



Causes of Food Insecurity Among Pastoral Communities in Harshin Woreda, Somali Region, Ethiopia

Ahmed Isse Alin^{a, b, c*}, Kataru Kalsa^a, and Mahamed Ibrahim Kadiye^{b, d}

^aDepartment of Public Administration and Development Management, College of Business and Economics, Dire Dawa University, Dire Dawa, Ethiopia

^bDepartment of Public Administration and Development Management, College of Business and Economics, Jigjiga University, Jigjiga, Ethiopia

^cHuman Resource Management Directorate, Somali Region Livestock and Agricultural Research Institute, Jigjiga, Ethiopia

^dSomali Region Livestock and Agricultural Research Institute, Jigjiga, Ethiopia

ABSTRACT

Background: Food insecurity is a persistent problem in Ethiopia and the pastoralists in drylands is significantly exposed. Harshin Woreda is a repeatedly draught prone Woreda in the Somali region due to poor infrastructure, institutions and so on. **Objective:** to assess causes of food insecurity of pastoral households in Harshin woreda on related factors as livestock-related constraints, income-related factors and pastoral conflict. **Methods:** The study followed an explanatory sequence design mixing quantitative and qualitative approach. 276 sampled households (beneficiaries of WFP) were randomly selected and collected information using questionnaires; and key informant interview (8) and one FGD were used. Descriptive statistic and thematic analysis were employed. **Result:** Out of food insecure households 65.9% ($276 \times 0.659 = 182$) were recorded. The major causes of food insecurity identified were drought effects (72.1%), low pasture productivity (59.4%), livestock diseases (55.1%), market access problems (65.6%), and pastoral conflict (74.3%) (**key**). lack of other income sources for other activities (59.4%) and absence of rural credit facility (73.6%). The major causes of pastoral conflict were competition over grazing lands (70.3%) and water points (16.3%), which consequently resulted in livestock losses and a reduction in asset ownership (**key**). **Conclusion:** Food insecurity of pastoralists in Harshin Woreda is primarily related to both biophysical, economic and socio-political factors. These include drought, feed unavailability, livestock disease, market system failure and pastoral conflict over grazing lands and water resources. Though aid agencies deliver emergency support in many situations, it is usually reactive. Pastoralists have traditional skills in management, yet capital, knowledge and credit constraint limits their activity to pastoral livelihoods and diversification are limited.

Key Words: Food insecurity, Livestock constraints, Pastoral conflict, Pastoral communities

1. Introduction

Food insecurity is now the top issue in the world, and it has been correlated with climate shocks, conflict and economic shocks. At such times when shocks emerge at the forefront of this crisis in the agro-pastoral and pastoral dry lands which are the focus of food security studies in Ethiopia and Africa. Globally there were 842 million chronic hungry people between 2011 and 2013, one for every eight, with most living in developing countries (Mota et al., 2019). In-

teractions of the crises brought about by Covid-19, climate change and the war between Russia and Ukraine have multifaceted impacts to global food availability, access, utilization and stability (Ayele et al., 2025; Iriti & Vitalini, 2025; Paudel et al., 2023; Saccone & Vallino, 2025; Tofu et al., 2025).

The shocks resulting from climate change and natural disasters, coupled with conflicts greatly threaten the food and nutritional security. In the continent of Africa the vast proportion of land use and population is in dry land rangelands which are a focus of food security research, this is supported by, or, supported by agro-pastoral and pastoral systems which are the vast majority of Africa dry land rangeland across all continents, they are vulnerable to climate shocks due to the increasing volatility of institutional change and climate shock that can drive pastoralist systems into critical point (Dong et al., 2011; Gebre et al., 2024b; Khavidak et al., 2025; Krätli et al., 2012; Tallam et al., 2025). Sub-Saharan Africa continues to record the highest proportion of the population below severe food insecurity and has maintained a rising trend since 2017 (Gebre et al., 2024a; Tofu et al., 2025). In Ethiopia food insecurity is a perennial issue; in the rural areas particularly there

*Corresponding author: ahmedisse5289@gmail.com

Article Information:

Article Received for Review: 07 April 2025

Article Reviewed: 20 April 2025

Revised Comments: 27 December 2025

Accepted for Publication: 31 December 2025

How to Cite this Article:

Ahmed A I, Kataru K, Mahamed I K, (2025). Causes of Food Insecurity Among Pastoral Communities in Harshin Woreda, Somali Region, Ethiopia. East African Journal of Pastoralism, 6(2):1-12.

© The Authors. Published by Jigjiga University. This is an open-access article under the CC BY license (<https://creativecommons.org/licenses/by/4.0/>)

are issues such as poor access to markets and endemic food shortage with poor infrastructure (Gebre et al., 2024b; Mota et al., 2019; Safari et al., 2022).

The vast rural poor are found in the pastoral and agro-pastoral land that comprise marginal dry lands which leads to widespread food insecurity. More than half of the pastoralists in Tanzania live under threat of food shortages or diet with very poor quality; the level of food consumption are much lower than the standard required for healthy nutrition (Safari et al., 2022). The primary causes for this issue include drought, land degradation and distances to market plus high human population pressure. Market distance is important and was revealed at Ngorongoro as greater than 5km to increase the food insecurity risk (Safari et al., 2022) as was also the conclusion for many woreda in Ethiopia (Mota et al., 2019; Mulugeta et al., 2018). The impact of climate change and drought, lack of water and forage together with inefficient market and poor institution drives a widespread hunger and food insecurity among pastoralists (Dong et al., 2011; Gebre et al., 2024b; Krätli et al., 2012; Tallam et al., 2025).

Food and nutrition security has always been an issue in Ethiopia due to many factors such as drought, poverty, land degradation and inadequate access to resources (Adenew, 2019; Gebre et al., 2024b; Hendriks et al., 2022; Mota et al., 2019; Mulugeta et al., 2018; Veen & Gebrehiwot, 2011). It is estimated that 50% of Ethiopian population does not satisfy their basic daily caloric need and the rural part of the nation, especially its woreda are endemic to drought and food insecurity (Gebre et al., 2024b; Mota et al., 2019; Mulugeta et al., 2018). Affected household percentage ranging from 71.6% for Damot Gale Woreda to 58% for Fedis Woreda (Mota et al., 2019; Mulugeta et al., 2018) whereas people in the drought prone areas of Tigray Region suffers widespread hunger and malnutrition (Gebre et al., 2024b). Key food insecurity influencing variables are, education of the household head, family size, ownership of land and livestock, draft power, and number of members of the family, low income, and market/input access (Adenew, 2019; Gebre et al., 2024b; Mota et al., 2019; Mulugeta et al., 2018; Veen & Gebrehiwot, 2011).

Various interventions are practiced by international organizations in famine and drought prone woreda, such as Tigray, Fedis Woreda and Damot Gale Woreda with good child nutritional impacts through Productive Safety Net Programme (PSNP), but the programs lack continuous funding, are reactive to crisis, and influenced by a number of contextual factors (political climate, institutional and regional trend) (Brhanu et al., 2023; Gebre et al., 2024b; Hendriks et al., 2022; Veen & Gebrehiwot, 2011). Few studies have been done on Harshin Woreda but data could be adapted from the pastoral areas such as Somali Region. Pastoral lands in Horn of Africa represent more than 60% of the country land use with 12-15% of its population and also most of the livestock of the nation. Pastoral areas of Ethiopia have been least developed in terms of infrastructure and social services such as healthcare and education (Zecca & Saima, 2025). Households food and resources are from animals, in this context the primary animals considered in the Somali region are camels, sheep, goats and cows (Gebre et al.,

2024b; Tallam et al., 2025; Zecca & Saima, 2025). Other sources of income are sales of firewood and charcoal which pose environmental implications (Zecca & Saima, 2025). Due to lack of water and forage as well as recurrent drought, animal diseases are prevalent and this results in food insecurity of pastoralist children (Gebre et al., 2024b; Tallam et al., 2025; Zecca & Saima, 2025). The increasingly severe global climate change is expanding the extent of drought on global scale, while conflict is disrupting pastoralist life and constraining resource access (Gebre et al., 2024b; Iriti & Vitalini, 2025; Tallam et al., 2025; Zecca & Saima, 2025). Widespread hunger and food insecurity as well as dependence on foreign aid are recorded in drought prone regions of Tigray (Gebre et al., 2024b; Veen & Gebrehiwot, 2011) and Fedis Woreda (Mulugeta et al., 2018) and likely in similarly drought prone woreda such as Harshin Woreda (Mota et al., 2019). This study aims at assessing food insecurity among the nomads in Harshin Woreda quantitatively, revealing lack of studies on this critical issue. Persistently prevailing drought, variation of weather, limited pasture quality and recurrent livestock disease, and inefficient markets constantly threaten the survival and existence of Ethiopia nomadic and pastoral people which is a major contribution to endemic acute food insecurity.

2. Materials and Methods

2.1. Study Area

The study was conducted in Harshin Woreda (district), Fafan Zone of the Somali Regional State, Ethiopia. Harshin Woreda is located approximately 120 kilometers south-east of Jijiga, the zonal capital. The Woreda comprises 14 kebeles (lowest administrative units), of which 11 are pure pastoralist, 3 are agro-pastoralist. The total area of the Woreda is 135,070.5 ha. The system of livelihood is largely pastoral, with main livestock including cattle, goats, sheep and camels. The study area's climate is semiarid, it has bimodal rainfall pattern (March-May and September-November). Annual rainfall varies between 300mm and 600 mm. The study area was chosen purposefully, due to the fact that Harshin Woreda is one of the chronically food insecurity and vulnerability areas in the Somali Region, as a result of recurrent drought, chronic water shortages, restrictions on live export, poorly developed infrastructure and clan conflicts (Abrham & Mekuyie, 2022; Flintan et al., 2011).

2.2. Study Design and Paradigm

Mixed-methods research design was employed, a pragmatic paradigm underlies this study, as it considers the use of both quantitative and qualitative data as essential for understanding the complex phenomenon being studied. The design chosen was explanatory sequential design, whereby quantitative data were collected first followed by the collection of qualitative data in order to explain and expand upon the results of the quantitative study.

2.3. Sampling Strategy and Sample Size

Three kebeles namely Harshin, Lanker and Farah Liban were chosen purposefully, since they are the only kebeles where pure pastoral system rather than agro-pastoral system is being practiced within the woreda. There were 900 beneficiaries of WFP relief program in the 3 kebeles: Harshin (360), Lanker (315), Farah Liban (225).

Sample size was calculated using the formula of Yamane (1967):

$$n = \frac{N}{1 + N(e)^2} \quad (1)$$

Where, N = 900 (Total WFP beneficiaries); e = 0.05 (Margin of error with 95% confidence limit). As shown in Table 1 below, the sample size for the study area was 276 households. Proportional allocation to the 3 kebeles is as follows: Kebele Beneficiaries Sample size. Simple random sampling was applied to select beneficiary households in each kebele; thus ensuring every beneficiary household has equal chance of selection.

Table 1: Details sample size of the respondents of three Kebeles

Kebele	Beneficiaries	Sample size
Harshin	360	110
Lanker	315	97
Farah Liban	225	69
Total	900	276

2.4. Data Collection Instruments

2.4.1. Household Questionnaire

Structured questionnaire was designed for household survey, comprising of open-ended and close-ended questions. The questionnaire was first prepared in English, then translated into local language, Somali, and re-translation into English to determine validity of the translation. Questionnaire covered:

The interviews covered several key topics, including demographics and socio-economic characteristics, the reasons for food insecurity such as livestock-related constraints, income-related factors, and conflict and the current status of food security as assessed by the participants themselves.

2.4.2. Key Informant Interview

Three key informants were purposively selected using a semi-structured interview guide. These informants included the Head of the Woreda Disaster Risk Management Office, an expert from the Woreda Agriculture Development Office, and a pastoralist who also serves as a clan leader. The interview lasted for about 45 to 60 minutes, conducted in Somali with audio recording of interviews, and notes taken by the researcher. The recording and notes were later transcribed and translated into English.

2.4.3. Focus Group Discussion

One Focus group discussion with five participants comprising the WFP relief program beneficiaries, a representative of the WFP and one from the Woreda administration office. The Focus Group Discussion (FGD) took approximately 90 minutes. Topics of the discussion focused on reasons of food insecurity, coping mechanisms and the current food security status in the woreda.

2.4.4. Document Analysis

Secondary data were gathered through reviewing relevant reports, policy documents, literature works related to food insecurity in pastoral areas in Ethiopia.

2.5. Validity and Reliability

Questionnaire was pre-tested with fifteen people, from outside the sampled kebeles. Modifications were made on ambiguous items after receiving feedback during the pre-test and irrelevant ones were excluded and new items were added. The questionnaire was reviewed by supervisor (PhD holder) and two subject matter experts. Validity of qualitative data was ensured through triangulation, which means comparing data from questionnaire, key informants, FGDs and document analysis.

2.6. Data Analysis and Management

Quantitative data was entered in Statistical package for social science (SPSS) version 20. Descriptive statistics namely frequencies, percentages, means and standard deviation were computed and presented in tables and figures. Qualitative data obtained from KIIs and FGDs were analyzed using thematic analysis. The recorded interview was transcribed verbatim, translated in to English and coded in themes based on the study objectives.

3. Results and Discussion

3.1. Socio-demographic and economic characteristics of pastoral households

The socio-demographic and economic characteristics of the sample pastoral households are presented in Table 2. Majority of household heads are male, i.e. 183 (66.3%), whereas the remaining 93 (33.7%) household heads are female. This is clear from the results that the male-headed pastoral households in the study area are higher in number. Age distribution: About half of the respondent heads of households, 138 (50%) falls in the productive age groups (20-64) and those in 64 plus are 116 (42%) and less than 20 age is 22 (8%). This indicates that most of the household heads fall in a productive and experienced age category and substantial portion of aged household heads which can affect the resilience of the livelihoods.

Marital Status: More than half of the respondents are married, i.e. 181 (65.6%), followed by single i.e. 40 (14.5%), divorced i.e. 34 (12.3%) and widowed i.e. 21 (7.6%). It shows that majority of the households are supported by stable family structure which might affect the labor and food

security strategies of household. Results of the study indicate that the level of formal education in the pastoral households was low: 44.9% had no formal education, 34.8%

can read and write, while only 20.3% reached elementary school level.

Table 2: Socio-demographic and economic characteristics of pastoral households

Variable	Category	Frequency	Percent (%)
Sex of household head	Male	183	66.3
	Female	93	33.7
Age of household head	Less than 20 years	22	8.0
	20–64 years	138	50.0
	Above 64 years	116	42.0
Marital status	Single	40	14.5
	Married	181	65.6
	Divorced	34	12.3
	Widowed	21	7.6
Educational level	Illiterate	124	44.9
	Read and write	96	34.8
	Completed elementary school	46	20.3

Source: Household survey, 2020.

3.2. Causes of food insecurity

As Figure 1 indicated, 94(34.1%) of the household’s heads claimed to be food secure whereas the remaining 182(65.9%) claimed to be food insecure. Therefore, as the

figure show most of the studied household heads were food insecure. This indicates that majority of people in the studied Kebeles are food insecure and in need of emergency assistance

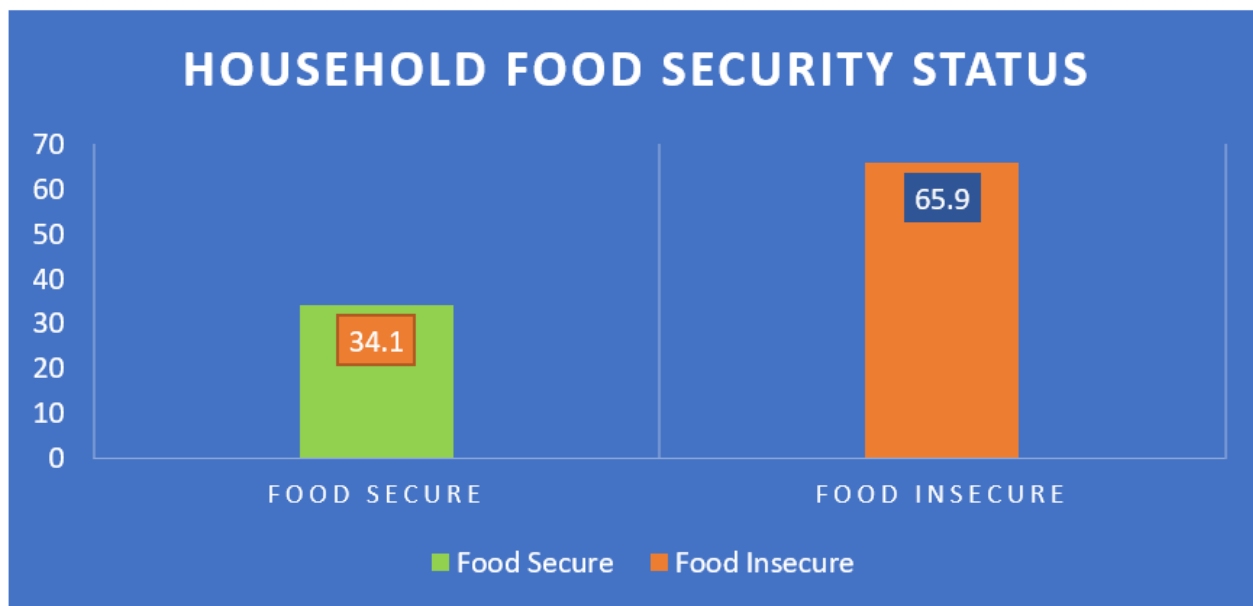


Figure 1: Household food security status

3.3. Community support and infrastructure development

As indicated in Table 3, sampled households were asked whether decline in community support is a reason for food insecurity. Therefore, while 118 (42.9%) respondents

replied positively, 158 (57.1%) respondents replied negatively. This implies that although the number of households that are aware of community support’s significance is substantial, majority do not see its decline as a reason for

food insecurity. However, the weakening of traditional community support can still affect livelihood stability of pastoral households.

Regarding development of poor socio-economic infrastructure, the respondents were asked if it is one of the reasons for food insecurity. Hence, while 208 (75.3%) respondents reported positively that development of poor infrastructure is a reason for food insecurity, 68 (24.7%) of the respondents replied negatively. This implies that majority

of the respondents consider that poor infrastructure, such as roads, market access and service delivery system has significantly affect on household' livelihood opportunities thereby exacerbates food insecurity. This finding is also supported by Solomon et al. (2007).

Table 3: Community support and infrastructure development

Variable	Response	Frequency	Percent (%)
Decline in community support	Yes	118	42.9
	No	158	57.1
	Total	276	100.0
Poor infrastructure development	Yes	208	75.3
	No	68	24.7
	Total	276	100.0

Source: Household survey, 2020.

3.4. Causes related to livestock constraints

As Table 4 indicates, respondents were asked if they think constraints to livestock is the cause of food insecurity. Accordingly, 183 (66.3%) respondents stated that constraints to livestock is the reason of being food insecure while 93 (33.7%) respondents stressed that it is not the reason of food insecurity. Finally, as the table 4 show the constraints to livestock make pastoralists of Harshin Woreda food insecure. This implies that because of constraints to livestock, pastoral communities of studied Kebeles were food insecure. Respondents were also asked if low productivity of pasture land and low provision of fodder is a livestock constraint which leads to food insecurity. For this, 164 (59.4%) respondents associated the Low pasture productivity and inadequate fodder with the livestock constraints while the remaining 112 (40.6%) respondents stated that low productivity and low provision of fodder is not a livestock constraint that lead to food insecurity. In conclusion, as the most respondents expressed low productivity pasture and low provision of fodder is the livestock constraints that causes food insecurity. The qualitative results are supported by the following interview, which emphasized:

"The inability to produce sufficient grain is a major reason why pastoralists experience food insecurity once or twice each year. This is mainly due to water shortages caused by insufficient rainfall. As a result, pastoralists are unable to grow enough grain to feed their livestock, which in turn leads to the loss of livestock.)"

In addition to this, FGD results also further strengthens as it can be seen in the following quotation:

"Nowadays, pasture production has become very low due to the spread of aggressive and unwanted plant species, which are considered a serious threat. These invasive plants have contributed to the sharp decline in pasture productivity by causing the disappearance of important grasses and replacing them with unwanted shrubs.)"

This study indicated that the pasture productivity loss due to bush encroachment, that is undesirable plant species, is a major threat for livestock production in the study area. The result supports the finding of Kebebew et al. (2001), which found that "the reduction in pasture productivity in the long-term is essentially due to invasion of the pastures by an aggressive species and to encroachment of undesired plant species into grazing land", therefore it is a major constraint to pasture availability among Borana pastoralists. Sampled household heads were asked whether drought effect/water shortage is a livestock constraints that causes food insecurity. To this end, 199 (72.1%) respondents claimed that drought effect/water shortage is a livestock constraints that leads to food insecurity while the remaining 77 (27.9%) respondents did not associate drought effects/water shortage with the livestock constraints that leads to food insecurity. As a result, the study can conclude that drought effect/water shortage is a main constraint to livestock and leads to food insecurity. In addition to this quantitative figures, drought as a main constraint to livestock is supported by two interviewees and stated as follows:

"Constant droughts that comes due to climate change is the main constraints to livestock production, due to this drought livestock suffers shortage of water and this further leads to food

insecurity for pastoralists", Agriculture development office expert

"majority of Harshin communities where pastoral and the economy of community depend on the livestock and livestock related business, while a repetitive droughts become a constraints to livestock production and leads food crisis."

In addition to the Key Informants' interview, and Focus Group Discussion results also illustrates as quoted below:

"The main effect of drought is a shortage of water. When this happens, our livestock begin to die due to the lack off water, with sheep and cattle being the most vulnerable. Sheep and cattle cannot survive even one week without drinking water. Moreover, water sources also become empty as a result of delayed rainfall, and livestock prices fall to their lowest levels. Furthermore, livestock begin to die, herd by herd, and eventually, people's lives are put in danger. As a result, many households are forced to relocate from their original homes to nearby areas with available water sources."

As the Household Survey, Key Informant Interview and result of FGD have confirmed, the study revealed that drought results a low productivity of livestock, decrease prize of livestock and death of livestock which leads to an acute food crisis. This finding is in agreement with the study undertaken by Kebebew et al. (2001) and Little et al. (2001) that disclosed that effects of drought brings low productivity of livestock, death of livestock and lower prices of livestock which causes a severe food insecurity for Ethiopian Borana Pastoralists.

On the other hand, studied households were also asked if Livestock disease is a livestock constraint that leads to food insecurity of pastoralists. For this, 152 (55.1%) respondents disclosed that Livestock diseases is a livestock constraint that leads to food insecurity for pastoralists under study and the remaining 124 (44.9%) stressed that livestock disease is not constraint to livestock rising. Therefore, as most of the respondents indicated Livestock diseases is another main livestock constraint that causes household food insecurity in the area under study.

This finding is less agreed with the study undertaken by Solomon et al. (2007) which revealed that livestock disease accounted for 22% of calf deaths even in the rainfall seasons. Moreover, this study is also in line with the study conducted by Gelagay et al. (2007) which disclosed that prevalence of disease called Contagious Caprine Pleuropneumonia (CCP) that comes due to climate changes is a main threat goat in Borana pastoral area in Ethiopia. With regard to the issue of stock management respondents were asked if there is a poor stock management that become constraints to livestock and leads to food insecurity. 137 (49.6%) respondents claimed that poor stock management is a livestock constraints and causes food insecurity whereas the remaining 139 (50.4%) respondents did not associate poor stock management with the livestock constraints that leads

to food insecurity.

Although that respondents are divided over the issue of poor stock management and figures are very close to each other making it difficult to conclude, a significant percent of respondents show that poor stock management is not a livestock constraints and is not a reason for being food insecurity. As a result, this questions was taken to the FGD to draw a sound conclusion and the result of FGD is quoted as:

"Better management of livestock is a common skill among most households. For instance, people generally know when it is profitable to sell their livestock and when it is more useful to retain them. Many managerial skills are passed down from generation to generation. Therefore, mismanagement of livestock is not considered a significant constraint to livestock production."

As there is a strong preference for livestock among the study communities, respondents were asked whether they thought this would have influence on the state of food security of their communities or not. While 89 (32.2%) agreed that the traditional love for large herd is among the constraints related to livestock which cause the state of food insecurity of pastoralists, 187 (67.8%) opposed this idea; this tradition does not appear to be a constraint related to livestock or its relationship with food security.

The result shows that tradition is not a livestock constraint or related to food insecurity, based on the majority opinion; this is however contrary to the findings of Mekonnen (2011) where preference of the tradition of large herds to the herd size is one of the threats to livestock production among Borana pastoralists. This might be due to cultural difference of the study communities; that in Borana tradition, owning more cattle is seen as an indicator of wealth and status, however, this appears to be the inverse to the tradition of owning livestock among pastoralists of the current study area. Respondents were further requested if lack off market access on livestock and livestock product market could constitute a constraint for food security. About 181 (65.6%) of the respondents responded that lack off market access is among livestock constraints, whereas 95 (34.4%) disagreed that this is a contributing factor.

paternalists depend on livestock and livestock products for their livelihoods. However, when we want to sell livestock or products such as milk, we do not have easy access to markets. We often have to travel long distances to find a place to sell them."

"We are located far from the market; to sell our livestock, we have to travel about fifty-five (55) kilometers to the Harta-Sheikh Town market. However, if the prices are unfavorable when we arrive, we cannot simply return home. As a result, we are forced to purchase expensive grain for our livestock while waiting and often have no choice but to sell at an unfavorable price. Brokers also take advantage of the situation, threatening

that our livestock will not be sold in the coming days unless we accept their very low offers. This is a common experience among almost all pastoralists."

The Survey report and KII who agreed that lack off market is a main constraint to livestock production, a FGD re-

sults also strengthen that lack off market for livestock and unfavorable market prize is a main constraints to livestock. The finding of this study is in line with the study of Mekonnen (2011) which disclosed that lack off access to market and unfavorable market prizes are a serious constraint to livestock rearing.

Table 4: Causes related to livestock constraints

Variable	Response	Frequency	Percent (%)
Livestock constraints as a cause of food insecurity	Yes	183	66.3
	No	93	33.7
	Total	276	100.0
Low pasture productivity and inadequate fodder	Yes	164	59.4
	No	112	40.6
	Total	276	100.0
Drought effect / water shortage	Yes	199	72.1
	No	77	27.9
	Total	276	100.0
Livestock diseases	Yes	152	55.1
	No	124	44.9
	Total	276	100.0
Poor livestock management	Yes	137	49.6
	No	139	50.4
	Total	276	100.0
Traditional preference for large herd sizes	Yes	89	32.2
	No	187	67.8
	Total	276	100.0
Lack off markets for livestock and products	Yes	181	65.6
	No	95	34.4
	Total	276	100.0

Source: Household survey, 2020.

3.5. Factors Affecting Participation in Income-Generating Activities

As shown in Table 5, household heads were asked about whether lack of sufficient income from other activities is a cause for food insecurity. As a result, 164 (59.4%) respondents associated the causes of food insecurity with the lack off sufficient income, whereas 112 (40.6%) respondents claimed that lack off sufficient income is not the cause for food insecurity. In conclusion, although there is significant percent of respondents that did not associate the cause of food insecurity with lack off sufficient income, as the most of the surveyed respondents claimed, lack off sufficient income is cause of household food insecurity for the pastoral communities under study. This finding is in agreement with the study undertaken by (Ministry of Agriculture

and Rural Development (MoARD), 2009), this study found that lack off sufficient income from beyond pastoral activities is a major considerable cause for food insecurity.

Coming to the causes related to the income, respondents were firstly asked about whether shortage of startup capital contributes to the lack off sufficient income from activities beyond livestock rising. For this, 163 (59.1%) respondents stated that lack off start-up capital is the cause for not having sufficient income whereas the other 113 (40.9%) respondents claimed that lack off start-up capital is not the contributing factors of income insufficiency. therefore as the most respondents claim, we can conclude that lack off start-up capital is the cause for food insecurity in the study area. On the hand, qualitative results also confirms and supports the quantitative figures as the following interviewee

claimed as follows:

"Many pastoralists are considering changing their reliance on livestock by exploring alternative ways to generate income beyond livestock rearing. However, the main challenge they face is obtaining the initial capital needed to start a new business or non-livestock activity that could help overcome food insecurity."

Therefore, as both quantitative and qualitative information stresses, this study discloses that lack initial capital is a major reason for the lack off sufficient income from beyond pastoral activities in the study area. With regards to the question of lack off knowledge and skills, 176 (63.8%) respondents claimed that lack off knowledge is a contributing factor to the lack off sufficient income on the other side, 100 (36.2%) respondents stated that lack off knowledge and skills is not a cause for the lack off insufficient income. . This finding is in agreement with the study undertaken by Mekonnen (2011) which revealed that lack off knowledge and skills is one reason of why pastoral community of Borana lack sufficient income from activities beyond livestock rising.

Coming to the question of lack off respect to some activity, 166 (60.1%) respondents stated that lack off respect for some activities is a contributing factor to the lack off sufficient income from non-pastoral activities while the remaining 110 (39.9%) respondents expressed that lack off respect for some activities is not a contributing factor of not earning sufficient income from non-livestock activities. This finding is in line with the study undertaken by Little et al.

(2001) which revealed that lack off respect to some activity to earn income from non-pastoral activities is a cause of deteriorating food crisis of Ethiopian pastoralists.

With regard to the issue of Unable to work, 173 (62.7%) respondents stated that there is inability to work for earning income and the other 103 (37.3%) respondents stated that they are able to work and inability to work is not the reason for the lack sufficient income. Therefore, study concludes inability to work is not one of the reason why studied pastoralists don't have sufficient income.

As the Table 5 indicates, respondents were asked about whether the absence of rural credit makes households earn less incomes from activities beyond livestock rising. For this, 203 (73.6%) respondents stated that there is an absence of rural credit. On the other hand, 73 (26.4%) respondents said that there is no absence of rural credit meaning rural credit is out there available for pastoralists. As a result, the study concludes that absence of rural credit is a constraints to the generation of income from other activities for the studied pastoralists. The FGD also further strengthens the quantitative figures. Therefore, FGD results is quoted as follows:

"Whenever we face food shortage, the only way of that become sell of our livestock animal to earn cash for buying food and grain. for this reason the price of livestock begun to fall as supply of livestock in the market increases so that the one way we refrain from this crisis and retain livestock is getting a credit which is not available."

Table 5: Factors Affecting Participation in Income-Generating Activities

Variable	Response	Frequency	Percent (%)
Lack off sufficient income from other activities	Yes	164	59.4
	No	112	40.6
	Total	276	100.0
Shortage of startup capital	Yes	163	59.1
	No	113	40.9
	Total	276	100.0
Lack off knowledge and skills	Yes	176	63.8
	No	100	36.2
	Total	276	100.0
Lack off respect for some activities	Yes	166	60.1
	No	110	39.9
	Total	276	100.0
Unable to work	Yes	173	62.7
	No	103	37.3
	Total	276	100.0
Absence of rural credit	Yes	203	73.6
	No	73	26.4
	Total	276	100.0

3.6. Causes related to pastoralists conflict

According to the information provided by Table 6, studied households were asked about whether they think that pastoralist conflict is the cause for food insecurity. For this, 205 (74.3%) of the household heads stated that pastoralist conflict is the cause of food insecurity whereas 71 (25.7%) of the respondents said pastoralist conflicts are not a cause for food insecurity therefore, as most of the surveyed households claim, the study concludes that pastoralist conflict is an another considerable cause for food insecurity in the study area. This finding is in agreement with the study undertaken by Nessef (2009) which revealed that pastoral conflict over various resources result displacement and cause a severe food insecurity in Ethiopia.

Other the other side, sampled households were also asked about the nature of conflicts. Therefore, 194 (70.3%) respondents said that conflicts are due to grazing while 45 (16.3%) respondents stressed that most conflicts occur over controlling water points. In addition 32 (11.6%) respondents claimed that safeguarding clan's territory is the cause of most conflicts and the remaining 5 (1.8%) respondents associated the nature of conflict about the territorial expansion claiming that conflicts are over territorial expansion. In conclusion, as the above figures show, most of the conflicts are over grazing land. This implies that most of the pastoral conflicts that occur in the studied area are because of grazing land. To understand more Focus Group Discussion participants debated over this issue and the result is quoted as follows:

"In the past, pastureland was open and accessible to everyone. However, nowadays, each pastoral household has its own enclosed land, and there are no open areas for communal grazing. Since we do not have pasture storage, whenever drought occurs, we quickly run out of both pas-

ture and water, which forces us to search for new grazing lands and water sources to ensure the survival of both people and livestock. To access grazing lands and control water points, conflict often arises. Last year, we experienced many conflicts over grazing rights and control of water points."

In conclusion, as both Household Survey and Focus Group discussion stressed, this study revealed that over grazing and over controlling points are two major causes of pastoral conflicts in the studied area. This finding is in agreement with study undertaken by (Farah, 2015) which revealed that most pastoral conflict are resulted from over pasture and over water sources.

Coming to the question of the effects of conflicts, 135 (48.9%) respondents stated that loss of livestock is the effects of conflicts while 30 (10.9%) respondents argued that gain or increase in the number of livestock is effects of conflicts and the remaining 111 (40.2%) respondents, claimed that loss of household assets is the results of pastoral conflicts. As a result, the study can conclude that loss of livestock and loss of household assets are the two major effects of pastoralist's conflict in the area under study. To strengthen and seek a further explanation on the issue of effects of conflict, this question was asked that participants of the FGD thus, FGD results is quoted as follows:

"Last year, we experienced two conflicts that arose over grazing land. Three pastoralists died, and others were wounded, which forced us to move from our original area to another location to protect the lives of people and livestock. After the displacement, we faced food shortages for ourselves and a lack off grain for our livestock."

Table 6: Causes related to pastoralists conflict

Variable	Category	Frequency	Percent (%)
Pastoral conflict as a cause of food insecurity	Yes	205	74.3
	No	71	25.7
	Total	276	100.0
Nature of conflict	Overgrazing	194	70.3
	Control of water points	45	16.3
	Safeguarding clan territory	32	11.6
	Territorial expansion	5	1.8
	Total	276	100.0
Effects of conflict	Loss of livestock	135	48.9
	Increase in livestock	30	10.9
	Loss of household assets	111	40.2
	Total	276	100.0

Source: Household survey, 2020.

3.7. Delay of assistance

As Table 7 shows, when household heads were asked about if they get assistance when they feel food insecure, 202 (73.2%) respondents stated that they get food assistance when they feel insecurity while the remaining, 74 (26.8%) respondents stressed that they don't get assistance when food insecurity. Therefore, as the figures show, the study concludes that most of Pastoral households of studied Kebeles receive food assistance when they become food insecure. On the other hand, household heads were asked whether the assistance delays or not. For this, 96 (34.8%)

of the household heads were stated that assistance delays while the remaining 180 (65.2%) of the respondents claimed that assistance don't delays. As a result, the conclusion that can be drawn from those figures is that the assistance that studied Kebeles receive do not delays. This finding is in line with the research undertaken by AFI (2012) which disclosed that the most common causes of food insecurity of Sub-Saharan Africa are lack off emergency plans and delays of assistance by Governments and NGOs among others.

Table 7: Delay of assistance

Variable	Response	Frequency	Percent (%)
Delivery of emergency assistance	Yes	202	73.2
	No	74	26.8
	Total	276	100.0
Delay of assistance	Yes	96	34.8
	No	180	65.2
	Total	276	100.0

Source: Household survey, 2020.

4. Conclusion and Recommendation

4.1. Conclusion

The study established that food insecurity has an extremely high prevalence and chronic form in pastoral households in Harshin Woreda. It can be attributed to multiple reasons. First, livestock-constraints like drought, water scarcity, poor pasture production, livestock diseases and lack off market access to livestock. Second, income constraints include insufficient non-pastoral income, absence of rural credit, lack off knowledge/skills and cultural aversion for new occupation. Third, pastoral conflict over water points and pasture and the causes are linked to livestock depletion and asset loss and displacement of household members. Although a considerable portion of the affected households receive emergency food relief at nearly the same time of emergency, none address the problem. Traditional management systems of livestock and indigenous ecological knowledge are useful in preventing food insecurity but absence of infrastructure facilities, poor market access and lack off credit facilities and related services continue to cause the problems.

4.2. Recommendation

It is advisable that decision-makers and development partners focus on building up resilience against droughts with adequate water harvesting, fodder development, appropriate range management, and controlling invasion species. It is proposed to increase productivity of livestock by providing extensive and efficient mobile veterinary services, and

capacitating community animal health workers. Adequate markets access and fair pricing schemes and value chain development for livestock products need to be assured. Apart from these recommendations, increasing diversified livelihood opportunities by provision of micro-finance and skills training, as well as promoting non-pastoral livelihoods is proposed to diminish dependency on food security and increase livelihood resilience. The causes of resource based conflicts should be managed at community level through establishing agreements among stakeholders and support to traditional conflict resolution mechanisms. Besides, a shift from relief approach to intervention strategies such as productive safety nets, and early warning systems/climate information services is considered as vital for increased resilient livelihoods. Additionally, significant attention needs to be paid to long-term resilience by investing on infrastructure, education and adult literacy schemes for the pastoral communities.

Acknowledgment

The authors gratefully acknowledges all researchers whose work contributed to this study.

Conflict of interest

The authors declare that there is no conflict of interest in the publication of this study.

References

- Abrham, T., & Mekuyie, M. (2022). Effects of climate change on pastoral households in the harshin district of the somali region, ethiopia. *Jamba: Journal of Disaster Risk Studies*, 14(1). <https://doi.org/10.4102/jamba.v14i1.1202>
- Adenew, B. (2019). The food security role of agriculture in ethiopia. 1, 138–153. <https://doi.org/10.22004/ag.econ.12012>
- AFI. (2012). Harvest help-africa food issues [Website; accessed [date]; URL currently unavailable (502 error)]. <http://www.harvesthelp.org.uk/causes-of-food-insecurity-inafrica-and-other-third-world-counties.html>
- Ayele, K., Demisew, M., & Gemedede, H. (2025). A systematic review of the impact of food and nutrition programs on child nutrition and household food security in ethiopia. *BMC Nutrition*, 11. <https://doi.org/10.1186/s40795-025-01194-z>
- Brhanu, G., Ayele, Z., & Gebreselassie, S. (2023). Policy and strategic responses to food and nutrition security in ethiopia. *Food and Nutrition Bulletin*, 44, 240–248. <https://doi.org/10.1177/03795721231202559>
- Dong, S., Wen, L., Liu, S., Zhang, X., Lassoie, J., Yi, S., Li, X., Li, J., & Li, Y. (2011). Vulnerability of worldwide pastoralism to global changes and interdisciplinary strategies for sustainable pastoralism. *Ecology and Society*, 16(2). <https://doi.org/10.5751/es-04093-160210>
- Farah, M. (2015). *Intensity and determinants of pastoral household food insecurity in somali regional state: The case of harshin district* [Master's thesis]. Haramaya University.
- Flintan, F., Tache, B., & Eid, A. (2011). *Rangeland fragmentation in traditional grazing areas and its impact on pastoral livelihoods in ethiopia* (tech. rep.). Save the Children UK. Addis Ababa, Ethiopia.
- Gebre, T., Abraha, Z., Zenebe, A., & Zeweld, W. (2024a). A comprehensive analysis of food insecurity in the drought-prone rural areas of tigray. *Journal of Health, Population, and Nutrition*, 43. <https://doi.org/10.1186/s41043-024-00564-w>
- Gebre, T., Abraha, Z., Zenebe, A., & Zeweld, W. (2024b). Food security intervention mechanisms in the drought-prone rural areas of tigray. *Frontiers in Nutrition*, 11. <https://doi.org/10.3389/fnut.2024.1413017>
- Gelagay, A., Teshale, S., Amsalu, W., & Esayas, G. (2007). Prevalence of contagious caprine pleuropneumonia in the borana pastoral areas of ethiopia. *Small Ruminant Research*, 70(2-3), 131–135. <https://doi.org/10.1016/j.smallrumres.2006.02.001>
- Hendriks, S., Montgomery, H., Benton, T., Badiane, O., De La Mata, G., Fanzo, J., Guinto, R., & Soussana, J. (2022). Global environmental climate change, covid-19, and conflict threaten food security and nutrition. *The BMJ*, 378. <https://doi.org/10.1136/bmj-2022-071534>
- Iriti, M., & Vitalini, S. (2025). Climate change, natural disasters, armed conflicts and migrations at the crossroads between food and nutrition insecurity and undernourishment. *Functional Food Science*, 5(1). <https://doi.org/10.31989/ffs.v5i1.1547>
- Kebebew, F., Tsegaye, D., & Gry, S. (2001). *Traditional coping strategies of the afar and borana pastoralists in response to drought* (Drylands Coordination Group Report No. 17). Drylands Coordination Group.
- Khavidak, A., Islami, I., & Azadi, H. (2025). Redefining pastoral vulnerability: A validated framework for livelihood assessment in climate-stressed dry rangelands. *Environmental and Sustainability Indicators*. <https://doi.org/10.1016/j.indic.2025.101030>
- Krätli, S., Huelsebusch, C., Brooks, S., & Kaufmann, B. (2012). Pastoralism: A critical asset for food security under global climate change. *Animal Frontiers*, 3, 42–50. <https://doi.org/10.2527/af.2013-0007>
- Little, P. D., Smith, K., Cellarius, B. A., Coppock, D. L., & Barrett, C. B. (2001). Avoiding disaster: Diversification and risk management among east african herders. *Development and Change*, 32(3), 401–433. <https://doi.org/10.1111/1467-7660.00212>
- Mekonnen, W. Y. (2011). *Food security, constraints and strategies among borana pastoral communities of ethiopia* [Master's thesis]. Addis Ababa University. <https://etd.aau.edu.et/items/42347e7f-b05f-4a6d-896a-bbc66f78ef72>
- Ministry of Agriculture and Rural Development (MoARD). (2009, August). *Food security program (2010–2014): Final report* (Technical Report). Federal Democratic Republic of Ethiopia.
- Mota, A., Lachore, S., & Handiso, Y. (2019). Assessment of food insecurity and its determinants in the rural households in damot gale woreda, wolaita zone, southern ethiopia. *Agriculture & Food Security*, 8, 1–11. <https://doi.org/10.1186/s40066-019-0254-0>
- Mulugeta, M., Tiruneh, G., & Alemu, Z. (2018). Magnitude and associated factors of household food insecurity in fedis woreda east hararghe zone, oromia region, ethiopia. *Agriculture & Food Security*, 7. <https://doi.org/10.1186/s40066-017-0140-6>
- Nessef, M. (2009). Pastoralism and climate change: Enabling adaptive capacity.
- Paudel, D., Neupane, R., Sigdel, S., Poudel, P., & Khanal, A. (2023). Covid-19 pandemic, climate change, and conflicts on agriculture: A trio of challenges to global food security. *Sustainability*. <https://doi.org/10.3390/su15108280>
- Saccone, D., & Vallino, E. (2025). Global food security in a turbulent world: Reviewing the impacts of the pandemic, the war and climate change. *Agricultural and Food Economics*, 13. <https://doi.org/10.1186/s40100-025-00388-0>

- Safari, J., Kirwa, M., & Mandara, C. (2022). Food insecurity in pastoral communities of ngorongoro conservation area, tanzania. *Agriculture & Food Security, 11*. <https://doi.org/10.1186/s40066-022-00374-5>
- Solomon, T. B., Snyman, H. A., & Smit, G. N. (2007). Cattle-rangeland management practices and perceptions of pastoralists towards rangeland degradation in the borana zone of southern ethiopia. *Journal of Environmental Management, 82*(4), 481–494. <https://doi.org/10.1016/j.jenvman.2006.01.008>
- Tallam, S., Rono, H., & Kerre, F. (2025). Effects of resilient agro-pastoral production on food security in arid and semi-arid regions of baringo county-kenya. *Asian Journal of Agricultural Extension, Economics & Sociology*. <https://doi.org/10.9734/ajaees/2025/v43i62773>
- Tofu, D., Dilbato, T., Fana, C., Dirbaba, N., & Tesso, G. (2025). Analysis of vulnerability, its drivers, and strategies applied towards reducing the pastoral and agro-pastoral livelihood vulnerability to climatic shocks. *Scientific Reports, 15*. <https://doi.org/10.1038/s41598-024-79165-w>
- Veen, A., & Gebrehiwot, T. (2011). Effect of policy interventions on food security in tigray, northern ethiopia. *Ecology and Society, 16*(1). <https://doi.org/10.5751/es-03895-160118>
- Yamane, T. (1967). *Statistics: An introductory analysis* (2nd). Harper; Row.
- Zecca, F., & Saima, S. (2025). Pastoralism and women's role in food security in the ethiopian somali region. *Humanities and Social Sciences Communications, 12*. <https://doi.org/10.1057/s41599-025-04680-8>