

Integrating Beneficiaries for Sustainable Food Security Initiatives in Arid and Semi-Arid Lands (ASAL) Parts of Ethiopia

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ABSTRACT

There has always been a tendency for beneficiaries to be excluded from most development plans and intervention programs. This has been a persistent issue, often resulting in failure to achieve the intended outcomes. This problem is particularly acute in arid and semi-arid (ASAL) parts where there is a high need for integrating beneficiaries due to the unique environmental challenges and resource scarcity that make local knowledge essential for the sustainable management of food security initiatives. The objective of this paper, based on a study undertaken in Fantale and Boset districts in Oromia regional state, Ethiopia, was to assess the challenges of ensuring sustainable food security in these ASAL parts of Ethiopia. The study used a mixed-methods research approach. Using multistage and systematic random sampling techniques, a sample size of 397 households was generated from the target population of 58,632 households in the study area. The instruments of data collection included questionnaires, focus group discussions, and structured interviews. The findings of the study showed several negative feedbacks, such as livestock food shortage, crop failure, market issues, farm input problems, conflict, asset loss, and land degradation, which challenged the food security intervention programs in the study area. In conclusion, despite various initiatives, gaps in current policy coherence and implementation effectiveness persist, necessitating more context specific approaches and the integration of beneficiaries to improve food security in these areas. It is recommended to enhance policies that address socioeconomic disparities and environmental degradation to tackle the challenges of sustainable food security in ASAL parts.

Key words: Sustainable food security, ASAL, Fantale, Boset, Ethiopia

INTRODUCTION

Sustainable food security remains a pressing concern worldwide, especially in arid and semi-arid (ASAL) regions. The increasing frequency and severity of droughts, along with rainfall variability, have directly affected agricultural productivity, which is the primary source of livelihood in these parts. The fragile ecosystem is susceptible to degradation due to its inherent characteristics and the overuse of natural resources (Rettberg *et al.*, 2017). Moreover, the ASAL regions suffer from inadequate infrastructure, poor market integration, and widespread poverty, all of which contribute to the persistence of food insecurity. These factors hinder the efficient distribution of food resources, limiting access to markets and reducing economic opportunities available to the local population. Additionally, macro-level political events, particularly shifts in land use policies, have had profound implications for the livelihoods of people in ASAL parts. These policies often fail to account for the unique needs and conditions of ASAL environments, leading to further marginalization and vulnerability. The interplay between political decisions and local realities creates a complex environment where achieving sustainable food security becomes increasingly difficult.

Socio-economic factors pose a significant challenge to food security in ASAL parts of Ethiopia, in addition to

climatic factors. Rural development initiatives in infrastructure and vibrant markets enable individuals to engage in income-generating activities such as retailing agricultural products and operating small businesses (Davies, 1996). However, Ethiopia's ASAL parts suffer from poor market integration due to inadequate infrastructure development. This market isolation restricts farmers' ability to sell their products and purchase food and necessary supplies, further entrenching food insecurity. Additionally, poor market access exposes them to traders who push down prices for farmers' products below the cost of production and sell farm inputs at higher prices to earn substantial profits (Esayas, Solomon & Girma, 2019; Little, Dejene & Waktole, 2014). Edjeta (2006) claims that cooperatives aimed at enhancing the market in the ASAL parts were insignificant due to poor organization. Even government support systems, such as the Productive Safety Net Program (PSNP), failed to recognize the local realities of the ASAL parts, thus becoming less effective in improving farmers' asset base and food security. Consequently, poverty, destitution, food insecurity, and dependence on aid have persisted in the ASAL parts of Ethiopia.

In Ethiopia's ASAL parts, policy dynamics profoundly undermine people's livelihoods and their adaptation strategies, further complicating efforts to achieve food security. Communities in ASAL these parts have established adaptation strategies and sustainable resource utilization knowledge. However, in recent years, they have become the most food insecure and destitute people in the country. Studies claim that various top-down government development programs and modernization initiatives implemented in these parts have limited local people's access to natural resources and disrupted their traditional food production systems, affecting food production activities (Getu, Duncan & Van Dijk, 2022; Rettberg *et al.*, 2017).

Balancing competing land use and livelihood systems while at the same time protecting natural resources remains a major challenge of development for governments' development programs that focus on increased agricultural productivity and economic benefits. The Ethiopian government's food security intervention initiatives in the ASAL parts faced similar challenges due to its failure to integrate local beneficiary communities. Studies claim that the land tenure policy change since the mid-20th century and the implementation of mega plantation projects and sedentary farming in ASAL parts of Ethiopia have negatively affected the food production system of indigenous people. These policy shifts have infringed upon the land rights of pastoralists, restricted their access to livestock grazing areas and water, and exerted pressure on the food production of pastoral and agro-pastoral communities in ASAL parts in various ways (Asebe & Korf, 2018; Rettberg *et al.*, 2017; Degefa, 2005).

The diminishing communal grazing land areas and restricted pastoral mobility as the result of shrinking communal land parts caused overgrazing and land degradation in these parts of the country, which weakened local communities' adaptation capacities and have caused household herd size decline below the threshold for food security (Rettberg *et al.*, 2017; Adugna *et al.*, 2022). Furthermore, the current privatization of mega plantation projects and their continued expansion have increased the marginalization of indigenous communities, limiting their access rights to land resources in the study area (Yidneckachew, Wisborg, Cochrane, 2023). ILRI (2011) claims that none of these mega projects were designed to integrate pastoral pathways for equitable development. Instead, their encroachment into pastoral grazing lands is causing diminishing resources and a decline in pastoral production.

Sedentarization and crop farming practices introduced to these dry land areas have been criticized for their lack of sustainability. Many studies argue that crop farming has often failed due to recurrent drought, poor rain, a lack of irrigation facilities, and farmers' financial constraints in accessing farm inputs (Yohannes & Mahmmud, 2015; Asebe, Yetebarek & Korf, 2018). These studies highlight that the shift to crop farming often leads to destitution and is less favored by local communities. Additionally, the benefits of irrigation projects for pastoral communities were marginal due to recurrent drought and rainfall variability as well as farm input limitations that affect outputs. Furthermore, the studies claim that adaptation strategies, such as dry land farming in pastoral areas, intensify the overuse of natural resources, damaging the sustainability of these fragile environments.

Similarly, Yohannes and Mahmmud (2015) reported that the indigenous pastoral and agro-pastoral communities benefited little from the irrigation schemes implemented as a development pathway to sedentary farming. The pastoralists in the ASAL parts of Ethiopia depend on livestock production and have less interest in and experience with settled crop farming. Conversely, these projects attracted investors who continued to privatize

parts of communal land areas, leading to conflict as privately owned land enclosures increased at the expense of communal land. Degefa (2005, P. 62 citing Friedmann, 1992) supports this by claiming that poverty and food insecurity are not just the outcomes of economic and social deprivation but also stem from people's lack of participation in matters that affect their own lives. The introduction of sedentary farming and state-sponsored irrigation programs to the ASAL parts as a strategy to improve food security did little to resolve the issue. Overall, the competition for land use between large plantation owners, sedentary crop farmers, and mobile pastoralists along with unsustainable agricultural practices, has exacerbated land degradation, soil erosion and conflict in parts these of the country.

ASAL parts have unique characteristics, such as environmental challenges and resource scarcity that make local knowledge and involvement essential for the sustainable management of food security initiatives. Studies argue that integrating the perspectives and needs of marginalized groups of the society, such as smallholder farmers and pastoralists, into sustainable food security strategies has critical importance, particularly in such regions due to the environmental fragility and socioeconomic character of the regions (Rahman & Westley, 2001; Scoones, 1996; IFAD, 2001; Degefa, 2005). These studies claim that, fostering partnerships, strengthening local institutions, and promoting ownership among these groups help to develop context-specific interventions that address the root causes of food insecurity and enhance the well-being of communities. They emphasize the profound impact of community engagement, participatory decision-making and inclusive governance structures on food security outcomes. Njuki *et al* (2011) for instance, claim that participatory approaches such as farmers' field schools have been proven successful in ASAL parts to promote sustainable agriculture practices and improve food security outcomes. Farmers' engagement in practical activities enables them to adapt to climate change and enhance their productivity. Similarly, Mureithi *et al* (2014) reported that community based natural resource management initiatives have demonstrated positive impacts on food security and livelihoods in ASAL parts. They claim that by involving local communities in the management of natural resources, the approach fosters sustainable land use practices and enhances resilience to environmental shocks. Scoones (1996) and Faith (2016) also claim that a lack of secure land tenure and inequalities in access to and control over land resources often hinder the participation of marginalized groups, including pastoralists, in decision-making processes.

Policies play a crucial role in shaping barriers, as they can either mitigate or exacerbate the challenges faced in achieving sustainable food security. Effective food security policies can provide the necessary support for sustainable agricultural practices, resource management, and infrastructure development. Innovative policies that consider the unique needs of ASAL regions and involve local communities in the decision-making process have shown promise. However, the success of such policy interventions depends on their acceptance and perceived relevance by beneficiaries, whose livelihoods are directly impacted. Without genuine engagement and consideration of local realities, the sustainability and effectiveness of these interventions remain limited. Consequently, the failure of government initiatives to integrate local ecological conditions and community perspectives has resulted in various dynamics that negatively affect food production system in the Arid and Semi-Arid Land (ASAL) parts of Ethiopia.

Many studies claim that the top-down approach to addressing food insecurity issues by investing in large-scale projects has failed to improve smallholder farmers' food security in ASAL parts (Stringer, et al., 2017; Scoones, Matose, & Wolmer, 1996). These studies suggest a shift to a systems approach, integrating smallholder farmers into food security interventions. They argue that integrating of poor smallholder farmers into these interventions provides opportunities to overcome poverty and structural inequalities, especially when reinforced by improved governance mechanisms and multi-stakeholder platforms. Therefore, improving the benefits from and profitability of smallholder farming remains an urgent task for the food security of ASAL communities, whose livelihoods are characterized by risks and complexities associated with climatic variability, land degradation, governance issues, and social systems.

Confronting similar trends observed in other ASAL areas across the country, communities in the Fantale and Boset districts have become increasingly vulnerable to food insecurity. The districts were included in the Ethiopian Productive Safety Net Program, which supports areas with chronic food insecurity problems. Despite the intended graduation from the PSNP after a five-year period, most households in the surveyed *kebeles* within these districts have remained reliant on the program since 2005, as their food insecurity persists (MoA, June

2014). According to data from the Oromia Regional Bureau of Agriculture Food Security Office, 13,462 households in the two study districts (1,753 from Fantale and 11,709 from Boset) were enrolled in PSNP in 2020, representing approximately 32% of households in the districts. This starkly illustrates the severe food insecurity prevalent in the study area, as PSNP beneficiaries are selected from among the most severely food insecure groups.

The objective of this study was to assess the challenges of sustainable food security in Fantale and Boset districts in the ASAL parts of Oromia regional state, Ethiopia. This assessment focused on the factual realities in the regions, policies designed to address food security, and the practices implemented on the ground. By analyzing the interplay between these dimensions, the study aims to provide a comprehensive understanding of the barriers to achieving sustainable food security and to identify effective strategies for overcoming these challenges.

Statement of the Problem

Despite the government's efforts to address food insecurity in the ASAL parts of Ethiopia, sustainability remains a significant challenge. Most government interventions in these areas have predominantly followed a top-down approach driven by policymakers and donors, often lacking the perspectives and adequate understanding of local communities' challenges. Policy implementation in these parts has faced significant barriers, including restricted access to various forms of resources for indigenous communities, loss of livelihoods, natural resource decline, and increased poverty. These issues have weakened the adaptive capabilities of ASAL parts communities to cope with shocks and stresses, exacerbating their vulnerability to food insecurity.

The introduction of sedentary farming and the expansion of mega projects by the government in the study areas, as a strategy to improve food security, have negatively affected the livelihoods of pastoral and agro-pastoral communities in the area in many ways. Crop farming and irrigation projects implemented in these areas faced complex problems and failed to improve the food situation for the local people. The expansion of farming has restricted pastoral mobility and caused the decline of traditional resource management systems. In response to these dynamic changes, people have adopted unsustainable strategies, leading to unsustainability such as soil erosion, land degradation, biodiversity decline, and conflict, which have disrupted the food production system. Poor infrastructure and market-related problems have further limited their ability to exchange farm products for food (Rettberg *et al.*, 2017). Consequently, these interventions have disrupted the socioeconomic foundation of households in the study area and failed to effectively address their specific needs. As a result, poverty remains high, and many households depend on government aid (Tefera & Ayalew, 2023).

Many previous food security studies in Ethiopia have utilized one or more dimensions of food security as indicators of food availability and access. In the context of ASAL parts of Oromia, achieving food security is not just about increasing production but also ensuring food systems are resilient and sustainable (Ingram, 2011). This involves overcoming barriers such as physical access to food due to poor infrastructure, economic constraints, and social access influenced by policies and community practices. By situating this study within the comprehensive definition of food security, it underscores the multifaceted nature of the problem and the need for a holistic approach that addresses the interconnected aspects of food security. Therefore, there is a pressing need to examine the challenges to food security in ASAL parts of the country and identify sustainable intervention strategies.

METHODOLOGY

The study employed a mixed approach to obtain comprehensive and reliable information through both qualitative and quantitative data. The target population for this study consisted of all 58,632 households (19,426 in Fantale and 39,206 in Boset districts) in the main localities that comprise rural setup. A Multi-stage cluster sampling technique was employed to select the sample *kebeles* (sub-districts) and then the corresponding households from each *kebele* (Bryman, 2012).

There are crop farming, pastoral, and agro-pastoral areas in the districts (Hirko *et al.*, 2020). However, the samples for the study were drawn mainly from pastoral and agro-pastoral areas. Fantale and Boset districts were purposefully selected from among 10 districts in the East Shewa Zone of the Oromia regional state in Ethiopia,

based on their location in ASAL parts, the high influence of policy dynamics, and the severe food insecurity situation. This strategy aims to gain greater insight into exploring cases of typical arid and semiarid areas' household food insecurity situation (Kumar, 2011).

Using lists obtained from the districts, the *kebeles* were categorized based on the people's livelihood in the area, the climatic conditions experienced in the specific locations, and accessibility/security. Then 25 representative *kebeles* (8 from Fantale and 17 from Boset) were randomly selected. Finally, simple random probability sampling was employed to select sample households from the selected *kebeles* using the household list provided by each district as a sampling frame. Respondents were selected using the table of random numbers procedure (Kumar, 2011). This approach helps to ensure the representativeness of the sample, especially when the study population is scattered over a large area, like Karayyu pastoral population (Banning, Camstra & Knottenrus, 2012; & Kothari, 2004). The sample size for the study was determined using Israel (2012) criteria, and a mathematical formula was used to calculate the sample size.

Focus group discussions, key informant interview guides, and a survey questionnaire were used for data collection. In areas where more extensive information was required, open-ended questions were included in the survey questionnaire to allow respondents to express their opinion freely without being constrained by predefined choices (Kumar, 2011).

Thirteen individuals from different regional, zonal, and district level offices, including Agriculture and Natural Resource Bureau, and Irrigation and Pastoral Development office heads, and food security experts, were selected for key informant interviews. These informants were interviewed face-to-face and by telephone to obtain clear information and insights relevant to the study objectives. Structured questions were prepared to ensure the uniformity of the data gathered, facilitating easy summarization (Bordens & Abbott, 2011).

For the focus group discussions, 20 representative individuals from the two districts were purposefully selected, drawing knowledgeable people from among men and women household heads who had lived in the *Kebeles* for at least 15 years and had information on food security issues. The participants included 2 elders, 6 farmer representatives, 4 youth representatives, and 4 women's representatives. Additionally, 4 representatives from the districts Agriculture and Natural Development Office, and district administrative offices were included to make the group heterogeneous. Each focus group member was assigned a code: FGDF1 to FGDF10 for participants from Fantale and FGDB1 to FGDB10 for participants from Boset. Open-ended questions based on the study's objectives guided the focus group discussions (Kumar, 2011). Two focus group discussions (one in each district) were conducted, each lasting 25 minutes. The size of each group was limited to 10 participants to ensure proportionality and manageability, as recommended by Cohen, Manion, and Morrison (2007), who suggested a size limit between 4 and 12 participants.

The collected quantitative data were entered into SPSS version 25 and analyzed accordingly. The qualitative data collected through focus group discussions, open-ended questionnaire questions, and interviews were thematically analyzed based on the study's objectives and research questions. Thematic analysis was used to examine the variables based on respondents' insights for an in-depth understanding (Kumar, 2011).

RESULTS AND DISCUSSION

With the purpose of investigating the challenges of sustainable food security in the Fantale and Boset districts in the ASAL parts of the Oromia regional state in Ethiopia, quantitative and qualitative data were collected and analyzed. The majority (78%) of the respondents were males, whereas just 21.9% were females. This disparity could be attributed to the data being collected from household heads, where males predominantly hold this role. The percentage of female household heads was higher in the agro-pastoral area of Boset (22.3%) compared to that of the pastoral district of Fantale (20.9%), which may be due to limitations in resource access and security issues for women in pastoral production style prevalent in ASAL parts. A similar finding from a study conducted by Little *et al.* (2011) in pastoral areas of East Africa indicates that violence during conflict and livestock raids in pastoral areas affects female herders more than their male counterparts.

Challenges faced by Households due to the Land Use Policy Changes Implemented

The findings of the household socioeconomic data revealed that in Fantale district, only 4% of the households had more than 1.75 hectares of privately owned land in 2020/21. In contrast, the majority of households in the district reported smaller holdings: 50% owned less than 0.25 hectares, and 46% owned between 0.25 and 1 hectare of private land during the same year. This highlights critical land distribution issues and land fragmentation that could exacerbate food security challenges in the area. However, in Boset district, the majority (52.7%) of households owned land size greater than 1.75 hectares during the same year.

It was also noted that the size of communal grazing land areas declined dramatically over the last couple of decades. In the two study districts, communal land size decreased by 52% over the past 15 years, with Fantale district experiencing a 62% decline and Boset a 52.7% decline between 2004/5 and 2020/21. The significant reduction in communal land availability suggests increased pressure on limited resources, leading to overuse and degradation of these lands.

Asked to indicate their average annual non-farm/off-farm income, about 59% of the respondent households replied that they had a minimal or no non-farm/off-farm income. About 26% of the respondents reported that they earn an average annual non-farm/off-farm income of greater than 195 USD in this study area, whereas 15% reported that their non-farm/off-farm income was between 2 USD and 195 USD. The average annual off-farm income for the study area household was 123 USD, which is minimal by all standards.

The focus groups highlighted lack of non-farm income sources (absence of firms like industries for employment opportunity) in Boset district and absence of conducive environment for non-farm activities such as petty trade except for activities such as selling firewood and charcoal in Fantale district as major determinant factors. This could be an indication of absence of economic activities that could have created opportunities for income sources diversification and hence traditional livelihood activities that highly depend on nature remained households' sole source of food provision and means of survival in the study area. This situation is damaging the environment due to over exploitation and misuse as all the focus group discussions stated repeatedly.

The respondents were specifically asked if there were challenges affecting their food security sustainability due to the land use policy changes implemented as a strategy to enhance food security in the study area. Their responses highlighted several major challenges: livestock food and water shortages (18.3%), crop failure (13.3%), and market related challenges (13%) financial difficulty to purchase farm inputs (12.6%), conflict and insecurity (9.6%), asset loss, and poor productivity, income decline, and food shortage (9.3%), land degradation (6%), loss of economic benefits from livestock as mobility distance increased (4.7%), and soil fertility decline (3.3%). These findings are illustrated in Figure 1.

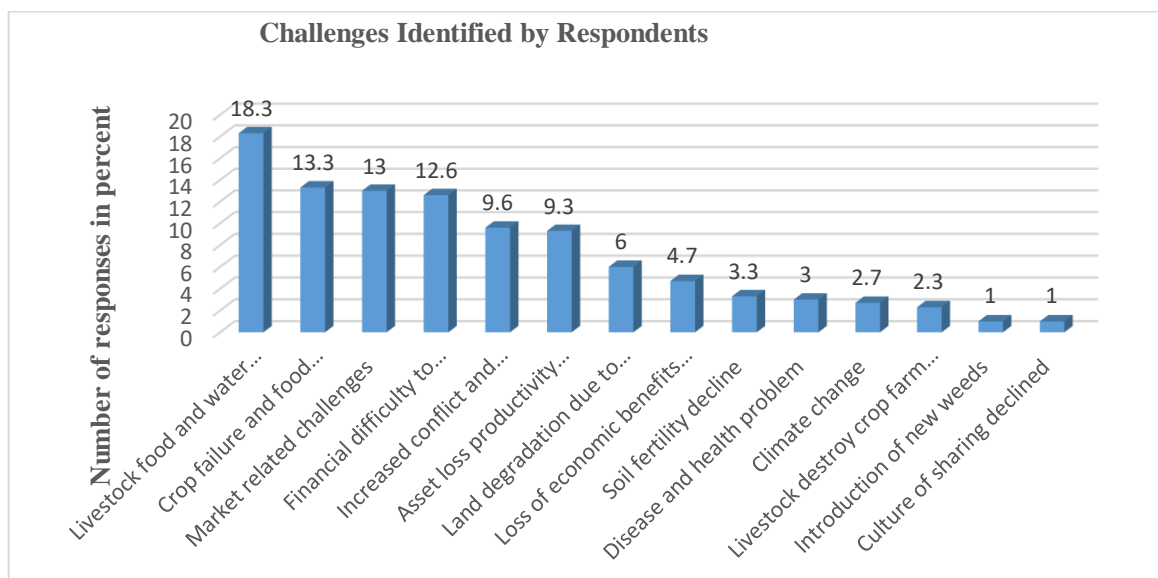


Figure 1: Challenges faced by Households due to the Land Use Policy Changes Implemented

Source: Field Survey between November 2021 and May 2022

As can be seen from Figure 1, livestock food and water shortages were the major challenges faced by the households as the result of land use policy changes in the study area. Previous studies conducted in ASAL parts support this finding. For instance, a study among pastoral communities in Southern Ethiopia and Northern Kenya by Little, Degene and Waktole (2014) showed that livestock food shortage was ranked as one of the major challenges to pastoral food production. The researchers further indicated that recurrent drought in the area caused a livestock food shortage. According to the discussants and interviewees, and supported by study by Yohannes and Mahmud (2015), government policy that restricted pastoral mobility and lacked seasonal grazing areas were the major causes of the livestock food shortage in the study area, although climate change also contributed.

Figure 1 also shows that crop failure was the second major challenge faced by households in the study area. The respondents claimed sedentary farming, introduced by the government to ASAL parts as an adaptation strategy, was less favorable to the ASAL agro-ecology and exposed them to recurrent drought and rainfall variability, resulting in crop failure and food shortages. However, they affirmed that owning a farm improved food access, particularly where there was access to irrigation. They further indicated that crop farming was also used for livestock forage production from crop residue as an adaptive strategy for the declining livestock grazing land area. Thus, crop failure exposed households not only to a shortage of food but also to a shortage of livestock feed, leading to livestock deaths and asset losses.

The key informants and focus group participants identified similar constraints regarding the shift to sedentary life and crop farming, highlighting poor productivity in crop farming as well as other diversification strategies introduced to the study area. Key informants from the Oromia Regional State Agriculture and Natural Resources Bureau indicated that drought, rainfall variability, poor soil fertility, and financial constraints in accessing farm inputs were major causes of crop failure. Similarly, focus group discussion participants in the Fantale district noted that, in addition to climate related challenges, most of the projects introduced to the study area, particularly in the pastoral area of Fantale district, were not well-suited to improving the livelihood of the community. They pointed out that the irrigation projects to produce vegetables and fruits did not consider the pastoralists' way of life. Since pastoralists are mobile, they had less interest in farming. Consequently, they rented their irrigation land to town residents and continued their mobility along their cattle.

A considerable number of previous studies support the findings of this study. Some claim that the shift from a pastoral way of life to sedentary farming and the preference for private land based on linear evolutionary change in ASAL pastoral areas of Ethiopia resulted in poverty and food insecurity for those pastoral households that started sedentary life. They also argue that even those who joined diversification activities suffer low productivity due to input and other constraints. However, they indicated that owning a crop farm has improved household food security in ASAL parts where there is access to irrigation (Fekadu et al., 2016). Fekadu, Gadissa and Jabessa (2020) reported that respondents support supplementing crop farming with pastoral activity, but they argued that the shift from pastoral livelihoods to sedentary farming as an adaptation strategy in ASAL parts ended in poverty for those who shifted to crop farming to be considered for the government-led safety net program. The same study reported that respondents believed crop farming was unproductive due to recurrent droughts, rainfall variability, high input costs and poor harvests. Instead, they favored livestock production due to its suitability to the ASAL agro ecology, the high price of livestock compared to crops, and its relatively low labor demand. Respondents also claimed that the return on livestock per unit of land is always higher compared to crops, but the return on investment in crops is lower, particularly where there is no access to irrigation.

Scoones and Wolmer (2000) claimed that governments have historically failed to recognize the specific spatial, temporal, and socioeconomic aspects of ASAL parts, including their agro-ecology, which are decisive for agricultural production. The necessary social and institutional constraints and opportunities that help to improve livelihoods' resilience in this dryland parts were not given attention as the basis for identifying development options. Others indicated that opportunities and constraints for different farming systems, such as crop farming or pastoralism, depended on farmers' social differences and power relations such as wealth, ethnicity, and ecology (Scoones & Wolmer, 2000). Scoones and Wolmer also argued that access to resources such as land, information, technologies, and physical infrastructure determines livelihood outcomes. They claim that poor pastoral households have less capacity to benefit from development projects such as mega plantation farms

promoted in ASAL parts. Similarly, Scoones (2022) argues that political choices that lead to the commodification of natural resources change patterns of resource ownership and control, resulting in gains for some and losses for others, thus influencing ecology. He further contends that development actions introducing changes to diversify livelihoods often undermine the rural people's strategies and fail to recognize the dynamics that cause livelihood vulnerability. The scholars advocate for promoting food security in the area by exploring alternative potentials that can be adapted to the agro-ecology, socioeconomic, and cultural conditions of the specific area, and identifying institutional opportunities to resolve the challenges faced. They suggest the need to give attention to available livelihood resources and capacities when adapting livelihood strategies in a given context.

Policymakers need to prioritize the input and involvement of beneficiaries when designing and implementing initiatives for sustainable food security in ASAL regions. The imposition of top-down policies, such as sedentary farming and launching large-scale projects without consulting local communities, has often resulted in adverse outcomes. Studies indicate that these approaches can exacerbate poverty and food insecurity among indigenous communities forced into crop farming, a shift that has proven unproductive in the face of recurrent drought, rainfall variability, and high input costs. Beneficiaries have expressed that such changes, aimed at meeting the criteria for government safety net programs, undermine their traditional livelihoods and ignore the agro-ecological suitability and economic viability of livestock production in ASAL parts. Therefore, a more inclusive policy framework that actively involves indigenous communities in decision-making processes and respects their knowledge and preferences is essential for achieving genuine and sustainable food security in these parts.

Farm inputs were also identified by the respondents as a major challenge to crop farm productivity (see Figure 1). A respondent in the FGD in Boset district explained desperately how the lack of access to technology was putting poor farmers on the poverty track. One of the discussants expressed her worries, saying, "*...farmers are now facing a serious problem emanating from this situation.*" She went on stating:

The price for fertilizer raised too much and the [poor] farmers cannot afford to buy. We are forced to make our farmland [includes irrigated land] sharecropping with people who can buy fertilizer since we cannot afford to buy. Then we share the yield with the shareholder. The next year also we continue to work on share basis. Because the previous year yield was shared and small for our family, we cannot afford to buy fertilizer [next] year again. We are not using our farmland fully for our household in this way. How can we have enough food then? We cannot have. Even the so-called government support there was no visible impact that we see....she continued asking "How does poverty end then?" (FGDB8).

Other group members shared their feelings about the problem caused due to lack of access to farm inputs. One group member added, "*Nowadays the land is not giving yield without using fertilizer. But most farmers could not afford to buy a full sack of fertilizer and they were forced to buy from retailers who were making huge profit. Therefore, farmers cannot add the right amount of fertilizer to their farms and this reduced the yield from farm*" (FGDB6).

A key informant, a seed analyst expert at Oromia Agricultural Development Office, explained various technical problems hindering the productivity of sedentary farming in ASAL parts. These challenges included inadequate seed breeding, insufficient seed marketing information and infrastructure, and farmers' lack of knowledge. The interviewee mentioned that seeds were adapted only to specific agroecosystems, but farmers often lacked the necessary information when purchasing seeds. Consequently, most of their maize farms remained unproductive, as the short rainy period in arid areas ended while the crops were still growing. He added that the lack of effective large-scale seed enterprises was a significant problem in Ethiopia. Large seed breeder companies, such as Comet, were not operating in the country, and existing pre-basic and basic seed suppliers were inadequate and lacked skills. Pioneer Hi Bred Seeds Ethiopia PLC was the only large importer, leading to shortage of seeds like maize breeds. Other small seed producers also lacked clear awareness and knowledge about seed production and faced challenges with isolating seeds during production. Seeds could become hybridized due to pollination when produced near breeds, and they were vulnerable to diseases and pests due to quarantine issues and crop diseases such as rust.

Another major challenge related to farm input problems was indicated by an informant who noted that fertilizers

absorbed moisture and dried out the land in these arid or semi-arid parts due to short rainfall periods. Additionally, affordability was another significant issue for farmers.

This finding is consistent with a study conducted by Mequanent, Birara and Tesfalem (2014), which reported that farm inputs such as improved seeds, technologies, and chemical fertilizers had a negative association with food security. The researchers indicated that due to the high cost of farm inputs, farmers were forced to sell their assets and spend their money on purchasing farm inputs, which in turn decreased their food security. Fekadu, Gadissa and Jebessa (2020) also claim that pastoralists in the ASAL parts sell their livestock to purchase farm inputs, while the returns from crop farms do not cover investment costs due to low productivity in the area.

Focus group discussion members indicated that ranching and fencing previously communal land by private owners had diminished grazing land areas and caused a shortage of livestock food. Consequently, the shift from livestock farming to mixed farming may work well for some but not uniformly for all. Participants said they were forced to limit their livestock numbers and types to a few manageable kinds, such as dairy cattle, goats, and poultry, to keep them on their farm as a survival strategy in the changing environment. Livestock destroyed crops when kept around home and often caused conflicts with neighbors over resources. Respondents further indicated a decline in livestock productivity and livestock deaths during drought seasons due to the loss of seasonal grazing areas, overgrazing, and a shortage of livestock food. Animal raids and theft consumed adults' labor time, as they had to herd livestock at borders and mountain grazing areas due to security problems. Respondents also noted that conflict over access to land resources increased hostility and insecurity in the ASAL parts.

This finding is supported by COMESA CAADP (2009), which claims that pastoralists in ASAL parts are highly vulnerable to food insecurity due to asset loss. Similarly, a study by Amwata, Nyariki and Musimba (2015) indicates that livestock losses are a major cause of food insecurity in the ASAL parts. This is due to the expansion of farmlands and the lack of access to and control over land resources by pastoral and agro-pastoral households, leading to diminishing animal food supplies.

Respondents also complained that they were forced to send their livestock to relatives at distant places (*darabaa*) due to the diminished communal land area and shortage of livestock feed. This practice had disadvantages, such as households losing the benefits of livestock products and income, loss of animal dung for soil fertility, being a burden on relatives, soil fertility declines, and increased food insecurity. They also mentioned flooding, the introduction of new weeds with improved seeds, and a declining culture of sharing as forage and plant residue became sources of income.

Focus group discussion members in the Boset district pointed out that changes in land tenure affected households' rights to access their livelihood resources and the unsustainable adaptation strategies used by the people degraded the fragile ASAL parts, negatively affecting the sustainability of household food security in the study area. They mentioned that overgrazing, use of plant residue as livestock feed, and collecting animal dung for economic reasons worsened land degradation and soil erosion in the area.

Many previous studies argue that the introduction of sedentary farming in the ASAL parts of Ethiopia aggravated land degradation and conflict in the region (Fekadu, Gadissa & jebessa, 2020). Blaikie (2016) claims that, besides causing food insecurity and income loss for pastoralists due to spatial displacement of food crops by cash crops, the rich class, backed by government policies, directly causes soil erosion and land degradation directly through the expansion of dry land cultivation. They indirectly pushes the pastoralists to more dry areas. He argues that governments need to revise strategies that threaten peasants' and pastoralists' rights to access land resources by empowering them and encouraging initiatives that enhance their food production activities.

Market Related Challenges Identified by Respondents

As shown in Figure 1, market related problems were identified by the respondents of this study as the third major challenge to household food access. They further indicated that the difficulties they faced were due to poor market facilities, brokers and traders controlling the market, lack of market information, limited market days, price fluctuation, limited trade activities, market day taxation, and the improper functioning of cooperatives, as

illustrated in Figure 2.

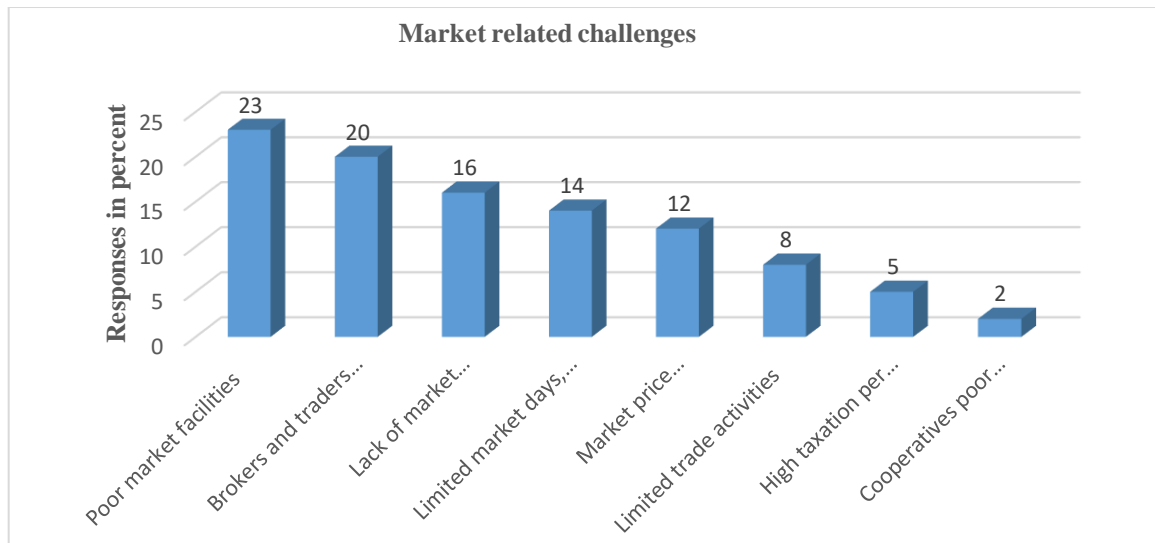


Figure 2: Market Related Challenges Identified by Respondents

Source: Field Survey between November 2021 and May 2022

In their responses to open-ended questions, the respondents indicated problems related to roads, crossing large rivers like Galan, and finding places to keep livestock overnight when traveling to distant markets in big towns in search of better prices. They also mentioned that market price fluctuations and waiting for livestock prices to rise were not conducive when money was needed to buy food. Additionally, they noted that market days, particularly for livestock, are limited, and the biggest market for livestock is during holidays, which exposed them to unnecessary expenses more for holiday as the biggest market for livestock was during these times.

The respondents also reported that they sometimes sold their livestock at unfair prices to avoid taking them back home over long distances and to escape the taxes they had to pay each time they took the livestock to market. They mentioned that government policies, such as restrictions on cross-border livestock markets, contributed to low income from livestock, thereby limiting household access to food.

A key informant, who was a team leader at the East Shewa Zone Irrigation and Pastoral Development Office, also claimed that the market was a major problem in the study area. He narrated:

Pastoralists in this area have a weak market chain. Pastoralists' major livestock is camel but the community does not consume camel milk and the market is not available for camel milk. Brokers who dominate the market for livestock, improved seed, and other items keep livestock and livestock product at low price making excessive high profit exploited pastoralists. However, the price of food and farm inputs remained high. The cooperatives are only profit makers as they buy from farmers and sell without any value adding at higher prices in other markets in Adama or Addis Ababa (KI-9).

The market related challenges identified by the respondents in this study, such as traders' dominance and lack of market information, align with the findings of previous studies. Little, Dejene and Waktole (2014) and Teklehaimanot, Ingenbleek and van Trijp (2019) claim that the influence of market-dominating traders, farmers' limited market knowledge, and taxation issues restrict farmers income.

Adaptation practices to the Changing Environment

Regarding their adaptation practices to the challenges they faced due to the land use policy changes, about 26.5% of the respondents indicated that they use crop residue from their own farms and water from irrigation or river for livestock feeding. About 15% had their own ranch lands and prepared ponds for their livestock, gaining additional income from selling forage. Another 24% complained that they faced increased expenses for purchasing forage from those who had ranch land and crop farms. Additionally, 5% mentioned that they reduced

the number of livestock to a manageable size, keeping only a few selected types, such as dairy cattle and ruminants like goat and chicken, on privately owned land around their homes. Another 5% said they joined cooperatives, 3% use mountain area and border area grazing, forest grazing, and a few (1%) said they sent their livestock to “*daraba*” to keep them with relatives in distant places where forage was available as shown in Figure 3.

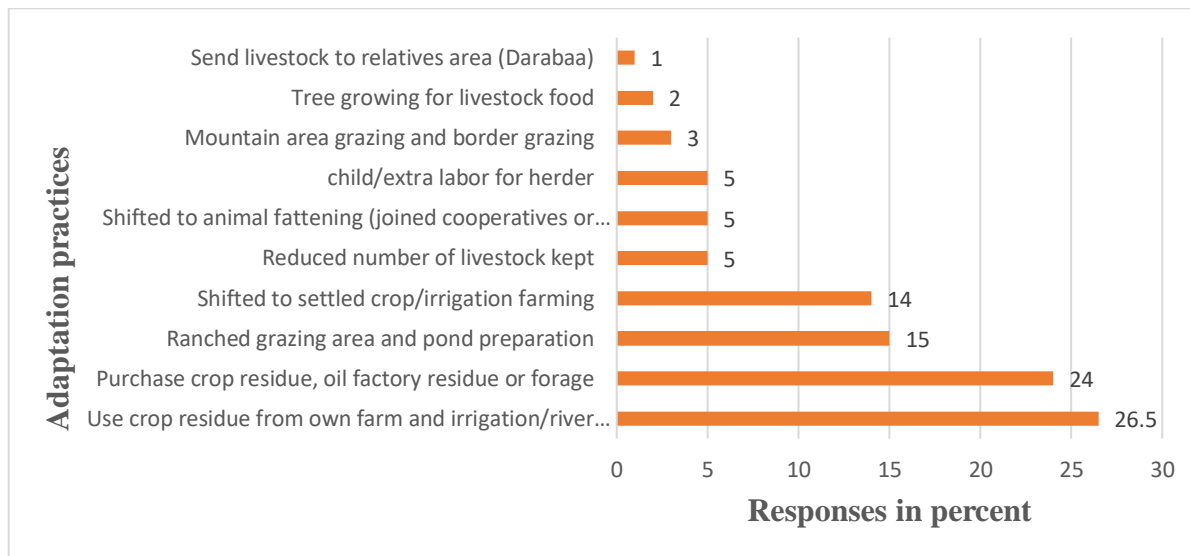


Figure 3: Adaptation practices to the Changing Environment

Source: Field Survey between November 2021 and May 2022

About 5% of the respondents indicated that they kept dairy breeds, started private animal fattening, or joined animal fattening cooperatives as part of sedentary farming introduced to the area. However, focus group discussants reported that these diversification practices were challenged by a shortage of water and animal feed in this dry land area. Poor handling of the animals due to inadequate feed resulted in poor prices and low income, making it difficult to repay the credit. Newly developed survival strategies were thus hindered by a lack of inputs such as animal feed, water, improved breeds, intensive care, and market access, leading to poor farm productivity, as supported by similar previous studies (Ericksen, 2008).

In one of the focus group discussions, discussants noted that those who kept improved dairy cattle breeds for milk production faced challenges due to a lack of market chain and exploitation by intermediary traders. Travelling to find markets for their products in other towns led to extra expenses and time. Regarding the adaptation practices improved breeds, a key informants argued that modern breed systems required a settled lifestyle and the supply of a balanced diet, healthcare, caretaking, and follow-up systems for the livestock. High inputs, such as animal feed and intensive care, were necessary to increase livestock productivity. Therefore, these practices were not convenient due to environmental factors and the pastoral lifestyle, where people moved from place to place in search of livestock food and water. The informant emphasized that convincing pastoralists, bringing about behavioral change, and providing necessary technical support were required to help them adapt to modern livestock production. Scoone and Wolmer (2000) also argue that adaptation strategies, such as vegetable farms using irrigation, animal fattening, and dairy farms, faced problems of market access. The field survey established that both those who shifted their livelihood basis to sedentary farming and those who continued their traditional pastoral life struggled to survive without any sustainable pathway.

Children herd livestock around homes, which resulted in low school participation among children and adult animal herding in mountain and border areas due to security reasons. Some group members also indicated that they started businesses but were unsuccessful due to limited trade activities in their localities. Others mentioned that they used to sell firewood and charcoal, but the trees for activities were diminishing, forcing them to work on a shared basis with those who had trees, resulting in inadequate income to support their households. Those relying on government aid also complained that it was not dependable. There were also group members who expressed dismay at having no viable means of survival, as non-farm income sources were rare in the area.

The findings reveal a diverse array of coping mechanisms that highlight both resilience and vulnerability. Reliance on crop residue and irrigation for livestock feeding underscores the importance of integrated farming systems, yet raises sustainability concerns due to soil erosion and land degradation. Market oriented strategies like purchasing forage and establishing ranches introduce financial burdens and economic disparities. The shift to settled farming affects land tenure and access to resources, impacting food security. These insights underscore the need for holistic, equitable interventions that consider local practices, long-term land management, economic equity, and social well-being. Addressing these challenges requires a comprehensive, context-specific approach that supports community resilience while mitigating vulnerabilities.

CONCLUSION AND RECOMMENDATIONS

With the purpose of assessing impediments to sustainable food security in the study area, this study employed a mix of both qualitative and quantitative approaches. The findings have shown that there were multifaceted challenges that affected sustainable food security in the ASAL parts of the Oromia Regional State of Ethiopia.

Despite the various development plans and interventions, sustainable food security has become a challenge in the study area, basically due to policy gaps and a lack of beneficiary engagement in development plans. Additionally, the failure to contextualize specific approaches aimed at improving food security has compounded the issue. Policy changes, limited access to food production resources, socio-economic disparities, resulted in a shortage of farm inputs, and a lack of market access, have persisted and hindered households' ability to secure adequate food. Environmental degradation, soil erosion, and deforestation, have further reduced the land's productivity and resilience. These shortfalls had resulted in a crop failure, asset loss, livestock production decline, income decline, and sustained food insecurity among the households.

To achieve sustainable food security in ASAL regions of Oromia, it is crucial to address these challenges through comprehensive and targeted strategies. The insights gained from this research provide a foundation for developing more effective policies and practices that can enhance food security and build resilience among indigenous communities. It has therefore, been recommended that the Ethiopian government, along with the Oromia regional state, the Oromia Agriculture and Natural Resources Bureau, and the district offices should:

1. Enhance policies that address socioeconomic disparities and environmental degradation to address the challenges of sustainable food security in ASAL parts,
2. Engage local communities in designing and implementing food security initiatives to ensure that they are context-specific and meet the needs of the beneficiaries,
3. Improve structures for farmers' access to improved seeds, breeds, and other technologies, and
4. Conduct capacity building programs to empower communities with knowledge and skills for sustainable agriculture, technology use, and market affairs.

The findings of this study however, have broader implications for sustainable food security in other ASAL parts beyond the study area. In Ethiopian context, policy initiations are top-down; and implementation practices involve both vertical and horizontal engagements of all stakeholders involved in or affected by food (in)security in the ASAL parts. It is hoped that these findings can serve as inputs for stakeholders at different levels to foster deliberations and actions that integrate beneficiaries into sustainable food security initiatives. This approach aims to ensure that macro, meso, and micro-level policies and practices effectively achieve sustainable food security in Ethiopia.

Further research is needed to explore innovative technologies and practices that can enhance food production and address resilience challenges in the ASAL parts.

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