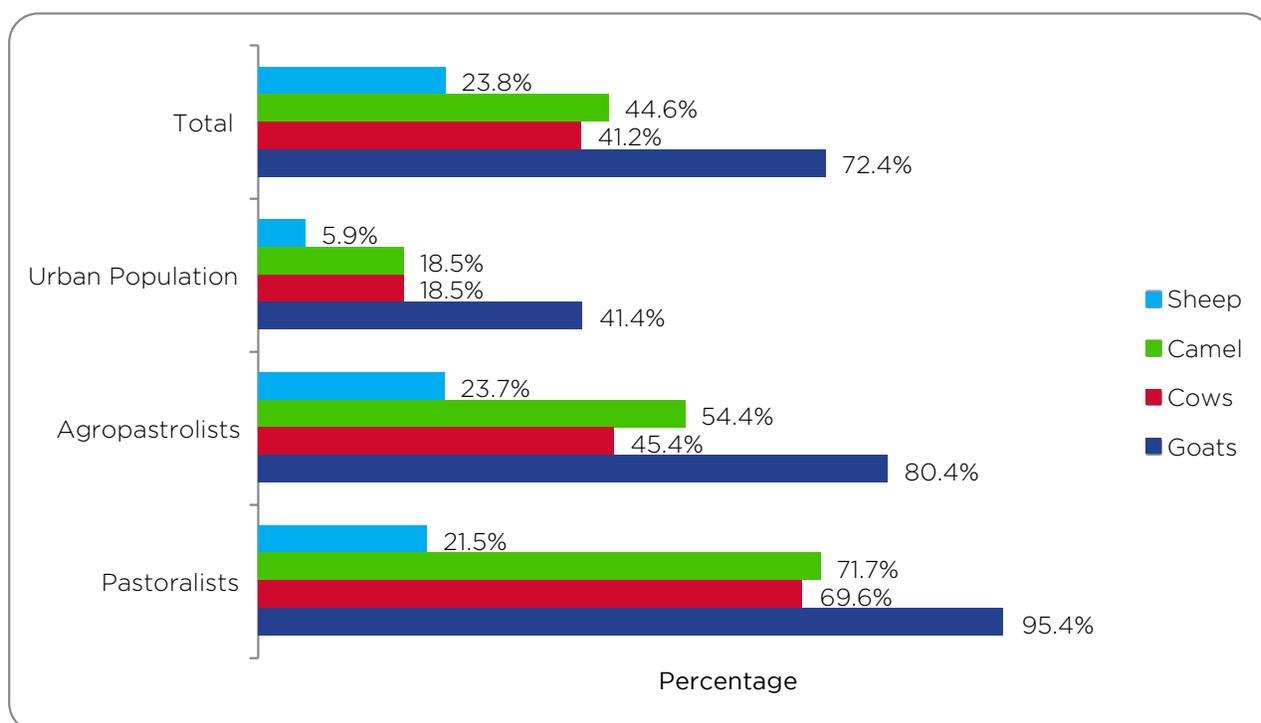


Figure 3.4: Household without livestock

*“Only a few IDPs have livestock (mostly goats) donated by humanitarian organisations. As such, most IDP households don’t have access to livestock milk. They rely on milk powder.” (IDP camp leader, Magalo IDP camp, Beledweyne district)*

### Herd composition

Most households with herds had goats (77.3 per cent during *Gu* and 67.4 per cent during *Jilal*), followed by sheep (16 per cent during *Gu* and 23.1 per cent during *Jilal*), as illustrated in Table 3.5.

Gu					
Livelihood	Cows	Goats	Camels	Sheep	Total livestock
Agropastoralists	9.9% (406)	67.2% (2,761)	0.3% (14)	22.6% (928)	100% (4,109)
Urban population	3.8% (93)	77.9% (1,924)	4.6% (114)	13.7% (338)	100% (2,469)
Pastoralists	1.3% (79)	83% (5,778)	2.9% (201)	12.8% (900)	100% (6,958)
Total	4.3% (578)	77.3% (10,463)	2.4% (329)	16% (2,166)	100% (13,536)
Jilal					
Livelihood	Total cows	Total goats	Total camel	Total sheep	Total livestock
Agro pastoralists	4.5% (134)	69.6% (2,079)	0.8% (24)	25.1% (748)	100% (2,985)
Urban population	4.7% (98)	69.6% (1,461)	3% (63)	22.7% (477)	100% (2,099)
Pastoralists	5.2% (183)	64.3% (2,276)	8.7% (309)	21.8% (9803)	100% (3,537)
Total	4.8% (415)	67.4% (5,816)	4.6% (396)	23.1% (1,994)	100% (8,621)

Table 3.5: Herd composition

## Herd structure

More than two thirds of the goats, sheep, camels and cows kept by pastoralists during *Gu* were females, with a focus on milk production (Table 3.6). In *Jilal*, this pattern is replicated with goats and cows. Camels are mostly used for transport, cows for milk production, goats for both meat and milk purposes, while sheep are generally kept for meat purposes.

Cows			
Gu		Jilal	
Mature female cows	61.8%	Mature female cows	62.4%
Mature male cows	11.1%	Mature male cows	20%
Young cows	27.1%	Young cows	17.6%
Goats			
Gu		Jilal	
Mature female goats	82.5%	Mature female goats	65.2%
Mature male goats	16.8%	Mature male goats	15.1%
Young goats	0.7%	Young goats	15.1%
Sheep			
Gu		Jilal	
Mature female sheep	59.7%	Mature female sheep	59.5%
Mature male sheep	13.9%	Mature male sheep	25.2%
Young sheep	26.4%	Young sheep	15.3%
Camels			
Gu		Jilal	
Mature female camels	66.7%	Mature female camels	46.5%
Mature male camels	32.6%	Mature male camels	21.4%
Young camels	32.6%	Young camels	32.1%

Table 3.6: Herd structure

Among households with cows, the average number of animals during *Gu* is three, which falls to zero during *Jilal* indicating livestock loss due to a scarcity of forage and water in dry seasons. The maximum number of cows kept by these farmers in *Gu* and *Jilal* are 28 and five respectively (Table 3.7). The loss of cows in *Jilal* appears to be replicated across all livelihoods. The urban populations possess the least number of cows during both seasons. The cows are local breeds, namely *Boran*, *Dawala*, *Sahwa* and *Surqo*.

All cows		Gu				Jilal			
		Mature male	Mature Female	Young Cows	All cows	Mature male	Mature female	Young cows	
Pastoralists	Minimum	1	1	1	1	0	0	0	0
	Maximum	14	3	7	5	5	1	3	1
	Mean	4	2	2.5	1.7	0.6	0.1	0.4	0.1
	Std. deviation	3.1	0.6	1.6	1.2	3.7	0.7	2.2	0.9
Agropastoralists	Minimum	1	1	1	1	0	0	0	0
	Maximum	28	5	17	14	15	4	13	5
	Mean	3.2	1.7	2.5	2.1	0.3	0.1	0.2	0.1
	Std. deviation	3.5	1.1	2.9	2.6	1.4	0.3	0.9	0.4
Urban populations	Minimum	1	1	1	1	0	0	0	0
	Maximum	5	2	35	14	15	4	13	3
	Mean	3.2	1.5	5.7	4.2	0.3	0.1	0.2	0.1
	Std. deviation	1.5	0.7	11.1	5.5	1.3	0.3	0.9	0.3
Total	Minimum	1	1	1	1	0	0	0	0
	Maximum	28	5	35	14	5	1	3	1
	Mean	3.3	1.7	2.8	2.2	0.4	0.1	0.2	0.1
	Std. deviation	3.3	1.0	3.9	2.7	2.3	0.3	1.4	0.5

Table 3.7: Number of cows owned in Gu and Jilal

Goats are the most reared animals in the Hiran region. Among households reporting ownership of goats, an average of 19 animals were owned by pastoralist families, 11 by agropastoralists and six per urban household during the *Gu rainy season* (Table 3.8). Pastoralists often lose goats during *Jilal* (mean=11), with minimal changes among the agropastoralists (mean=13) and urban populations (mean=8). The region's goats are a Somali breed.

All goats		Gu				Jilal			
		Mature male	Mature female	Young goats	All goats	Mature male	Mature female	Young goats	
Pastoralists	Minimum	0	0	1	0	0	0	1	0
	Maximum	700	250	300	50	200	80	100	40
	Mean	19.0	5.5	16.9	3.9	11.7	4.4	16.3	6
	Std. Deviation	28.7	7.7	22.7	6.1	21.6	8.5	18.9	5.9
Agropastoralists	Minimum	0	0	0	0	0	0	1	0
	Maximum	360	250	78	30	215	60	100	50
	Mean	11	4.5	10.6	1.7	13.1	6.1	15.8	6.6
	Std. Deviation	39	5.3	12.9	3.8	28.7	8.3	25.8	7.1
Urban population	Minimum	0	0	0	0	0	0	0	0
	Maximum	100	32	60	40	90	25	50	30
	Mean	5.9	5.0	13.8	1	7.5	4.6	12.1	6.4
	Std. Deviation	14.0	6.7	11.7	3.3	13.8	5	10.7	6.0
Total	Minimum	0	0	0	0	0	0	0	0
	Maximum	700	250	300	50	400	80	300	50
	Mean	11.9	5.1	14.2	2.0	10.3	5.1	14.6	6.3
	Std. Deviation	29.1	6.7	18.3	4.6	21.4	7.6	19.2	6.4

Table 3.8: Number of goats in Gu and Jilal

Among those reporting ownership of camels, there was an average of six animals per pastoralist household, four per agropastoralist household, and seven per urban household during both seasons (Table 3.9) – excluding during *Jilal*, when the urban populations de-stock their camels. The most common camel breed in the region is the one-hump Somali camel.

		Gu				Jilal			
		Total	Male camels	Female camels	Young camels	Total	Male camels	Female camels	Young camels
Pastoralists	Minimum	1	1	1	1	0	0	0	0
	Maximum	23	6	17	6	140	20	45	75
	Mean	6.2	3.2	4.7	2.53	6.2	6.1	6.3	6.3
	Std. Deviation	6	2	4.3	1.6	7.6	1.3	2.8	3.7
Agropastoralists	Minimum	3	0	2	1	0	0	0	0
	Maximum	4	0	2	2	8	8	3	2
	Mean	3.5	0	2	1.5	0.1	0.1	0.1	0.1
	Std. Deviation	0.6	0	0	0.6	0.5	0.4	0.227	0.128
Urban populations	Minimum	2	1	1	1	0	0	0	0
	Maximum	22	1	45	25	8	8	6	4
	Mean	7.3	1	13.2	9	0.1	0.02	0.1	0.03
	Std. Deviation	7.5	0	18.3	13.9	0.8	0.3	0.4	0.26
Total	Minimum	1	1	1	1	0	0	0	0
	Maximum	23	6	45	25	140	20	45	75
	Mean	6.1	2.8	5.8	3.2	0.3	0.1	0.1	0.1
	Std. Deviation	5.9	2	8.3	4.9	4	0.8	1.5	2

Table 3.9: Number of camels in Gu and Jilal

Across both *Gu* and *Jilal* seasons, there was an average of two or three sheep per household (Table 3.10) reporting ownership of the animals. The breed encountered during field visits was the ‘blackhead’ Somali sheep.

Total		Gu				Jilal			
		Mature male	Mature female	Young sheep	Total	Mature male	Mature female	Young sheep	Total
Pastoralists	Minimum	0	0	1	0	0	0	1	0
	Maximum	41	10	25	11	101	30	40	9
	Mean	2.3	2.2	6.0	3.2	2.8	2.9	3.6	2.7
	Std. Deviation	5.7	2.8	5.2	2.5	8.7	6.1	6.4	2.3
Agropastoralists	Minimum	0	0	0	0	0	0	1	0
	Maximum	45	23	40	10	2.5	4.2	5.4	3.1
	Mean	2.3	2.4	5.0	2.6	5.1	2.3	2.5	1.1
	Std. Deviation	5.9	4.0	5.6	2.2	7.1	6	5.2	2.8
Urban populations	Minimum	0	0	0	0	0	0	1	0
	Maximum	40	10	12	18	30	4	20	10
	Mean	0.8	1.9	4.7	3.3	1.1	1.7	4.4	3.4
	Std. Deviation	3.5	2.8	3.7	3.4	3.4	1.1	3.5	2.4
Total	Minimum	0	0	0	0	0	0	1	0
	Maximum	45	23	40	18	101	30	40	11
	Mean	1.7	2.2	5.3	3	2	3	5.3	3
	Std. Deviation	5.1	3.4	5.2	2.6	6.5	5.3	5.3	2.5

Table 3.10: Number of sheep in Gu and Jilal

There are three main sources of livestock in the region: social donations given either as wedding gifts, or given by wealthy Muslims to more vulnerable families to balance social inequality (40.1 per cent); local breeding (29.6 per cent); or local purchase (23.1 per cent). Other sources of livestock include donations from humanitarian agencies, or inheritance from parents (Table 3.11). Local breeding shows no effort to improve breeds or promote the genetic diversity of herds.

Source of livestock	Pastoralists	Agropastoralists	Urban population	Total
Purchase	5.7% (39)	14.2% (98)	3.2% (22)	23.1% (151)
Local breeding	14.8% (102)	9.4% (65)	5.4% (37)	29.6% (204)
Social donations/dowry/ inheritance from parents	23.4% (161)	10% (69)	6.7% (46)	40.1% (276)
Other	1.3% (9)	4.5% (31)	1.5% (10)	7.3% (50)
Total	45.1% (311)	38.2% (263)	16.7% (115)	100% (689)

Table 3.11: Source of livestock

During *Gu*, the price of a mature male sheep is 1,020,357 Somali shillings (US\$44)<sup>33</sup>, while that of mature female sheep is 742,857 Somali shillings (32 US dollars) and young sheep cost 304,642 Somali shillings (US\$13). In *Jilal* the prices are lower: 626,829 (27 US Dollars) for mature males; 460,731 (US\$20) for mature females; and 200,073 (US\$7) for young sheep (Table 3.12). These seasonal variations in prices are replicated across goats, camels and cows. As there are fewer mature male livestock in the herd structure, goats, sheep and cows are more expensive than female equivalents. Conversely, mature female camels are more expensive than their male counterparts during *Gu*.

<sup>33</sup> US\$1 = 23,000 Somalia shillings (as at October, 2016).

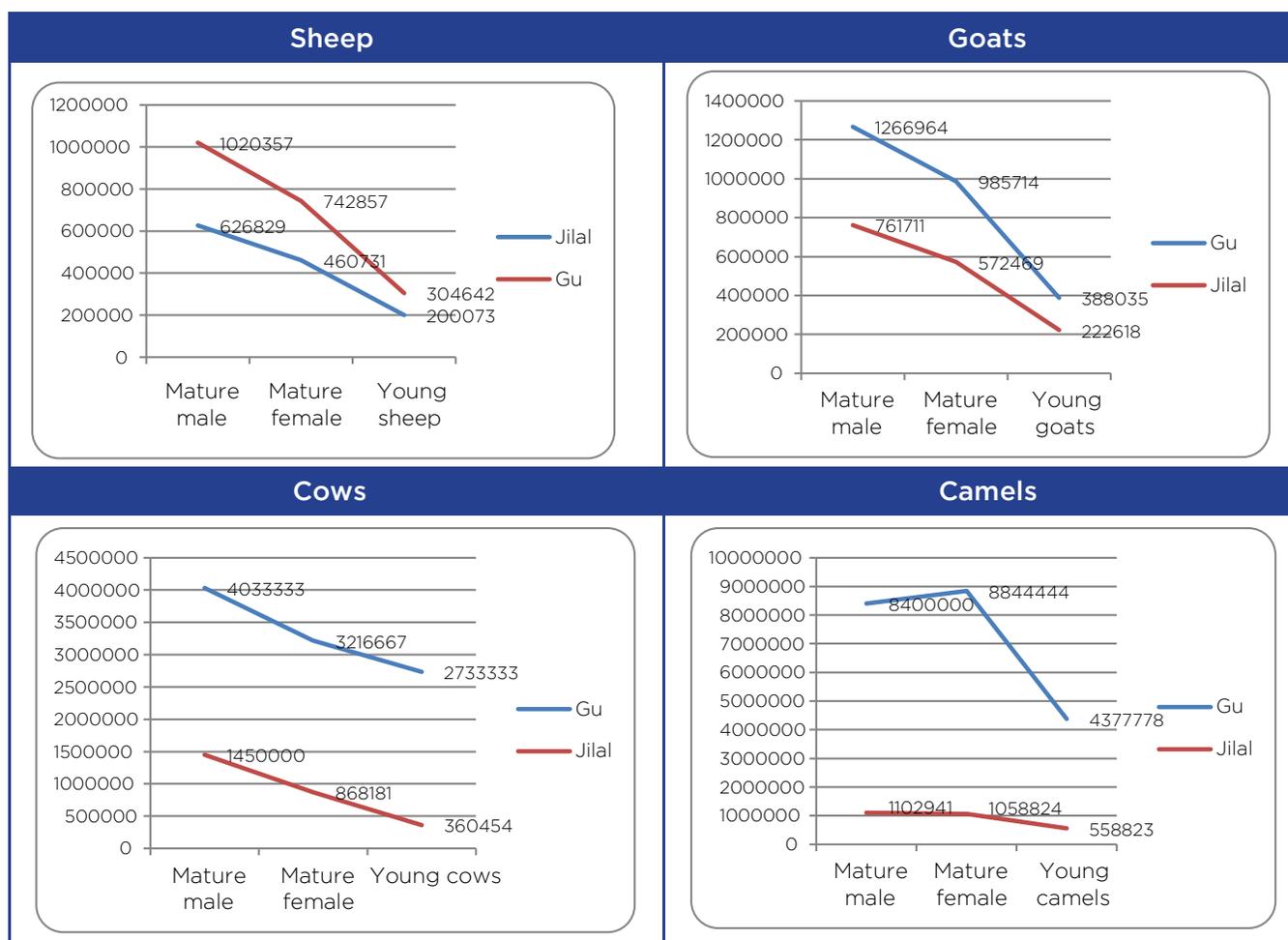


Table 3.12: Price of livestock in Somali shillings

Supplementary feeding for the animals is necessary to ensure they reach maturity and their full value. Commercially-packed concentrates and mineral salts are available and cost between 200,000 Somali shillings (US\$9) and 300,000 Somali shillings (US\$13), as in Table 3.13. Though it is evident that animals in the region lack nutrients and this becomes more problematic during the dry season, most of the farmers in the three focus livelihood zones have not embraced the idea of providing their animals with supplements. Many don't do it because they can't afford to.

Concentrates	Somalia shillings (US dollars)
Masago	300,000 (13)
Bulugo	200,000 (9)
Damadi	250,000 (11)
Mineral salts	Somali shillings (US dollars)
Bulugo	300,000 (13)
Burosh	300,000 (13)

Table 3.13: Price of concentrates and mineral salts

### 3.4 LIVESTOCK EXTENSION SERVICES

Across the three livelihood zones, only 7.6 per cent of respondents were aware of community animal health workers in the region (Table 3.14). Humanitarian organisations tend to pay for veterinary services for pastoralists and urban populations (68.8 per cent and 58.5 per cent, respectively). A larger number of agropastoralists in the region pay for the veterinary services themselves (60.8 per cent), as illustrated in Table 3.14. CERALPA was cited several times as an important source of information on livestock health and the institution was reported to have two community animal health workers working in the region.

Availability of CAHW				
	Pastoralists	Agropastoralists	Urban population	Total
Yes	2.5% (29)	1.9% (22)	3.2% (37)	7.6% (88)
No	23.2% (268)	30.5% (352)	38.6% (446)	92.4% (1,066)
Payment for animal health services				
	Pastoralists	Agropastoralists	Urban populations	Total
Self	30.3% (10)	60.8% (14)	37.7% (20)	40.5% (44)
Regional government	0% (0)	0% (0)	3.8% (2)	1.9% (2)
Humanitarian agencies	68.8% (22)	39.1% (9)	58.5% (31)	57.4% (62)

Table 3.14: Availability and payment for animal health services

The availability and affordability of veterinary services appear to be the main reasons the services are under-used, with the majority (69 per cent) of respondents aware of CAHW services and describing veterinary services and inputs as vital to strengthening livestock production (Table 3.15). While farmers want training in animal management, to improve their knowledge and practices, respondents' attendance at animal production/improvement training sessions in the preceding year (2015) was extremely low (0.9 per cent), as illustrated in Table 3.15. Through FGDs, the farmers reported a willingness to attend training, but their attendance was limited by the availability of such trainings.

Usefulness of the extension services				
	Pastoralists	Agropastoralists	Urban populations	Total
Useful	25% (29)	12.9% (15)	31% (36)	69% (80)
Not useful	3.4% (4)	9.5% (11)	18.1% (21)	31% (36)
Attendance of animal production training in the preceding year				
	Pastoralists	Agropastoralists	Urban population	Total
Yes	0.3%(5)	0.1%(2)	0.4% (6)	0.9% (13)
No	28.0%(414)	30.7%(453)	40.4% (597)	99.1% (1,464)

Table 3.15: Usefulness of the extension services and attendance of animal production training

### 3.5 ANIMAL FEEDS AVAILABILITY

More than half (60.3 per cent) of respondents reported fodder was available in *Gu*, while 57.1 per cent said that was not the case in *Jilal* (Table 3.16). Currently, livestock problems in Hiran are centered on management of animals and their products, as opposed to forage production.

	Gu				Jilal			
	Pastoralists	Agropastoralists	Urban population	Total	pastoralists	Agropastoralists	Urban population	Total
Easily available	22.0% (62)	16.1% (63)	22.7% (100)	20.2% (225)	6.3% (24)	7.4% (27)	5.5% (18)	6.4% (69)
Available	25.2% (71)	27.6% (108)	30.2% (133)	28.0% (312)	10.4% (40)	12.6% (46)	10.7% (35)	11.3% (131)
Moderately available	21.6% (61)	23.3% (91)	21.3% (94)	22.1% (246)	24.2% (93)	19.0% (69)	33.3% (109)	25.2% (271)
Unavailable	7.4% (21)	10.7% (42)	8.2% (36)	8.9% (99)	18.0% (69)	13.5% (49)	11.6% (38)	14.5% (156)
Very unavailable	23.8% (67)	22.3% (87)	17.7% (78)	20.8% (232)	41.1% (158)	47.5% (173)	38.8% (127)	42.6% (458)

Table 3.16: Availability of livestock feeds

Commercial fodder is available among all three livelihood groups. One *kabaay* is sold for 300 Somali shillings (US\$0.13) in *Gu*, and for 500 Somali shillings (0.22 US dollars) in *Jilal*. Similarly, an *Uub* is sold for 36 Somali shillings (US\$0.0016) in *Gu*, while it costs 50 Somali shillings (0.0022 US dollars) in *Jilal*. From the household survey, 78.6 per cent said water for livestock was available during *Gu*, while 72.1 per cent reported problems accessing water for their livestock during *Jilal* (Table 3.17).

	Gu				Jilal			
	Pastoralists	Agropastoralists	Urban population	Total	Pastoralists	Agropastoralists	Urban population	Total
Easily available	27.9% (79)	17.1% (67)	27.1% (120)	23.8% (226)	10.2% (39)	13.5% (49)	12.8% (42)	12.1% (130)
Available	29.7% (84)	35.2% (138)	34.4% (152)	33.5% (374)	13.3% (51)	22.9% (83)	11.6% (38)	16.0% (172)
Moderately available	26.1% (74)	22.7% (89)	24.4% (108)	24.3% (271)	28.9% (111)	18.2% (66)	35.1% (115)	27.2% (292)
Unavailable	4.6% (13)	5.6% (22)	4.8% (21)	5.0% (56)	9.1% (35)	9.4% (34)	7.3% (24)	8.7% (93)
Very unavailable	11.7% (33)	19.4% (76)	9.3% (41)	13.4% (150)	38.5% (148)	35.9% (130)	33.2% (109)	36.0% (387)

Table 3.17: Availability of water for livestock

Groundwater is the main regional water source. Through FGDs, members of the three livelihood groups reported covering an average of three to seven kilometres to access water points during the *Gu* rainy season. There are narrow areas around river Shabelle that are occupied by agropastoralists and offer surface water throughout the year. The major water sources for livestock consumption are community bore holes (52.8 per cent) and rivers (25.3 per cent), as illustrated in Table 3.18.

	Pastoralists	Agropastoralists	Urban populations	Total
Community boreholes	52.8%(152)	51.4%(201)	54.2%(241)	52.8%(594)
Berkads (water pans)	20.9% (60)	21.5% (84)	16.2%(72)	19.2%(216)
Rivers	24.0%(69)	24.6%(96)	26.7%(119)	25.3%(284)
Shallow wells	1.4%(4)	0.5%(2)	0.4%(2)	0.7%(8)
Other	1%(3)	2%(8)	2.5%(11)	2%(22)

Table 3.18: Sources of water for livestock

Coping with cyclical droughts and erratic water availability is a challenge for most households in the region. Pits and trenches are the main water preservation methods, with this water often shared between the livestock and human beings – posing a risk of zoonotic infections. While pits, trenches and storage tanks offer a remedy for water conservation, there are other traditional methods of water conservation employed by a quarter of the region’s households (Table 3.19).

	Gu				Jilal			
	Pastoralists	Agropastoralists	Urban population	Total	Pastoralists	Agropastoralists	Urban population	Total
Berkads (water pans)	38.3% (103)	38.4% (139)	37.2% (154)	37.9% (396)	59.5% (154)	40.2% (117)	40% (80)	46.8%(351)
Storage tanks	37.2% (100)	35.9% (130)	37.4% (155)	36.8% (385)	36.3% (94)	27.5% (80)	35% (70)	32.5%(244)
No preservation	24.5% (66)	25.7% (93)	25.4% (105)	25.3% (264)	4.3% (11)	32.2% (94)	24.1% (50)	20.6%(155)

Table 3.19: Water preservation methods

### 3.6 MILK ACCESS AND USE

For the households visited, casual labour was the main source of income to purchase food (55 per cent of households in *Gu* and 61.7 per cent of the households in *Jilal*), followed by the sale of livestock (24.4 per cent of households in *Gu* and 24 per cent of households in *Jilal*). Milk was described as a source of food in *Gu* by 0.6 per cent of respondents, with none describing it as a source of food during *Jilal* (Table 3.20).

Season	Livelihood group	Sale of livestock	Meat	Milk	Relief remittances	Wild products	Casual labour	Businesses	Other	Total
Gu	Pastoralists	37% (143)	2.3% (9)	1% (4)	1.3% (5)	0.3% (1)	42.0% (162)	15.3% (59)	0.8% (3)	100% (386)
	Agropastoralists	24.6% (115)	0.9% (4)	0.6% (3)	0.4% (2)	0.2% (1)	54.5% (256)	9% (42)	9.8% (46)	100% (468)
	Urban populations	15.5% (85)	0.4% (2)	0.4% (2)	0.4% (2)	0% (0)	66.0% (363)	9.5% (52)	8.0% (44)	100% (550)
	All the 3 livelihoods	24.4% (343)	1% (15)	0.6% (9)	0.6% (9)	0.1% (2)	55.6% (780)	10.9% (153)	6.6% (93)	100% (1,404)
Jilal	Pastoralists	64% (155)	0.4% (1)	0% (0)	2.1% (5)	0.4% (1)	26.9% (65)	4.5% (11)	1.7% (4)	100% (242)
	Agropastoralists	9.3% (20)	0% (0)	0% (0)	6.5% (14)	1.4% (3)	69.0% (149)	2.8% (6)	11.1% (24)	100% (216)
	Urban populations	8.7% (37)	0% (0)	0% (0)	4.2% (18)	0.0% (0)	77.9% (331)	3.1% (13)	6.1% (26)	100% (25)
	All the 3 livelihoods	24.00% (1)	0.1% (0)	0% (0)	4.2% (37)	0.5% (4)	61.7% (545)	3.4% (30)	6.1% (54)	100% (883)

Table 3.20: Main source of food in Gu and Jilal

***“In urban areas, there are women’s social networks called Ayuuto or Agbad, where women collect money monthly and distribute it to members during hardship or at agreed times to cater for domestic needs, such as food” (female group leader in Beledweyne)***

Milk production is influenced by livestock feed availability, which is dependent on seasonal variations characterised by the biannual rainfall pattern. There is little difference between the three livelihood groups in Beledweyne when it comes to food access, health and malnutrition vulnerabilities. The seasonal calendar of events illustrated below shows significant associations between the prevalence of acute malnutrition (peak admissions at nutritional centres), the hungry season, peaks in diseases (such as diarrhoea and acute respiratory tract infections), high food prices at market, and poor availability of farm labour or temporary jobs. Milk and food availability (food security), health care and waterborne diseases are also affected by these seasonal changes (Table 3.21).<sup>34</sup>

	Months: January to December											
	J	F	M	A	M	J	J	A	S	O	N	D
Prevalence of acute malnutrition	H	H	H	M	L	L	M	H	M	M	L	H
Ground water availability	H	M	L	H	M	M	M	L	L	M	H	H
Milk availability	M	L	M	H	M	L	M	M	L	L	M	H
Food prices	M	H	H	H	M	L	M	H	H	H	M	L
Waterborne diseases	H	H	H	L	L	L	M	M	M	L	L	L
Human and livestock migration	H	H	H	M	L	L	M	M	L	L	M	H

\*\*\*\*H= high, M=moderate, L=low<sup>35</sup>

Table 3.21: Seasonal calendar for Hiran region

<sup>34</sup> SNS consortium.2015. Nutrition casual analysis for South Central Somalia [online].

< [http://reliefweb.int/sites/reliefweb.int/files/resources/sns\\_nca.pdf](http://reliefweb.int/sites/reliefweb.int/files/resources/sns_nca.pdf) >

<sup>35</sup> The seasonal calendar is based on community members’ description of the changes in the six variables across the year.

This study focused on two seasons, namely *Jilal* and *Gu*. *Jilal*, which is the dry season (December to March), is characterised with low milk production, while *Gu*, the main rainy season (April to July), is characterised by high milk production<sup>36</sup>. The highest volume of milk production in the households was recorded during the wet season. Based on quantitative data analysis, on average every household produces 3.51 litres of milk in *Gu* and 1.8 litres of milk in *Jilal* every day. Feedback from FGDs suggested daily milk production was between one and two litres during *Jilal* and three to five litres in *Gu* (Figure 3.5). The bulk of milk in Hiran is produced by cows, followed by goats, which is reflective of the herd composition. Diseases affecting animals were highlighted by every group as an important factor in reducing milk supply to households. The issue of scarce water and pasture for animals during dry season was also highlighted. There was consensus among FGD participants and key informants that drought was the main driver of milk shortages. Pastoralist households recorded a higher milk output than the agropastoralists and urban population during the two seasons under consideration (Table 3.22).

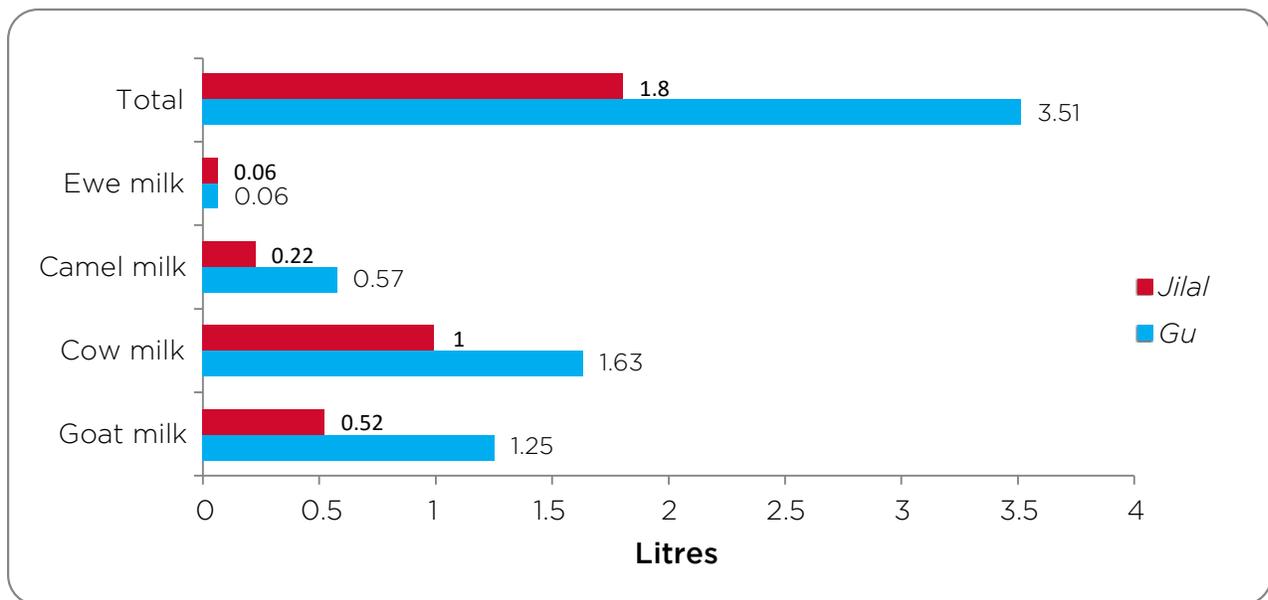


Figure 3.5: Daily milk production in Gu and Jilal

	Gu						Jilal					
	Produced	Std. deviation	Sold	Std. deviation	Consumed	Std. deviation	Produced	Std. deviation	Consumed	Std. deviation	Sold	Std. deviation
Pastoralists	5.2	1.64881	2.5	1.202	2.7	1.04899	3.1	1.11808	0.9	0.950	2.2	0.64726
Agropastoralists	4.2	1.28977	1.5	0.897	2.7	0.89479	1.6	0.99567	0.49	0.681	1.11	0.64998
Urban populations	0.44	0.73056	0.43	0.758	0.67	0.49417	0.7	0.59765	0.21	0.464	0.49	0.37293
All the 3 livelihood groups	3.51	1.26259	1.47	0.964	2.04	0.83205	1.8	0.90812	0.5	0.696	1.3	0.55712
Total Volume (24 hours)	888.82	-	564	-	929	-	624.62	-	289	-	335.6	-

Table 3.22: Milk volume in 24 hours (in litres)

<sup>36</sup> High milk volume in *Gu* is recorded after the recovery of animals following the rains; ideally this is three to four weeks into *Gu*. Data collection for this study was conducted in mid-August 2016 after the *Gu* season.

There is a significant difference between the mean volumes of milk produced, consumed and sold in *Jilal* and *Gu* ( $P < 0.05$ ), as shown in Table 3.23 below.

	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Milk produced	0.12092	1.39359	0.03592	0.05046	0.19139	3.366	1504	0.001
Milk consumed	0.6358	1.1904	0.0348	0.5675	0.7042	18.247	1166	0.00
Milk sold	0.1281	0.96169	0.02481	0.07942	0.17677	5.162	1501	0.00

Table 3.23: Milk production and use

During *Gu*, 41.8 per cent of the milk produced in every household is consumed, while the rest is sold. In *Jilal*, the percentage of milk consumed falls to 27.8 per cent, with 72.2 per cent sold (Table 3.24). This is a response to limited food availability in households during the dry seasons. Families sell larger volumes of milk to generate income for food, which results in children consuming less milk.

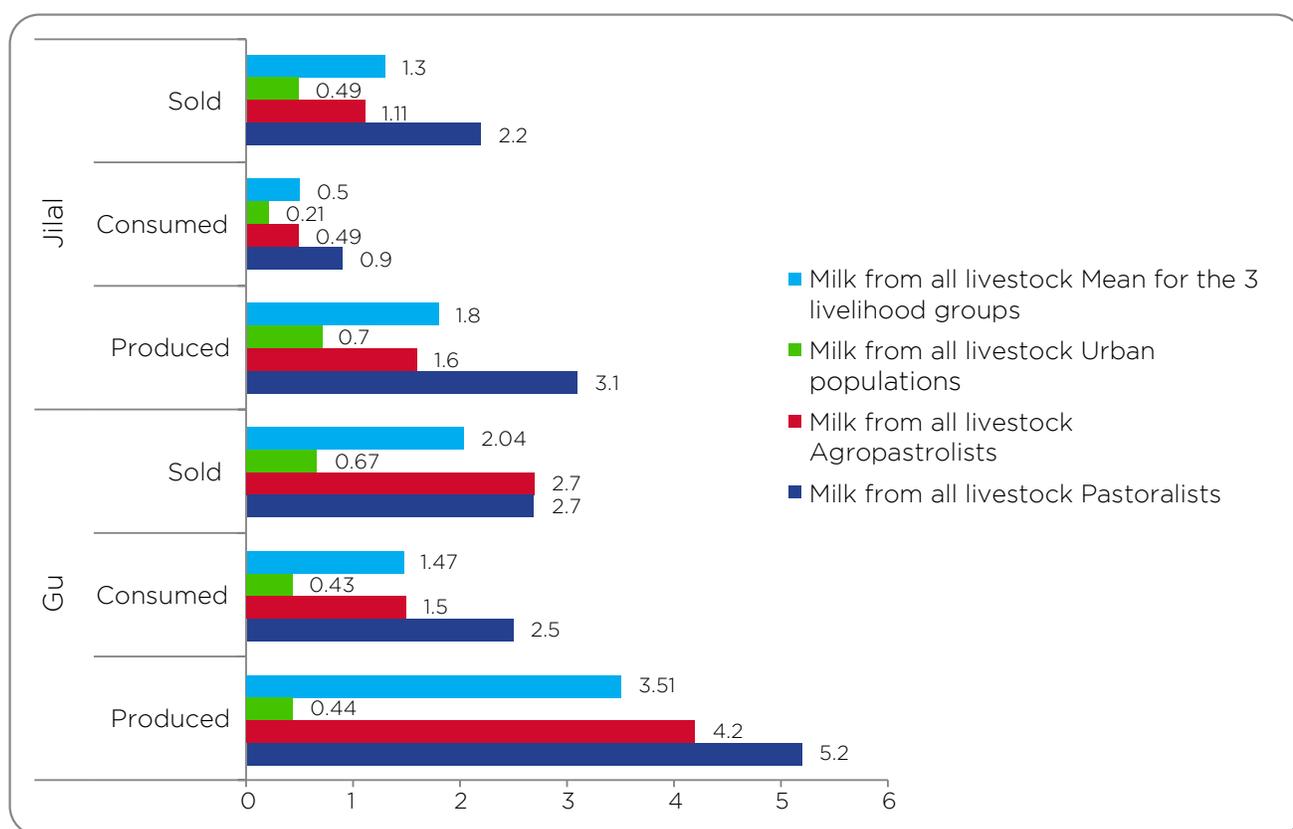


Figure 3.6: Milk utilization in the household 24 hours before the survey

With limited livelihood options, milk is a source of income irrespective of the season and the livestock. But milk consumption is not consistent across the seasons. There is a notably high consumption of milk in *Gu*, which FGDs and KIIs revealed is linked to high milk production; low milk prices making it more affordable to families; and limited markets, due to overproduction.

The reverse is true of Jilal, when there is little milk available for sale, which drives up prices and limits household consumption. When food is less available during the dry seasons, milk sales rise and consumption among these households drops.

The volume of milk consumed by children also falls during the Jilal season, as illustrated in Figure 3.9. There are minimal fluctuations in the volume of milk produced, sold, and consumed among the urban population due to the limited number of livestock they own (Figure 3.6).

Of the 1.47 litres of milk consumed daily in households with livestock during Gu, 1.2 litres (81.6 per cent) are consumed by children aged below five years. In Jilal, of the 0.5 litres of milk consumed by households with livestock, 0.32 litres (90 per cent) is consumed by children aged below five years (Figure 3.7). In households with no livestock, an average of 0.56 litres is purchased every day in Gu, of which 0.38 litres is consumed by children aged below five years (68 per cent). In Jilal, 0.5 litres of milk are purchased daily by households with no livestock. Of this, 0.3 litres are consumed by children aged under five (79 per cent). This is an indication that milk purchased in Jilal is largely for children’s consumption.

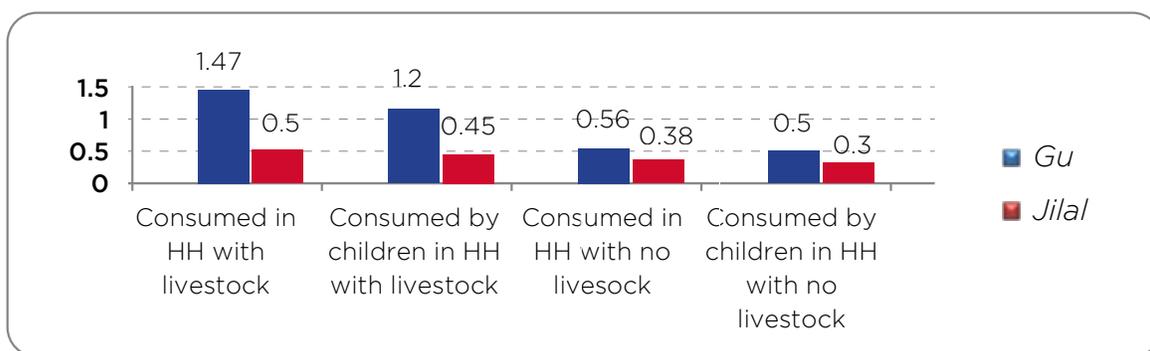


Figure 3.7: Mean litres of milk consumed in 24 hours preceding the survey

***“The common barriers to milk consumption by children in this village are low production, poverty (hence the sale of milk) and poor transport infrastructure in the surrounding villages” (Male FGD respondent in Takarale Village, Mataban District)***

It was difficult to establish the ages of children in most households, so an estimation of children aged below five years was done. There were no concrete responses on the number of children taking milk in Jilal due to poor milk availability, price fluctuations and migration. However, in Gu, 1,734 of 1,892 (91.6 per cent) of children consumed milk in the households – an indication that milk availability can be used to address the region’s malnutrition challenges (Figure 3.8).

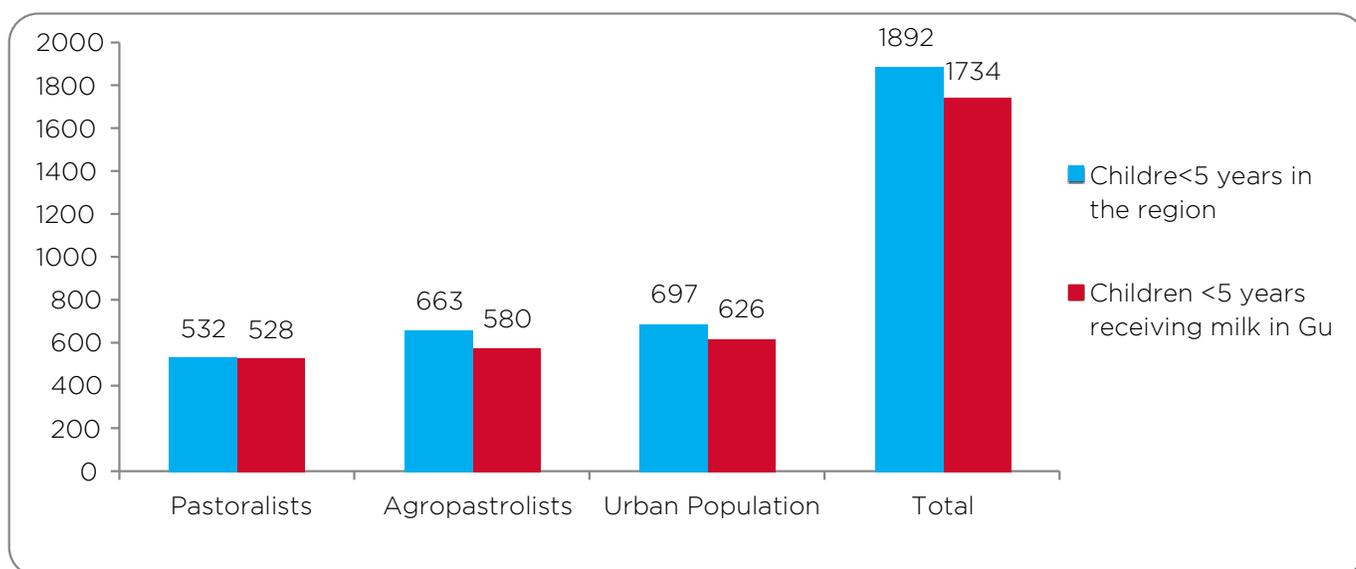


Figure 3.8: Number of children consuming milk in Gu

Children need 200 millilitres (mls) of milk daily to obtain 25 to 33 per cent of their daily protein requirements, with adults requiring 250mls<sup>37</sup>. Given households in Hiran average seven people (an assumption of two adult parents and five children), at least 1.5 litres of milk should be consumed per household daily. On average, every household produced 3.51 litres of milk per day in Gu and 1.8 litres of milk daily in Jilal, exceeding these seasonal reference points.

A cross tabulation of production and consumption levels in households shows where there is high milk production in Gu, there is high consumption: 85.9 per cent of households consume more than 1.5 litres in 24 hours. Meanwhile, in households where there is low milk production, only 15.5 per cent consume high volumes of milk in Gu. In Jilal, 44.8 per cent of households with high milk production levels consume a large amount of milk, while only 5.5 per cent of households with low production levels do so. This shows that when milk production is high, there is room for high consumption (Table 3.24). Unavailability of food during dry seasons results in high milk sales and low milk use, in order to generate money for food purchases. Normally, food prices are highest toward the middle or end of the dry season.

	Gu			Jilal			
	High consumption	Low consumption	Total		High consumption	Low consumption	Total
High production	85.9% (55)	14.1%(9)	100% (64)	High production	44.8% (77)	55.2% (95)	100% (172)
Low production	15.5%(175)	84.5%(957)	100% (1,132)	Low consumption	5.5% (83)	94.5% (1,422)	100% (1,505)

Table 3.24: Cross tabulation of milk consumption and production

Historical data shows similar links between seasons, milk production and household consumption. A 1988/1989 study in Mogadishu showed seasonal patterns of milk sales by various wealth

<sup>37</sup> Michaelsen, K.F., Hoppe, C., Ross, N., Kaested, P., Stougaard, M., Lauritzen, L., Mølgaard, C., Girma, T. & Friis, H. 2009. Choice of foods and ingredients for moderately malnourished children 6 months to 5 years of age. *Food Nutr. Bull.*, 30: S343-S404.

groups, with poor households most affected by seasonal changes. During *Gu* and *Deyr*, a lower proportion sold milk than other wealth groups (60 per cent in both seasons), but during *Hagaa* and *Jilal*, a higher proportion did so (80 per cent in *Hagaa* and 93 per cent in *Jilal*). A similar pattern was observed for the volume of milk sold (70 per cent in *Jilal* and 80 per cent in *Gu*). In *Jilal* 1989, the rich households could maintain a high sales rate, but still consume three times more than the poor households.<sup>38</sup> Similar studies in Somalia dating back to 2002 found the same thing.<sup>39</sup>

Average daily camel milk sales and proportion of households selling milk, by season and wealth rank, 1988/89								
	Gu		Hagaa		Deyr		Jilal	
Wealth rank	Litres sold per day	% of HH that sold milk	Litres sold per day	% of HH that sold milk	Litres sold per day	% of HH that sold milk	Litres sold per day	% of HH that sold milk
Rich	10.7	44	8.9	56	10	56	5.7	100
Medium	5.1	65	4.6	50	5.1	46	1.9	85
Poor	4.3	60	3.6	80	3.5	60	1.7	93
Mean	7.1	56	6.2	59	6.7	53	2.9	92

Amounts of camel milk sold and consumed daily, and sales rate of households actually selling milk in late Jilal/early Gu 1989, by wealth rank							
		Late Jilal			Early Gu		
Wealth rank	Percentage of HH	Volume sold	Volume consumed	Sale rate	Volume sold	Volume consumed	Sale rate
Rich	33	5.1	1.8	80	6.7	2.8	70
Medium	33	2.3	1	70	1.8	2.7	40
Poor	33	1.4	0.6	70	2.4	0.6	80
Mean	100	2.9	1	74	3.4	1.9	63

(Herren U.J., 1991)

Table 3.25: Average daily camel milk sales, proportion of households selling milk and volume of milk consumed in selected HH in Mogadishu between 1988 and 1989<sup>40</sup>

### Purchase of milk

There were 476 and 436 households buying milk in *Gu*, while 436 households bought milk in *Jilal*. Of these, the majority were urban-based without livestock (49.6 per cent in *Gu* and 48.4 per cent in *Jilal*) followed by pastoralist (25.4 per cent in *Gu* and 26.4 per cent in *Jilal*) and agropastoralist households (25 per cent in *Gu* and 26.4 per cent in *Jilal*), as shown in Figure 3.9. A higher proportion of households without female livestock species purchase milk than those with female livestock species (70.5 per cent against 51.2 per cent in *Gu*, and 61.8 per cent against 53.1 per cent in *Jilal*), as illustrated in Table 3.26. This is an indication that even households with livestock do not produce adequate milk for consumption.

<sup>38</sup> Herren U.J.1991. *The commercial sale of camel milk from pastoral herds in the Mogadishu Hinterland, Somalia*. ISSN 0951 1911, Paper 30a November 1990. Institute of Anthropology, University of Bern, Switzerland Scandinavian Institute of African Studies, Uppsala, Sweden.[Online].< <https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/5369.pdf>>

<sup>39</sup> FSAU/FAO.2002. *Food utilisation in Somalia food security assessment unit the food and agriculture organization of the united nations, September 2002*. [Online].< [http://pdf.usaid.gov/pdf\\_docs/Pnado327.pdf](http://pdf.usaid.gov/pdf_docs/Pnado327.pdf)>

<sup>40</sup> *Wealth ranking was based on the size of livestock herd*

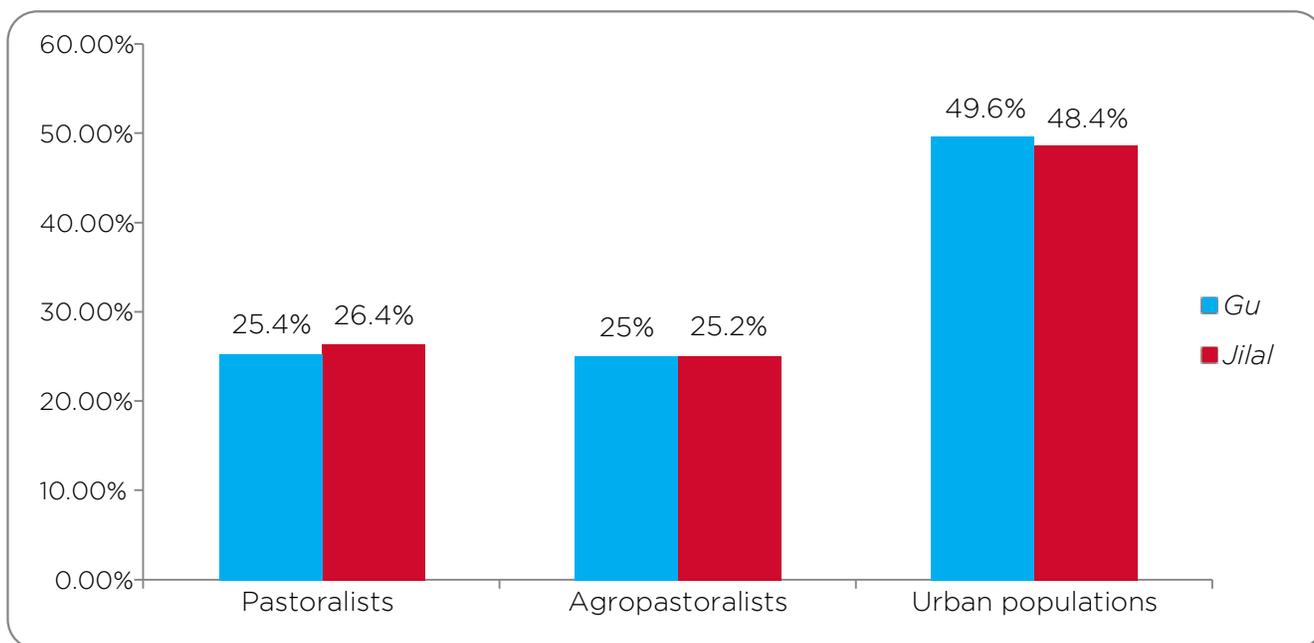


Figure 3.9: Proportion of households purchasing milk

		Purchase milk	No purchase of milk	Total
Gu	Households with female livestock species	51.2% (177)	48.8% (168)	100% (345)
	Households without female livestock species	70.5% (294)	29.5% (125)	100% (419)
Jilal	Households with female livestock species	53.1% (173)	46.9% (153)	100% (326)
	Households with no female livestock species	61.8% (264)	38.2% (163)	100% (247)

Table 3.26: Households purchasing milk

*“Most of us prefer goats’ milk, but it is expensive and not readily available. We therefore consume cows’ milk, which is readily available” (Female FGD respondent in Dofii IDP camp, Beledweyne)*

There is no significant difference in the mean volume of milk bought ( $P=0.547$ ) in the households across the two seasons, as shown in Table 3.27.

	Mean volume bought	Std. deviation	Total volume bought
Gu	0.9121	1.17783	1399.15
Jilal	0.936	1.2505	1409
Paired t test	Mean	Std. deviation	P value
	-0.01884	1.21358	0.547

Table 3.27: Milk purchased<sup>41</sup>

Qualitative interviews suggest goats’ milk is preferred to cows’ milk, as it’s easier to digest. However, due to limited goats’ milk production, a comparison of milk purchases in *Gu* shows only 36.2 per cent of households purchase goats’ milk, while 63.8 per cent purchase cows’ milk. Similarly, in *Jilal*, a comparison of households purchasing milk shows that 35.1 per cent purchase goats’ milk, while 64.9 per cent purchase cows’ milk (Table 3.28).

<sup>41</sup> This both fresh milk, fermented milk and commercial milk

Season	Milk	Pastoralists	Agropastoralists	Urban populations	All the 3 livelihood groups
Gu	Goat milk	59.8%(79)	27.4%(62)	33.6%(146)	36.2%(287)
	Cow milk	40.2%(53)	72.6%(164)	66.4%(289)	63.8%(506)
	Total	100%(132)	100%(226)	100%(435)	100%(793)
Jilal	Goat milk	55.5%(66)	28.2%(57)	32.5%(125)	35.1%(248)
	Cow milk	44.5%(53)	71.8%(145)	67.5%(259)	64.9%(457)
	Total	100%(119)	100%(202)	100%(384)	100%(705)

Table 3.28: Comparison of proportions of households buying goat and cow milk

Herd management in the Hiran region is considered a male responsibility. Men make decisions about breeding, the selection of grazing sites, how long the animals graze each day and what nutritional supplements are provided to cattle - all of which could influence milk yield. The livestock are usually milked once a day, in the morning; the evening milk is left for the calves. Milking is done by both men and women.

Decisions on milk use, as well as the amount consumed per household, are predominantly made by women, as reported by more than three quarters of the households visited - though, in some instances, they consult their husbands (Table 3.29). During *Jilal*, men in pastoralist livelihoods migrate with the livestock and their primary concerns are water and feed for the animals. This leaves no room for decision-making on milk from the livestock, which are away from the households.

	Decision on milk use in households					
	Pastoralists	Agropastoralists	Urban population	Female	Male	Total
Men	2.9%(12)	7.2%(32)	3%(17)	5.4%(43)	2.8%(18)	4.3%(61)
Women	73.7%(302)	77.4%(342)	77.1%(441)	77.9%(616)	74.1%(469)	76.2%(1,085)
Both men and women	23.4%(96)	15.4%(68)	20%(114)	16.7%(132)	23.1%(146)	19.5%(278)
	Decision on volume of milk consumed in households					
	Pastoralists	Agropastoralists	Urban population	Female	Male	Total
Men	2.3%(9)	4.7%(20)	2.4%(13)	3.9%(30)	2.0%(12)	3.1%(42)
Women	78.3%(307)	78.4%(337)	79.9%(441)	80.5%(617)	77.0%(468)	79.0%(1,085)
Both men and women	18.9%(74)	17.0%(73)	17.6%(97)	15.3%(117)	20.7%(126)	17.8%(243)

Table 3.29: Decision-making on milk use

When milk is available at home, it is often mixed with complementary foods before it is given to children (71.2 per cent), as illustrated in Table 3.30. FGDs revealed that most children in the region consume their milk mixed with porridge - milk is often incorporated into children's meals to make them smoother and more palatable. Other uses - such as mixing milk with blood, vegetables, mashed potatoes, water or tea - were also reported. The study revealed milk was mixed with food once or twice a day, depending on food availability.

	Pastoralists	Agropastoralists	Urban population	Female	Male	Total
Fresh drinking milk	29.9% (72)	22.2% (70)	21.9% (82)	27.4% (147)	20.3% (87)	24.2% (234)
Fermented milk	0.4% (2)	1.6% (5)	0.5% (2)	1.1% (6)	0.5% (2)	0.8% (8)
Milk in food	66.9% (184)	74% (233)	72.1% (271)	68.0% (366)	75.2% (322)	71.2% (688)
Other	2.9% (8)	2.2% (7)	5.6% (21)	3.5% (19)	3.7% (17)	3.6% (36)

Table 3.30: Type of milk consumed by children

***The most common meal for children in this region is milk mixed with mashed potatoes” (Midwife in Magalo IDP camp, Beledweyne district)***

Pastoralists, including those in the Hiran region, migrate with their herds during climatic disasters, as a coping mechanism. During the dry seasons, the livestock left behind for milking purposes by women are goats (75.9 per cent) and, occasionally, a few cows (calves), as illustrated in Table 3.31.

Livestock	Pastoralists	Agropastoralists	Urban population	Female	Male	Total
Camels	0.4%(1)	0%(0)	0%(0)	0.2%(1)	0%(0)	0.1%(1)
Goats	85.9%(242)	72.6%(220)	67.1%(139)	77.4%(352)	73.9%(249)	75.9%(601)
Cows	13.8%(39)	26.7%(81)	31.4%(65)	22.0%(100)	25.2%(85)	23.4%(185)
Sheep	0%(0)	0.7%(2)	1.4%(3)	0.4%(2)	0.9%(3)	0.6%(5)

Table 3.31: Livestock left behind during migration

### 3.7 MILK HYGIENE AND HANDLING PRACTICES

Hygienic milk production, handling and processing are important aspects of promoting livestock production. Fresh milk is handled, stored and transported to the selling or distribution points by women (64.2 per cent). In some households, this responsibility is shared between men and women (31.9 per cent). This is replicated across all three livelihoods (Table 3.32).

	Pastoralists	Agropastoralists	Urban population	Male	Female	Total
Men	0.3%(1)	6.2%(25)	0.8%(3)	3.1%(17)	1.9%(12)	2.5%(29)
Women	63.20%(251)	61.50%(248)	68.20%(259)	66.9%(428)	61.1%(330)	64.2% (758)
Both men and women	35.5%(141)	30%(121)	30.3%(115)	34.4%(186)	29.8%(191)	31.9%(377)
Boys	0%(0)	0.7%(3)	0.5%(2)	0%(0)	0.8%(5)	0.4%(5)
Girls	0.8%(3)	0.5%(2)	0.6%(3)	0.3%(2)	0.3%(2)	0.4%(5)
Other	0.3%(1)	0.9%(4)	0.6%(3)	0.3%(2)	0.6%(3)	0.4%(5)

Table 3.32: Responsibility for handling, transporting and storing milk

Modern milk-handling equipment is not used by most of the region’s farmers, who opt for traditional guards and plastic utensils, such as jugs, cups and jerry cans. The same equipment is used for milk storage by a few farmers (16.5 per cent), see Table 3.33. Other equipment used

includes Koobos, which are empty cooking oil tins, and *Dhiil*, woven from tree fibres and used to store milk. Agricultural extension workers, interviewed during the study, confirmed the preference for this locally-available equipment, as well as the region’s limited modern milking apparatus. As highlighted in subsequent sections of this report, milk spoilage is common in most livelihoods, possibly in part due to the lack of correct equipment available.

	Equipment	Pastoralist	Agropastoralists	Urban population	Female	Male	Total
Milking	Plastic utensils	71.6% (282)	75.4% (306)	88.9% (337)	77.8% (487)	79.2% (438)	78.5% (925)
	Traditional guards	28.4% (112)	24.6% (100)	11.1% (42)	22.2% (139)	20.8% (115)	21.5% (254)
Transportation of milk	Plastic jerry cans	81% (286)	69.5%(244)	82.6% (265)	76.2% (407)	79% (388)	77.6% (795)
	Traditional guards	15%(53)	16.5%(58)	6.2%(20)	14.8%(79)	10.6%(52)	12.8% (131)
	Aluminium cans	3.1% (11)	11.4% (40)	5.9% (19)	6.2% (33)	7.5% (37)	6.8% (70)
	Other	0.8% (3)	2.6% (9)	5.3% (17)	2.8%(15)	2.9% (14)	2.8% (29)
Storage	Plastic jerry cans	49.3% (189)	32.8% (130)	54.4% (224)	40.1% (258)	52.1%(285)	45.6% (543)
	Traditional guards	26.4% (101)	36.9% (146)	9.0%(37)	25.3% (163)	22.1%(121)	23.8% (284)
	Aluminum cans	13.8% (53)	17.7% (70)	18% (74)	19.4% (125)	13.2%(72)	16.5% (197)
	Other	10.4% (40)	12.6% (50)	18.7% (77)	15.2% (98)	12.6% (69)	14% (167)

Table 3.33: Equipment used for handling milk by producers

Nearly half (48.3 per cent) of the study’s respondents said they did not boil milk prior to consumption, because they believed raw milk was healthier and more nutritious. This is more common among the pastoralist community, with 71.1 per cent reporting they do not boil milk before consumption (Figure 3.11). Qualitative interviews revealed similar practices were common when consuming raw blood and ruminal juice.

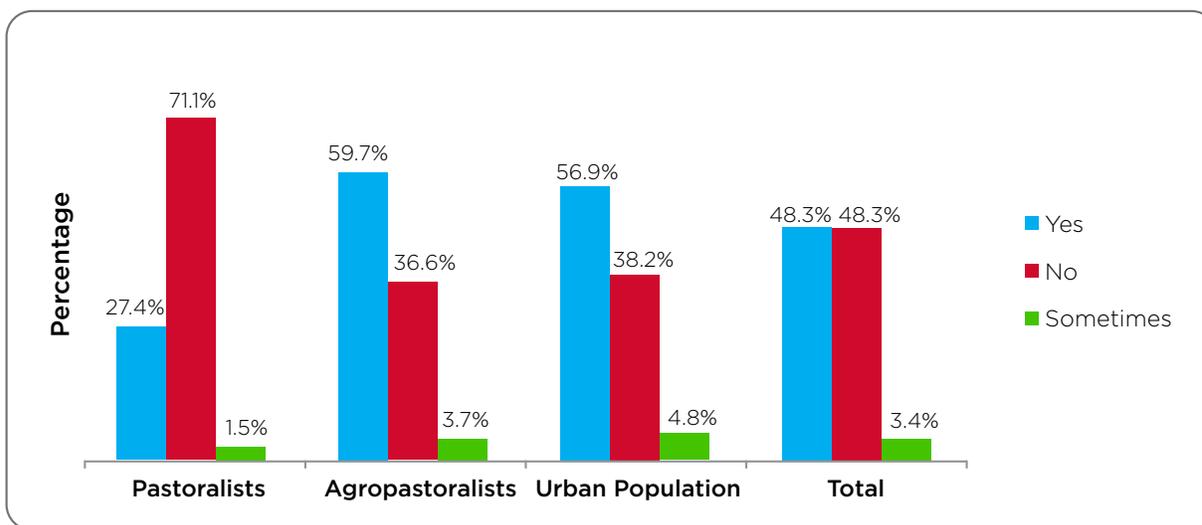


Figure 3.11: Boiling milk before consumption

In Hiran, traditional methods employed to clean milk equipment include using smoking equipment (14.3 per cent) and immersing it in hot water (80.9 per cent), with others using ash and sand (Table 3.34). FGDs revealed barriers to the satisfactory cleaning of equipment, including water

hardness, limited and often recycled water, low temperatures, and not spending enough time cleaning a specific item.

	Pastoralists	Agropastoralists	Urban population	Female	Male	Total
Smoking	20.3% (63)	15.5% (49)	9.3%(41)	14.2% (86)	14.5% (67)	14.3% (153)
Washed with hot water, but no soap	78.1% (243)	76.7% (243)	85.9% z(378)	79.7% (483)	82.5% (381)	80.9% (864)
Washed with hot soapy water	1.3% (4)	4.1% (13)	2% (9)	3.1% (19)	1.5% (7)	2.4% (36)
Washed with cold water but no soap	0.3% (1)	0% (0)	0% (0)	0% (0)	0.2% (1)	0.1% (1)
Washed with cold soapy water	0% (0)	0% (0)	0.2% (1)	0.2% (1)	0% (0)	0.1% (1)
Other	0.6% (2)	3.2% (10)	2.5% (11)	2.8% (17)	1.3% (6)	2.2% (23)

Table 3.34: Mode of cleaning milk handling equipment by farmers

Milk preservation, just like milk handling, is done using traditional methods, including storage in cold water (28.6 per cent) and boiling water (56 per cent), as illustrated in Table 3.35. Through FGDs, farmers reported fermenting a substantial volume of milk that would otherwise get spoiled, or mixing milk with traditional herbs.

	Pastoralists	Agropastoralists	Urban population	Total
Use of cold water	38.9% (151)	20.3% (84)	27.8% (121)	28.8% (356)
Repeated boiling of milk	36.9% (143)	65.1% (269)	64.3% (279)	56% (691)
Fermentation of milk	11.3% (44)	10.4% (43)	3.5% (15)	8.3% (102)
Other (keeping in cool places)	12.9% (50)	4.1% (17)	4.4% (19)	7% (86)

Table 3.35: Milk preservation by producers<sup>42</sup>

## 3.8 CHILD HEALTH AND NUTRITION

There is limited access to information on child health and nutrition services in Hiran. Where available, it is typically provided by the few health facilities and private clinics located in Beledweyne and Tuulohiiraan (Table 3.36). Getting to these health facilities is a challenge for many, as are other health system constraints. Community health workers, staff at health facilities and local radio stations are the main sources of information on nutrition and sanitation. Other sources include traditional healers and birth attendants and humanitarian organisations, such as Save the Children International. However, as highlighted in the table below, of those asked where they receive nutrition and sanitation information, only half responded, and they were from urban and agropastoralist households. This indicates how limited health information is among the pastoralists.

An outpatient therapeutic programme (OTP) run by Save the Children in Mataban district, which probably provided information on child health and nutrition, has since closed.

<sup>42</sup> Milk is not boiled before drinking. Boiling in this case is necessitated by foreseen spoilage

Source of information on nutrition	Pastoralists	Agropastoralists	Urban population	Female	Male	Total
Community health outreach workers	34.2% (93)	10.7% (40)	23.1% (90)	19.6%(108)	23.8% (115)	21.5% (223)
Health facilities	25% (68)	33.9% (127)	41.1% (160)	33.5%(185)	35.1% (170)	34.3% (355)
Religious leaders	0%(0)	0.5% (2)	0.3% (1)	0.5%(3)	0% (0)	0.3% (3)
Community leaders	7.7% (21)	15.2% (57)	15.2% (59)	11.8%(65)	14.9% (72)	13.2% (137)
Radio	31.3% (85)	34.7% (130)	17.7% (69)	30.1%(166)	24.4% (118)	27.4% (284)
Other	1.8% (5)	5.1% (19)	2.6% (10)	4.5% (925)	1.9% (99)	3.3% (34)
Don't know/Not sure	3.6% (10)	5.8% (22)	2.9% (11)	4.1% (23)	4.2% (20)	4.2% (43)

Table 3.36: Source of information on nutrition and sanitation

***“There are no health centres or trained community health workers in this village. The local villagers have to travel for about 10 kilometres to access private health services” (Female FGD respondent in Beledweyne region)***

***“We have several health centres in this district, but they lack regular medicine and nutritional supplies, as well as healthcare workers. Most people in this region rely on humanitarian organisations and private health care providers for health and nutrition services” (District administrator, Beledweyne district)***

During dry spells, health information is difficult to assess and there are no coherent information sources due to mobility prompted by seasonal changes. As migration sees people move considerable distances from health facilities during the dry seasons, the availability of health information in Hiran tends to be lower (27.3 per cent) than during the wet seasons (47.1%), as illustrated in Table 3.37.

	Pastoralists	Agropastoralists	Urban population	Female	Male	Total
Dry seasons	27.1% (102)	24% (100)	29.9% (167)	25.4% (191)	29.8% (178)	27.3% (369)
Wet seasons	47.6% (179)	46.2% (192)	47.5% (265)	49.9% (375)	43.6% (261)	47.1% (636)
Throughout the year	20.2% (76)	16.8% (70)	19.2% (107)	17.8% (134)	19.95 (119)	18.7% (253)
Other responses	5.1% (19)	13% (52)	3.4% (19)	6.6% (50)	6.7% (40)	6.8% (90)

Table 3.37: Availability of health information

For the two seasons preceding this study, critical levels of acute malnutrition were recorded in Beledweyne and Mataban districts.<sup>43</sup> A 2016 November SMART Survey by Save the Children International in Hiran region revealed a severe acute malnutrition (SAM) prevalence of 5 per cent and a GAM rate of 25.6 per cent in Beledweyne district (Figure 3.12).<sup>44</sup> A SAM prevalence of 4.4 per cent and a GAM prevalence of 19.9 per cent were recorded in Mataban district (Figure 3.13).<sup>45</sup>

<sup>43</sup> SNS consortium.2015. Nutrition casual analysis for South Central Somalia. [Online].

< [http://reliefweb.int/sites/reliefweb.int/files/resources/sns\\_nca.pdf](http://reliefweb.int/sites/reliefweb.int/files/resources/sns_nca.pdf) >

<sup>44</sup> SNS Consortium. 2016. Somalia Beledweyne District SMART Survey.

<sup>45</sup> SNS.2016. Nutrition SMART Survey for Mataban District.

### GAM and SAM trends in Beledweyne 2012-2016

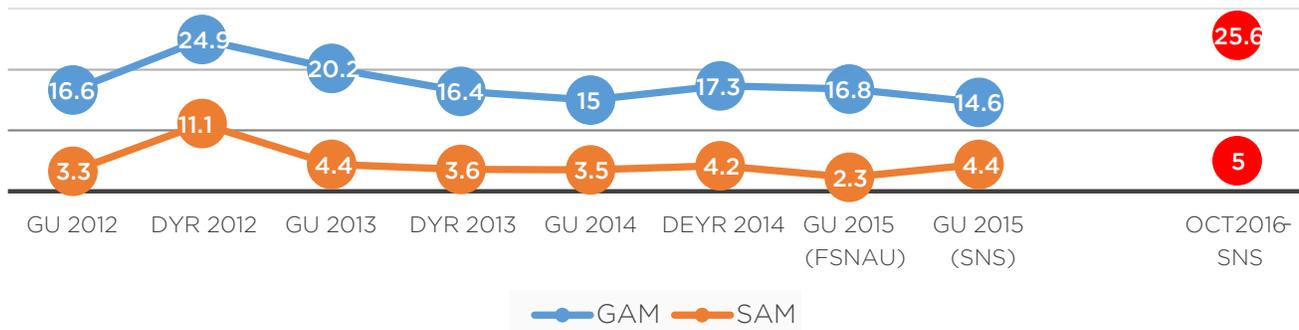


Figure 3.12: Trends in acute malnutrition in Beledweyne district (source: SNS, 2016)

### GAM and SAM trends in Mataban district

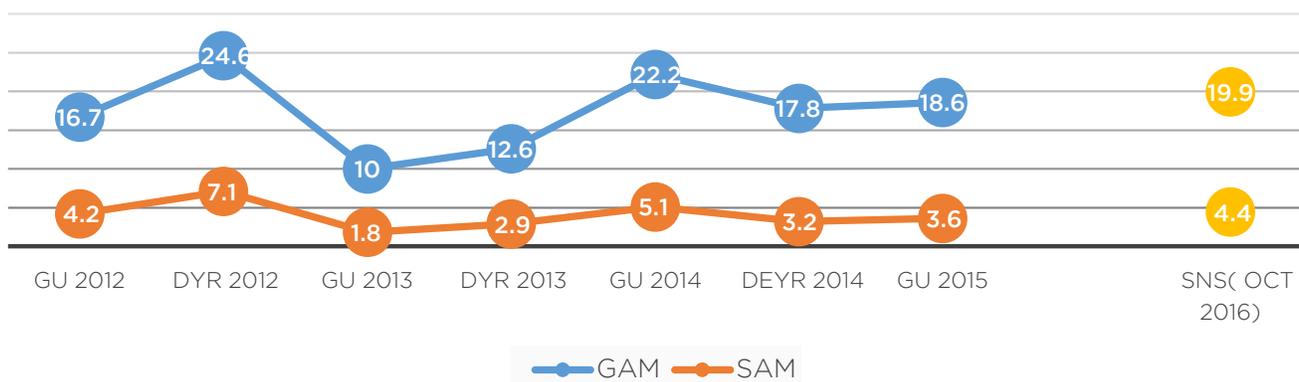


Figure 3.13: Trends in acute malnutrition in Mataban district (source: SNS, November 2016)

In addition, the SNS nutritional causal analysis (NCA) report for Somalia (2016) recorded the prevalence of stunting and underweight as 24.2 per cent and 23.5 per cent in Mataban district. Stunting and underweight was recorded as 11.6 per cent and 16.8 per cent in Beledweyne district. In addition, morbidity rates for this region were relatively high, at 38.9 per cent in Beledweyne and 50.3 per cent in Mataban districts. Vitamin A supplement coverage for children aged six to 59 months in the region is reported to be 44 per cent.<sup>46</sup>

A significant reason given for the poor nutritional status of children in the region was a lack of food (70.6 per cent), particularly by pastoralists (88.3 per cent); while 40.7 per cent of the agropastoralists and 30.6 per cent of the urban population attributed their children's poor nutritional status to milk unavailability (Table 3.34). Other reasons offered by key informants and community members during FGDs and KIs were poor breastfeeding practices; insufficient health services; poor WASH practices and an unsanitary living environment; and infections – such as

<sup>46</sup> SNS consortium. 2015. Nutrition casual analysis for South Central Somalia. [Online]. < [http://reliefweb.int/sites/reliefweb.int/files/resources/sns\\_nca.pdf](http://reliefweb.int/sites/reliefweb.int/files/resources/sns_nca.pdf) >

diarrheal disease, malaria and acute respiratory infection – exacerbated by conflict. Malnutrition in this region has also been attributed to floods, which have caused the deterioration of sanitary conditions and spread disease.<sup>47</sup>

These observations are consistent with global observations summarised by UNICEF’s conceptual framework of the determinants of child undernutrition.<sup>48</sup> Local nutrition surveillance studies indicate malnutrition rates in Somalia are typically ‘serious’ (between 10 and 15 per cent) from October to January, and critical (15 to 30 per cent) from February to May, due to low food stocks and reduced milk access.<sup>49</sup>

	Pastoralists	Agropastoralists	Urban population	Females	Males	Total
Food unavailability	88.3% (188)	56.9% (123)	68.2% (227)	66% (518)	69.7% (287)	70.6% (538)
Milk unavailability	9.9% (21)	40.7% (88)	30.6% (102)	27.7% (211)	25.2% (104)	27.7% (211)
Childhood infections	0.5% (1)	1.4% (3)	0.3% (1)	0.6% (2)	0.7% (3)	0.7% (5)
Other	1.4% (3)	0.9% (2)	0.9% (3)	0.6% (2)	1.4% (6)	1% (8)

Table 3.38: Reasons for poor nutritional status of children in the area

There is no comprehensive nutrition surveillance system in the region and nutrition interventions at household level are limited due to insecurity, inaccessibility of some parts of the region, and limited health care services. What exists is currently limited in coverage and quality due to weaknesses in the public health system. There are limited outpatient therapeutic programmes, run by humanitarian organisations in Beledweyne district and the northern part of Mataban district. As a result, 78.9 per cent of respondents were unaware of nutrition services in Hiran (Table 3.39). These hinder the promotion of optimal IYCF practices, and other key nutrition behaviour. Through FGDs, participants across the board reported little or no access to community nutrition and health workers. In a few instances, however, there were health and nutrition workers paid by humanitarian agencies. Some of those agencies working in maternal, child health and nutrition were identified as Save the Children, Relief International and WARDI. It is in areas where these agencies were working that a few functional health facilities could be found.

	Pastoralists	Agropastoralists	Urban populations	Mataban	Beledweyne	Total
Yes	26.2% (111)	14.7% (68)	18.9% (111)	25.7% (132)	16.5% (158)	19.7% (290)
No	72.8% (308)	84.2% (390)	79% (463)	73.3% (376)	81.9% (785)	78.9% (1,161)
Don't know/Not sure	0.9% (4)	1.1% (5)	2% (12)	1% (5)	1.7% (16)	1.4% (21)

Table 3.39: Availability of nutritionists in the area

47 FSNAU.2015. Post Deyr 2014/15 Nutrition Analysis FSNAU Technical Series Report No. VII 58 Issued March 5, 2015.[Online].< [http://pdf.usaid.gov/pdf\\_docs/PBAAC121.pdf](http://pdf.usaid.gov/pdf_docs/PBAAC121.pdf)>

48 UNICEF.2013.Improving child nutrition, The achievable imperative for global progress.[Online].

< [https://www.unicef.org/publications/files/Nutrition\\_Report\\_final\\_lo\\_res\\_8\\_April.pdf](https://www.unicef.org/publications/files/Nutrition_Report_final_lo_res_8_April.pdf)>

49 FSNAU and FWET.2016. Somalia food security outlook. October 2016 to May 2017.[Online]< [http://www.fews.net/sites/default/files/documents/reports/Somalia\\_OL\\_10\\_2016\\_2.pdf](http://www.fews.net/sites/default/files/documents/reports/Somalia_OL_10_2016_2.pdf)>

Humanitarian assistance	Organisations
OTP	SNS, WARDI, SAMRADO, MGV
Maternal, child health and nutrition	HIDIG, SWISS -KALMO
Targeted supplementary feeding (TSFP)	SCI
IYCF	SNS, BPPSC, SCI
Healthcare	HIRDO, WARDI, ZAMZAM
WASH	DRC, WARDI, SCI
Food for assets	HARDO, HIHADO, HAPOCHILD, DOYALE and DRC
Education and vocational training	ADRA, FENPS

Table 3.40: Humanitarian organisations supporting communities in Hiran region

Based on mothers' recall, only 23.7 per cent of children aged below five were admitted to nutrition therapeutic feeding programmes in the region, most of which were run by humanitarian agencies (Figure 3.14).<sup>50</sup> As indicated in Table 3.41, the children who were registered in such programmes were from 18.5 per cent of the households visited, which reflects the number of households aware of nutrition services (19.7 per cent). The low registration of children in nutrition therapeutic programmes, despite the high rate of malnutrition, demonstrates why interventions, such as Milk Matters, is important.

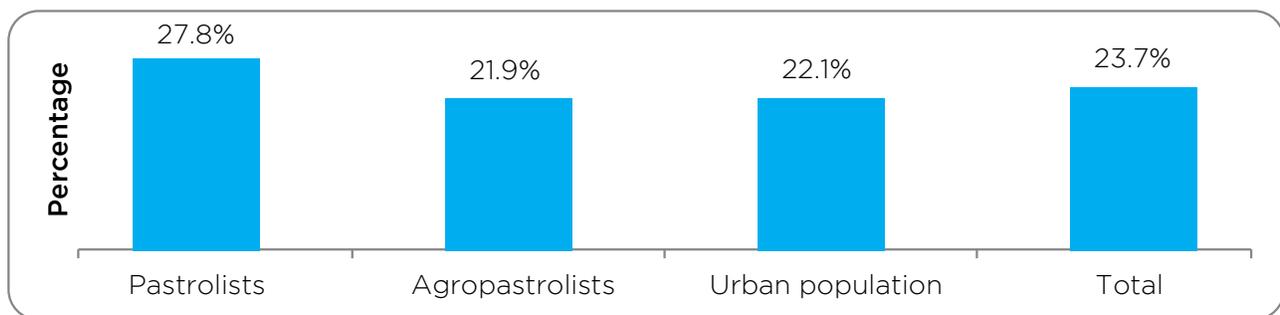


Figure 3.14: Percentage of children registered in nutrition therapeutic programmes

	Pastoralists	Agropastoralists	Urban population	Total
No child registered	79.4% (340)	81.0%(389)	83.3% (521)	81.5% (1,250)
1 child	9.10% (139)	10.40% (50)	10.3% (64)	10% (153)
2 children	7.7% (33)	6.5% (31)	4.2% (26)	5.9% (90)
3 children	2.8% (12)	2.1% (10)	1.8% (11)	2.2% (33)
4 children	0.7% (3)	0% (0)	0.5% (3)	0.4% (6)
6 children	0.2% (1)	0% (0)	0% (0)	0.1% (1)
7 children	0% (0)	0% (0)	0.2% (1)	0.1% (1)

Table 3.41: Number of household children registered for nutrition therapeutic programmes

As indicated in Figure 3.15, knowledge of complementary feeding is relatively low in the region, as is awareness of how long a mother should breastfeed (34.9 per cent of women) and the prevalence of mothers breastfeeding from early into their child's life (44.2 per cent of

<sup>50</sup> These figures are based on mothers' recall and not semi-quantitative evaluation of access and coverage (SQUEAC)

women). There were particularly strong feelings about the benefits of animal milk in preventing malnutrition, with camel, goat and cow milk perceived by all groups as ‘better’ than milk-cereal mixes and powdered milk, when asked during the FGDs.

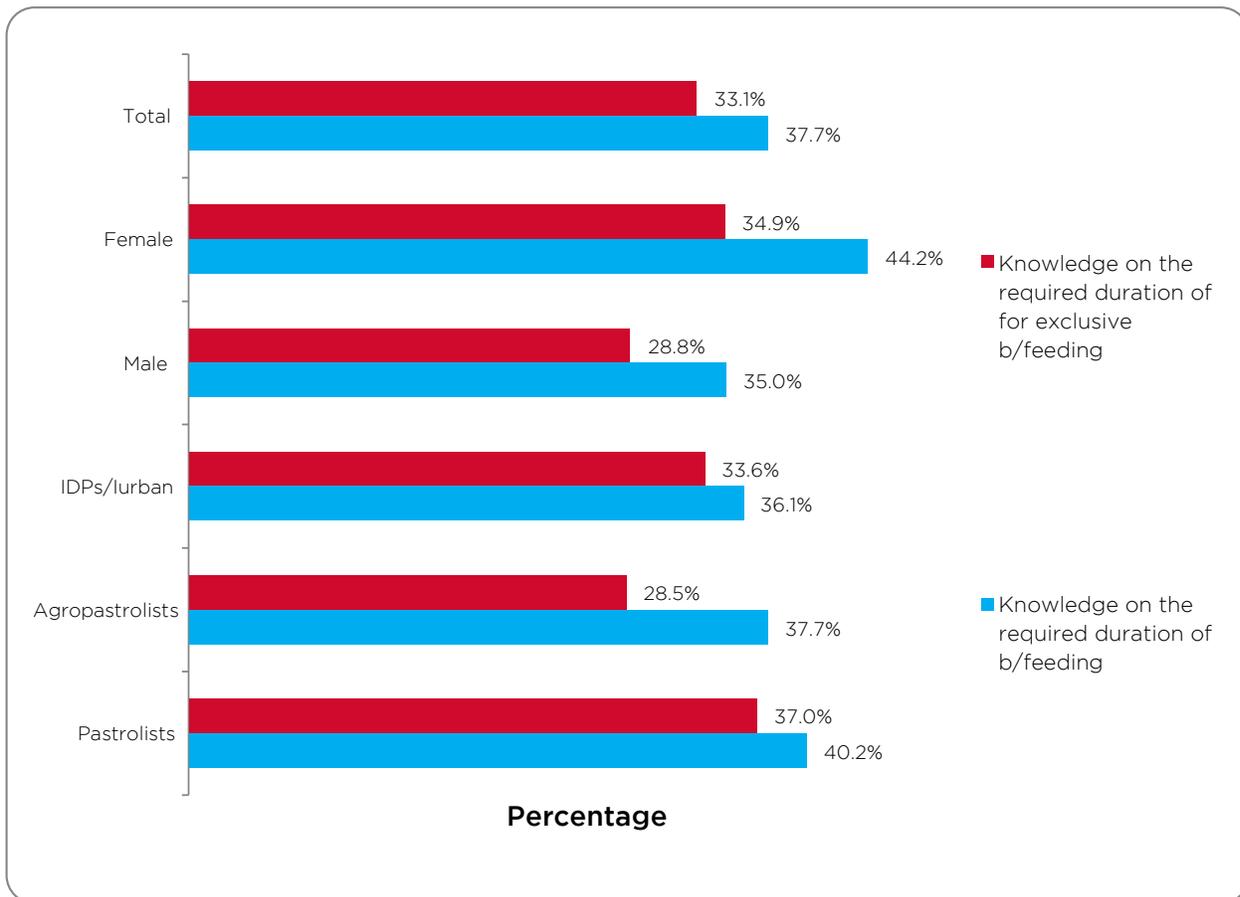


Figure 3.15: Knowledge on breastfeeding

Other factors contributing to poor IYCF practices in the region include the following misconceptions cited by FGD participants:

- Babies under six months old should be given water to drink when it is hot.
- It is sometimes biologically impossible for a mother to produce enough milk to breastfeed exclusively.
- A mother cannot breastfeed while pregnant.
- Colostrum is harmful, so breastfeeding should be delayed.
- Breastfeeding should be delayed until naming ceremonies are held.

***“Children in this region are undernourished due to poor food intake, prolonged drought, diseases, poor breast feeding and occasional floods” (Female FGD respondents in Dofil IDP camp, Beledweyne)***

***“Nursing mothers face food shortages, and because of this they cannot breastfeed exclusively. After two or three months, we supplement breast milk with potato meals” (Female respondent in a KII, Bergadid village, Mataban district)***

### 3.9 MILK MARKETING/ENTERPRISE

There are three key actors in the Hiran milk market chain: famers who are producers, local handlers (buyers and sellers), and consumers (Table 3.42). In a few isolated towns, women act as agents for fresh milk collection in surrounding villages. Thereafter, the milk is transported by men to secondary retailers for sale. Only a third of the respondents were aware of milk buyers' presence in the region. The milk handlers are local business community members (94.9 per cent). Milk sold is for household consumption only.

	Pastoralists	Agropastoralists	Urban population	Beledweyne	Mataban	Total
Local business men	93.4% (158)	95.7% (193)	98.3% (208)	95% (379)	94.5% (190)	94.9% (458)
Business community from other areas	0.6% (1)	1.5% (3)	0.9% (2)	1.3% (5)	0.5% (1)	1% (1)
Don't know	5.9% (10)	4.9% (10)	1.8% (4)	3.8% (9)	4.5% (9)	4% (24)

Table 3.42: Milk buyers and sellers

The long distance to markets, poor road networks, a lack of information on marketing, poor storage facilities for milk, the seasonality of milk availability, and inadequate transport means, all limit milk market participation. Some families face a 29-kilometre trip to access a market. During the three weeks of data collection in Beledweyne and Mataban districts, 41 milk traders shared their experiences. They were all small-scale traders, with women the largest stakeholders in the milk business (97.6 per cent), as shown in Figure 3.16. These traders were aged 27 to 86, with a mean age of 66 years.

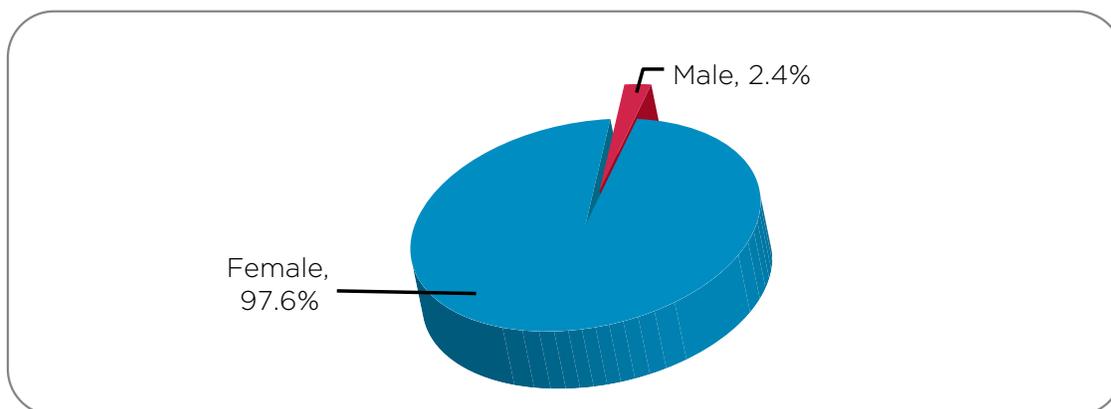


Figure 3.16: Gender of the milk traders

Milk traders are largely engaged in milk collection and sale (40 of the 41 encountered), with only two also involved in milk production (Figure 3.17). While training programmes are virtually non-existent for milk traders, study participants appeared receptive to the idea of increasing their knowledge and understanding of milk marketing. Indeed, their recommendations reveal that the proposed initiative will require an extensive literacy and educational awareness programme, to enhance the target groups' basic knowledge and understanding of the market dynamics within the milk enterprise.

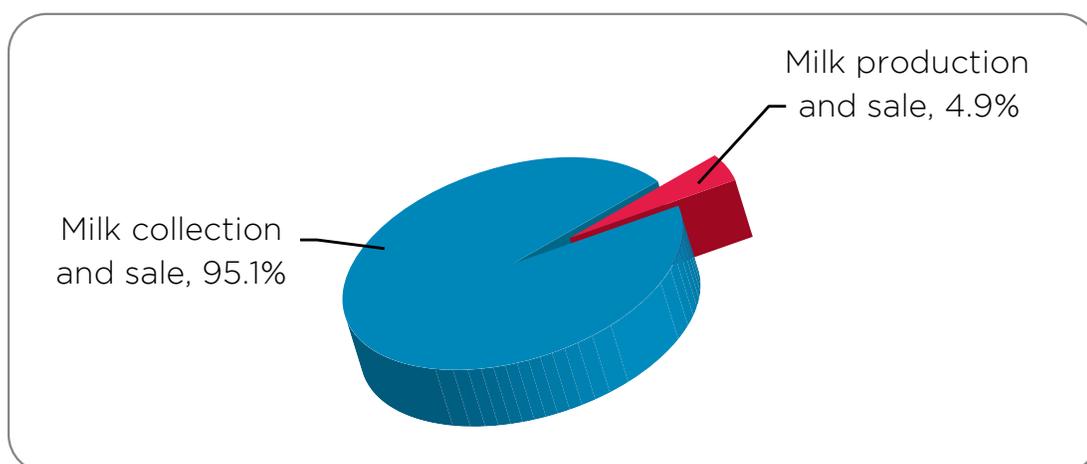


Figure 3.17: Milk vendors' scope of work

The region lacks companies processing milk, and cooling plants to preserve it. Where milk is not sold by households, it is often consumed by children (43.7 per cent), as illustrated in Table 3.43. This was further confirmed by FGD participants who observed that, when surplus milk is available in the household, the priority is given to children, followed by the elderly. This is an indication that milk availability can influence the amount consumed by children in the region.

	Pastoralists	Agropastoralists	Urban population	Female	Male	Total
Consumed by children below 5 years	52.7% (144)	59% (165)	40.1% (123)	53.1% (240)	47% (192)	49.2% (432)
Consumed by adults	4.4% (12)	5.4% (15)	1% (3)	3.3% (15)	3.7% (15)	3.5% (30)
Fermented	0.7% (2)	0 % (0)	0% (0)	0.4% (2)	0% (0)	0.2% (2)
Add to adult meals	1.5% (4)	1.8% (5)	2% (6)	2.7% (12)	0.7% (3)	1.7% (15)
Fed to livestock springs	0% (0)	0.7% (2)	0.3% (1)	0.2% (1)	0.5% (2)	0.3% (3)
Used in rituals/ceremonies	0% (0)	0.7% (2)	0% (0)	0.2% (1)	0.2% (1)	0.2% (1)
No surplus	40.7% (111)	32.5% (91)	56.7% (174)	40% (181)	47.8% (195)	43.7% (376)

Table 3.43: Handling of unsold milk in the households<sup>51</sup>

Besides milk, there are no other known milk products in the region – suggesting its limited additional value. Only 35.1 per cent of the respondents claimed to ferment milk, and this was largely for home use (Table 3.44). Fermentation of milk is a reactionary measure to poor milk preservation in the region.

	Pastoralists	Agropastoralists	Urban population	Total
Do not ferment	54% (231)	60% (288)	76.2% (477)	64.9% (996)
For home use	45.3% (194)	39.4% (189)	23.5% (147)	34.6% (530)
For sale	0.7% (3)	0.6% (3)	0.3% (2)	0.5% (8)

Table 3.44: Milk fermentation

Traders have neither shops nor stalls to sell their milk from. The milk selling points are open spaces in markets and road sides, with no defined shelter (95%), as illustrated in Figure 3.18.

<sup>51</sup> High quantities of milk refer to any remnants in the household due to market unavailability, insecurity or overproduction.

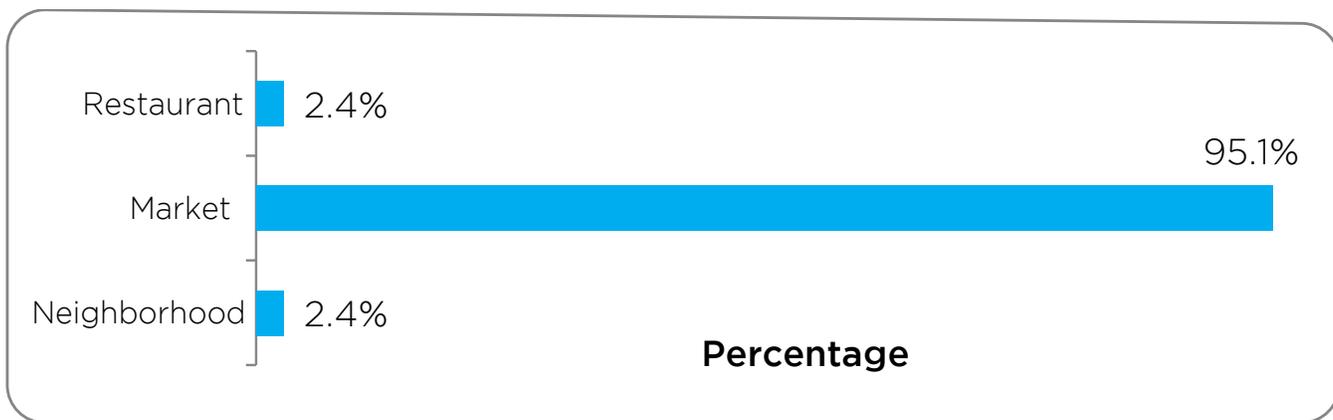


Figure 3.18: Milk selling point

The mean amount of milk bought and sold comfortably in a day by the traders is 16 litres in *Gu* and nine litres during *Jilal*. The maximum amounts purchased and sold in *Gu* and *Jilal* are 73 litres and 27 litres (Figure 3.19). There is a statistically significant difference in the amount bought in dry and wet seasons ( $P < 0.01$ ). Their clientele are restaurants and an urban population residing around markets.

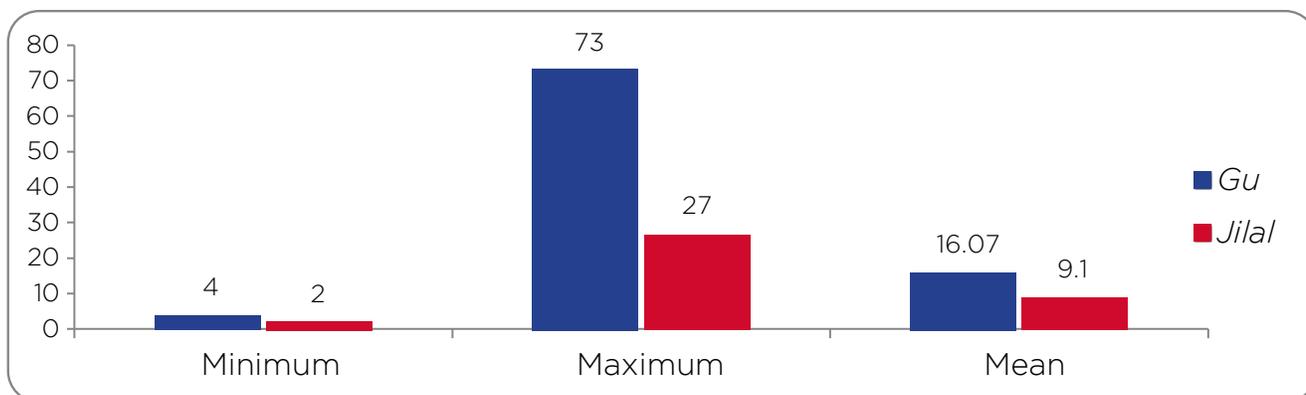


Figure 3.19: Daily volume of milk sold by the traders, in litres

Community members' decision to purchase milk is largely based on their consumption needs (90.5 per cent), rather than market dynamics or a need to use it for other products (Table 3.45). This pattern is more pronounced among the urban population, who produced the least volume of milk (93.1 per cent).

	Pastoralists	Agropastoralists	Urban population	Female	Male	Total
Milk price	0% (0)	0% (0)	0.9% (4)	0.2% (1)	0.6% (3)	0.4% (4)
Taste/freshness	3% (9)	2.8% (8)	1.7% (8)	2.1% (12)	2.8% (13)	2.4% (25)
Actual need	91.8% (279)	84.9% (241)	93.1% (249)	90.2% (527)	90.8% (422)	90.5% (949)
Easy availability	1.6% (5)	0.7% (2)	2.4% (11)	1.7% (10)	1.7% (8)	1.7% (18)
Availability of preservation equipment	0% (0)	0% (0)	0.2% (1)	0% (0)	0.2% (0)	0.1% (1)
Purchasing power	0% (0)	0% (0)	0.2% (1)	0.2% (1)	0% (0)	0.1% (1)
Other	3.6% (11)	11.6% (33)	1.5% (7)	5.7% (33)	3.9% (18)	4.9% (51)

Table 3.45: Motivation to buy milk

Traders and farmers use similar equipment to transport and store milk, with plastic cans the most commonly chosen (85 per cent for transport and 84 per cent for storage), as illustrated in Figure 3.20.

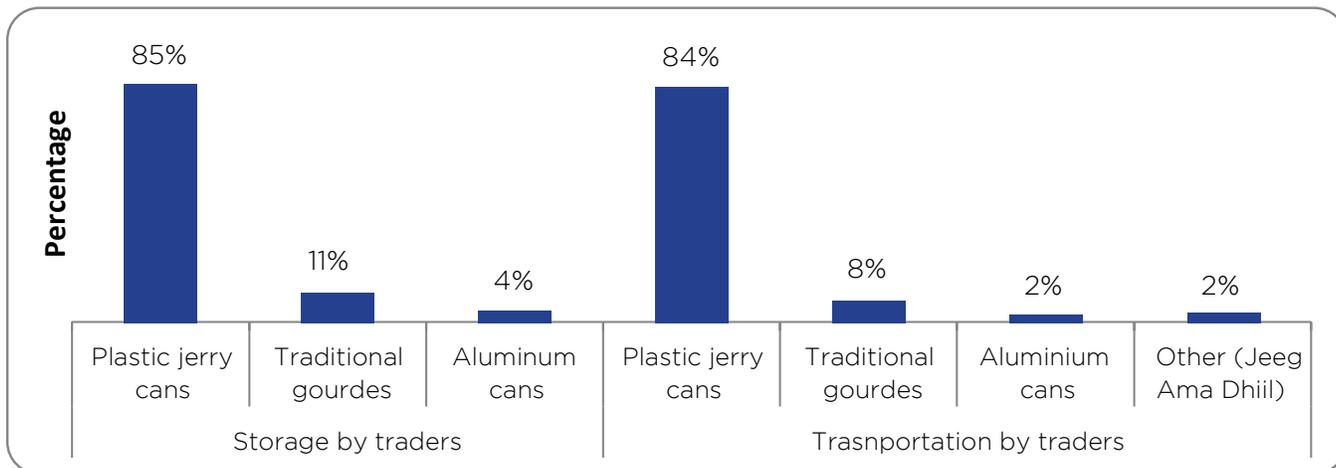


Figure 3.20: Milk handling by traders

As shown in Figure 3.21, boiling milk is the most popular and widely practiced milk preservation method among traders (92.7 per cent).

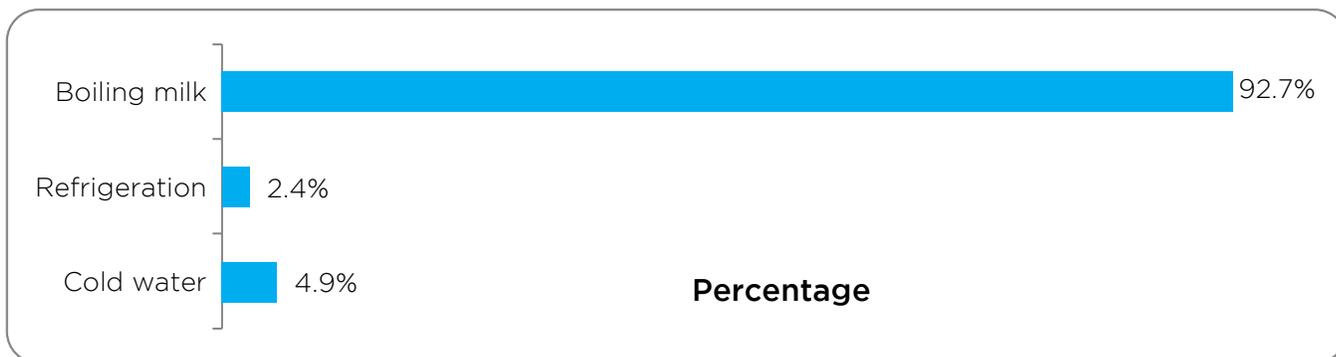


Figure 3.21: Milk preservation by traders

Seasonality plays a major role in milk marketing, as supply, quality and transport challenges change drastically between dry and wet seasons, with consequent price fluctuations. Milk is sold to local consumers in the villages at a lower price than is sold to traders in the same region. Upon arrival in market places, milk prices significantly increase, demonstrating a greater demand for milk in urban centres (Figure 3.22 and Table 3.46).

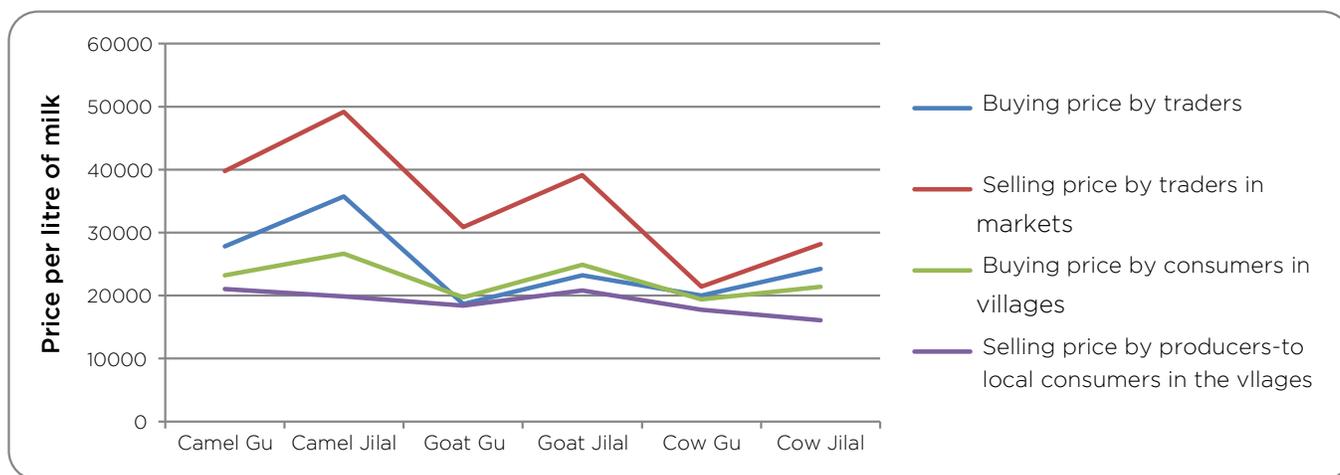


Figure 3.22: Buying and selling price of Milk

	Camel Milk in Gu	Camel Milk in Jilal	Goat Milk in Gu	Goat Milk in Jilal	Cow Milk in Gu	Cow Milk in Jilal
Buying price by traders	27,789 (US\$1.2)	35,729 (US\$1.6)	18,666 (US\$0.8)	23,194 (US\$1)	20,000 (US\$0.9)	24,268 (US\$1.1)
Selling price by traders in markets	39,784 (US\$1.7)	49,158 (US\$2.1)	30,889 (US\$1.3)	39,085 (US\$1.7)	21,418 (US\$0.9)	28,157 (US\$1.2)
Buying price by consumers in villages	23,233 (US\$1.2)	26,649 (US\$1)	19,750 (US\$1.2)	24,907 (US\$1.1)	19,394 (US\$0.8)	21,372 (US\$0.9)
Selling price by producers	21,040 (US\$0.9)	19,846 (US\$0.9)	18,430 (US\$0.8)	20,833 (US\$0.9)	17,734 (US\$0.8)	16,079 (US\$0.7)

Table 3.46: Mean price of a litre of milk across the seasons (Somali shillings)

There is a 12.6 per cent increase in milk prices at the producers' level, while a 23 per cent increase in milk prices is noted at the traders' level during the dry season (Table 3.47). However, no milk producer or vendor could estimate the costs of production, limiting the study's ability to determine profit margins for milk sale.

	Camel milk	Goat milk	Cow milk	Total
Price in markets/at the trader level	23.6%	24.3%	21.3%	23%
Price in villages/at the producer level	14.7%	13%	10.1%	12.6%

Table 3.47: Percentage increase in prices during the dry season for a litre of milk

Challenges in the region's milk business include: unavailability of commercial buyers; milk's short shelf life, in view of local preservation measures; price fluctuations; the inaccessibility of some villages due to insecurity; transport setbacks in the wet seasons; and the unavailability of milk during the dry season.

### 3.10 MANAGEMENT, RISK AND SUSTAINABILITY

The proposed programme has the backing of local government officials, as well as community members. Comments, observations and advice from local government officials included:

- The programme will offer sustainable and reliable local solutions to nutrition challenges in the region.
- Ensure communities support the project. Alternative methods for improving milk production should be based on the relevant livelihood contexts.
- Community leaders and religious organisations have a wealth of knowledge and influence in the communities, so they need to be the entry point for the programme. Working with ethnic and political divides has the potential to result in vulnerabilities and in-fighting.
- Build the capability of local personnel to deliver services, such as animal health and fodder management, rather than relying on direct services from project staff.
- There is a need to consider seasonal activity calendars with the community members, and base interventions on that calendar.
- The programme could provide a significant source of revenue for the local communities and positively contribute towards improving living standards.
- Communal resources, such as boreholes and grazing zones, will need to be given due consideration, since they constitute a source of conflict.
- The major challenge will be putting in place mechanisms to appropriately manage excess milk production.
- The sustainability of the programme will depend on a behaviour change communication, as well as health services, and fodder and water availability.
- Pastoral development takes a long time and the priorities of development agency, donor and implementer may change while the project is being implemented. Therefore, there is a need to identify a realistic exit strategy at the project planning stage.
- Commercial value addition is better handled by the private sector, but it is unsustainable in the long term. The programme should focus on local processing mechanisms to ensure that milk products are available during dry seasons.
- It would be prudent to start with a small-scale pilot project, to document possible pitfalls and challenges, before rolling out a large-scale project.

In total, 99.2 per cent of the community's members are willing to receive help to improve their animal husbandry practices and subsequently improve milk production. A similar number of respondents felt the programme would be ideal for the region and was in line with the local political, religious and cultural orientation. Moreover, a cursory review of the FGD statements indicates a significant number of respondents would accept assistance to improve livestock breeds and milk production, if they were given the opportunity. Going by what participants have observed of ongoing initiatives in their local areas, there is high confidence that the current proposed project could improve communities' wellbeing, if properly implemented.

Primary concerns voiced by study respondents included animal diseases (by 47.7 per cent of females), increased social tension over the use of communal land resources, and increased

family tension (14.6 per cent of men), as shown in Table 3.48. While human diseases were of little concern to the three populations, milk safety is poor due to inadequate handling procedures and the consumption of raw milk. During the FGD interviews, many participants said they expected a smooth initiation and undertaking of the project's activities, but some cited conflict between clans, harsh climate and terrain, insecurity, a poor capacity among local residents to assist in implementation, and low understanding of the programme's concept, as potential challenges.

	Pastoralists	Agropastoralists	Urban population	Female	Male	Total
Animal diseases	22% (80)	20.2% (77)	47.3% (255)	47.7% (338)	12.8% (74)	32.1% (412)
Human diseases	0.8% (3)	0.3% (1)	0.9% (5)	1% (7)	0.3% (2)	0.7% (9)
Zoonotic diseases	0% (0)	0.5% (2)	0.4% (2)	0.3% (2)	0.3% (2)	0.3 (4)%
Drought	0.3% (1)	0% (0)	0% (0)	0% (0)	0.2% (0)	0.1% (1)
Conflict	7.4% (27)	9.7% (37)	2.2% (12)	6.5% (46)	5.25(30)	5.9% (76)
Increased social tension	19% (69)	11.5% (44)	12.8% (69)	12.9% (91)	15.8% (91)	14.2% (182)
Family tension	12.4% (45)	6% (23)	10.4% (56)	5.6% (40)	14.6% (84)	9.6% (124)
Environmental hazards	1.1% (4)	1.8% (7)	0.4% (2)	1.4% (10)	0.5%(3)	1% (13)
Other	37.1% (135)	50% (191)	25.6% (138)	24.6% (174)	50.3% (290)	36.1% (464)

Table 3.48: Foreseen negative effects as a result of the programme implementation

Floods during *Gu* are common in Beledweyne when river Shabelle burst its banks, causing displacement, disrupting seasonal agricultural and pastoral activities, and compounding difficulties in accessing markets.

There are no adequate communal or institutional early response mechanisms to drought in the region; most of the measures are reactionary. As earlier reported, the community's coping mechanisms in the dry seasons are built around herd migration; the splitting of herds; the increased sale of livestock and livestock products; bush product collection and sale; hunting; and the family splitting for labour and herd migration purposes.

Insecurity remains a key challenge in Hiran, as in other parts of South Central Somalia. Of importance is hostility in the Western part of Mataban district. Insecurity in the region often disrupts the movement of market commodities, restricts livestock movement, and causes localised, short-term displacement.

***“Migration to places with pastures is the key copying mechanism for pastoralists. Support from relatives in diaspora is another coping mechanism.” (District official in Hiran district)***

# SECTION 4: DISCUSSION, CONCLUSION AND RECOMMENDATIONS

## 4.1 DISCUSSION

### 4.1.1 Concept compatibility

The three population groups of interest to this feasibility study – namely, pastoralists, agropastoralists and those in urban areas – rely heavily on livestock production for income and livelihood. This Milk Matters programme has the potential to exploit the gaps in livestock production and improve people’s nutrition and income. It is envisaged as a pilot project, with the possibility of it being implemented in one or more locations at the same time.

The minimum recommended milk consumption was witnessed in the majority (85.9 per cent) of households with high milk production (>3.54 litres in 24 hours) during Gu. But this was seen in less than half (44.8 per cent) of households with high milk volume production (>2.8 litres in 24 hours) during Jilal.<sup>52</sup> This indicates low milk consumption during dry seasons can be attributed to low production. Less production, in general, means there is less milk available for household consumption, and less production often leads to higher milk prices at local markets and a tendency among households to prioritise selling milk for income.

<sup>52</sup> Michaelsen, K.F., Hoppe, C., Ross, N., Kaested, P., Stougaard, M., Lauritzen, L., Mølgaard, C., Girma, T. & Friis, H. 2009. Choice of foods and ingredients for moderately malnourished children 6 months to 5 years of age. *Food Nutr. Bull.*, 30: S343-S404.

The importance of low milk production as a barrier to ensuring adequate consumption is affirmed in numerous studies.<sup>53a-58d</sup>

There are considerations that need to be addressed if the programme is to be implemented among the urban population. While the study documents livestock ownership among urban and IDP populations, in conjunction with problems related to low access to milk, constraints around land ownership limit the potential effectiveness and sustainability of the intervention unless livestock shelters, feeding points and fodder are considered.

Land management among the pastoralist communities is negotiated by *Deegan*. This needs to be considered when planning a milk programme for this livelihood group, particularly in the wake of fodder production in communal land tenure systems.

Insecurity remains a key challenge in Hiran, as in other parts of South Central Somalia. Beledweyne district, as well as southern, northern and eastern parts of Mataban district are relatively calm and accessible, but the programme’s implementation faces real security threats in the western part of Mataban district, which is under the control of Al Shabaab.

<sup>53a</sup> Sadler S and Catley A.2009. *Milk matters, The Role and Value of Milk in the Diets of Somali Pastoralist Children in Liben and Shinile, Ethiopia. Participatory Research for the Pastoralist Health and Nutrition Initiative.* < <http://fic.tufts.edu/assets/Milk-Matters-inf-2009.pdf> >

<sup>58b</sup> Sadler K et al.2009. *A Literature Review of Pastoralist Nutrition and Programming Responses.* < [http://www.fao.org/fileadmin/user\\_upload/drought/docs/Tufts%20Feinstein%20Ethiopia%20Milk%20Matters-A%20Literature%20Review%20of%20Pastoralist%20Nutrition%20and%20Programming%20Responses.pdf](http://www.fao.org/fileadmin/user_upload/drought/docs/Tufts%20Feinstein%20Ethiopia%20Milk%20Matters-A%20Literature%20Review%20of%20Pastoralist%20Nutrition%20and%20Programming%20Responses.pdf) >

<sup>58c</sup> Stites E and Mitchard E.2011. *Milk Matters in Karamoja: Milk in Children’s Diets and Household Livelihoods* < [http://www.fao.org/fileadmin/user\\_upload/drought/docs/MM-Karamoja.pdf](http://www.fao.org/fileadmin/user_upload/drought/docs/MM-Karamoja.pdf) >

<sup>58d</sup> Sadler S et al.2012. *Milk matters, The Impact of Dry Season Livestock Support on Milk Supply and Child Nutrition in Somali Region, Ethiopia.* < <https://www.usaid.gov/sites/default/files/documents/1860/Milk%20Matters.pdf> >

Floods in *Gu* are often reported among the agropastoralists, but the community members have adapted well to this challenge by adopting coping mechanisms, such as moving to safer ground.

Malnutrition in children has been reported as a key concern across the three livelihood groups, but there are few available nutrition therapeutic programmes. Hiran region faces critical levels of acute malnutrition, with 5 per cent SAM and 25.6 per cent GAM in Beledweyne, and 4.4 per cent SAM and 19.9 per cent GAM in Mataban district.<sup>54</sup>

As in other parts of South Central Somalia, the region is faced with low knowledge on IYCF, as well as traditional cultural practices affecting infant and young child nutrition. Sources of information on nutrition are community health workers, workers in health facilities and local radio stations. This supports the proposed use of health facilities and community health workers to share nutrition information during the new programme, and monitor the children's nutritional progress. There are limited interventions on health and nutrition in the region, asserting the programme's relevance – it would offer complementary input to existing and ongoing nutrition interventions there.

The relationship between the government and community in Hiran is acceptable and there is adequate cooperation between the two. In Somalia, the consultation of community leaders and community representation in decision making by both the regional government in Hiran (state) and the Federal Government, is key.

<sup>54</sup> SMART surveys conducted by the Strengthening Nutrition in Somalia (SNS) Consortium, October 2016.

Fodder production has the most significant impact on livestock milk yields. Ruminant livestock production relies heavily on natural pasture for feeding. Both the quantity and quality of this pasture is low during the dry season and this is a major constraint to livestock milk production. Providing protein supplements to animals existing on the natural pasture is a strategy farmers use to alleviate the problem of poor forage quality. The need to grow fodder in Hiran cannot be over emphasised, given the unpredictable nature of the climate and the frequent droughts. Fodder availability in *Jilal* is a challenge for more than half (57.1 per cent) of the residents, across all livelihood groups. Notably, only 12.5 per cent of the pastoralists' land is used for fodder cultivation, as they largely rely on open grazing. Consequently, a focus of this programme should be on fodder production, including the introduction of drought-resistant fodder varieties. While agricultural interventions to promote fodder availability would be feasible among agropastoralists, this has limited room for success among pastoralists and urban populations. Discussions with district agricultural officers pointed to the use of fodder voucher schemes, which would be ideal for all three livelihood groups, while at the same time mitigating conflicts over communal resources among pastoralists, and land unavailability challenges among the urban populations.

The programme is not only culturally and politically acceptable, but is also in line with local communities' way of life, needs and livelihood orientation.

The cost of livestock health services is a major challenge for community members. With large herds and services scarce, more than half of the community's members currently rely on free animal health assistance (57.4 per cent). This has been attributed to market failures and the lack of a community-based animal health delivery system. Prior to the collapse of the Somali government, the Ministry of Livestock, Forestry and the Range ran an elaborate animal health programme<sup>55</sup> that included basic social services, such as watering shelters. At present, there is a limited animal health service provided by humanitarian agencies and untrained private animal health service providers, which import and dispense animal medicine. The animal health sector is also unregulated, leading to gaps in the quality of imported drugs and animal health services.

Careful planning will need to be undertaken to minimise the environmental impact of the programme. Primarily, these are related to the requirements of many browsing animals that feed on leaves, soft shoots, or the fruit of plants, such as shrubs. An increase in animal diseases and an upsurge in zoonotic diseases can also be expected, if counter measures are not employed (particularly related to the proper disposal of animal waste). With poor milk handling, substandard hygiene measures, and traditional practices such as the consumption of raw milk, infections may be inevitable. Climatic and environmental hazard mitigation will need to be factored from the onset of the programme, to ensure its long-term sustainability.

### 4.1.2 Targeting

The Milk Matters approach is feasible not only because of constraints on milk consumption and a broad understanding of milk's role in improving nutrition outcomes, particularly among pastoralist families, but also because it offers an opportunity to introduce value addition activities, as part of the approach to increase income and improve food security and nutrition.

Hiran's traditional community leaders, as mentioned earlier, have the power to persuade community members to join or reject development interventions and should be targeted as key influencers in any bid to encourage community participation in Milk Matters.

The regional administrators' approval should be sought and their participation in the mobilisation phase considered, to establish government ownership of the project and develop the long-term engagement needed to build technical and structural interventions.

The selection of beneficiaries is critical to the success of this programme. There has been widespread interest in the proposed programme from the community. Interviews with community leaders and district animal health officials stressed the need for non-discriminatory criteria regarding who benefits, emphasising the inclusion of marginalised communities such as the Somali Bantus, living along the banks of river Shabelle in Hiran.

It is recommended that different types of communities in Hiran should be selected for the pilot project. This includes pastoralist,

<sup>55</sup> UNDP and Centre for Research and Dialogue, 2004. *Socioeconomic assessment of South Central Somalia in 2003.*

agropastoralist and riverine communities. In urban and IDP areas, there is the potential to provide support in terms of fodder and veterinary services, to improve milk production and use among children, but constraints around land availability suggest implementing the recommended range of, or ensuring the approach's sustainability, will be a challenge.

All households in selected communities that meet the following criteria should be selected as part of the programme: ownership of small ruminants or cows that are recently lactating, with normal milk yield; no apparent livestock health issues, and; the presence of children aged up to 12 years. Including all eligible households in selected communities will help reduce the potential for any conflicts, and dilute results by sharing fodder among different households, as observed in Ethiopia.

While children under five years represent the core beneficiary group for the intervention, it is recommended that children up to 12 years should be covered by the intervention. This will help ensure enough milk is available in households.

Appropriate guidance on the number of animals to be supported per household should be developed at the programme planning stage. One approach could be to support a fixed number of animals per household (e.g.

three goats or one cow). Another approach could be to calculate the number of eligible animals per household, based on the number of children. A weighted average can be used for this purpose, where children under five carry, for example, twice the weight of older children. Depending on milk production per animal, one cow can be considered the equivalent of three goats.

Goats constitute the highest number of livestock in the region's herd structure (77.3 per cent in *Gu* and 67.4 per cent during *Jilal*). During migration, they are the predominant species left behind for women's and children's milk needs (75.9 per cent of households) because women prefer to give their children more easily digestible goats' milk. In addition, goats are disease-resistant, consume less fodder than cows, and are highly adaptable to various climate and environmental conditions. They also have the ability to consume a range of plants and fodder, including browsing, forage, grains and legumes. Cows' milk accounts for the largest volume of milk produced in the region. As cows are grazers, they primarily consume grass and have digestive systems capable of handling large quantities of forages with relatively low nutritional quality. Goats' milk is superior to cows' milk and has fewer incidences of allergies among infants, as shown in Table 4.1.<sup>56</sup>

<sup>56</sup> FAO. 2013. *Milk and dairy products in human nutrition*. E-ISBN 978-92-5-107864-8. [Online]. < [www.fao.org/docrep/018/i3396e/i3396e.pdf](http://www.fao.org/docrep/018/i3396e/i3396e.pdf) >

	Advantages	Disadvantages
<b>Cows' milk</b>	<ul style="list-style-type: none"> <li>• Cows produce large volumes of milk.</li> <li>• The cream separates from the liquid, so you can produce cream and butter.</li> <li>• Cows' milk has higher levels of B12 and folate than goats' milk.</li> </ul>	<ul style="list-style-type: none"> <li>• Because the fat globules are bigger (the main cause of cream separating), cows' milk is harder to digest (2-3 hours).</li> <li>• High incidences of allergies to cows' milk.</li> </ul>
<b>Goat milk</b>	<ul style="list-style-type: none"> <li>• Goats' milk is closest in structure to human milk.</li> <li>• Fat globules are smaller, which aids in digestion. It takes a shorter time to digest (30 minutes). The ease of digestibility is also due to the high amount of medium-chain fatty acids (has 35% compared to cows' 17%).</li> <li>• Low incidences of allergy to goats' milk; 93% of infants allergic to cow's milk are able to drink goats' milk without allergic reaction (it has casein - main allergenic protein).</li> <li>• Goats' milk also contains less lactose (milk sugars) than cows' milk, which helps those who suffer from lactose intolerance.</li> <li>• Goats' milk is slightly alkaline, unlike cows' milk, which is slightly acidic.</li> <li>• Fats in goats' milk contain conjugated linoleic acid, which plays an important role in the prevention of obesity, atherosclerosis, some cancers and allergy.</li> <li>• Has linoleic acid, which is useful for immunity improving.</li> <li>• Amino acid composition of goats' milk is also balanced; amino acids such as lysine and cysteine improve absorption of minerals - calcium, phosphorus, iron, and copper.</li> </ul>	<ul style="list-style-type: none"> <li>• Some people dislike the taste of goats' milk because certain breeds of goats can have musky-tasting milk.</li> <li>• Goats produce less milk than cows; 2-3 goats to feed our family of four.</li> </ul>

Source: FAO, 2013

Table 4.1: Pros and cons of goats' and cows' milk

Similarly, in terms of nutrition content, goats' milk is superior, as illustrated in Table 4.2 below.<sup>57</sup>

	Cow	Goat
Protein	8g	9g
Carbohydrates	11g	11g
Fat	8g	10 g
Vitamin D	98IU	30 IU
Vitamin C	0 mg	3.2 mg
Vitamin A	249 IU	483 IU
Vitamin K	0.5 mcg	0.7 mcg
Vitamin E	0.15 mg	0.2 mg
Vitamin B6	0.100 mcg	0.112 mcg
Vitamin B12	1.1 mcg	0.2 mcg
Folate	12 mcg	2.4 mcg
Calcium	276 mg	327mg
Selenium	9 mcg	3.4 mcg
Magnesium	24 mcg	32 mcg
Mg=milligrams, g=grams, IU=international unit, Mcg=micrograms		

Source: FAO, 2013

Table 4.2: Nutritional contents analysis for 1 glass of milk

This study recommends that the first phase of the programme focuses on goats and cows left with women during migration. The second phase of the programme should focus on distributing

<sup>57</sup> FAO. 2013. *Milk and dairy products in human nutrition*. E-ISBN 978-92-5-107864-8.[Online].

< [www.fao.org/docrep/018/i3396e/i3396e.pdf](http://www.fao.org/docrep/018/i3396e/i3396e.pdf) >

three lactating goats to poor and vulnerable households.

Families who don't have livestock said during this feasibility study that they are willing to accept them. This study proposes supplying three lactating goats to such families, as happened during the implementation of the Milk Matters programme in Ethiopia, because this number of goats can provide an adequate milk supply for a family.

### **4.1.3 Milk access and use**

Milk production levels in the surveyed households were low, despite large herd sizes, with each household producing 3.51 litres of milk in *Gu* and 1.8 litres of milk in *Jilal*. The bulk of milk in Hiran is produced by cows, followed by goats.

During *Gu*, less than half (41.8 per cent) of the milk produced by the household's animals is consumed within that family. During *Jilal* that drops to less than a third, with only 31.1 per cent of the milk produced consumed within the household. These figures point to increased milk consumption in the household whenever it is available, and reduced consumption when there is little produced at home. This is a response to the unavailability of food for families in the dry seasons, which leads them to sell more milk to generate the income they need to buy food.

These low milk production levels leave few scenarios where there is milk surplus. However, when there is a surplus of milk produced, around 80 per cent of households prioritise its consumption by children. Decisions on milk handling and the amount of milk to be

consumed in households are made by women. There are limited methods of milk preservation in the area. Sharing milk was not reported in the region, but sharing livestock during social functions is common practice.

A general acceptance by the community that milk is vital to children's health sees it often mixed with other supplementary foods, such as porridge and vegetables, before being given to children. The study did not establish any negative attitudes towards milk consumption by children, so the major barrier to children's milk use in the region is its availability at home.

### **4.1.4 Child health and nutrition**

Poor nutrition is the result not only of a lack of food, but also inappropriate feeding practices - where the timing, quality and quantity of food given to infants and young children is inadequate. Optimal breastfeeding and complementary feeding practices are essential to meet the nutritional needs of children in the first two years of life, and beyond.

Healthcare in Somalia is largely delivered in the private sector. There is not much access to information on child health, nutrition and sanitation in Hiran. Where available, it is typically provided by the few health care workers available in public and private health facilities in Beledweyne and Tuulohiiraan. An out-patient therapeutic centre run by Save the Children, which was likely to provide this kind of information, has since closed. Getting to these health facilities is a challenge for many families living in remote areas without transport. Other constraints include a lack of

professional staff in the clinics and inadequate equipment.

Agropastoralists obtain child health and nutrition information from older community members/elders, traditional birth attendants and through radio stations. Seasonal variations in accessing information have been reported, as during the dry season most pastoralists migrate to other regions, which limits their access to health information

The proposed pilot programme should focus on building the capacity of local health workers and health facilities to address the region's nutrition challenges. There is the need, and a willingness by the local health authorities, for technical support in maternal, child health, nutrition and sanitation.

Generally, there is a positive attitude towards, and an acceptance of, the importance of milk to child health. The major gap is in IYCF practices, because of: traditional and cultural norms; limited access to health care services; poor hygiene and sanitation infrastructure; the limited availability of foods, to ensure diversified diets; a lack of knowledge among mothers and other key decision makers on the importance of optimal IYCF and its various practices; poor support within communities for some desirable practices, particularly exclusive breastfeeding (in terms of time, resources and confidence). Due to this:

- Initiation of breastfeeding is delayed
- Complementary feeding is initiated too early (with two months)
- Continuation of breastfeeding after the introduction of other foods is poor
- The introduction of complementary foods

is not optimal in terms of timing, density, and diversity of foods

- Feeding practices for sick children are poor

Addressing the knowledge gap and breaking the social cultural practices and myths surrounding breastfeeding may encourage optimal breastfeeding practices, which is important in improving nutrition indicators in Hiran and could have a profound impact on children's survival, health and development. This should be linked to other synergistic community health interventions, such as WASH.

#### **4.1.5 Livestock inputs**

Fodder and water availability during the dry season remain a challenge that the proposed project will tackle.

In the short term, constructing community-managed livestock feeding centres would be recommended. However, in the long run, two more economically viable options to counter fodder shortages include fodder vouchers among the urban population and pastoralists, and the promotion of fodder production, and management of crop and plant residues, among the agropastoralists and riverine households.

There is no evidence of community training having been given on milk production, milk safety, fodder production or preservation, and/or animal health. Animal health extension support to the sector is weak, and responsible institutions do little in this regard. This has ramifications for the quality of fodder produced and results in inadequate feeding,

and it impacts herd management techniques, milk handling and safety. As there has been no training of community animal health workers in the region, the programme must identify and train a few community members and provide them with tool kits to mitigate this knowledge gap. The process of identifying trainees should be participatory, involving the respective community members. Commercial concrete and minerals for livestock are available in the region, but demand from farmers is generally low.

Water management strategies are notably few in a region of chronic water scarcity, due to the lack of proximity to major water sources (streams, rivers) and the high capital cost of most agricultural water management technologies. Water is scarce among pastoralist and urban communities. The pastoralists depend on natural water points, community boreholes, pots and trenches for animal water. Women, in particular, are unable to access water resources for animals during the dry seasons, because water sources nearby dry up and those available are too far away. More boreholes and berkads need to be established to solve frequent water shortages and improve water availability during the dry season.

#### **4.1.6 Milk marketing / enterprise**

The value chain of milk in the region entails three activities: gathering (collecting milk from the villages), transportation and retail trading. Overall, the milk that is marketed in the region is not formally processed and there is thus no value addition in doing so. There are

no large- or small-scale milk processing units in the region.

Observations and KIIs with stakeholders in the region show milk traders lack important business and marketing skills. Milk cooperatives do not exist in the region and only one of the 41 milk traders interviewed reported to have received training on milk enterprise – that person's training was years ago in Somaliland.

The season dictates the price of milk. The variation in the price of milk between *Gu* and *Jilal* – or rainy and dry seasons – is a good indicator of the gap between demand and supply in the region. The price of milk at a household level is relatively lower than that of milk sold in the markets. This is an indication that high milk production during the dry seasons would stabilise the prices and promote continued milk consumption across the region. Due to high prices in dry seasons, the demand and consumption of milk sold in urban areas decreases, which can only be reversed by high milk production.

Milk handling and sale is entirely done by the women in Hiran, who make decisions on how much to use at home and sell, and how the milk should be used. Improving the quality of the milk and households' marketing skills could economically empower women in this region.

At present, there is no commercial demand for milk and its products. The purchase of milk in urban centres is largely by urban populations. There is a risk of a milk glut leading to spoilage or waste. The programme will need to address

the importance of preserving and processing milk and its products. The basic equipment required to process milk does not exist in the region and neither do the skills. Training sessions and the provision of equipment – such as milk churners, cream separators, milk containers, such as stainless-steel buckets, and lactometers, will need to be factored into the programme’s design.

#### ***4.1.7 Management, risk and sustainability***

Development that excludes part of the population can be socially divisive. Tapping into the community’s enthusiasm is essential and resonates with the humanitarian principles. In the context of Hiran, harnessing the support of traditional and religious leaders can be crucial, as they can play a key role in supporting or hindering the adoption of interventions and can influence the cultural practices around IYCF and WASH.

To support the programme’s implementation, community members could participate in: milk surveillance and regular data collection on household milk productivity, fodder production, fodder sale, milk processing, milk marketing, and the sale of animal health inputs. Enlisting the support, and encouraging the participation, of local community members helps ensure the programme’s sustainability. The programme is likely to be welcomed by the community because it addresses food insecurity and milk availability, and milk is one of the most important components of the Somali diet. In addition, the milk sector plays a crucial role in income generation for many

households, not only for those who have herds but also milk collectors, transporters, traders and vendors whose livelihood depends entirely on revenue from the milk trade.

The private sector’s involvement in milk processing and value addition appears unsustainable. Business ventures in an insecure environment, without access to loans, may not be feasible. Focus should be on supporting households, villages and/or community groups to process milk into longer-lasting products that can be consumed during the dry seasons. This will offer the foundation for the long-term sustainability of the project. Supporting women groups, VSLAs and cooperatives to process milk products locally will be a fundamental component to address food insecurity and ensure the economic strengthening continuum. In addition, mother-to-mother support groups would offer an integrated approach to address malnutrition and promote IYCF and WASH practices.

Most of the respondents in the FGDs with females felt that income generation projects that work through women’s groups would ensure continued access to milk when the programme ends. ‘Nutrition support groups’ would synergise the interventions, encourage their sustainability and promote social cohesion. An integrated approach that uses existing women’s health groups or VSLAs would see milk products processed locally. This would improve social cohesion, address food insecurity, bolster adaptive capacity and ensure the economic strengthening continuum. This will also ensure that diversion of livestock provided through the programme is avoided

through close monitoring by group members.

Local health care workers and animal health experts have a significant role to play in providing advice, as well monitoring household's nutritional statuses, and providing much-needed education for the behavioural component of the interventions. Based on their local experience, they are best placed to devise child and animal health packages appropriate to the region's needs, to augment the planned interventions. The availability of milk does not seem to influence breastfeeding habits; breastfeeding is largely influenced by a lack of knowledge, and social and cultural practices, in the region.

Key risks to be mindful of when implementing the programme include: zoonotic diseases; human/diarrhoea diseases associated with poor milk handling; displacement of the agropastoralists by floods; social tension about shared communal resources in the case of pastoralists; and the spoiling of any excess milk.

The scale and scope of insecurity in South Central Somalia challenges the humanitarian system's capacity to deliver assistance consistently. Security restriction on movements have a serious impact on the delivery and cost of the programmes. The security situation in Beledweyne district and all but western areas of Mataban district, is acceptable for the programme's implementation. As this is a pilot project, the focus should be in the parts of Hiran accessible by national staff. Any implementation of the programme in western parts of Mataban district can only be achieved

using local partner organisations with the support of third party monitoring services, due to access restrictions. To mitigate any rejection or resistance to the programme, the following approaches should be taken:

- Ensure a community-centered approach that is conscious of clan dynamics. Special attention should be given to minority community groups living along the banks of River Shabelle, in Hiran.
- Invest in relationships with local staff, partners and community authorities prior to the programme roll-out, bearing in mind previous experiences (Annex 1 and Annex 2). The local authorities, communities and elders must be fully involved in selecting the beneficiaries.
- Tailor interventions to the specific context of each livelihood group to mitigate conflicts.
- Take a multi-pronged approach, linking the Milk Matters programme with relevant community-level activities, such as WASH, nutrition and health, through community health workers, will bolster community acceptance.

Dairy production systems may impact the environment and climate, as they require a great deal of water, a loss of biodiversity, land degradation, and release pollutants.<sup>58</sup> To ensure climatic and environmental sustainability in the region, the following potential strategies ought to be considered for the Milk Matters project: diversifying livestock across the community (composition and numbers); varying livelihood activities; and modifying rangeland management practices.

<sup>58</sup> FAO.2006. *Livestock's long shadow, environmental issues and options*. [Online]. < <http://www.fao.org/docrep/010/a0701e/a0701e00.HTM> >

Water scarcity will need to be addressed for the programme to succeed. Whereas water vouchers have been extensively used in Somalia to improve water accessibility for household use, it is logistically difficult to deliver water, for livestock use, to sparsely populated areas with limited water resources. Households will need to have sufficient and safe storage containers. Water vouchers and trucking are not only temporary, but also expensive and unsustainable interventions that have the potential to cause conflict, especially when some beneficiaries receive water vouchers and others do not.<sup>59</sup> Water trucking and vouchers also offer limited links with other WASH activities, such as hygiene and sanitation promotion. Repairing existing boreholes and establishing community boreholes, water catchment dams and underground tanks for water harvesting, should be priorities and should be managed by local water associations. Alternative interventions, such as fuel subsidies, to strategic community boreholes can be used to cater for this need.

## 4.2 SWOT ANALYSIS FOR THE PROPOSED PROGRAMME

Livestock farming is a major source of food and a sector that can generate a significant number of jobs and income for Hiran's poor rural population. Geographically, the region is well suited to the programme, with possible

<sup>59</sup> *Oxfam.2013.Technical Guidelines on Water Trucking in Drought Emergencies.[Online].*

[http://www.fao.org/fileadmin/user\\_upload/drought/docs/Technical%20Guidelines%20on%20Water%20Trucking%20in%20Drought%20Emergencies.pdf](http://www.fao.org/fileadmin/user_upload/drought/docs/Technical%20Guidelines%20on%20Water%20Trucking%20in%20Drought%20Emergencies.pdf)

locations being Beledweyne district, as well as eastern, southern and northern areas of Mataban district. The deficit between milk demand and supply makes the intervention a timely venture. Most resources for this project could be secured locally, except animal health services. An important economic benefit of the project is that it would increase the supply of milk and longer-lasting milk products, which would help fight worrying rates of undernutrition in children. If successful, the programme's interventions would be sustainable and cheaper than conventional therapeutic feeding programmes.

Market segments for milk have not been defined, nor market size determined but, as already stated, it is clear demand exists. The programme is a viable model that can exploit sub-sector gaps, such as low fodder production; inadequate animal feeding; livestock reproduction; animal health and welfare; milk hygiene and quality. The diversification of production, wherever possible, should be considered as a way to optimise production and ensure that there is value addition for milk. The livestock owners have some fixed land bases, which can be used to undertake intensive farming and livestock production. There is strong good will for the programme interventions from political, religious and community leaders. Possible environmental, conflict and security risks can be mitigated, as outlined in this feasibility study's recommendations (see page 67).

A SWOT analysis can help analyse the factors pivotal to the programme's success, as presented in Table 4.1.

Strength	Opportunities
<ul style="list-style-type: none"> <li>-Vast, unused land resources among the pastoralists and agro pastoralists.</li> <li>- Livestock farming is a major source of income in the region.</li> <li>- Livestock farming is a major source of food in the region.</li> <li>- Ample human resource and manpower availability.</li> </ul>	<ul style="list-style-type: none"> <li>- The project is acceptable to the community members.</li> <li>- The programme is addressing an important problem in the community.</li> <li>- Ready market for dairy products</li> <li>- Non-existence of any value-added products</li> </ul>
Weaknesses	Threats
<ul style="list-style-type: none"> <li>-Weak technical support of agricultural and livestock extension services.</li> <li>-Traditional approaches of livestock production due to lack of skills.</li> <li>- Remoteness of the region limits transportation and market chains.</li> <li>- Seasonal changes hamper the livestock productivity and milk production.</li> <li>- Poor milk preservation methods.</li> <li>- Poor milk handling, hygiene and safety.</li> </ul>	<ul style="list-style-type: none"> <li>- High risk of diseases in livestock.</li> <li>- High risk of human diseases due to poor milk safety and handling.</li> <li>- Fragmented markets.</li> <li>- Sequential drought in the region.</li> <li>- Lack of community organisations and outdated farm practices.</li> <li>- Floods cause displacement of community members and hinder transport in the region.</li> <li>- An unpredictable security situation.</li> </ul>

Table 4.3: SWOT analysis for the proposed milk matters programme in Hiran

## 4.3 CHALLENGES AND LIMITATIONS IN THE STUDY

- Recall bias - This study heavily relied on memory to assess the situation in Jilal. Therefore, errors could have been caused by differences in the accuracy or completeness of recollections retrieved from study participants regarding past events or experiences. To overcome this, the study targeted two respondents in each household. The participants were given enough time before answering the recall questions to reflect and think through the sequence of events during Jilal. In addition, questions on recall were posed last and on a separate questionnaire to help 'blind' the participant.
- The milk volumes reported in Gu were relatively low due to poor rains in the region. As such, there was limited recovery by animals from the effects of the drought in Jilal season. However, the figures given allowed enough comparison on milk production, consumption and sale.
- The inability of milk traders and farmers to accurately estimate the cost of milk production and distribution hindered the calculation of profit margins for milk sale.
- Poor road networks in the region hampered the data collection exercise, so the field work took 20 days instead of the planned 16 days.
- Insecurity was a major challenge in Mataban district. In Gerijir village in the west of Mataban district, the field team faced confrontations from community members, but order was restored following the intervention of village elders and enumerators who originated from the region. Similar resistance was experienced in Omaad region, in the east of Mataban, where the field team faced a security risk from Al-Shabaab terrorists.

## 4.4 CONCLUSION

The Milk Matters approach has been deemed feasible in Hiran due to constraints on milk consumption related to low production during dry seasons; high levels of livestock ownership; a broad understanding of milk's role in improving nutrition outcomes, especially among pastoralist families; and the potential for layering activities focused on livelihoods and resilience, as part of a wider approach. This could provide significant benefits in terms of improving food security and nutrition in targeted communities, as well as enhancing the sustainability of the interventions in emergency and non-emergency contexts. The programme is acceptable among community members, and political, religious and community leaders. By mitigating possible security challenges, social conflict and environmental hazards, the programme holds significant potential to enhance the region's nutrition and food security.

## 4.5 RECOMMENDATIONS

The following recommendations aim to provide guidance for developing the Milk Matters approach in Somalia and, more specifically, a Milk Matters pilot project in Hiran. The recommendations aim to ensure efficiency, while at the same time enhancing cross-sectoral links and the potential impact of the intervention. The proposed interventions encompass a holistic approach to the problem of increasing milk availability for vulnerable populations by focusing on dry

seasons (through support for fodder, water and veterinary services), as well as rainy seasons (by encouraging the conversion of milk to storable products, and supporting longer-term income-generating activities). At the same time, all activities should be firmly embedded in a community-based approach (focusing on community mobilisation and long-term capacity building on issues of fodder, water and environmental management). This is expected to maximise the intervention's positive impact and sustainability, while also improving the resilience of households involved.

### *Programme interventions*

- Building on the positive results from the Somali region of Ethiopia, the Milk Matters pilot in Somalia should provide support in terms of fodder and veterinary services for milking animals that stay close to women and children during dry seasons. Based on available evidence, this is expected to lead to significant improvement in milk production, as well as milk consumption by children.
- Schemes to enhance community-level water availability should be incorporated as part of the overall programme approach. This is especially true given the recent drought in the region and its negative effects on milk production and livestock health. Water shortage was also documented as an important limitation by community members, as part of the Milk Matters project in Ethiopia.
- Given contextual realities, such as high levels of GAM among children and

pregnant and lactating women (PLW), low levels of exclusive breastfeeding and sub-optimal complementary feeding practices, the pilot project should be supported by a strong and clearly defined infant and young child feeding (IYCF) strategy, including social and behaviour change communication (SBCC) components. In addition to conventional nutrition-related messaging, from the perspective of the pilot project, important areas of focus should include: i) encouraging conversion of milk to products with a long shelf-life (e.g. ghee and cheese), especially towards the end of rainy seasons, ii) promoting the role of milk in enhancing the nutritional status of PLW, which in turn can positively influence their perceived ability to exclusively breastfeed children under six months, and iii) encouraging women to devote more household income towards ensuring adequate nutrition for their children, through optimal complementary feeding.

- As discussed, women play a central role in deciding household-level milk allocation, as well as milk handling, storage, transportation and trading in Somalia. Therefore, the programme approach should be primarily focused on women, in terms of provision of assistance and targeting of SBCC initiatives, while also ensuring adequate participation of men.
- Parallel to its focus on women, the programme approach should be underpinned by a commitment to developing the capacity and participation of the target community. This is crucial to maximizing the programme's impact and fostering its sustainability. Capacity development can include a range of basic skills directly related to the

programme, e.g. fodder management, water management, rangeland and environmental management and market awareness, as well as enhanced awareness about optimal IYCF and nutrition. Further operational research, which adequately builds on collective development experience in Somalia, will help determine the specific form of these activities.

- Low household income is one of the underlying causes of malnutrition globally. Over the medium to long terms, it is therefore important to develop strategies to supplement household income as part of the Milk Matters approach. This should include the distribution of milking animals, through suitable mechanisms (including cash transfers), to poor households with no livestock to enhance milk availability, as well as to strengthen potential income-generating opportunities. Importantly, there is a strong potential to expand milk-production and value addition through village savings and loan associations (VSLAs) and cooperatives, and by exploring the development of links with the private sector, where relevant. Taken together, these interventions can serve to increase the resilience of targeted households against external stresses and shocks.
- Given the close association between nutrition programming on the one hand, and food security and livelihoods programming on the other, cross-sectoral links should be enhanced to the extent possible. Improving milk production and consumption among children - through fodder production and storage, water management, and veterinary services for livestock - provides a concrete "bridge" that can link interventions in the two

sectors. For nutrition interventions, available evidence demonstrates that enhanced milk production and consumption can significantly augment nutrient intake. It has also been shown that by reducing the time spent searching for pasture and water for animals, women can spend more time caring for their children. Therefore, nutrition interventions should aim to improve milk production at the household level as part of regular programming. As part of food security and livelihoods interventions, greater emphasis should be placed on ensuring consistent milk production in households, especially during dry seasons. Such programmes also hold the potential to ensure nutrition outcomes are systematically tracked, by including nutrition-related indicators.

- Links with programmes focused on health, as well as water, sanitation and hygiene (WASH), should be promoted in order to maximize positive nutrition outcomes. Such links should be clearly documented, in order to address considerations related to attribution and impact under the pilot project.

### ***Programme phasing***

Given the complexities inherent in the design of a multi-sectoral programme, a phased approach is recommended for the Milk Matters pilot project:

- Phase I entails support for animals that stay close to women and children (goats and cows) during seasonal migration, through the provision of fodder, water and veterinary services; IYCF and SBCC support; the mobilisation of women's groups for improvement of

milk production and enhanced nutrition outcomes; and the mobilisation of community groups focused on fodder management, water management, and rangeland and environmental management. To the extent possible, coordination with existing interventions focused on health and WASH should be promoted. It is recommended that the Phase I should run for a period of one year.

- Phase II focuses on well-performing communities under Phase I, with the distribution of lactating animals to poor and marginalised households with no livestock; the distribution of milk vouchers among urban populations (e.g. IDPs) that cannot effectively keep milking animals; the setting up of livestock infrastructure and enterprises through cooperatives and village savings and loans associations (VSLAs), with a view to enhancing income and economic opportunities during the rainy seasons that can increase savings available during dry seasons; the processing and value addition of livestock products, including by developing partnerships with public and private stakeholders; and the phasing out of support for Phase I interventions, as community capacity in select areas – including fodder, water and rangeland management – improves.

### ***Focus on women***

- The central role played by women in ensuring positive nutrition outcomes for children is well-documented. This study also notes that women overwhelmingly determine household-level milk allocation in Hiran. Engaging women to ensure that increased milk availability translates

into increased milk consumption among children is therefore fundamental.

- It is important to note that the incentive to sell milk for higher prices during the dry season can diminish the positive effects of increased milk production on milk consumption by children. Therefore, the programme will seek to raise awareness among women about the importance of using income to enhance nutrition among children (especially through optimal complementary feeding).
- In addition, the medium- to long-term interventions under Phase II of the project should ensure the adequate targeting of women, through VSLAs and the promotion of cooperatives. In addition to the prominence of women as milk traders and suppliers, this can help to increase the income available to women at the household level – with potential concomitant benefits for child nutrition. Men should also be suitably involved in different programme components.
- It should be ensured that all proposed activities conform to religious and cultural norms in Somalia.

### ***Community-level engagement***

- As indicated, the project should be underpinned by a long-term commitment and approach to increasing community capacity in key areas, including fodder, water and rangeland management. This is crucial to ensuring that the effects of the project are sustainable and contribute to the long-term resilience of the communities.
- Where possible, simple, cost-effective and high-impact interventions should be undertaken in the above areas.

Approaches that have worked well in Somalia, as well as those that have worked in other countries but hold strong potential to be replicated in Hiran region, should be identified during the project planning stage.

- Communities that demonstrate strong results during the pilot project should be chosen as ‘model communities’. Such communities can effectively demonstrate the potential gains of the Milk Matters approach to other communities, as well as development organisations. Learning visits to well-performing communities should be arranged as feasible.

### ***Selection criteria***

- It is recommended that different types of communities in Hiran region should be selected for the pilot project. Primarily, this includes pastoral and agro-pastoral communities, where incidence of livestock ownership is high and traditional practices recognise the importance of milk in enhancing nutrition among children. However, there are other important groups, such as marginalised groups in riverine communities, where the approach should also be tested. In urban and IDP areas, there is a potential to provide support in terms of fodder and veterinary services to improve milk production and utilization among children; however, constraints around land availability imply that it will be challenging to implement the range of activities recommended for the pilot project, or to undertake steps to ensure the sustainability of the intervention.
- It is further recommended that all households in selected areas that meet

the following criteria should be selected: i) ownership of small ruminants or cows, ii) recently lactating animals with normal milk yield, iii) no apparent livestock health issues, and iv) presence of children up to 12 years. Including all eligible households in selected communities will help reduce the potential for any conflict, as well as the dilution of results through the sharing of fodder among different households, as observed in Ethiopia.

- While children under five years represent the core beneficiary group for the intervention, it is recommended that children up to 12 years of age should be covered by it. This will help ensure that enough milk is available at the household level.
- Appropriate guidance on the number of animals to be supported per household should be developed at the programme planning stage. One approach could be to support a fixed number of animals per household (e.g. three goats or one cow). Another approach could be to calculate the number of eligible animals per household based on the number of children. A weighted average can be used for this purpose, where children under five carry, for example, twice the weight as older children.
- Depending on milk production per animal, one cow can be considered the equivalent of three goats.

Support for fodder, water and animal health services

- It is recommended that support for fodder should be provided in a multi-pronged approach. In the short-term, in areas in close proximity to functioning

fodder markets, fodder vouchers should be used. In areas distant from functioning fodder markets, fodder and supplement rations should be provided to eligible households with appropriate frequency.

- Establishing alternative and complementary forage sources (legumes, grasses and tree fodder) should be promoted, as relevant.
- Over the medium-term, community-level fodder production and management should be promoted. This is true for agro-pastoralist and riverine communities, as well as pastoralist communities, in Hiran region.
- Appropriate varieties of fodder should be determined at the programme-planning stage, depending on the conditions and needs of different communities. Drought-resistant crop and fodder varieties that can withstand harsh weather conditions should be promoted.
- The Hiran context is ideal for the establishment of water catchment dams and underground tanks for water harvesting that can be managed by local water users' associations or the private sector. Development of boreholes at strategic points should also be considered. In the latter case, the use of solar borehole pumps should be promoted to enhance the sustainability of such installations.
- A package of animal health interventions should be defined that includes prophylactic and curative drugs, based on the common livestock diseases in the region. These services can be accessed by community members through a voucher system.
- In the medium-term, the training of both

men and women as community animal health workers (CAHWs) should be promoted to ensure continued access to animal health services at times of seasonal migration by men.

### ***Integrating marginalised populations***

- This study recommends that Phase II of the pilot project should focus extending the Milk Matters approach to marginalised households and communities. This includes poor households that do not own livestock within communities selected under Phase I, as well as riverine and urban IDP communities.
- Poor households in target communities that do not own livestock should be provided a one-time cash transfer to facilitate the purchase of three lactating goats per household. Goats are generally well-suited to the conditions in Somalia, given low fodder consumption, less land requirement, greater resistance to diseases, and a general preference for goat milk among Somali mothers. The ownership of livestock among such families should improve both the household's asset base, as well as dietary diversity and nutrition outcomes among children.
- Potential negative environmental damages resulting from the introduction of a large number of animals should be adequately anticipated, and remedial measures (such as construction of livestock shelters) should be taken.
- Households provided with livestock should be given the same support services for fodder, water and veterinary services as project participants selected in Phase I.

- Among urban communities with a high risk of malnutrition, especially IDPs, the distribution of milk vouchers among children meeting pre-defined criteria should be undertaken. In addition to the nutrition benefits identified earlier, this can help create a demand-side component to the range of income generating activities proposed for families with livestock.
- Post-distribution monitoring should be maintained to track results and identify any issues related to livestock disease or death, as well as proper usage of milk vouchers.

### ***Improving economic opportunities and income***

- Phase II should also focus on developing economic opportunities associated with livestock in target areas. By increasing income and savings, this can positively influence food security and dietary diversity, WASH and health-seeking behaviour among project participants. This is expected to result in positive nutrition outcomes.
- The project should focus on providing training to increase milk yield, which can subsequently be converted and/or sold. Sufficient water and fodder availability will underpin improved milk yield, so the activities should focus on communities where these inputs have been adequately managed.
- Access to finance is a key component to increasing economic opportunities. It is recommended that VSLAs can provide an effective community-based mechanism for facilitating access to finance among programme participants. In well-performing communities where income

and savings levels are low, the project can provide adequate seed funding and/or promote links with financial institutions, to initiate the saving and borrowing cycle. Close mentorship by project staff should be ensured during the early phases of the activity to ensure that any challenges are identified and resolved in a timely manner.

- Depending on community context and location, the project should also explore opportunities for value addition. This can be achieved through the pasteurization and packaging of milk, as well as conversion to dairy products. In this respect, the development of cooperatives in well-performing communities can facilitate the growth and management of requisite community-level infrastructure. However, the success of such enterprises will depend on local conditions, including distance to local markets and opportunities for developing partnerships with the private sector. These should be analyzed during planning for Phase II.
- Women should be the primary focus of all activities aimed at increasing income and economic opportunities. In order to avoid any gender-related conflicts, adequate participation of men through community-level organisations should also be ensured.

### ***Inter-sectoral linkages***

- The Milk Matters approach is inherently multi-sectoral. It aims to improve nutrition outcomes through food security and livelihood interventions. The multi-sectoral nature of the approach increases its complexity. This necessitates strong consultation and research at the project planning stage. Importantly, experiences

of relevant organizations that have worked in Somalia on similar interventions should be used.

- The approach aligns closely with nutrition-sensitive programming, in terms of a key expected outcome, namely the improved nutrition status of children up to five years. The pilot project in Hiran should also prioritize IYCF and SBCC activities, to ensure that increased milk production translates to increased, sustainable milk consumption by children.
- In terms of food security and livelihoods, the Milk Matters project in Ethiopia focused on the provision of fodder and veterinary services for programme participants. The proposed pilot project should also include expanded activities for income generation and rangeland management, as outlined earlier.
- Provision of water and proper management of livestock waste are associated with the WASH sector and should be appropriately included in the design of the pilot project with a focus on community mobilization and capacity building.
- The project results framework should adequately capture the multi-sectoral nature of the intervention through developing both sector-specific and integrated indicators.

### ***Resilience***

- The Milk Matters approach focuses on improving milk production and use among children, especially during dry seasons and drought. This has been documented to produce positive results in terms of food security, dietary diversity and nutrition outcomes in the Somali (Ogaden) region

of Ethiopia. It can also protect critical assets against the adverse effects of intense or unusually dry weather. In this sense, the approach provides a concrete, contextually-relevant and well-tested method for improving the resilience of selected communities against drought-related stresses and shocks. It is therefore important that project planning and communication adequately emphasize the power of the approach in improving resilience against droughts.

- Activities aimed at the introduction of introducing drought-resistant crop and fodder varieties should be introduced as part of the pilot project, to improve year-round fodder availability.
- Improved community-level water management is a key recommendation for the pilot project that carries strong implications for improving resilience against droughts, through the protection of livelihoods and assets.
- During rainy seasons, activities aimed at improving the storage of fodder and the conversion of milk to products with a longer shelf life should be introduced as part of the pilot project, to further strengthen resilience through better asset protection and the improved nutritional status of children.
- During Phase II, activities aimed at enhancing economic opportunities associated with milk should be undertaken in well-performing communities (where community groups for management of water and rangeland have demonstrated strong results). Through increasing income generation and savings, this can further enhance the resilience of households selected under the Milk Matters pilot project.

- It is recommended that the pilot project is underpinned by a strong community mobilization strategy. This is expected to contribute fundamentally to the effectiveness and sustainability of interventions in the area of fodder, water and environmental management, as well as the identification and development of appropriate economic opportunities. This is expected to carry significant implications for improving the resilience of communities to drought and non-drought related stresses and shocks.

### ***Research, monitoring and evaluation***

- Before different aspects of the programme can be put into operation, further research is needed at district and community levels. Following the selection of communities for the project, a comprehensive baseline survey should be undertaken to gather information on demographics, food security and dietary diversity, the nutritional status of children and PLW, water availability, fodder types and availability, livestock ownership, the presence of veterinary services, and community characteristics (including community structures and distance to important markets). The possibility of conducting a market survey should also be explored, to better understand the demand and supply of milk and dairy products in the region. Data should be collected through both qualitative and quantitative methods. The available data should be used to guide project planning and strategy development, as well as establish a baseline for determination of impact.

- The results from the baseline survey (and potentially the market survey) should be used to develop a project strategy. Important areas of focus should include fodder management, water management, IYCF, gender, community engagement, and environmental management. For Phase II, a strategy on livelihoods and economic opportunities should also be developed and incorporated into the overall project strategy. The strategy should clarify the objectives, outcomes and outputs for the pilot project, in line with community-level information. In addition, the experience of development partners in different project areas should be captured and used.
- The programme should institute a comprehensive monitoring system to ensure results were achieved, and any challenges are identified and resolved early. The monitoring system should include indicators on inputs and outputs. At the same time, outcomes relating to food security, nutrition, resilience, gender and community mobilization should be adequately captured. As part of Phase II, additional indicators related to post-disbursement (for households receiving livestock), access to finance, income generation and saving should be introduced. Routine monitoring visits through all tiers of staff should be ensured throughout the project.
- A comprehensive end-line survey should be conducted as part of an impact evaluation, to document the results of all activities under the project.

### ***Security and conflict mitigation***

- The security situation in Beledweyne district, as well as southern, eastern and northern parts of Mataban district is acceptable for the implementation of the programme. As this is a pilot project, the focus should be on parts of Hiran that are accessible by both UNICEF and Save the Children national staff.
- The project should ensure a community-centered approach that is cognizant of clan dynamics. Special attention should be given to minority community groups living along the banks of River Shabelle, in the Hiran region.
- The programme should invest in developing relationships with local governments, partners and community leaders prior to programme roll-out, based on previous experiences (as outlined in Annexes 1 and 2). The local communities, elders and local authorities must be fully involved in the selection process of the beneficiaries.

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# ANNEXES:

## ANNEX 1: SALIENT PROJECTS WITH RELEVANCE TO NUTRITION IMPLEMENTED IN SOMALIA

### *Annex 1.1: FAO's protecting Somalia's leading livelihood assets programme*

FAO has previously worked with Livestock Professional Associations in Somalia to address the food and nutrition security situation, through the promotion of animal health, animal production, value addition and marketing, in the wake of contagious caprine pleuropneumonia.<sup>60</sup> The success of this programme was largely due to a multi-pronged approach entailing: diversification of incomes by creating non-traditional activities related to livestock infrastructure and enterprises, such as cooperatives; improving the production and productivity of the livestock sector; promoting the marketing of livestock and livestock commodities; promoting meat hygiene and enhancing the national human resources capacity through training; support to disease surveillance and certification; improving fodder production and conservation; and the processing of livestock products and by products.

### *Annex 1.2: Community-led total sanitation programme in Somalia*

UNICEF has previously used a community-level approach to bring local stakeholders and leaders on board to support community-led total sanitation.<sup>61</sup>

## ANNEX 2: LIST OF VILLAGES WHERE DATA COLLECTION WAS CARRIED OUT

Beledweyne District	Mataban District
Ayaan, Beegadiid, Beerfedind, Beergadood, C/Jaale, Caamed, Cabooyo, Calasow Osman Alason, Coomaad, Geri Jir, Kataral, Omad, Qod Qod, Qotqot, Takaale, Takaraale, Takarade, Xaaja Habaabis and Xaajo Habaabis.	Ayaan IDP camp, Alla Amin IDP camp, Ayaam, Doon Subagle, Baaslaawe, Bacadaho Kulan/Cisma Calasow, Ced Gaal, Ceeljade Cismaan, Calasow IDP camp, Cisman Calasow Kulan, Dhariyow, Dafil, Doofil, Doofil IDP camp, Doon - Subagle IDP camp, Gabooye, Gadodow, Hiile, Hiiran, Midnimo/Hiile IDP Camp, Ilka Cade, Ismaan Calasow, Jawil, Lafole, Leeboow, Maagalo, Magaalo IDP camp, Midnimo/Hiili, Midnimo/Hiiliye IDP camp, Qooqane, Shiniile and Tuulo-Hiiraan.

60 FAO, 2012. [Online]. Protecting Somalia's Leading Livelihood Assets, Livestock Offers a Critical Path to Escaping Abject Poverty in Somalia <<http://www.fao.org/3/a-as781e.pdf>>

61 UNICEF, 2014. CLTS in fragile and insecure contexts: Experience from Somalia and South Sudan. [Online]. <[http://www.communityledtotalsanitation.org/sites/communityledtotalsanitation.org/files/CLTS\\_Fragile\\_Insecure\\_Contexts\\_Somalia\\_SouthSudan\\_0.pdf](http://www.communityledtotalsanitation.org/sites/communityledtotalsanitation.org/files/CLTS_Fragile_Insecure_Contexts_Somalia_SouthSudan_0.pdf)>

## ANNEX 3: FEASIBILITY ASSESSMENT MATRIX

Theme	Questions
Livestock inputs	<ul style="list-style-type: none"> <li>• Is fodder available in the region? What types are available and at what cost during the dry and wet seasons?</li> <li>• Which milking animals and breeds are kept in the area? What is their production capacity/capability?</li> <li>• What are the current livestock management practices and veterinary services?</li> <li>• What are the major livestock diseases and animal management policies in the region? What are the disease coping mechanisms?</li> <li>• Are there sufficient water supplies for fodder production?</li> <li>• Are skilled animal extension workers available locally? Do they have adequate/appropriate experience/background?</li> <li>• How effective are the veterinary inputs for livestock?</li> <li>• What is the availability and affordability of agricultural extension services?</li> <li>• What are the livestock coping mechanisms of pastoralists during drought?</li> </ul>
Milk access handling and utilization	<ul style="list-style-type: none"> <li>• What are the milk production levels in Hiran region?</li> <li>• How is milk collected in the region?</li> <li>• What is the quality of milk in Hiran?</li> <li>• How is milk handled/processed in the region?</li> <li>• Is the milk produced accessible for use in the household?</li> <li>• Who drinks the milk in the household? Are there cultural practices to this?</li> <li>• Do children in the household drink milk?</li> <li>• Would children be allowed to take milk if it was available?</li> <li>• How is milk used in Hiran? Sale? Drinking? etc.</li> <li>• What type of milk is recommended for children? When and why?</li> <li>• What are the community socio-cultural perspectives on the use of milk?</li> <li>• How is milk used in a household, in both rainy and dry seasons, and how can we protect milk supply to children in that stress context?</li> <li>• Gender issues - who influences the milk consumption and child nutrition decisions in the household?</li> </ul>
Milk marketing / enterprise	<ul style="list-style-type: none"> <li>• What is the cost of milk, per litre?</li> <li>• How is milk handled?</li> <li>• Are there milk-selling centres? How close are they to communities?</li> <li>• Who sells milk in Hiran region?</li> <li>• Is there value addition in milk? Processing?</li> <li>• What are the milk products in Hiran?</li> <li>• What are the milk demand and supply dynamics?</li> <li>• Does a value chain for the product exist?</li> <li>• Does the Infrastructure allow processing, transportation and handling of milk?</li> </ul>

Theme	Questions
<b>Management, risk, sustainability</b>	<ul style="list-style-type: none"> <li>• How is fodder managed during peak and off-peak seasons?</li> <li>• How is milk managed during periods of surplus?</li> <li>• Are there early warning systems within the community to cope with fodder and milk shortages?</li> <li>• Are there community mitigation measures during dry seasons?</li> <li>• What are the community's coping mechanisms during periods of glut?</li> <li>• Are there any potential causes for project failure that cannot be mitigated?</li> <li>• Are overall risks acceptable?</li> <li>• What will be the effect of the programme on the environment?</li> <li>• Will the project generate good will locally?</li> <li>• Are impacts of political threats small/ insignificant?</li> <li>• Can a definite project timeline be defined /designed?</li> <li>• What would be the next best/alternative approach?</li> </ul>
<b>Child health and nutrition</b>	<ul style="list-style-type: none"> <li>• What are the nutritional practices in the region?</li> <li>• What is the community perception of milk in malnutrition management?</li> <li>• What is the nutrition status of infant children (under five years.)?</li> <li>• What type of food is given to infants in the region?</li> <li>• What are the prevalent childhood illnesses in the region?</li> <li>• Are health care workers available? (existence, effectiveness of health services and availability of community nutrition and health workers)</li> <li>• Are ante- and post-natal services available? (distances and quality of services)</li> <li>• In areas where there are no health facilities, how do mothers treat ill children?</li> </ul>

## ANNEX 4: ETHICAL CLEARANCE LETTER

JAMHUURIYADDA  
FEDERALKASOOMAALIYA  
WasaaraddaCaafimaadka  
DaryeelkaBulshada  
XAFIISKA  
AGAASIMAHA GUUD



Somali Federal Republic  
Ministry of Health & Human Services  
Office of Director General

جمهورية الصومال الفيدرالية  
وزارة الصحة ورعاية المجتمع  
مكتب المدير العام

Ref: MOH&HS/DGO/0476/July/2016

10/July/2016/ Mogadishu

To whom it may concern

**Subject: Ethical Clearance**

Flowing the request for the authority to carry out study on preparation for "Milk maters pilot project " in Beletweine and Mataban districts, of Hiran Region south central Somalia, 2016.

After the review process, and based on the recommendation of the Research ethics committee, I am pleased to inform you that you have being authorized to undertake the study.

On completion of the study you are expected to submit one hard copy and one soft copy of the study report to our research section within one month

**Best Regard**

Dr. Abdullahi Hashi Ali

Director General, Ministry of Health & Human Services



Tel: +252-612375800/E-mail: [drhashi4@hotmail.com](mailto:drhashi4@hotmail.com) =Mogadishu-Somalia=

## ANNEX 5: LIST OF KEY INFORMANTS

S/No.	Names	Organisation/Position
1.	Omar Adan Ibrahim	Mayor Beledweyne District
2.	Ali Dahir Mohamed	Animal health officer, Beledweyne District
3.	Abdi Farah Hared	Agricultural expert, Beledweyne District
4.	Muse Makahil Qumati	Community health care worker
5.	Sheikh Abukar Da'ud Guure	Mayor of the village and Religious leader
6.	Farhan Omar Arte	Chairwomen of Hiran Women Organization
7.	Abdiwahab Ali Rage	Member of youth group, Hiran Youth Organization
8.	Khadar Ahmed Abdullahi	Vice chair of Youth Organization, Hiran Region
9.	Koraad Rashid Hersi	Midwife-Magaalo IDP, Wardi Relief and Development Initiatives
10.	Elmi Ahmed Nur	Field manager, DRC Somalia, Beledweyne field office
11.	Mohamed Abdullahi Burale	Field manager, Relief International Somalia, Beledweyne field office
12.	Abdullahi Sheikh Abukar	Village elder
13.	Adan Farah Jinti	Village elder
14.	Cibaado Odowaay Carone	Traditional Birth Attendant
15.	Ali Aden Ibrahim	Block leader in an IDP settlement
16.	Hussein Mohamed Nuriyow	Block leader in an IDP settlement
17.	Dhaqan Hassan Awale	Women activist in Beledweyne
18.	Hussein Isse	Deputy Chairman of the Village
19.	Muse Haji Mohamed	Community leader
20.	Yusuf Nur Abdi Fahiye	Village elder
21.	Makka Laamid Salad	Village committee leader
22.	Ahmed Mohamed Hashi	Business man
23.	Moalim Ali Hassan	Religious Leader
24.	Ali Madar Gure	Community Leader
25.	Muse Mohamed Osman	Business man
26.	Abdi Hassan	Business man
27.	Salad Ali Hassan	Business man
28.	Hussein Farah	Business man

## ANNEX 6: TERMS OF REFERENCE FOR THE MILK MATTERS FEASIBILITY STUDY

### SCOPE OF WORK

*UNICEF/Save the Children Consultancy for Feasibility study in preparation for 'Milk Matters Pilot Project'*

#### 1. Introduction

In collaboration with UNICEF, Save the Children is aiming to pilot a 'Milk Matters' project that will be implemented in Hiran, South Central Somalia (provisionally) by early 2016, in co-ordination

with partners from consortia including SNS, BRCiS, SomRep and the Joint FAO-UNICEF-WFP Resilience Strategy. The scale and timeframe of the pilot is to be determined by the programme components selected, based on this locally-oriented feasibility study. The communities in the selected pilot area play a critical role in ensuring the approach is acceptable and effective in supporting sustained coping and wellbeing. It will be carried out with collaborating partners and the pilot will be designed and implemented based on the results of the study.

## **2. Background**

Milk Matters was developed by Tufts/Feinstein and Save the Children in Ethiopia to improve the availability, accessibility and use by children, of household milk. Animal milk (not replacing breastfeeding for children under two) is critical to child nutrition and health. The Milk Matters pilot seeks to help communities and households improve their children's health and nutrition, and maintain it during drought, dry seasons, conflict and mobility.

It is expected, based on this detailed feasibility study, that Milk Matters will provide animal health, fodder and water inputs, combined with nutrition education. Success will be gauged by the improved and sustained nutritional status of children. The approach could apply to pastoralist and non-pastoralist zones, in areas where households keep milking animals. For both agencies, the potential reach of this approach, given a successful pilot and robust documentation of lessons learned, is significant.

The pilot's objectives are:

- Supporting families as they gain the capacity to improve:
- household milk production, by rolling out a community-based animal health and production network
- knowledge attitudes and practices on animal production (particularly local solutions for increased fodder production)
- sanitary milk collection, preparation and storage
- To increase child milk intake, by improving knowledge attitudes and practices in households and communities relating to child nutrition (including breastfeeding, dietary diversity and hygiene), through locally-recruited and supported, community-based nutrition and health workers.

## **3. Objective**

The objective of the study is to explore the feasibility of the Milk Matters pilot project along the following themes (detailed feasibility questions to be shared after consultant selection):

- Compatibility with local nutrition vulnerability, and variations in dietary intake of young children by season and periods of stress, such as the proportion of households with children aged 6-59 months registered with severe acute malnutrition in an outpatient therapeutic programme, or other criteria.
- Compatibility with local perceptions of malnutrition and nutritional status, and ways of ensuring sustained child nutrition.
- Location, access and security.

- Community relations and local government cooperation.
- Linking with existing nutrition-sensitive and nutrition-specific interventions and partners.
- Scalability, in terms of how location's characteristics are shared with other areas.
- Fodder availability and production during dry seasons.
- Environmental impact
- Cultural and livelihood acceptability and project affordability.
- Understanding existing coping mechanisms.
- What messages people are already receiving and how Milk Matters could overlap with existing resilience and/or nutrition-sensitive and nutrition-specific programming. Consider what happens during times of shock and across the following overarching themes: livestock inputs, milk access and use, milk marketing/enterprise, management, risk, sustainability, child health and nutrition.

In general, the feasibility study should consider the following issues, as they are critical to the success of the pilot study:

- (1) Sustainable provision of fodder for milking animals (locally-driven solutions may include agricultural interventions, crop residues, market vouchers, or rangeland regeneration); the possible provision of milking animals to households with none; using local systems to provide veterinary inputs for milking animals (vaccinations, mineral blocks); sustainable water inputs for milking animals; training needs (animal health, nutrition and

productivity, milk collection, preparation, storage); social networks giving access to milk and food; existing coping practices such as lending milking animals etc.

- (2) How is milk used in a household in a year of stress? How can we protect milk supply to children in that stress context (early warning/early action focus to ensure predisposition to protecting milk intake of young children)? Gender issues - who is influencing the milk and child nutrition decisions in the household and how can we address them? How could this dynamic change in a time of stress? What criteria should be used to target households for the programme? What is the preferred method that the women/ other community members would like to receive information on child nutrition (counselling, health care providers, religious leaders)? What are the inroads, culturally? Wider variations in dietary intake and complementary feeding of young children by season, and during time of stress.

#### **4. Recipient**

Save the Children on behalf of UNICEF, and the UK's Department for International Development as the principal funder of the programme.

#### **5. Responsibilities**

- Developing a framework and tools for undertaking the feasibility study activities;
- Coordinating with Hiran-based local partners, SNS, BRCiS, SomRep and the Joint FAO-UNICEF-WFP in undertaking the feasibility study activities;
- Forming a team that includes the recruitment of a Somali national research co-lead, supervisors and data collectors;

- Organising pre-planning meeting;
- Finalising tools and the inception report;
- Taking overall responsibility for training of supervisors; monitors and field workers;
- Organising a validation workshop, a dissemination workshop, a presentation and providing final report with clear recommendations, as scheduled.

## **6. Skills required:**

The main consultant

- Post-graduate degree in a relevant field and/or equivalent and experience in the implementation of similar feasibility study.
- Strong background in nutrition, public health, agriculture or food security and livelihood
- Previous experience and knowledge of Somalia or at least five years' work experience in a fragile and conflict-affected state.
- Previous experience with similar feasibility study
- Excellent writing and presentation skills
- Fluency in spoken and written English
- Ability and willingness to travel to Somalia, if necessary
- Desirables: Knowledge of Somali

## **7. Methodology, design and scope**

- Both qualitative and quantitative methods with cross-sectional study design will be used. The target population will be sampled from villages clustered along the three livelihood zones in the Beledweyne and Mataban districts of Hiran region, in South Central Somalia.

## **8. Consultancy cost and logistics support/ arrangements**

- The lead consultant will be responsible for recruiting and establishing his/her own team, including the co-lead consultant – who must be a Somali national. The consultant will be responsible for, and must factor in his/her proposal and budget: health insurance and travel insurance in Nairobi; travel costs of the co-lead consultants to, from and within Somalia; application for entry visas to Nairobi/Somalia; and equipment needed to do the job to a degree of quality.
- Save the Children will be responsible for all logistical arrangements when the consultant arrives for the mission, including: local transport for all official movements, hotel accommodation in Nairobi/Somalia, communication costs, and assisting in the recruitment of field study team (data collectors and supervisors etc.)

## **9. Reporting**

The consultant will report to SCI Somalia/Somaliland office based in Nairobi.

## **10. Timing**

- The work is to be commissioned as soon as possible, with a total of 20 working days.
- Total number of days allocated to finalise the study is approximately 45 days.

## **11. Deliverables**

The final report shall include the analysis, report and recommendations for the design of the pilot project.



**Save the Children**



**unicef** 