



Food and Agriculture
Organization of the
United Nations



Annex 2 Feasibility Study | Appendix 2
For FAO-GCF project "Climate Resilient Agriculture in Somalia"

FINAL REPORT - December 2023

Sorghum, Maize, and Sesame Value Chains in Somalia

SCALA Private Sector Engagement Facility



ABBREVIATIONS

AECF	Africa Enterprise Challenge fund
BAU	Business As Usual
CIMMYT	International Maize and Wheat Improvement Center
BRCiS	Building Resilient Communities in Somalia
DRIVE	De-Risking, Inclusion and Value Enhancement of Pastoral Economies in the Horn of Africa Project
FSANU	Food Security and Nutrition Analysis Unit
GEEL	Growth, Enterprise, Employment and Livelihoods
FGS	Federal Government of Somalia
GCF	Green Climate Fund
IBS	International bank of Somalia
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
NAP	National Adaptation Plan
NDCs	Nationally Determined Contributions
NRC	Norwegian Refugee Council
PIMS	Promoting Inclusive Markets in Somalia
SATG	Somali Agricultural Technical Group
SCALA	Support Program on Scaling up Climate Ambition on Land Use and Agriculture
SMEs	Small medium Enterprises
SPS	Sanitary and phytosanitary Standards
UNFCCC	United Nations Framework Convention on Climate Change
WFP	World Food Programme
WV	World Vision

TABLE OF CONTENTS

Table of Contents

LIST OF FIGURES	5
LIST OF TABLES	6
FOREWORD	7
EXECUTIVE SUMMARY	8
1.0 INTRODUCTION	10
1.1. LINKAGES WITH NATIONAL TARGETS.....	10
1.2. OBJECTIVE OF THE STUDY.....	11
1.3. APPROACH AND METHODOLOGY	12
1.4. STRUCTURE OF THE REPORT.....	13
2.0 OVERVIEW OF THE SORGHUM, MAIZE, AND SESAME VALUE CHAINS	14
2.1 ENABLING ENVIRONMENT	16
2.1.1 GOVERNANCE STRUCTURE	16
2.1.2 REGULATORY FRAMEWORK AND POLICIES.....	17
2.1.3 PUBLIC-PRIVATE COLLABORATIONS	19
2.1.4 LICENSING, COMPLIANCE AND CERTIFICATION	19
2.1.5 ACCESS TO INPUT SERVICES	20
2.1.6 ACCESS TO FINANCE AND INSURANCE.....	21
2.1.7 INFRASTRUCTURE & TRANSPORT	22
2.2 VALUE CHAINS	22
2.2.1 SORGHUM VALUE CHAIN	22
2.2.2 MAIZE VALUE CHAIN	32
2.2.3 SESAME VALUE CHAIN	41
3.0 PRIVATE SECTOR AND ECOSYSTEM MAPPING FOR SORGHUM MAIZE AND SESAME IN SOMALIA	50
3.1. SMALL SCALE PRIVATE SECTOR.....	51
3.1.1 SEYDHELOW CO-OPERATIVE FARMERS	51
3.1.2 SARIIRAAL FARMERS COOPERATIVES	51
3.1.3 DANWADAAG FARMERS ASSOCIATION	52
3.1.4 HAWLWADAAG COOPERATIVES	52
3.1.5 WARJANAAY WATER COMMITTEE	53
3.1.6 JOWHAR WATER COMMITTEE	53
3.2 MEDIUM AND LARGE-SCALE PRIVATE SECTOR	53
3.2.1 GABYOW AGRICULTURE PRODUCT TRADING CO.	53
3.2.2 LIIN HASSAN GROUP OF COMPANIES	54
3.2.3 ALSHRAF INTERNATIONAL (SESAME EXPORTERS)	55
3.2.4 AL MIZAN TRADING COMPANY (AMITCO).....	56
3.2.5 ADCO	57
3.2.6 MOUMIN GROUP	58
3.2.7 SHABELLE AGRO CORPORATION	58
3.3. SEED AND INPUT SUPPLIERS	58
3.3.1 CENTRE FOR SOCIAL & ECONOMIC TRANSFORMATION (CSET).....	58
3.3.2 SOMALI AGRICULTURAL TECHNICAL GROUP -SATG.....	59
3.3.3 FILSAN	59
3.4 FINANCIAL SERVICE PROVIDERS	60
3.4.1 BANKS	60
3.4.2 MICRO-FINANCE INSTITUTIONS (MFIs).....	61
3.4.3 GOVERNMENT MSME FUNDS	62

3.4.4. INSURANCE INSTITUTIONS	63
4.0 CLIMATE ANALYSIS.....	64
4.1 CLIMATE CHANGE IN THE CONTEXT OF SOMALIA AGRICULTURE	64
4.2 CLIMATE CHANGE RISKS AND VULNERABILITY IN TARGET VALUE CHAINS	65
4.2.1. SORGHUM CLIMATE CHANGE RISKS AND VULNERABILITY	65
4.2.2 MAIZE CLIMATE CHANGE RISKS AND VULNERABILITY	66
4.2.3 SESAME CLIMATE CHANGE RISKS AND VULNERABILITY	67
4.3 CLIMATE ADAPTATION CHALLENGES, SHOCKS AND NEEDS IN THE VALUE CHAINS.....	67
4.4 ADAPTATION TECHNOLOGIES AND PRACTICES IMPLEMENTED	69
4.5 CLIMATE-POSITIVE BUSINESS MODELS.....	70
4.6 GENDER ASPECTS.....	70
4.7 GAPS HINDERING ENGAGEMENT IN CLIMATE DIALOGUE	71
5.0 MARKET AND FINANCIAL ANALYSIS	72
5.1 STRENGTHS, WEAKNESSES, OPPORTUNITIES, AND THREATS ANALYSIS (SWOT)	72
5.2 FINANCIAL ANALYSIS.....	76
5.2.1 BARRIERS TO ACCESS FINANCE	76
5.2.2. FINANCIAL LOSSES DUE TO DROUGHTS AND FLOODS AND CLIMATE CHANGE IMPACTS IN THE VALUE CHAIN	
77	
5.2.3 FINANCIAL, CREDIT AND INSURANCE PRODUCTS	77
5.2.4. VALUE CHAIN FINANCING OPPORTUNITIES AND CONSTRAINTS.....	78
6. CONCLUSIONS AND RECOMMENDATIONS	79
6.1 CONCLUSION	79
6.2 RECOMMENDATIONS.....	80
7 REFERENCES.....	85
8 ANNEXES	86
ANNEX 1. LIST OF STAKEHOLDERS MAPPED	86

LIST OF FIGURES

Figure 1. Primary Agricultural Zones In Somalia	15
Figure 2. Somalia Doing Business Ranking by Topic	18
Figure 3 Somalia value chain map	23
Figure 4. South region contribution to sorghum production	25
Figure 5. Sorghum production in metric tons	25
Figure 6. Regional contribution to maize production.....	35
Figure 7. Trend in maize production under different systems	35
Figure 8. Production and Market Flow Maps: Somalia Maize.....	37
Figure 9 Regional contribution of sesame production	43
Figure 10 The monthly rainfall performance from 2004 to 2023	65
Figure 11: Sorghum production (Tons) trends 1961 - 2021	66

LIST OF TABLES

Table 1. Number and the type of interviews in the respective value chain.....	12
Table 2 Gross Production of Sorghum in Somali (2016-2022)	26
Table 3. Prices of red and white sorghum per Kg in 2022 in various towns	27
Table 4 Import and export of sorghum (tons and value in 1000\$)	28
Table 5. Producer Gross Margins Sorghum Analysis per Ha.....	28
Table 6. Middle men / Trader Sorghum gross margin analysis	28
Table 7. Whole seller/Retailer Sorghum gross margin analysis	29
Table 8. Maize and Maize flour import/Export in Somalia (2017-2021)	37
Table 9. Maize producer gross margin estimates	38
Table 10. Maize wholesaler gross margins	38
Table 11. Maize retailers' gross margins	39
Table 12. Import and export quantity and value of sesame seed & oil (2017-2021)	46
Table 13. Sesame producer gross margins	46
Table 14. Sesame Traders gross margins	47
Table 15. Sesame Wholesaler/Retailer gross margins	47
Table 16: Jowhar market prices estimated @ USD per Kg (28 th August 2023)	54
Table 17 SWOT Analysis Table	72

FOREWORD

Climate change in Somalia is characterized by recurrent drought and regular flooding which leads to failed crops, loss of livestock and Somalia's chronic food insecurity. The Country's National Development Plan (NDP-9) for 2020–2024 recognizes the threats that climate change poses to the country's development objectives and mainstreams climate change into the strategic interventions planned for all vulnerable sectors of the economy to enhance resilience.



Engagement in partnerships with regional and international bodies to exchange knowledge and collaborate on environmental and climate initiatives is amongst the key mandates of the Ministry of Environment and Climate Change. Therefore, as a Ministry we are pleased of being part of the Scaling up Climate Ambition on Land Use and Agriculture (SCALA)'s Private Sector Engagement Facility initiative which contributes towards translating NDC and/or NAPs into actionable and transformative climate solutions in land-use and agriculture through multi-stakeholder engagement. SCALA's emphasis on collaboration between the public and private sectors to drive implementation shall certainly contribute to quick adaptation and transfer of innovation and mobilization of the much need resources to enhance sustainability of the initiatives in the country.

We take cognizant of this report being an important output of an agreement between the Federal Government of Somalia and the SCALA programme through the support of FAO and UNDP offices in Somalia. The report details value chain and private sector ecosystem mapping and analysis for sorghum, maize, and sesame with a focus on identifying private sector adaptation challenges and barriers, technologies and practices, losses due to droughts and floods, investment potential and incentives to participate in public dialogue. Insights on how the private sector is affected by climate change are instrumental to Somalia's National Adaptation Plan process, facilitate their engagement and enabling climate, promote investment for the country's adaptation and climate resilience development agenda and create awareness in terms of business opportunities and need to climate-proof investments.

The findings and recommendations from this study shall go a long way in informing climate policy, support the design of climate - resilient and gender responsive interventions and strategically contribute to GCF programs and NAPA/NDC targets being currently developed/reviewed. Subsequently, it will strategically contribute to enhancing stabilization and resilience of the country to short term shocks and long-term stresses emanating from extreme weather events.

Statement from the
Ministry of Environment and Climate Change
Federal Government of Somalia

EXECUTIVE SUMMARY

The Support Program on Scaling up Climate Ambition on Land Use and Agriculture (SCALA) is a multi-year initiative funded by Germany's Federal Ministry for Economic Affairs and Climate Action (BMWK) through its International Climate Initiative (IKI). SCALA is implemented by the Food and Agriculture Organization of the United Nations (FAO) and United Nations Development Programme (UNDP).

SCALA supports the translation of respective country NDC's and NAPs into actionable and transformative climate solutions in land use and agriculture with multistakeholder engagement. The three main outcomes of the programme are:

- a. Enhanced capacity to identify and appraise transformative climate actions required on land-use and agriculture
- b. Strengthened national and sectoral plans and budgets to integrate agriculture and land use sectors' climate-related priorities
- c. Increased climate action in land use and agriculture through private sector engagement

SCALA launched a technical assistance facility – Private Sector Engagement Facility (PSEF) to enhance engagement and investment for non-SCALA countries. The facility is in recognition of the fact that the private sectors have a pivotal role to catalyse investment in adaptation in the agri-food system and address the finance gap in agriculture. In 2022 the Federal Government of Somalia expressed interest from the SCALA facility and hence this study.

The objective of this study was to provide an overview of the structure of the sorghum, maize, and sesame value chains, mapping out the core processes and stakeholders (private, public and others) in Hirshabele, Southwest and Somaliland States and carrying out a market and private sector analysis of the value chains in the context of climate change. The outcome is to strategically contribute towards attaining national objectives, building on current NAP-GCF initiatives, and providing evidence-based research for GCF's programme on climate resilient agriculture.

Mixed-methods approach was applied in collecting the data, including both secondary and primary research. Qualitative data was collected through Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs). Amongst those interviewed were Government Ministries, Sesame Exporters, Traders MFIs & Banks Cooperatives, Water Committees, Input suppliers, Research Organization Development organizations. Secondary research involved the review of relevant literature relating to the three value chains. Over 70 stakeholders across the value chains were mapped and 35 engaged through KIIs and focus group discussions.

The review of production trends of sorghum, maize, and sesame since 2010 affirms that sorghum, maize, and sesame are the three leading crops produced in Somalia and frequent the occurrence of drought followed by flash floods have severely affected production of the these crops; both in land size cultivated and productivity. Consecutive years of poor rain between 2016 to 2018 led to the loss of over 6.4 million of the total livestock population, valued at more than \$350m, and cost the agricultural sector more than \$310m. The historic drought following five consecutive failed rainy seasons in 2022 also led to mass displacement, widespread death of livestock and a devastating food crisis and contributing to about 5.6 million people across the country experiencing high levels of acute food insecurity.

These effects have contributed to the country being a Net food importer, estimated at US\$ 1.35 bn in 2020. About 417,496.96 MTs of Sorghum worth \$ 92.748M were imported between 2017 and 2021

and in 2018 the demand for maize was estimated 1.2M MTs valued at USD 396,000, with an annual deficit of about 40% filled by imports.

The emerging challenges limiting the exploitation of the full potential in these value chains include but are not limited to dilapidated state of irrigation and flood control infrastructure, insecurity leading to forced displacements making it difficult for farming communities to live, grow crops and even provide labour, lack of water use planning and regulation, which has led to inefficient water use, increased salinization, and water logging, poor soil fertility management, as inputs such as manure, fertilizer, and pesticides suboptimal or not used at all, low-quality seeds and the availability - limited varieties on the market, limited and unreliable mechanized equipment and inappropriate farming techniques, due to the absence of extension and research services amongst others.

The report further dwells on the climate adaptation challenges, shocks and needs in the value chains that include; limited availability of drought-resistant seed varieties for the three crops has contributed vulnerability to drought incidences, lack of climate proof infrastructure – easily gets destroyed during floods, lack of access to weather information, forecasts and early warning systems-extended to beneficiaries / outreach to small scale, insecure land tenure also does affect the ability of farmers to make long-term investments, lack of water reservoir to mitigate the impact of drought, floods make the farming regions inaccessible hence loose out on markets, displacement of people during floods contributes to shortage of farm workers, food aid deliveries / unconditional cash transfer threaten availability of agriculture labour and market for locally produced food.

Some of the adaptation technologies and practices implemented by the stakeholders include; Smallholder farmers make effort to identify seed from the best crop of the previous season. This is complemented with support from development projects that provide improved seeds for free or in kind. The middle and large scale farmers in the case of maize and sesame can afford improved varieties that are available in the market (more drought resistant, and early maturity than traditional varieties). SATG and Red cross, CEST and CIMMYT are involved in seed multiplication to make them affordable. Riverine farmers have adapted to using irrigation during the dry season and about, 25% production through irrigation while rest 75% is through rain-fed farming. As floods recede, farmers advantage to replant any destroyed crops though its mostly sesame and sorghum which are hardier to the effects of drought. In the north,- source water is from shallow wells and springs, which are the major sources of water for crop irrigation. Climate smart agriculture such as crop diversification and intercropping of cereals with legumes to manage total crop failure as well as soil and water conservation technologies. A few millers are switching to solar energy ; though initial cost high thus discouraging and Sesame exporters are buying land to farm and drilling boreholes to sustain stabilize production.

The study finalizes by providing specific and crosscutting recommendations categorized under Enabling Environment, Regulation and Governance, Financing, Training and Innovation, Water Management and Infrastructure, and Logistics, Quality and Compliance. An important recommendation that stands out from this assignment is for the Government to seek an additional grant from SCALA program to carry out an in-depth assessment of Banks/MFIs capacity and their ability to provide relevant financial products to agriculture stakeholders in the value chains including cooperatives, exporters amongst others; as well as investment in collection of data on financial losses in agriculture, especially infrastructure from the effects of climate change. Nonetheless, the forwarded recommendations are aligned to The Somalia's National Climate Change Policy (2020) that provides the governments strategic directions for climate change, especially adaptation and mitigation.

1.0 INTRODUCTION

The Support Program on Scaling up Climate Ambition on Land Use and Agriculture (SCALA) through Nationally Determined Contributions (NDCs) and National Adaptation Plan (NAP) is a multi-year initiative funded by Germany's Federal Ministry for Economic Affairs and Climate Action (BMWK) through its International Climate Initiative (IKI). SCALA is implemented by the Food and Agriculture Organization of the United Nations (FAO) and United Nations Development Programme (UNDP). SCALA supports 12 countries across Africa, Asia, and Latin America.

The program is designed to support transformative climate action in land use and agriculture sectors to reduce GHG emissions and/or enhance removals, as well as strengthen resilience and adaptive capacity to climate change in participant countries. Its specific objective is for countries to have translated their NDC and/or NAPs into actionable and transformative climate solutions in land-use and agriculture with multi-stakeholder engagement. It emphasizes collaboration between the public and private sectors to drive implementation.

Recognizing the private sector's pivotal role to catalyse investment in adaptation in the agri-food system and address the finance gap in agriculture, SCALA has launched a technical assistance facility – Private Sector Engagement Facility (PSEF) to enhance engagement and investment for non-SCALA countries. The Facility will provide targeted support to an additional set of countries on engaging with the private sector on climate solutions in land use and agriculture. The broad service lines include: i) outreach, opportunity mapping & facilitating multi-stakeholder engagement, ii) assessing risks & business opportunities, and iii) de-risking & enabling private investment. In July 2022 the Government of Somalia expressed their interest in receiving support from SCALA to conduct a detailed value chain and private sector ecosystem mapping and analysis for sorghum, maize, and sesame with a focus on identifying private sector adaptation challenges and barriers, technologies and practices, losses due to droughts and floods, investment potential and incentives to participate in public dialogue to inform climate policy.

A meeting with the Global SCALA PSE Team and Focal Points (FPs) at United Nations Framework Convention on Climate Change (UNFCCC), Ministry of Environment, FAO and UNDP in Somalia took place in September 2022 to discuss the areas of potential engagement in line with the scope of PSE Facility support that can strategically contribute towards attaining national objectives, building on current NAP-Green Climate Fund (GCF) initiatives and providing evidence-based research for GCF's programme on climate resilient agriculture and value chain development¹. Notably, Somalia has initiated its NAP process and has started to implement a readiness project to enhance its capacity and institutional frameworks and define adaptation actions in priority sectors (GCF, 2020). In addition, FAO is designing a project entitled 'Climate Resilient Agriculture in Somalia' to be submitted to the GCF and the findings from this assignment shall provide valuable information to the project proposal.

1.1. Linkages with National Targets

It is expected that this intervention will inform climate policy, support the design of climate-resilient and gender responsive interventions and strategically contribute to GCF programs and NAPA/NDC targets. Specifically, this will be done by proposing interventions that reduce vulnerabilities to the impacts of climate change and build the resilience of the country and its

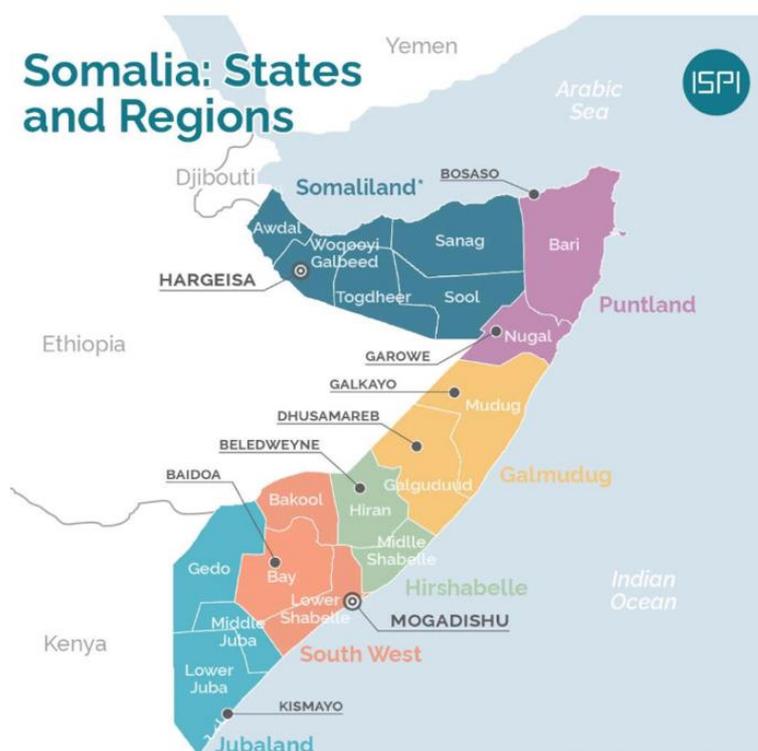
¹SCALA Private Sector Engagement (PSE) Facility Scope of Work | Somalia

communities within the ecosystem of the target value chain; and subsequently contribute to the updated NDC Somalia target of achieving 30% emissions reductions against the Business As Usual (BAU) scenario estimate of 107.39 MtCO₂eq by 2030. The Somalia updated 2021 Agriculture Sector NDC targets for estimated project BAU emissions from the sector (Mt CO₂ eq) and the emissions reductions as per the NDC target (Mt CO₂ eq) are 41.2 and 588 respectively at a cost / investment and USD 600 for the NDC period².

The project is also aligned to the NAP process. This includes working with and through coordination structures that bring together federal member states and federal government stakeholders through the value chain mapping exercise and propose planning and implementation of adaptation actions. In addition, it will also contribute to the aspiration of the NAP through creating awareness among the private sector of the need to climate-proof their investments, and of the business opportunities presented by the urgent need to adapt to climate change. Furthermore, the approach applied in this assignment is cognizant to NAP process emphasis on community centred approach, with local communities including farmers and pastoralists, fully participating in defining and planning for adaptation priorities that suit local situations.

1.2. Objective of the Study

The objective of this study is to provide an overview of the structure of the sorghum, maize, and sesame value chains, mapping out the core processes and stakeholders (private, public and others) in target states that will be identified in the methodology and more specifically in Hirshabelle, Southwest and Somaliland States and carrying out a market and private sector analysis of the value chains in the context of climate change. The outcome of the assignment is to strategically contribute towards attaining national objectives, building on current NAP-GCF initiatives, and providing evidence-based research for GCF's programme on climate resilient agriculture. The assignment will produce a strategic analysis summarizing the main findings, and presenting potential interventions, activities, and recommendations for successful engagement of the private sector actors in the design of large-scale climate investment programs.



² The Federal Republic of Somalia Updated Nationally Determined Contribution (NDC) (2021)

1.3. Approach and Methodology

The mixed-methods approach was applied in collecting the data, including both secondary and primary research. Qualitative data was collected through Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs). Due to the high level of informal relationships in Somalia, the team did seek the Ministry of Agriculture’s support as a first step to facilitate introduction to private sector actors (who were part of the KIIs) for credibility and trust.

Secondary research involved the review of relevant literature relating to the three value chains. The reference material include but not limited to: final evaluations of value chain development projects, climate change policies, relevant agriculture policies / regulatory frameworks, Land use policy, Environmental policy, agricultural as policy, ministries strategic plans, Ministry of trade reports, national and Food Security and Nutrition Analysis Unit (FSANU) statistics, existing project reports by NGOs/ Government / development partners on the value chains, chamber of commerce reports, certifications and standards for value chains, multi-stakeholder platforms reports, amongst others. List of documents reviewed is attached as references in this report.

Primary research involved conducting 35 KIIs to obtain and collect information using quantitative methodologies, and first-hand information from key stakeholders. This was done through face-to-face and virtual interviews with key designated staff from the Government, private sector actors, non-state actors, and other service providers along the value chains and their ecosystems. The Key informants included federal and state government officers in the Ministry of Agriculture and Irrigation, Ministry of Environment and Climate Change, seed and input supplier companies, cooperatives and associations, traders and exporters, NGOs, processors, retailers, investors, research organizations, micro-finance institutions, Somalia Chamber of Commerce and Industry, Somalia Investment Promotion Office (SOMINVEST), water committees, amongst others. They were identified through snowball approach. Given the high number of potential KII’s, the influence / interest matrix was used to identify the institutions and organizations to be targeted. Those interviewed were the designated focal point in these institutions. A snowball approach was applied to identify other important CBOs, NGOs and donors supporting these value chains and their leadership interviewed using KII tools.

Umbrella Cooperatives were purposively identified in each value chain in each federal member state; where they don’t exist then the large cooperatives were selected. The cooperatives selected were representative and of comparatively had a reasonable membership size with high sales turnover. In each cooperative, the leadership were interviewed using a KII tool. The below table illustrates the number and the type of interviews in the respective value chain.

Table 1. Number and the type of interviews in the respective value chain.

S/N	Type of the stakeholder	Category	Value Chain	Number of interviews	Locations
1	Government	Ministry of Agriculture	Maize Sesame and Sorghum	9	Mogadishu, Hargeisa and Baidoa
		Ministry of Environment		1	Online
2	Private Sector	Exporters	Sesame	5	Mogadishu
		Traders	Maize and Sorghum	3	
		Seed producer	Maize and Sorghum	2	Mogadishu and Hargeisa

3	Financial Institutions	Bank	Maize, Sesame and Sorghum	1	Mogadishu
		MFIs	Maize Sesame and Sorghum	4	Mogadishu, Baidao and Hargaisa
4	Farmer organizations	Cooperatives	Maize Sesame and Sorghum	5	Mogadishu, Baidao and Hargaisa
		Cooperatives	Maize, Sesame	2	Gabiley
		Cooperative	Sorghum Seed bank	1	Gabiley
5	Research Institution		Maize and Sorghum	2	Mogadishu and Hargaisa

1.4. Structure of the Report

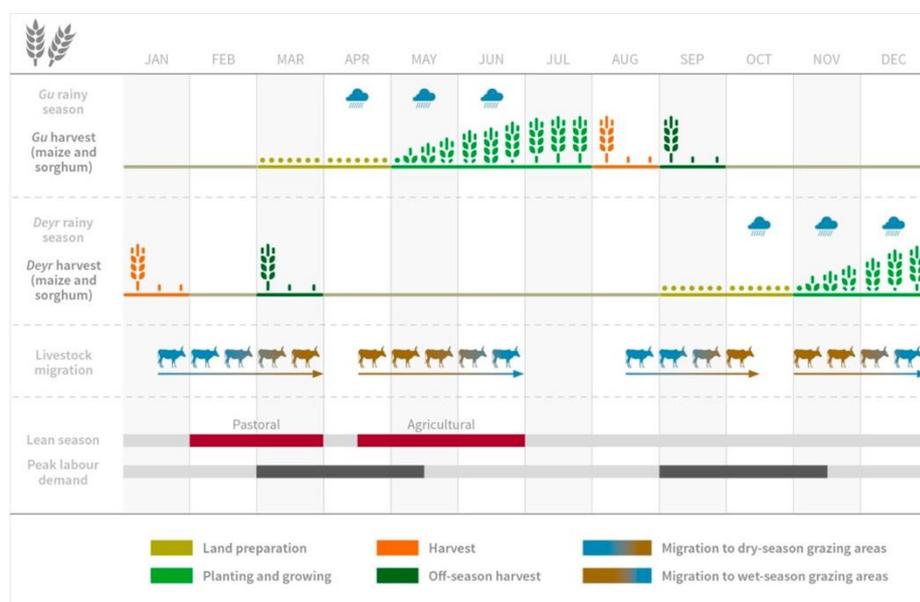
This report comprises 4 chapters. Chapter 1 introduces The Support Program on Scaling up Climate Ambition on Land Use and Agriculture (SCALA) initiatives and gives an overview of the target value chains and the enabling environment of the value chains. Chapter 2 covers the private sector ecosystem and mapping of sorghum, maize and sesame value chains. It describes the actors and the service providers along the respective value chains. Chapter 3 focuses on the analysis of climate change risks and vulnerability for value chain actors, the potential entry points and value added of other stakeholders to strengthen adaptation actions in value chains, and multi-stakeholder dialogue and identification of gender issues. Finally, Chapter 4 provides the conclusions and recommendations for successful engagement of private sector across targeted value chains.

2.0 OVERVIEW OF THE SORGHUM, MAIZE, AND SESAME VALUE CHAINS

Most Somalis (60%) are still largely dependent on livestock, ³and 23% are subsistence farmers, one of the poorest groups. Agriculture is the backbone of the economy, contributing to approximately 70 percent of the country’s GDP, 80 percent of employment, and about 50 percent of exports⁴. Millions of Somalis depend on agricultural production for their livelihoods. About 75 percent of the land is owned and managed by smallholder farmers, while 25 percent is owned/managed by large-scale farmers, with about 66 percent people employed in primary production. The ongoing widespread severe drought has largely affected the agriculture sector leading to failed production, displacement of farmers/ producers, loss of agricultural livelihoods, and has resulted in over dependence on food imports and humanitarian assistance.

Somalia has primarily a bimodal agricultural system with two agricultural seasons: the Gu season is characterized by rains between April and June, and the Deyr season is rainy between October and December. The Jilaal is characterized by warm, sunny and dry weather from December to mid-March. The cool, dry and cloudy Haggai season starts in July and lasts until mid-September. The 2022 Deyr season (December 2022-January 2023) cereal harvest in southern Somalia (the country’s breadbasket) is expected to be 40-60 percent below the 1995- 2021 average. The Gu 2023 season harvest (July 2023- August 2023) is also estimated to be 40- 60 below the 1995- 2022 average. Three consecutive years of poor rain between 2016 to 2018 led to the loss of over 6.4 million of the total livestock population, valued at more than \$350m, and have cost the agricultural sector more than \$310m.

Figure 2. Seasonal Planting Calendar



Source: FAO. 2021. Somalia | Shocks, agricultural livelihoods and food security:

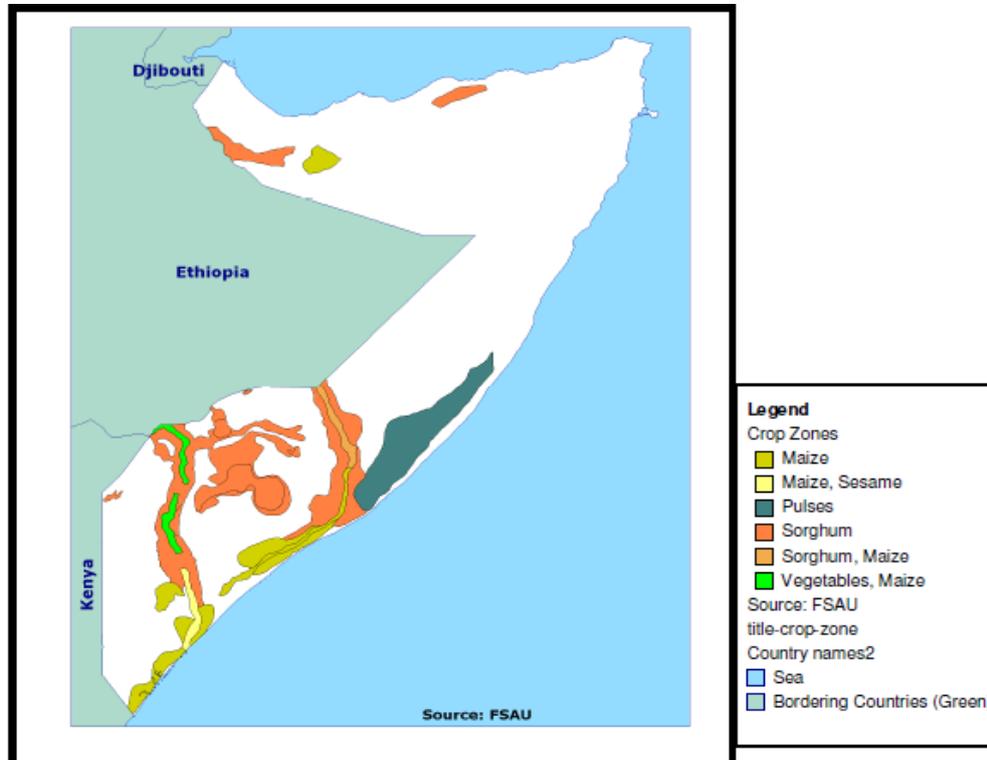
Sorghum, maize, and sesame are considered the three major leading crops cultivated in Somalia both for household consumption and business’s purpose, at international, domestic, and regional markets,

³Oxfarm (2018) Drought, Displacement and Livelihoods In Somalia . Time for gender-sensitive and protection-focused approaches

⁴ Somalia: Country Food and Agriculture Delivery Compact (2023 Feb)

representing 36.8%⁵ of total agricultural produce. The map below depicts the four primary agricultural zones in Somalia. It also indicates where the respective crops are often grown.

Figure 1. Primary Agricultural Zones In Somalia



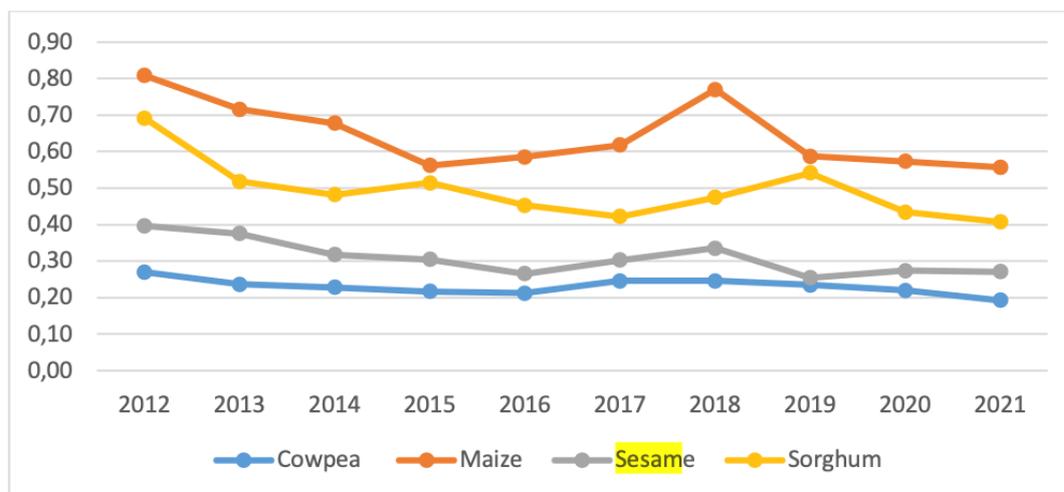
Source: UNIDO Technical report (2020) Mapping & Value Chain Analysis of the Fruits and Vegetable Sub-Sectors in Somalia

- Northwest in parts of Awdal and W. Galbeed – rain-fed maize and sorghum.
- Coastal Cowpea Belt Zone in Central and Southern Somalia.
- Shabelle and Juba Riverine Valleys – rain-fed and irrigated maize, with sesame cash crops.
- Sorghum Belt in Bay and Bakool Region – rain-fed sorghum with livestock production.

Frequent occurrence of drought has severely affected production of the three crops. Based on seasonal Standardised Precipitation Index (SPI) analysis by World Food Programme (WFP), Somalia has experienced meteorological droughts of varying severity across space and time. In March-May 2011, the meteorological drought was quite severe in parts of southern Somalia, which was a key driver for the decline in production levels; sorghum production reduced from 107,060 MT in 2015 to 37,320 MT in 2016, representing a 56% decline; maize production reduced from 134,322 MT in 2015 to 48,561 in 2016, a 64% decline while sesame production reduced from 25,836 MT in 2015 to 8,045 MT in 2016, a 69% decline. The drought effects spilled to 2017, and some level of recovery experienced in 2018 following a wetter than-normal MAM 2018 season which resulted to an improvement in productivity across the three value chains. Another cycle of poor climatic performance and drought conditions manifested in 2020, 2021 and 2021 leading to 56% average decline in production in the three value chains. The trends in productivity for the past 10 years (2013 to 2023) are illustrated in the sections below under each value chain.

⁵ FSNAU Data 2022

Figure . Average Yield for Cowpea, Maize, Sesame and Sorghum in MT per Ha



Source FSNAU 2023

2.1 Enabling Environment

This section discusses the status of the enabling environment under which the three target value chains namely sorghum, maize and sesame operate. The status is presented under various subsections.

2.1.1 Governance Structure

Governance across the three value chains is very similar. Unlike the medium and largescale farmers, the smallholder farmers (SHF) hardly use improved seeds nor use other farm inputs such as fertilizers because they are expensive and out of reach for them; hence they do not extensively engage with the input suppliers. They either recycle seed from previous harvest or get inputs from government and development projects. Agriculture extension support also come though development projects, because Ministry of agriculture and irrigation does not have sufficient capacity and resources. Occasionally, a few private sector provide extension to their contracted farmers.

Cooperatives play a crucial role in bringing the smallholder farmers with common goals and interests together and offer them a platform to lobby as well as gain prospects that they otherwise could not have individually, including negotiating for better markets, lobbying for subsidized prices on farm inputs and securing land rights. Notably, the majority of the smallholder farmers in Somalia farm more than one crop to mitigate risks of crop failure and subsequently the cooperatives handle a combination of various crops i.e., maize, sorghum, sesame amongst others.

Sorghum and Maize are grown for the household consumption and excess off loaded into the market. Except for a few cases where smallholders sell their crops through the cooperatives, majority of the producers operate independently, without forming farming associations or groups, the interactions between producers, traders and consumers are sporadic, with minimal cooperation between actors. There are no specific stakeholder platforms for the sorghum and maize value chains.

In terms of exports, the success of Somalia's sesame exports relies on thousands of out-grower smallholder farmers and large growers who can consistently supply the markets; thus, the sesame value chain has better structures than both sorghum and maize farmers to enable them engage traders and exporters efficiently and effectively. Sesame Seed Growers' Association (SESIMA) and the

Shabelle Farmers' Association (SHEFA) both which have a strong presence in Lower Shabelle region are examples of progressive sesame associations.

At the national level, the Somalia Union Cooperative Movement (UDHIS) is an umbrella organization for all cooperatives in Somalia established in 1973 and its current administration was officially into office in 2017. UDHIS aims at serving as the voice of all the cooperatives movement both nationally and internationally and its membership consist of 6 (six) different union cooperatives coming from six Regional States of the Federal Republic of Somalia including the Union of the Agriculture Cooperatives Movement. UDHIS also serves as the main cooperative policy advisor for the government, implements various cooperative development projects, and is mandated by law to arbitrate and help settle conflicts within the cooperative movement⁶. Its membership consists with 6 (six) different union cooperatives come from six Regional States of the Federal Republic of Somalia. Among them is the Union of the Agriculture cooperatives Movement.

According to provisions of the cooperative laws, proceeds from cooperative earnings are to be shared according to the following percentages: 30% goes to savings, 20% remain as earnings for the cooperative, 7% for local administration, 8% goes to the region in which the respective cooperative is located, 15% goes to national cooperative federation and 20% goes to the umbrella organization for Somali cooperatives, UDHIS. The expectation was to have UDHIS reinvest 40% of the proceeds, 20% for contingency, 15% for social improvement, and 25% for capacity development and funding projects whose budgets fell short. However, this yet to materialize partly because corruption incidences have been reported in the past as government influence disrupted and interfered with the usage of finances at the UDHIS⁷. Thus, the unmet expectations have influenced the stability of cooperatives in the country and the trust in the ability of the cooperatives distorted among members. As per National Union Association Cooperative (NUAC) records, there are about 181 registered Agricultural cooperatives 60% involved in Maize, Sorghum and Sesame production. Annex 2 lists a number of the cooperatives involved in cereals and oil seeds as per the NUAC database.

2.1.2 Regulatory Framework and Policies

The Federal Republic of Somalia in its current Agriculture Development Strategic Plan 2021-2025 articulates a range of policies that have been revised to promote investment in the multiple productive sectors. Some key laws and policies passed by the cabinet include:

(i) Somali Agricultural Regulatory and Inspection Services (SARIS)

Somali Agricultural Regulatory Inspection Services (SARIS) passed in 2020 established the competent authority that Somalis rely on for regulating agricultural activities around the country including phytosanitary regulation and the sale of agro-chemicals. Furthermore, SARIS is in charge of enacting regulatory standards governing the sale, production, storage and distribution of seeds. In order to incentivize investments in agribusiness all farm inputs, including fertilizer, pesticides and seeds are Zero rated. Other incentives are favourable investment allowances and deductions for agricultural machinery and tools. SARIS remains the only regulation enforced by the Ministry.

Other laws and policies include:

- (ii) Somali Agricultural Chemical Control
- (iii) Seeds and Plant Varieties
- (iv) Plant Protection and Quarantine

⁶SIPAM (2019): The Economic Impact Of Cooperatives In Somalia: Key Economic Issues And Potential For Development

⁷ SIPAM (2019): The Economic Impact Of Cooperatives In Somalia: Key Economic Issues And Potential For Development

- (v) National Fertilizer Policy
- (vi) National Pesticide Policy
- (vii) National Irrigation Policy
- (viii) National Food Security Policy
- (xix) National Agricultural Land Use Policy and National Extension Policy.

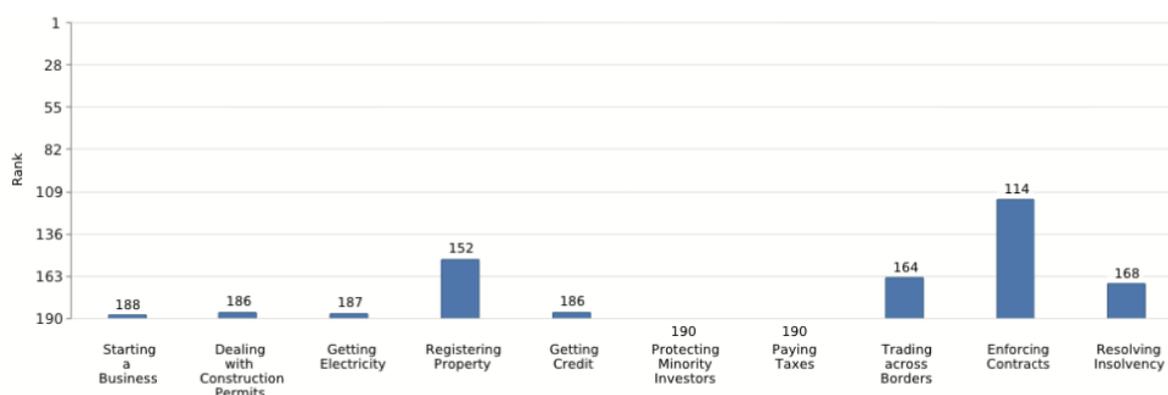
The policies and regulations on seed production, import and export are to enable farmers, seed growers, and inputs/seed suppliers to produce and sell certified seeds. The irrigation policy is expected to provide guidance to all stakeholders in the provision of irrigation goods, works, and services, as well as improve interventions that will facilitate improved food security, nutrition and above all sustainable economic growth and development. While these laws provide a legal framework for agriculture regulation in the country, also covers quality control of agri-inputs and agri-outputs.

Further Somali government is keen to work with businesses to develop regulatory frameworks which support them and improve their access to international markets and finance. The Somali Agricultural Regulatory and Inspection Service (SARIS) and Somali Bureau of Standards have been established to develop the regulations and standards in Agricultural activities and product certification respectively. However, due to weak institutional capacities the implementation and enforcement of these policies and regulations is a key challenge.

The National Investment Promotion on Strategy (NIPS) developed by the Ministry of Planning, Investment and Economic Development in conjunction with SOMINVEST, presents the Federal Republic of Somalia aspirations in promoting an enabling environment favorable for accelerating both foreign and domestic investment. The NIPS targets reforms that impact enterprise growth by addressing the primary constraints identified through the doing business survey. These include removing these constraints, in particular (i) dealing with construction permits at the municipal level (ii); improving access to electricity (iii); access to business credit and financing (iv); protecting minority investors (v); and resolving insolvency issues will remain the NIPS investment priority⁸. In terms of the agricultural sector, the strategy identified farming sector opportunities in maize and sorghum production and processing investment, establishment of agro-processing industries and expansion of existing ones, particularly investments in the sesame value chain (hulling, hosting, tahini etc.), overall value chain sector and export investment, among others.

The current impact of the policy and regulations for ease of doing business in Somalia are ranked below in figure 2

Figure 2. Somalia Doing Business Ranking by Topic



⁸NIPS Federal Government of Somalia - Ministry of Planning, Investment and Economic Development

ii) Somalia Bureau of Standards (SoBS).

In 2020, the FGS implemented some reforms to support inclusive growth and resilience to climate shocks. This included passing the Somali Standards and Quality Control Bill and established the Somali Bureau of Standards. These provide a framework for agricultural standards and certification to support activity and employment in the largest sector of our economy. Additionally, a “one-stop-shop” to e-register business for integrated tax and business licensing services was established and a second set of regulations was issued to the Company Act specifically covering the issue of minority shareholder protection to encourage private sector investment⁹.

2.1.3 Public-Private Collaborations

The IMF Somalia Country report (2023)¹⁰ alludes to the fact that there are no Government backed public-private partnerships (PPPs). However, the PPP framework that covers key productive sectors in Somalia which includes agriculture is under development by the Ministry of Finance. It shall provide a transparent framework that adequately manages fiscal risks and controls costs. However, it is important to note that Somalia state-owned enterprises which centered on large agro-industrial parks along the two major rivers which were equipped with roads and irrigation canals, and often had their own onsite processing facilities are now planned for revival, and to accomplish this, the government is focusing on public-private partnerships through "Special Purpose Vehicles"¹¹. Besides these designated agro-parks, large agricultural land blocks of 500-2,000 Ha are also available via PPPs. In addition, some of the former government research facilities are also being considered for large seed multiplication centers through PPPs

Notably, discussions with some Sesame exporters alluded to the fact that some of them repair irrigation canals and charge the producers for the use to enable them recover their cost. They also do provide food and tractor hours at a reasonable cost. These partnerships has been mainly practiced between Sesame exporters and farmers around Shabelle river.

2.1.4 Licensing, Compliance and Certification

The Somali Business Registration and Licensing System (SBRL) has recently been developed by the Ministry of Commerce and Industry, which has overall responsibility for business registration. The SBRL has reduced the business registration period from months to just about three days.

The Federal government of Somalia (FGS) is ongoing accession program to the World Trade Organization and other regional trade bodies, and subsequently the government's new regulations and standards are moving towards the adoption of international standards to ensure consistency with global trade rules to enable participation in global trade and address the increasing consumer demand for quality and safe products. The Somali Bureau of Standards (SOBS), is the national standard body overseeing the implementation of high-quality infrastructure to address compliance and certification, and has initiated the development of an infrastructure policy which is currently at the draft stage⁸. This entails developing a roadmap that will guide the regulatory institutions and identify the roles of the relevant public and private enterprises. It also covers public-private dialogues in consumer awareness and protection. While the SOBS is being set-up its important to note that certifications and standards for the agricultural sector across the value chain nodes seeds, production, processing, distribution, exports are yet to be drafted to enable effective implementation.

⁹ IMF Country Report No. 23/187 (May 2023)

¹⁰ IMF Country Report No. 23/187 (May 2023)

¹¹ SOMINVEST (2022) Priority Sector Investment Study

Exporting companies in the sesame value chain have had to meet the international Sanitary and Phytosanitary Standards (SPS) and food handling standards as exporters including the food safety system certifications (FSSC 22000) from the world's leading quality assurance organization, the Société Générale de Surveillance (SGS). This has allowed companies to access the highest-value markets like those of the United States and Japan.

2.1.5 Access to Input Services

The Somalia seed systems are informal. Farmers use seeds saved from previous harvests for most of their field and local crops—maize, sorghum, cowpea, and rice. There are different local varieties and landraces of maize, sorghum, and cowpea in various parts of the country, and these are uniquely adapted to drought.

A seed system security assessment conducted by the FAO representation office in Somalia in 2015/16 (FAO, 2016), established that 46 percent of households relied on local markets to source their seeds, while an additional 38 percent relied on their own seed sources and 13 percent relied on seed distributions and/or aid. Another assessment (FAO 2021) indicated that around 52 percent of cropping households across all zones of Somalia reported difficulties related to seed access¹². Among the key challenges facing household access to seeds include the unavailability of seed from vendors nor local markets, insufficient household income with which to buy seeds and higher-than-usual seed prices. Others reported common concerns included the inability to reach markets to buy seeds, the unavailability of typically used seed varieties, and the non-provision of typical seed aid and / or subsidies this year.

Somalia has crafted a seed policy however its yet to be effectively implemented due to limited capacity of the regulators hence seed imports are not subjected to any inspections for quality and phytosanitary checks. Nonetheless, local seed companies are now emerging and producing clean and others hybrid seeds for the market. However, the improved seeds are still expensive for most of the farmers to buy. For instance, F1 maize Hybrid seeds goes for about USD– 2.5 per Kg while hybrid goes for 75 Cent per Kg. Main seed companies include Centre for Social & Economic Transformation (CSET), Filsan, Som Seed, Darusalam Seed, amongst others.

The continuing insecurity makes access to farms and market outlets risky, costly, and unprofitable. Such conditions also make interventions by aid agencies extremely challenging. Ministries at the federal and state level provide agricultural services in Southern Somalia in only an extremely limited, fragmented, and inefficient way, because of lack of skilled staff and funding and poor access to most rural areas.

Despite the presence of agro-input distributors, farmers in Somalia underutilize essential farm inputs, such as fertilizers. They are either employed sub optimally or not at all due to limited financial resources and input accessibility in remote areas. However, the large commercial farms on average do use more inputs than smallholders for optimal production. Additionally, traditional, low-risk responses to unpredictable rainfall patterns further deterred their use¹³. Hence majority of farmers use their harvests as seeds especially for maize and sorghum. This limited adoption of inputs has resulted in the proliferation of low-quality seeds and a restricted variety of seeds in the market, as dealers primarily stock them based on demand. Furthermore, the seed sector remains underdeveloped, presenting significant investment opportunities.

¹² National Economic Council of Somalia (2022). Food Security, Environmental Sustainability and Building Resilience in Somalia.

¹³ General information on crop production in Somalia (FAO 2022)

Most fertilizers are imported from various countries with minimal or no quality assurance related to sourcing¹⁴. The annual fertilizer demand is estimated at 250,000 metric tons, with an expected annual increment of 5%. Fertilizer application rates are on the rise, averaging 20 kg/ha¹⁵ in commercial operations. However, the importation of fertilizers is limited, accounting for approximately US\$ 5 million per year. Currently, Somalia relies on 100% imports for all its agrochemical inputs, often sourcing them from distant locations in Asia. The primary imports in this category consist of pesticides and fertilizers. It's anticipated that The Somali Agricultural Regulatory and Inspection Service (SARIS) regulate and streamline operations on matters of quality control and farming inputs and products as well as facilitating trade and investments in the agriculture sector.

2.1.6 Access to Finance and Insurance

Across the Somali peninsula, access to formal banking services is limited to 16% of the population. The overall scale of lending through Somali Financial Institutions remains low, with limited financing going into agricultural firms¹⁶. During severe droughts that farmers utilize communities, clans, families, diaspora network and humanitarian assistance to of access credit as their main coping strategy.

Financial institutions (Banks and MFI's) in Somalia give sharia compliant loans¹⁷. While Banks may not have specific financial products for farmers, some MFIs based in the farming zones i.e Midnimo Microfinance offers loans to farmers. This comes in the form of inputs, assets, or equipment at an estimated profit margin (interest) of 8-12% and loans range between USD 100 to 5,000. Particular MFI in Southwest State (Baidoa) indicated that their interest in SMEs including the farmers is 4%. The agriculture portfolio in one of the MFI's (Midnimo Microfinance) is about 10% of their portfolio and majority of those who receive the loans from them are women in petty trade. The MFI's interviewed in this study considered the sector to be too risky especially in the face of climate change¹⁸. The MFIs also do on lend to cooperatives, but as any other individual applying loan the cooperative should fulfil the eligibility prerequisites these includes guarantor and collaterals.

While many Somali cooperatives grapple with challenges such as access to finance and disaggregated marketing, successful ones have managed to offer valuable financial services for the common good of their members. The cooperatives pool resources to support their initiatives, as Sharia law prohibits loans on interest. They rely on alternative financial mechanisms, often leveraging local banks such as Salam Bank for financial support that aligns with Islamic principles. These funds are then used for common purposes, such as draining rivers, acquiring water pumps, purchasing tractors, equipment, and fertilizers. The loan is usually paid on monthly bases and the borrowing cooperatives will ensure that payments are made on time. In case of default the banks will deal with the guarantor or otherwise seize the asset in the collaterals. The cooperative model enables members to access financial resources collectively, which can be especially beneficial for projects that require substantial capital investments.

¹⁴ Country food and agriculture delivery compact

¹⁵ AU -Dakar 2 Country Food and Agriculture delivery component (2022)

¹⁶ DAI (2019) Promoting Inclusive Markets in Somalia (PIMS) Final Report

¹⁷ *Shariah-compliant finance*, refers to financial activities that adhere to Shariah (Islamic law). Two fundamental principles of Islamic banking are the sharing of profit and loss and the prohibition of the collection and payment of interest by lenders and investors. Emphasis is on making a profit through equity participation, which requires a borrower to give the bank a share in their profits, rather than paying interest.

¹⁸ MicroDahab MFI, IBS – MFI and IBS

2.1.7 Infrastructure & Transport

Historically, commercial plantations used to occupy approximately 50% of irrigated farmland along both the Juba and Shebelle rivers before the civil war. However, the existing infrastructure has deteriorated significantly over time, with embankments not being adequately reinforced, and the number of available pumps reduced. Sections of the former commercial plantations that have been taken over by smallholders are experiencing low production due to limited knowledge of irrigation and water management techniques¹⁹. Currently, even relatively small amounts of rainfall can cause flooding due to high levels of siltation in the main rivers. Thus, water resource development and management remain a key challenge facing Somalia's key, productive, rain dependent sectors.

In regards to postharvest handling, lack of appropriate storage facilities has contributed large amounts of post-harvest losses at the farm level since the average annual cereal losses in southern Somalia are estimated to be on the order of 50,000–80,000 tons, valued at \$15–\$20 million, representing about 20–30 percent of the harvest²⁰. The traditional underground storage pits lined with clay are highly prone to moisture contamination, particularly during the rainy season, and contamination from aflatoxins, other bacteria, and fungi. The new technology introduced by World Food Programme (WFP) known as cocoon²¹ is yet to be widely adopted in cereals (sorghum and maize). Generally, the road network in the agriculture zone is in bad condition because they have deteriorated beyond their design life. Thus, access to markets and farms is difficult under the current road network.

2.2 Value Chains

A total of 79 actors across the three value chains were identified from production to consumption. A consolidated list of the stakeholder mapping and ecosystem are found in Annex 5. These include the Government Ministries i.e., Ministry of Environment, Ministry of Agriculture and Irrigation, SOMINVEST representing Ministry of Planning; Cooperatives such as Danwadag farmer cooperatives and Hawlwadaag Cooperatives. Sesame Exporters i.e Moumin group and Alshraf; Seed companies i.e Filsan, CSET amongst others.

2.2.1 Sorghum Value Chain

The sorghum value chain in Somalia comprises several actors who perform key activities that are crucial in overall functioning of the value chain. These activities include production, harvesting, processing, trading, and retail. The figure below provides a visual representation of the value chain, it illustrates the different stages of the value chain, from production to consumption, and identifies the main actors involved in each stage²².

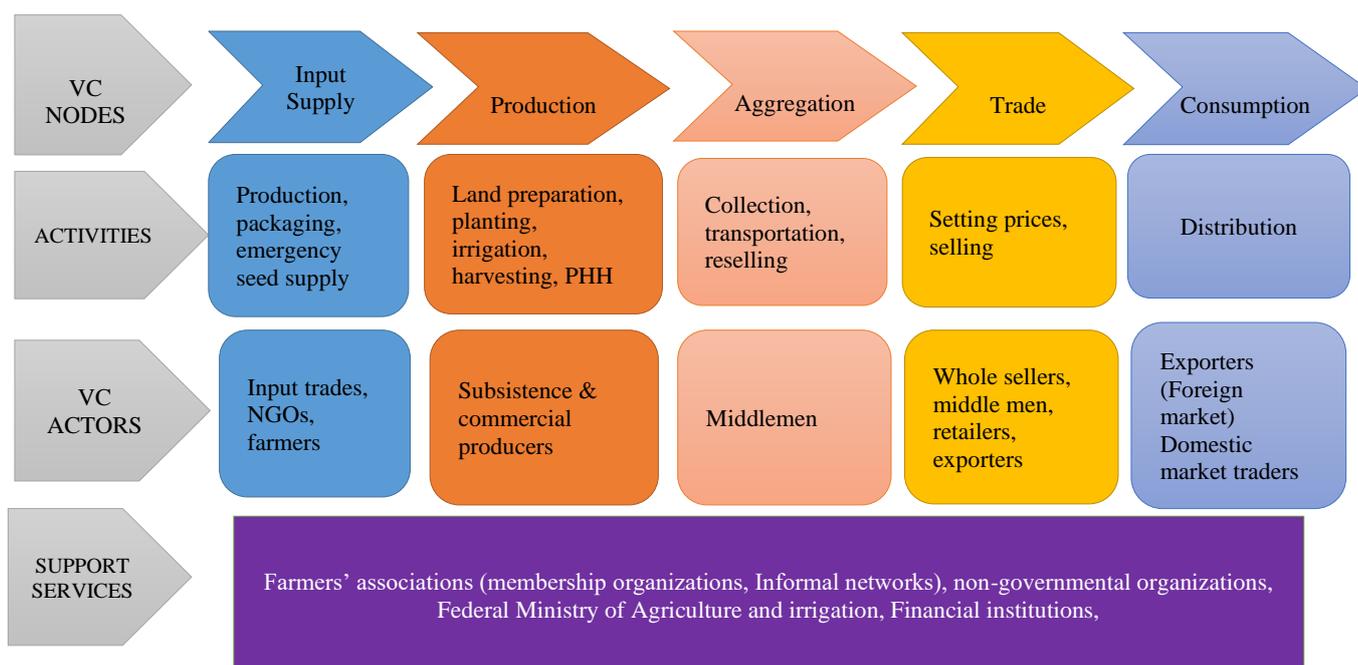
¹⁹ General information on crop production in Somalia (FAO 2022)

²⁰ World Bank and FAO (2018) Rebuilding Resilience and Sustainable Agriculture in Somalia. Somalia Country Economic Memorandum, Volume I

²¹A Cocoon is a gastight and watertight outdoor storage unit, designed for long-term storage of agricultural commodities. Each unit can store between 100 and 150 metric tonnes for a year with close to no losses.

²² FEWSNET (2004)

Figure 3 Somalia value chain map



2.2.1.1 Value Chain Actors

Input traders

Input traders, are normally located in the peri-urban areas, facilitate the flow of agricultural inputs, services, and products to the farmers. Seeds are the primary inputs and are bought from either retailers or wholesaler, however, most producers use their own seeds from previous harvests or are able to access emergency seed distribution programmes from NGOs. In addition, the use of fertilizer and irrigation equipment on sorghum is limited. These factors constraint market driven provision of essential inputs/services along the value chain.

Producers

Sorghum is typically planted between April-June and October-December. There are two categories of sorghum producers: i) subsistence producers; majority 80%, and ii) commercial producers. Subsistence producers grow sorghum for their own consumption and rarely have surplus produce to sell to the markets. The surplus (unprocessed sorghum) is sold directly to consumers, middlemen, or retailers. Post-harvest activities performed by the farmers include threshing, winnowing, and storing in sacks. The transport costs in trade of sorghum are prohibitive for many of the smallest producers.

Subsistence producers usually have small land holdings and utilise family-based unpaid labour, use of commercial inputs, such as fertilizer and certified seeds is minimal. During labour intensive harvest periods, small producer communities support each other in reciprocal labour exchanges. On the other hand, commercial sorghum production is carried out on a much larger scale – often in excess of 10 hectares, sometimes using tractors and hired labourers. After harvest, they package sorghum in 50kg bags and sell to whole-sellers or middlemen mostly in cash although some agree credit terms²³.

Traders/ Retailers

²³ Opportunity Mapping in Baidoa and Beletweyne

Sorghum is harvested between August-September and January-March. Middlemen purchase small quantities of sorghum from producers and bulk before selling to wholesalers and retailers. Occasionally, they offer informal credit services to producers and accept surplus grain as repayment. These arrangements between middlemen and producers are mostly informal. Wholesalers mainly supply to retailers, although some wholesalers are also retailers and sell directly to the market. They have storage facilities that allow them to sell produce during the off-season and command a stronger price. Wholesalers also facilitate trade with other regions in Somalia typically transporting sorghum to the markets in Mogadishu for sale and further redistribution.

Retailers often women, operate in open-air stores under improvised structures, many of these retailers move between markets buying from producers in the harvest seasons and from wholesalers in the off-season. They sell sorghum as grains with the husk removed or as flour from large sacks, scooping smaller portions into small plastic bags depending on the quantity the customer requires²⁴. Processing into flour is normally carried out using small milling machines in the small towns.

Consumption

Sorghum is mainly used for household consumption in the form of ugali, porridge pancakes, also it is mixed with cowpeas before boiling. Sorghum is also used as fodder for the animals. The stalks are either baled into hay or ferried over donkey carts to feed animals.

Processing

Household in the farming areas process sorghum into flour using small milling machines in the small towns. A few small-scale processors such as Gabyow Agriculture Product Trading Co in blend sorghum and maize flour and sell to the general public.

2.2.1.2 Production

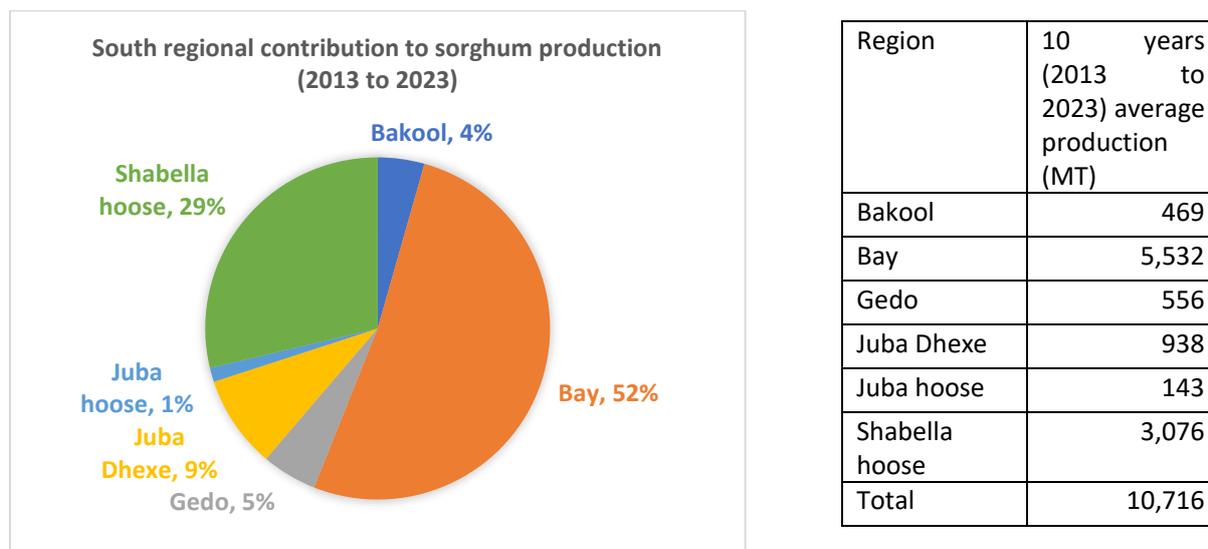
Sorghum is significant to Somalia's economy as it's the staple diet for the majority of Somalis, and increasing its production would significantly reduce the country's need on food aid. The vegetative nature of sorghum also allows it to be utilized as animal fodder, and thus enhancing the livelihoods of Somali agro-pastoral communities. Due to its adaptability to the dry and semi-arid weather conditions, Sorghum's drought resistance offers an entry point for Somalia to engage in climate resilient farming.

Sorghum is grown as a subsistence crop and is important as food and fodder crop, especially in rain-fed areas where livestock represents a crucial point to the success of local agro-pastoralist communities. Its estimated sorghum was farmed on 250,000²⁵ Ha in Somalia in 2021 yielding 94,000 MTs. Lower Shebelle, Middle Shebelle, and Bay regions in the South West State of Somalia account for over 80% of the country's grain crop production. Bay is known for its significant sorghum output. It leads with over 50% of the production, while Lower and Middle Shebelle account for approximately 30%. Baidoa city found in the state is the country's main sorghum-trading market. The average farm size for sorghum is 3 to 4 hectares, while commercial sorghum production is carried out on a much larger scale – often cultivating in excess of 10 hectares. Sorghum represents % of the total agricultural output. Contribution of different regions to total production is illustrated in the figure below.

²⁴ WFP (2011): Food Market and Supply Situation in Southern Somalia

²⁵ <https://ipad.fas.usda.gov/countrysummary/default.aspx?id=SO&crop=Sorghum>

Figure 4. South region contribution to sorghum production



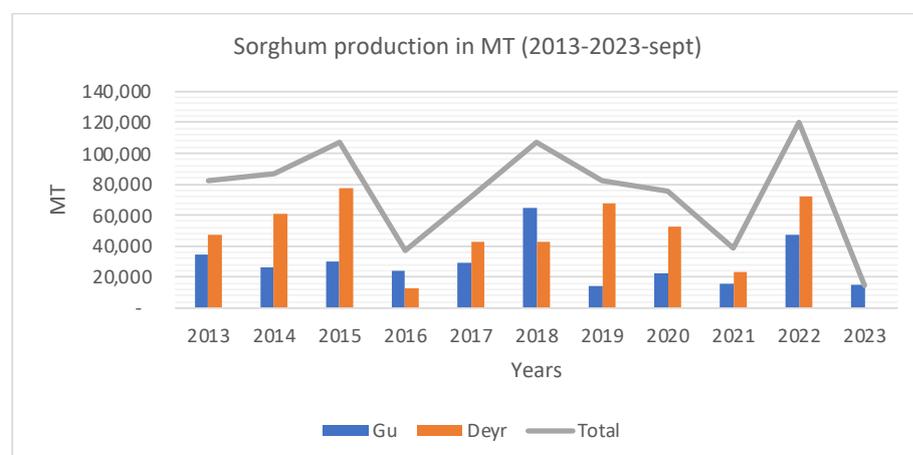
Source: FSNAU Data 2023 September

Most producers use their own seeds from previous harvests or are able to access emergency seed distribution programmes from NGOs. The demand for sorghum mainly comes from rural households, who consume it in the form of porridge like drink called *mordi* and its biomass is an important supplementary fodder to natural grazing, especially during the dry season. Herders also do graze into sorghum field when it's a failed crop.

Sorghum is mainly grown in rain-fed conditions. This makes it susceptible to climatic and environmental challenges and this results in fluctuations in production that generally does not meet market demand in the harvest seasons. Production ranges 0.3 to 0.6 tons/ha. against the potential of 5 to 10 MT/ha for sorghum (Gavin et al. 2018). Subsistence producers who are a majority simply grow sorghum for their own consumption and rarely have enough surplus produce to sell to the markets. They often rent their land to sharecroppers in order to mitigate against the risk of crop-failure²⁶.

Harvesting is mainly in two seasons; June (Gu season) and December (Deyr season). The trend in production in the South regions of Bay, Bakool, Gedo, juba Dhexe, juba hoose and Shabelle hoose is presented below.

Figure 5. Sorghum production in metric tons



Source: FSNAU Data 2023 September

²⁶ ILO (2015) Opportunity Mapping in Baidoa and Beletweyne, Somalia

Besides the climate extremes, which have contributed to the cyclical decline in productivity in 2016 and 2021, prolonged conflicts have led to widespread destruction of agricultural infrastructure, displacement of farmers, and disrupted supply chains, all of which severely hamper production activities. Moreover, since 2006, the militant group Al-Shabaab has exerted control over South West and Hirshabelle regions, where the bulk of the cereal production including sorghum occurs. The group is known to demand payment from development agencies in return for access making it difficult to provide much-needed support to the sorghum farmers²⁷. Other factors that contribute to low production of sorghum include: low availability of surface water for irrigation due to damaged irrigation facilities during the war period; lack of water use planning and regulation; poor soil fertility and minimal use of fertilizers; low quality seeds and availability of limited variety; unreliable mechanized equipment and inappropriate farming techniques due to absence of extension and research services²⁸. A move away from sorghum production in favour of sesame has also contributed to a decreased acreage and subsequent household resilience for many agro-pastoralists.

Few farmers use water pumps to supply to crops in their farms. There is hardly use of modern technologies like drip irrigation. Moreover, mechanization and use of chemical fertilizers are low. Harvesting is also manual and mostly entail use of hand tools. This is attributed to the small-scale nature of farming.

2.2.1.2 Market Size and Value

The Sorghum production averaged at 97,000 between 2016 and 2022 value at USD 17.460M. The fluctuation during that period as depicted in table 3 below is related to the weather patterns. For instance, there has been significant drought from 2020 -2021 which explains the drop in the production of sorghum from 125,000 in 2019 to 94,000 in 2020 to 59,000 in 2021. Notably, over 50 percent of the sorghum is introduced as food aid by various organizations which disincentivizes the farmer to grow the crop²⁹. 2017 and 2021 approximately 417,496.96 MTs of Sorghum was imported.

Table 2 Gross Production of Sorghum in Somali (2016-2022)

Year	Production in MTs
2016/2017	77,000
2017/2018	95,000
2018/2019	132,000
2019/2020	125,000
2020/2021	94,000
2021/2022	59,000

Source: USDA 2023

²⁷ IMF Country Report No. 22/376

²⁸Federal Government of Somalia (2022): Somalia's National Adaptation Plan (NAP) Framework

²⁹Federal Republic of Somalia Ministry Of Agriculture Strategic Plan 2016-2020

2.2.1.3 Growth Trends

Sorghum production in Somalia takes place in the drylands and is almost entirely rain-fed which is highly dependent on rainfall. Due to the climate change and rainfall pattern conditions sorghum production has been highly volatile and failed to improve with minimal expectation for growth, unless the area under cultivation is increased.

2.2.1.4 Competition

Sorghum competes with other cereal crops like maize and cowpea and is comparatively advantaged over these crops because of its tolerance to the arid and semi-arid conditions. Subsequently, the land allocated to sorghum production is much higher compared to maize and other crops.

Given the fact that Somali agricultural sector is heavily dependent on food imports, local sorghum production also competes with imported sorghum. The competitiveness of locally produced sorghum is hampered with inconsistent standards, poor harvesting and post harvesting handling techniques such as threshing, and post harvesting managements. These challenges make it impossible for locally produced sorghum to compete with imported sorghum which has higher standards and more appealing to consumers.

Table 3. Prices of red and white sorghum per Kg in 2022 in various towns

	Jan		Feb		March		Apr		May		June	
	Red	White	Red	White	Red	White	Red	White	Red	White	Red	White
Benadir	0.51	0.77	0.52	0.79	0.62	0.93	0.63	0.97	0.66	0.99	0.66	1.00
Johwhar	0.65		0.66		0.70		0.74		0.72		0.74	
Baidoa	0.60	0.66	0.59	0.65	0.57	0.71	0.71	0.75	0.65	0.70	0.76	0.82
Beledwayne	0.00	0.71	0.57	0.69	0.57	0.75	0.65	0.76	0.69	0.78	0.69	0.80
Lower Juba - Kismayo	0.45		0.50		0.50		0.50		0.50		0.50	

Source: Somalia Quarterly Economic Review (2022Q2) Volume No.: 06 April - June 2022

2.2.1.5 International Trade

Despite its low production, sorghum from Somalia is occasionally exported in very small quantities to the international markets. The main destination of Sorghum exports from Somalia are: United Kingdom, Austria, and Switzerland³⁰. However, the export value is small compared to the value of imported sorghum. Between 2017 and 2021, Somalia imported a total of 417,496.96 tons of Sorghum worth \$ 92,748,000.00. On the contrary, it exported merely 33.70 tons worth only \$ 27,000.00. In 2022 Somaliland exported 34 tons and imported 6,300 tons of sorghum³¹.

³⁰<https://oec.world/en/profile/bilateral-product/sorghum/reporter/som>

³¹ Trade statistical bulletin (2022) Ministry of Finance development: Macroeconomics and Statistics Department.

Table 4 Import and export of sorghum (tons and value in 1000\$)

Year	Import		Export	
	Import quantity in tons	Import Value in 1000\$	Export quantity in tones	Export value in 1000 \$
2017	109,202.45	24,755.00	5.57	5.00
2018	81,212.26	17,868.00	4.43	3.00
2019	103,262.25	23,727.00	10.46	9.00
2020	46,820.00	9,398.00		
2021	77,000.00	17,000.00	13.24	10.00

Source: FAOSTAT Data September 2023

2.2.1.6. Distribution of Margins

Producer Gross Margins Sorghum Analysis per Ha

Table 5. Producer Gross Margins Sorghum Analysis per Ha

Traditional Practices (Small scale farmers in Lower Shabelle)	
Land size	1 Ha
Land preparation cost	\$25 per H
Seeds	\$10
Fertilizer	0
Pesticides	0
Labor (weeding and harvesting)	\$20
Total production cost per Ha	\$55
Quantity harvested	400 KG
Sale price per quintal (100Kgs)	\$25
Total Cost of production	\$55
Cost of production per 100Kgs	\$13.75
Sale price of Total harvest (400kgs)	\$100
Gross margin per Ha	\$45
Gross margin per 100Kgs produced and sold	\$11.25
Gross margin as % of sale price for 100kgs	25.00%

Table 6. Middle men / Trader Sorghum gross margin analysis

Item	Cost / Unit
Purchase price per quintal (100Kgs)	\$35
Load price	\$0.4
Transportation cost	\$2
Offloading	0

Fees	1
Total Cost per 100kgs	38.4\$
Total selling price to retailers	\$60
Gross margin	\$21.6
Gross margin as % of sale price	36.00%

Table 7. Whole seller/Retailer Sorghum gross margin analysis

Item	Cost / Unit
Purchase price (100ks)	\$60
Load price	\$0.2
Storage and labor	0
Offloading	\$0.2
Fees (licenses)	1
Losses and other costs	0.2
Total Cost for 100Kgs	\$61.6
Total selling price per Kgs	\$0.75
Total selling price for 100Kgs at retails	\$75
Gross margin for every 100Kgs sold	\$13.4
Gross margin as % of sale price	17%

These analysis presents gross margins at 25%, 36% and 17% for the farmers, trader and Wholesaler / Retailer respectively. This low gross margins at the retailer level may be informed by the fact that imported sorghum is considered of high quality and competes favorably with the locally produced sorghum.

2.2.1.7. Information and Knowledge

Information exchange is important for the smooth functioning of the sorghum value chain. Communication links exist between market actors: extension workers, processors, traders, and retailers. They play important roles in disseminating information to farmers and other market actors. The main types of information that flow across value chain actors include:

Production information: this comprises information on best practices for sorghum cultivation, including land preparation, planting, and harvesting. Extension workers are the main source of information, in addition, farmers also share information among themselves on local weather patterns, pest control, and other production-related issues. Post-harvest processing information such as quality is mainly sourced from processors.

Market information: Information on market demand, consumer preferences and pricing flows from traders and middlemen to farmer. Traders also share information among themselves on market trends, pricing, and transportation logistics. There are no formal systems and structures to provide market information. The limited availability of market information

makes it hard for Government, private businesses, and development practitioners to identify market gaps, and to design appropriate solutions for the value chain. Farmers face difficulties in making production decisions ranging from selection of appropriate seed varieties to climate shocks preparedness. Radio and television broadcasts contribute significantly to information access especially for actors without internet access or are illiterate. The government and other national/international actors have already set up an online database of market information, but it requires considerable data entry in order to generate the kind of information necessary to inform macro- and micro interventions along the value chain³².

2.2.1.8. Relationships and Linkages

Sorghum value chain actors are interconnected through a series of transactions and relationships that enable the flow of sorghum from production to consumption in the Somali market. The interactions among input traders, producers, middlemen, wholesalers, and retailers ensures the flow of sorghum through the value chain, meeting the diverse needs of consumers in the Somali market. Each actor plays a crucial role in ensuring the availability and distribution of sorghum products, contributing to the overall functioning of the value chain.

Input traders, typically situated in peri-urban areas, serve as the initial link in this chain by supplying farmers with essential agricultural inputs like seeds, fertilizers, and irrigation equipment. However, the utilization of these inputs for sorghum cultivation is often limited, partly because many producers rely on seeds from previous harvests or emergency seed distribution programs initiated by NGOs. This constraint hinders the provision of crucial inputs and services in a market-driven manner along the value chain.

Trade in sorghum is mostly through informal channels, middlemen play a key role by purchasing and aggregating sorghum from producers in relatively small quantities. Subsequently, they distribute aggregated sorghum to both wholesalers and retailers. Occasionally, middlemen extend informal credit to farmers and may accept excess grain as a form of repayment, although such agreements tend to be informal in nature, they highly contribute to significant financing of the value chain activities.

Wholesalers in Southern regions are mostly found around in Mogadishu. They are significant players in the distribution process. They often function not only as suppliers to retailers but also as retailers themselves. They commonly have access to storage facilities, allowing them to aggregate sorghum for off-season sales and leverage price speculation. Furthermore, wholesalers play a crucial role in the cross-regional trade of sorghum within Somalia, frequently transporting sorghum to markets in Mogadishu.

Retailers, frequently women, purchase sorghum from producers during harvest seasons and from wholesalers during off-seasons. Retailers offer sorghum for sale as grains with the husk removed or as flour, packaging it according to customer preferences.

2.2.1.9. Gender Responsiveness

Women and youth are involved in various stages of the value chain, including production, processing, and marketing. In some production areas women own 50% of the total production and they are also responsible for planting, weeding, and harvesting sorghum, as well as processing it into flour or other

³² ILO – Opportunity Mapping in Baidoa and Beletweyne, Somalia

products while youth are involved particularly in the marketing and distribution of sorghum. Empowering women and youth through training and skills development have contributed to increase their participation and decision-making in the value chain, leading to greater economic opportunities and improved livelihoods.

2.2.2 Maize Value Chain

A total of 30 actors across the maize value chain were identified from production to consumption. A consolidated list of all stakeholder mapping and ecosystem are found in Annex 5. These include the Government Ministries SOMINVEST representing Ministry of Planning; Cooperatives such as *Sariiraale Farmers Cooperatives*, Danwadag farmer cooperatives and Hawlwadaag Cooperatives, Seed companies such as Filsan, and CSET amongst others.

2.2.2.1 Value Chain Actors

The maize value chain in Somalia involves a range of actors, each of whom plays a critical role in the production, processing, and marketing of maize products. These actors include input suppliers, farmers, traders, processors/millers, wholesalers, retailers, and exporters.



Source: Adapted from Maize Value Chain Analysis: EU funded project; Outreach Program, Somalia, Adam Smith International, the Somali Agricultural Technical Group (SATG) and KasmDev.

Input supply

The maize value chain consists of four main input categories: seed, fertilizer, pesticide suppliers, and agricultural equipment supplied by both formal and informal actors such as agro-dealers, NGOs, and

government agencies. The value chain is characterized by limited varieties of seeds, absence of certified seed suppliers and unregulated seed imports. Consequently, majority of farmers, with exception of large-scale commercial farmers, use seeds kept from their harvests. Fertilizers are imported through the ports of Jowhar and Mogadishu, there is lack of inspection and testing procedures and poor distributorship which allows poor-quality and counterfeit fertilizers to infiltrate the market. Pesticides are normally imported from Kenya, India, China, and Jordan and sold in major agricultural zones by agro-dealer enterprises. While there are several farm equipment suppliers in the state, the available equipment is often old and expensive to maintain. They include tractors, soil cultivators, and water pumps, among others. Notably, there is a shortage of locally manufactured or assembled farm equipment, resulting in the majority of farm tractors being imported from Italy.

Production

Maize production is categorized into small-scale, medium-scale, or large-scale based on the size of the land they work on. Small-scale maize farmers typically cultivate less than 3 hectares, medium-scale farms range from 3 to 10 hectares and large-scale farms exceed 10 hectares. Small-scale farmers, who represent around 80% of the farming community, usually engage in subsistence farming and contribute to roughly 70% of the total maize production in the state. Medium and large commercial farmers have a commercial interest in increasing production to meet urban demand. They often sell directly to wholesalers and brokers, achieving relatively better profit margins than small-scale farmers. The medium and large commercial are often organized into marketing groups and cooperatives, enabling them to negotiate with buyers and access financing from banks and grants from donor projects.

Aggregation

Aggregation involves the collection and consolidation of maize from multiple small-scale farmers into larger quantities that can be sold to wholesalers or processors. The major activities in the aggregation stage of the maize value chain in Somalia include the collection, consolidation, sorting, grading, and storage of maize from multiple small-scale farmers into larger quantities that can be sold to wholesalers or processors. These activities are usually carried out by intermediaries, such as brokers or cooperatives, who purchase maize from farmers at the farm gate or in local markets. In addition, the government and development partners play an important role in supporting the aggregation stage of the maize value chain by providing support for the construction of collection centers and warehouses, as well as development of transportation networks that connect farmers to these facilities. This improves the efficiency of the maize value chain by reducing transaction costs and increasing the bargaining power of small-scale farmers. However, aggregation in the maize value chain in Somalia faces a number of challenges, including poor infrastructure and limited access to finance.

Trade

Maize trade is conducted both formally and informally within the country and in cross-border with neighbouring countries. The major actors in the maize trade include wholesalers, processors, retailers and consumers. Wholesalers based in Mogadishu are the primary buyers of maize; they purchase maize in large quantities from intermediaries or directly from farmers. Processors buy from wholesalers, they clean and mill the maize into various products, such as flour or meal. The processed products are distributed to retailers who sell to consumers in local markets or shops. Consumers (institutional and individuals) are the end-users of maize products; they purchase for consumption in their homes or businesses. In supporting trade, the government and development partners provide support through development of policies and regulations that promote fair trade practices and protect consumers as well as offering financial support to access new markets.

Processing

Processing activities include cleaning, milling, and processing carried out by small-scale processors or large-scale industrial processors, depending on the scale of production and the level of technology used. Majority of the processors in the south are rural based manual or small motorized milling machines commonly found in the market. These have low capacity to mill maize and often operate at less than 0.5 tons a day. Maize is transformed into various products, such as flour or meal. The products are distributed through wholesale and retail outlets.

In Somaliland, Hargeisa town has more than 35 millers and they are all privately owned, and machines are used in markets for business milling for specific commodities (mainly maize). Processing costs US\$3 for each 50kg bag³³. Bags are provided by the goods owner but can be locally purchased at a cost of US\$0.40 per empty bag. The milling capacity of majority of the processors in Hargeisa are between 5 MT to 25 MT/day and they do not provide but packing or storages facilities etc.

Distribution

Distribution involves transportation, storage, and marketing. Wholesalers who are mainly based in Mogadishu and retailers are the primary actors in the distribution node of the value chain, they purchase maize products in large quantities from processors or other intermediaries. They transport and store the products until they are sold to retailers or other buyers. Retailers sell maize products to consumers in local markets or shops, they market the products and ensure availability to consumers. Support services for distribution include infrastructure, such as roads and storage facilities which are provided by the government and development partners.

Consumption

About 60% of the maize produced is consumed in the neighbourhood. In the south rural based small motorized milling machines in the market that process less than 0.5 tons capacity a day are used by households to process the maize into flour. The other 40% is consumed in the urban households. They source from traders who mill at private millers and retail the flour in small quantities from small outlets around the cities

2.2.2.2 Production

Somalia heavily relies on food aid and imports to meet its food requirements. Maize plays a significant role in reducing this overdependence and helping Somali's meet their nutritional needs and achieving food security. As an important staple cereal crop, maize is also an important source of livelihood for rural agricultural households, typically grown under irrigation. The agro-pastoral households also use maize as fodder and occasionally dried maize is boiled for their livestock. The farming households sell the surplus to markets thus earning some additional incomes.

Maize in Somalia is mostly produced by subsistence farmers, with an average land area of 0.2–3.0 hectares. In 2022, the total production was 90,207 MT. Shabelle is Somalia's most important maize producing region, accounting for 51% of the total production in the southern region³⁴. Production from the riverine production system was 32,851 MT representing 36% of the total annual production³⁵. Maize is on an average of 100,000 hectares annually³⁶. Contribution of different regions to total production is illustrated in the figure below.

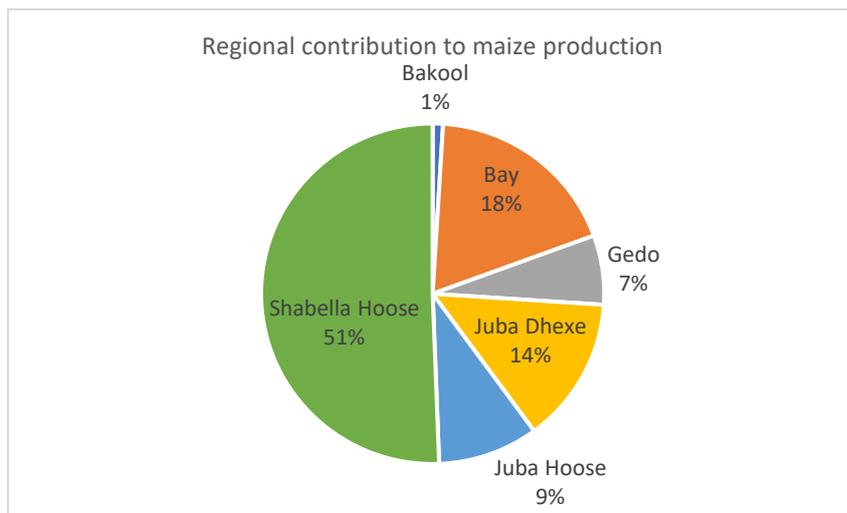
³³ Somalia milling assessment: <https://dlca.logcluster.org/27-somalia-milling-assessment>

³⁴ General information on crop production in Somalia (FAO 2022)

³⁵ FSNAU Data 2022

³⁶ USDA : <https://ipad.fas.usda.gov/countrysummary/default.aspx?id=SO&crop=Corn>

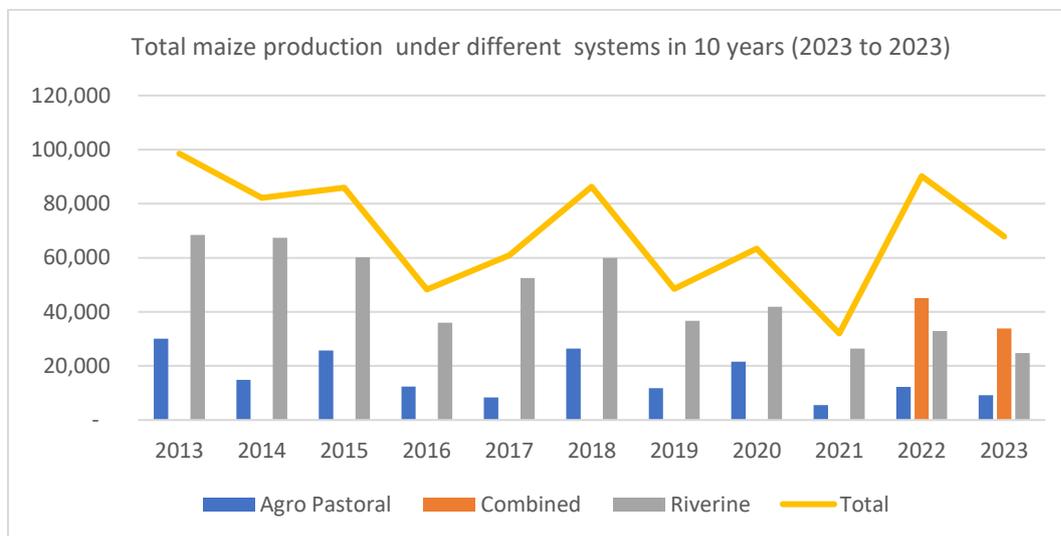
Figure 6. Regional contribution to maize production



FSNAU Data 2022

Traditionally most maize in the Shebelle riverine is grown under furrow irrigation with little to no use of external fertilizers or mechanical implements. Though the maize production systems are irrigated, seasonal rain failures in the Shebelle River basin have major effects on the water level of the Shebelle River and influence a farmer’s ability to irrigate³⁷. Further, a combination of unsophisticated farm management practices in traditional maize cropping systems, consistent political instability, and harsh environmental conditions especially

Figure 7. Trend in maize production under different systems



Source: FSNAU Data 2023 September

The climate-change-related temperature variations have also increased the risks of faster breeding among disease-causing vectors and pests. For example, in 2020-2021, locusts, ravaged Somalia’s vegetation, destroying key crops such as sorghum and maize³⁸. These factors amongst others

³⁷ Gavin, R., Haji, H., Jelinski, N., Harvey, A., & Porter, P. (2018). On-farm irrigated maize production in the Somali Gu season. *African Journal of Agricultural Research*, 13(19), 969-977.

³⁸ Federal Government of Somalia (2022): Somalia’s National Adaptation Plan (NAP) Framework

articulated below contribute to the prevailing low yields of between 1 to 1.50 t / ha which is far below the potential of between 10 to 15 MT³⁹t/ha.

- Much diminished and inconsistent surface water availability in southern Somalia, because of the dilapidated state of its prewar irrigation and flood control infrastructure and minimal rehabilitation efforts because of persistent insecurity.
- Insecurity has also contributed to forced displacements making it difficult for farming communities to live and grow crops.
- Lack of water use planning and regulation, which has led to inefficient water use, increased salinization, and water logging.
- Poor soil fertility management, as inputs such as manure, fertilizer, and pesticides are either used in a suboptimal way or not used at all, because of lack of adequate funds and inputs availability in remote areas.
- Low-quality seeds and the availability of only very limited varieties on the market.
- Limited and unreliable mechanized equipment (most farmers use handheld tools to till the land, because of the high cost of machinery).
- Inappropriate farming techniques, due to the absence of extension and research services.

2.2.2.3 Market Size and Value

The growing rural and urban population in Somalia is increasing the demand for maize. In 2018 the estimated demand of maize was at 1.2 million metric tonnes valued at USD 396,000, with an annual deficit of about 40% filled by imports, especially through food aids⁴⁰.

2.2.2.4 Growth Trends

Several households in Somalia consume maize in different forms, such as milled, fresh, and dry maize, the demand is expected to continue to grow by at least 15% annually across the country²². Investment in milling and value addition in the country is also increasing demand for maize, especially with the fact that sifted maize is going to attract new maize for certain regions that did not consider it a staple crop.

2.2.2.5 Competition

Maize majorly competes with sorghum in Somalia. Maize productivity is around 1 to 1.50 tons/ha compared to 0.3 to 0.6 tons/ha for sorghum. Maize farming occurs along the riverine therefore drought shocks on production are minimal on maize compared to sorghum. However, huge tracts of land have been allocated to sorghum compared to maize because the agro-ecology of Somali largely favors sorghum farming. Notably, in the areas that livestock is the main source of income, the level of livestock prices and quantity sold determines a household's ability to buy enough maize grain and flours in the market.

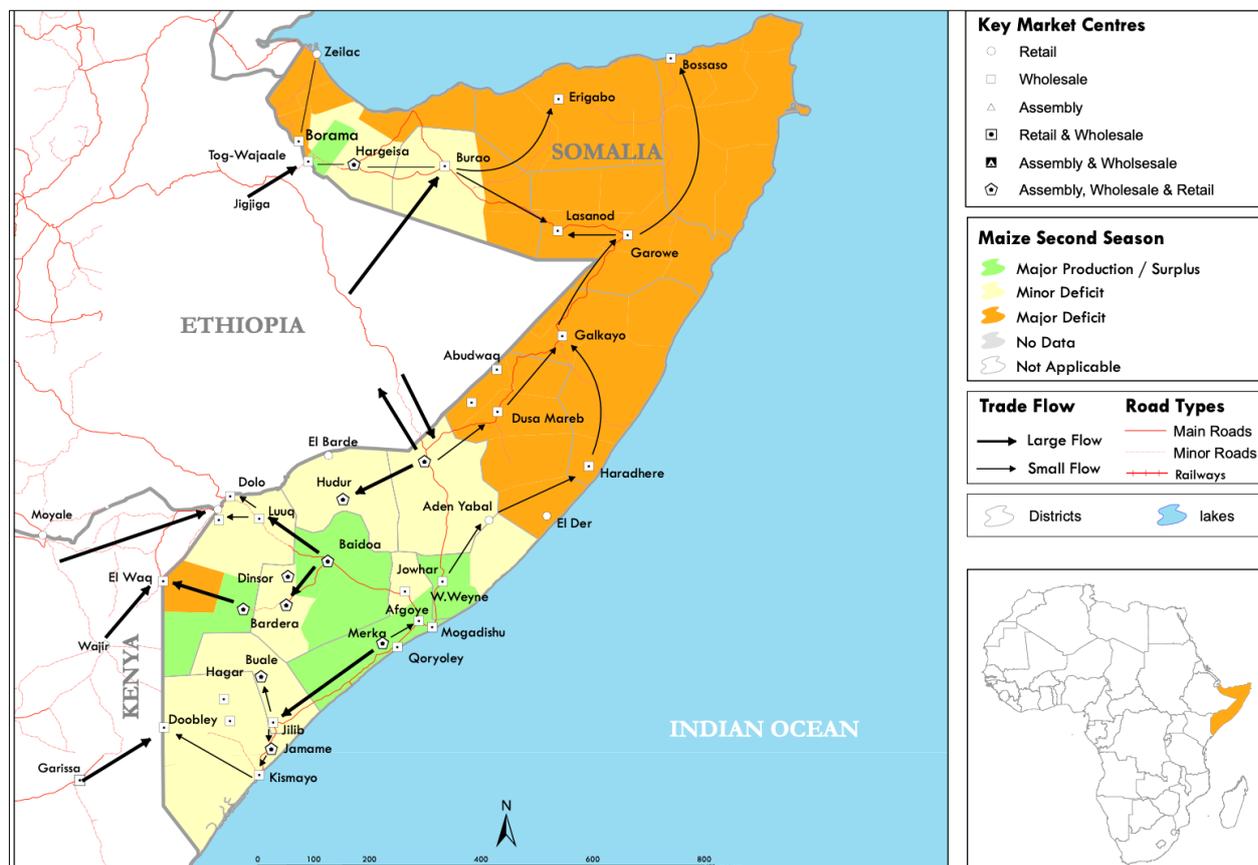
2.2.2.6 International Trade

³⁹FAO of the UN (2022) Food Systems Profile – Somalia Catalyzing the sustainable and inclusive transformation of food systems

⁴⁰ Outreach Project (2018): Maize Value Chain Analysis Somalia

The production and market flow map below provides insights of Somalia maize trade. The regions shaded in yellow and brown depict the areas with major and minor maize deficits respectively. Large flows of maize come in from Kenya and Ethiopia.

Figure 8. Production and Market Flow Maps: Somalia Maize



Source FEWSNET

There is major trade deficit in maize and maize flour in Somalia. In 2018 the estimated demand was at 1.2M MTs valued at USD 396,000, with an annual deficit of about 40% filled by imports. Data from the FAOSTAT indicate that between 2017 and 2021 Somalia imported maize corn and maize flour. The value of export of maize and flour is very low to compare. In fact, Somalia was not able to export maize in 2020 and 2021. In 2022 Somaliland exported 10,334 tons of maize and imported 51,081MTs⁴¹.

Table 8. Maize and Maize flour import/Export in Somalia (2017-2021)

Year	Maize		Maize flour					
	Import		Export		Import		Export	
	Quantity (t)	Value \$1000						
2017	4,307.	1,340			427.50	207.00		
2018	2,009	1,199			1,394.00	587.00	2.25	1.00

⁴¹ Trade statistical bulletin (2022) Ministry of Finance development: Macroeconomics and Statistics Department.

2019	24,633.86	9,186	17.59	7.00	1,159.11	522.00	4.00	2.00
2020	2,692	1,216	2.88	1.00	997.56	447.00		
2021	2,310	1,383	2,863.71	241.00	1,192.84	536.00		

Source: FAOSTAT September 2023

2.2.2.7 Distribution of Margins

Maize production by small holder farmers (in Lower Shabelle, Somalia) is characterized by minimal input costs and absence of expenditures on fertilizers and pesticides. The gross margin per hectare amounts to USD 70, when viewed on a per-unit basis, the gross margin per 100 kilograms of maize produced and sold is USD 14. Further, the gross margin, expressed as a percentage of the sale price for 100 kilograms of maize, is calculated at 20%. This figure underscores that nearly half of the sale price is retained as profit after deducting the production costs.

Table 9. Maize producer gross margin estimates

Traditional Practices (Small scale farmers in Lower Shabelle)	
Land size	1 Ha
Land preparation cost	\$25 per H
Seeds	\$10
fertilizer	0
Pesticides	0
Labor (weeding and harvesting)	\$30
Total production cost per Ha	\$65
Quantity harvested	500 KG
Sale price per quintal (100Kgs)	\$27
Total Cost of production	\$65
Cost of production per 100Kgs	\$13
Sale price of Total harvest (500kgs)	\$135
Gross margin per Ha	\$70
Gross margin per 100Kgs produced and sold	\$14
Gross margin as % of sale price for 100kgs	20.00%

Source: Author, 2023

Table 10. Maize wholesaler gross margins

Item	Cost
Purchase price per quintal (100Kgs)	\$27
Load price	\$0.4
Transportation cost	\$2
Offloading	0
Fees	1
Total Cost per 100kgs	\$30.4

Total selling price to retailers	\$55.4
Gross margin	\$25
Gross margin as % of sale price	45.10%

Retailers' margins

Retailers' margin analysis demonstrates that after considering various expenses such as purchase, loading, offloading, fees, and other costs, there is a positive gross margin of USD 23.2 for every 100 kilograms sold. This indicates the profitability of 29% of the selling price retained as profit after covering all costs.

Table 11. Maize retailers' gross margins

Purchase price (100ks)	\$55.4
Load price	\$0.2
Storage and labor	0
Offloading	\$0.2
Fees (licenses)	1
Losses and other costs	0.2
Total Cost for 100Kgs	\$56.8
Total selling price per Kgs	\$0.8
Total selling price for 100Kgs at retails	\$80
Gross margin for every 100Kgs sold	\$23.2
Gross margin as % of sale price	29%

2.2.2.8 Information and Knowledge

Transfer of information and knowledge among actors in the maize value chain is critical for promoting efficiency, competitiveness, and sustainability in the sector. By working together and sharing information and knowledge, actors can better understand market dynamics, identify opportunities for value addition, and improve production and marketing strategies.

There are formal and informal channels and mechanisms for transfer of information and knowledge among actors in the maize value chain. They include:

- Extension service providers offer technical assistance and training to farmers to help them improve their farming practices and increase their yields.
- Input suppliers also provide farmers with the necessary inputs, such as seeds, fertilizers, and pesticides, to support their production activities.
- Business-to-business linkages platform facilitate communication and collaboration among actors, such as input suppliers, farmers, processors, and traders, and help provide market information and other relevant data to actors in the value chain, which help them make more informed decisions and improve their competitiveness

- Cooperatives and associations provide a platform for farmers and other actors to share information and knowledge, as well as to access resources from development partners and access markets for their produce

2.2.2.8 Relationships and linkages

Vertical linkages

Vertical linkages among value chain actors is limited with very few cooperative and buyers been in contact. Linkages on transfer of information between actors is limited/ inexistent. There is growing interest by development organizations such as WFP to engage farmers and purchase maize from farmers. Farmers are willing to sign contracts when provided with inputs by buyers. The level of trust among key actors is low due to fluctuation of prices and yields. Further, lack of central body or association to coordinate linkages between players weakens the relationship between actors.

Horizontal linkages

The existence of horizontal linkages between actors is manifested in sharing of information and knowledge on seeds and skills by small scale farmers. However, collective marketing system is practically inexistent and in cases where associations among farmers are present, common interest among members and farmers are generally through their chairmen. Recent WFP program of purchasing maize from farmers has provided opportunities for farmers to create a common bargaining platform through their associations. This has contributed towards reduction of transaction cost and road fees by creating an economy of scale for farmers as well as traders.

While challenges like limited internet access and the need for digital literacy exist, the implementation of digitalized market information systems holds the promise of improving the maize value chain in Somalia. Digitalized market information systems have the potential to revolutionize the maize value chain in by providing real-time access to market information on pricing and demand and empower farmers, traders, and processors to make informed decisions.

2.2.2.9 Gender Responsiveness

In Somalia, women play a significant role in agriculture, with statistics from the Ministry of Agriculture and Irrigation of Jubaland indicating that 96% of agricultural product sellers including maize in markets are women. However, they struggle with negative stereotypes and perceptions regarding their roles and capabilities, often being traditionally designated as caregivers. To enhance their livelihoods, it is imperative to improve women's access to modern farming tools and quality seeds, advocate for the adoption of agricultural technology, and offer training to households on progressive farming practices.

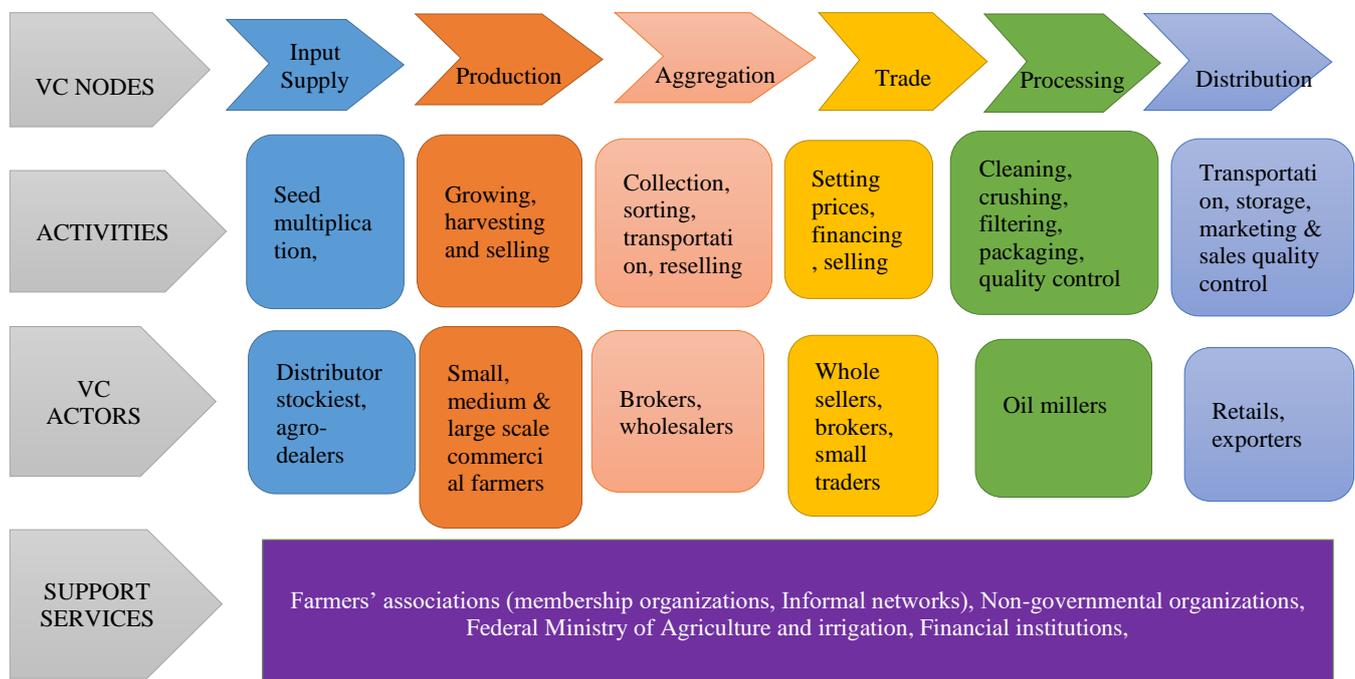
Maize cultivation in Somalia is undertaken by farmers from diverse socioeconomic backgrounds across the state. The maize value chain offers a platform for active participation by women, who engage in various aspects of maize farming, such as planting, weeding, and harvesting. Recognizing and supporting women's contributions within the value chain is essential for promoting gender inclusivity. It's important to note that women's involvement in agricultural activities varies based on their residential context, with those living in regular settings more likely to engage in farming compared to their counterparts in IDP (Internally Displaced Persons) communities⁴².

⁴² Africa.unwomen.org

2.2.3 Sesame Value Chain

Sesame is the principal oil seed crop grown for consumption and export. It was once one of Somalia’s top exports to the global markets. In 2014 the sector’s annual revenue was USD 300 Million accounting for 5.25% of the country’s total GDP of 5.71 billion⁴³. The industry’s profitability has been seriously harmed by the civil war and effects of climate change leading to the sector losing their competitiveness in international markets.

A total of 23 actors across Sesame value chains were identified from production to consumption. A consolidated list of the stakeholder mapping and ecosystem are found in Annex 5. These include the Government Ministries i.e., Ministry of Environment, Ministry of Agriculture and Irrigation, SOMINVEST representing Ministry of Planning; Cooperatives such as Danwadag farmer cooperatives and Hawlwadaag Cooperatives. Sesame Exporters i.e Moumin group and Alshraf; Seed companies i.e Filsan, CSET, amongst others.



2.2.3.1 Value chain actors

Production

Producers, comprising both smallholder and commercial family farmers engage in a series of activities including land preparation, seed selection and sowing, weed and pest management. After harvesting, farmers market their sesame products through several channels. While some choose to sell directly to oil millers and wholesalers without intermediaries, others prefer working with small village traders or brokers.

⁴³ GEEL Project (2018) Sesame Production Manual for Small-Scale Farmers In Somalia

Aggregation

Village traders or brokers within the sesame value chain play a significant role in aggregation. They function as intermediaries, collecting sesame in relatively smaller quantities directly from producers, aggregate and resell in larger, more marketable quantities to wholesalers, oil millers, and exporters. However, they do not contribute substantial value to the sesame grain, but they primarily serve as facilitators in the aggregation and distribution process. While they perform a valuable function by streamlining the supply chain and making sesame more accessible to larger buyers, their role tends to focus on logistical and market-related activities, rather than enhancing the product. In essence, they operate in the capacity of aggregators and distributors, helping to bridge the gap between small-scale producers and larger buyers, without significantly altering the quality or nature of the product.

Trade

The main players in sesame trade are wholesalers based in Mogadishu with enhanced capabilities in terms of financial resources and infrastructure to handle bulk quantities and facilitate the movement. They operate on a larger scale compared to brokers and village traders. They play a critical role in the distribution of sesame, acting as intermediaries between producers and the ultimate consumers. They acquire sesame from various sources, which can include smallholder and commercial farmers, brokers, or village traders; they then aggregate in larger quantities to facilitate efficient distribution. Their customer base encompasses various entities, including retailers, oil millers, and exporters.

Processing

Oil millers are the primary processors, they are involved in the mechanical crushing and filtration of sesame seeds to produce valuable oil. Majority are based in Mogadishu, but there are small scale millers also in Baidao and Jowhar. The Chamber of commerce estimates over 300 small scale millers operate in Mogadishu. However, it's worth noting that the perception of work quality and hygiene including sanitation, equipment maintenance, and overall cleanliness within the oil milling process requires improvement in order to meet the standards necessary for producing a product that can compete on the global market. Furthermore, there is a notable absence of technology or tools that would enable oil millers to precisely monitor and verify the standard and quality of their sesame oil products. This deficiency in quality control mechanisms hinders the ability to consistently meet international quality and safety standards, which are crucial for accessing global markets.

Distribution

Retailers are the link between the processors and local consumers within the sesame value chain. They function as the merchants or vendors responsible for making sesame products available to the end-users in the immediate vicinity. These retailers provide a crucial service in ensuring that sesame products are accessible to local consumers who use them in various ways.

Consumption

Only 25% of sesame seed produced in the country is exported⁴⁴. The rest is consumed internally as seed or edible oil. This is widely used by households in pastries, such as bagels, cakes, donuts or by making candies. The oil is also used for cosmetics locally. The waste from processed oil is sold as animal feed.

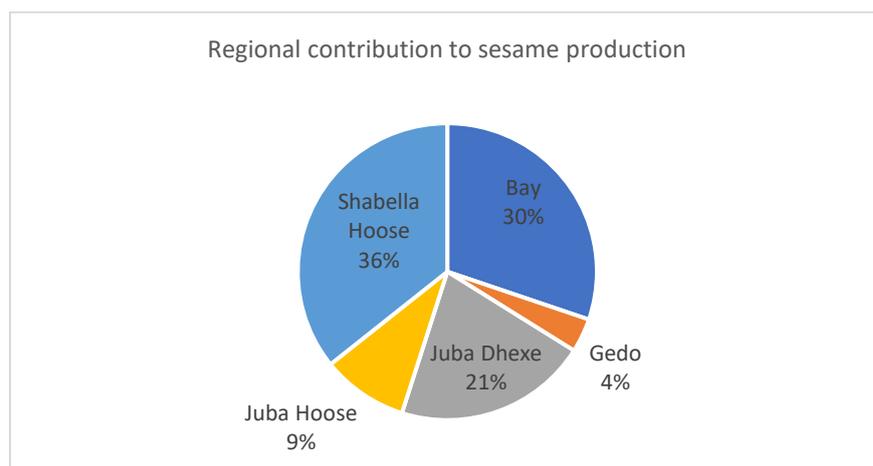
⁴⁴ DAI (2021) Promoting Inclusive Markets In Somalia (PIMS) Final Report

2.2.3.2 Production

Somalia is one of the top fifteen sesame-producing countries in Africa and ranks the 12th largest in cultivated area contributing 0.08% of the world's total sesame seed production (FAOSTAT, 2020). Sesame is produced as a cash crop with 25% going into the export market. About 80% is grown in the Southern states, especially the Shabelle regions by smallholder farmers with productivity of about 0.25 MT per/ ha. The crop is grown by an estimated 250,000 Somali farmers, with the majority being smallholders who own 1 to 2.5 hectares of land. The sector also supports over 300 sesame seed oil microprocessors in Mogadishu. Large-scale commercial production accounts for approximately 20% of the total sesame production.

In Somalia, sesame is traditionally cultivated in the flood recession areas of lower and middle Shabelle and in the low land areas where the Jubba River floods inundate farming areas of Middle and Lower Jubba regions. The Hirshabelle state is the largest producer of sesame in the country, with estimated 150,000 ha under production⁴⁵. In 2022, the total production of Sesame in the country was 20,170 MT, which was 179% increase from 2021 from 75,727 Ha⁴⁶. This was a significant recovery from weather shocks experienced in 2021.-Contribution of different regions in the southern Somalia to total production is illustrated in the figure below.

Figure 9 Regional contribution of sesame production



Adoption of Good Agricultural Practices (GAP) has seen production rise to about 0.4-0.6 MT / ha⁴⁷, with rainfed farms producing yielding 0.5 tons per hectare, and irrigated farms 0.7 tons/ha⁴⁸. Other than the traditional broadcasting of seeds, the GAPs include harrowing, ridging, planting in rows, and weeding at least twice a season. Lack of access to quality seeds that are critical for cultivation of high-yield varieties that are competitive in the global sesame market also do affect and limit production and productivity. Land preparation and planting activities in sesame production is usually done by men while the other activities are carried out by women as well as youth.

A study by Somalia Resilience Programme (2019) established that cost of leasing land under rain fed farming (for Sesame and other crops) in Afgooye district costed about /USD 50 per a hectare per cropping season while land under irrigation infrastructure is leased out at the cost of USD 200 per

⁴⁵ SOMINVEST (2022) Priority Sectors Investment Study. Agribusiness opportunities in Somalia's food production sector.

⁴⁶ FAOSTAT 2022

⁴⁷ DAI (2021) Promoting Inclusive Markets In Somalia (PIMS) Final Report

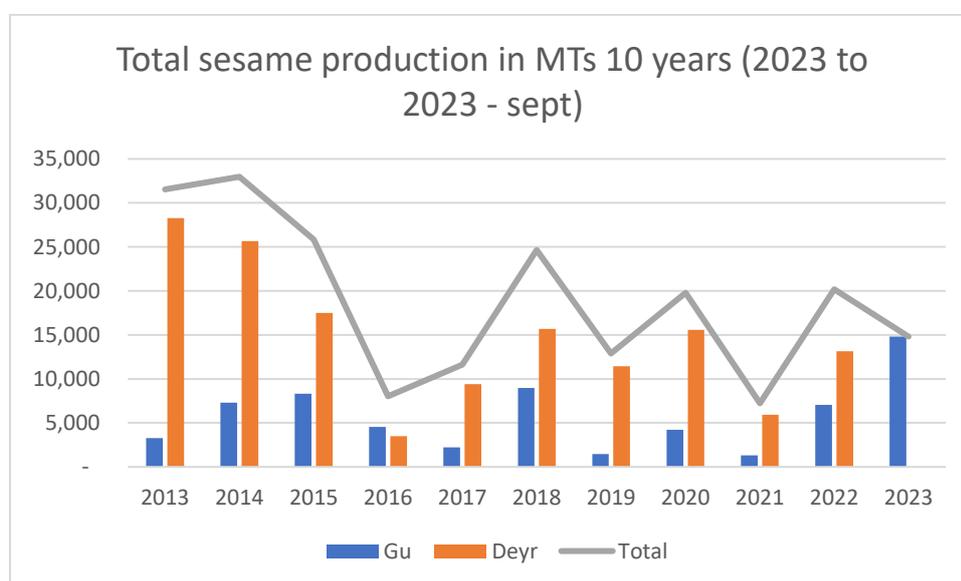
⁴⁸SOMINVEST (2022) Agribusiness Opportunities in Somalia's Food Production Sector

hectare per cropping season. The tractor plough is charged per hour and can range between USD 8-12 largely influenced by fuel prices. It often takes 3 hours to plough a hectare.

Since sesame is a tropical plant species, the crop needs a short rainy season (Deyr) and a longer dry season (Jiilaal) for the rain-fed system, growing in both rain and irrigation⁴⁹. The timing of flowering and harvesting varies depending on the variety of seeds. But on average they are between 35 and 60 days. Recession irrigation is prevalent for sesame production along river Juba. The plant is important due to its lack of soil selectivity, low need for nutrients, drought tolerance, and no problems in marketing (Yol, 2011).

Smallholder and family farming have very small volumes to sell; they lack market information, and they sell their output immediately after harvesting, which is when the supply is abundant and consequently the prices are relatively low and as they fully dependent on middlemen traders (dalaal).

Table 7. Sesame production in Somalia in MTs (2018-2023)



Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Gu	3,279	7,295	8,324	4,559	2,223	8,978	1,471	4,216	1,313	7,035	14,804
Deyr	28,274	25,679	17,513	3,487	9,402	15,670	11,437	15,563	5,920	13,135	
Total	31,553	32,974	25,836	8,045	11,624	24,647	12,907	19,779	7,233	20,170	14,804

Source: FSNAU Data 2023 September

2.2.3.3 Market Size and Value

Sesame seed is mainly produced for the market. Sesame is Somalia's leading export crop, typically exported in the form of oil or seeds. Its prices are highly dependent on the international market and production is highly responsive to market prices. The gross production of sesame in Somalia was estimated at 40,777 MTs in 2017. However, this figure experienced a decline to 38,089MT in 2020 before showing a modest improvement to 38,484MT in 2021 worthy USD 50M (FAO STAT 2023). As

⁴⁹Source: Abudullahi A.A (2023)- Improvements of Sesame Production: Marketing and its Export Trends in Somalia

at 2016⁵⁰, there were more than 300 sesame seed oil microprocessors in Mogadishu. These processors operate using outdated machinery that can only produce around 100 litres of oil per day, and their oil filtering systems yield low-quality oil. These factors collectively contribute to diminishing the value of sesame oil in both local and international markets.

2.2.3.4 Growth Trends

In stark contrast to the decline in cereal production, sesame seed production and exports in Southern Somalia have displayed a positive trend, surpassing their pre-war peak levels. However, this promising picture is marred by the contamination and genetic exhaustion of local sesame landraces. These factors result in low yields, typically ranging from 250 to 420 kg/ha, and subpar seed quality⁵¹.

One significant hurdle hampering the expansion of the value chain, along with other crop value chains, is the imposition of heavy taxation by both national and local governments. The presence of numerous militia-manned checkpoints and the associated off-loading and loading costs, as well as high motor vehicle insurance costs, pose substantial challenges for producers as they transport their goods across the states²⁶. These obstacles collectively restrict the growth potential of the sesame sector in Somalia. Interviews with exporters established that they have to pay about USD 100 per truck at source e.g., at Afgoye, and USD 0.05 and USD 0.02 per ton to Ministry of Finance and Chamber of commerce respectively and finally USD 90 per Container at the port.

There are investment opportunities on high-quality machines (for seed cleaning and oil extraction) with efficient processing capacities in order to satisfy local and international market needs shall also create employment in the country.

2.2.3.5 Competition

Interviews with exporters established that most of the sesame was exported as seeds because the quality of processed oil in Somalia was relatively low. However, two of the major exporters are acquiring high end processing machines that would enable them process high quality sesame oil. However, the acquisition and installation process has been slowed down because there hasn't been sufficient sesame in the past two years (2021-2022) to support processing. A few processors even had to import and re-export in order to remain in the market.

2.2.3.6 International Trade

Mogadishu hosts several sesame exporters who purchase sesame seeds from local farmers in addition to their own production. 25 % of sesame produced in Somalia is exported to international markets. The primary markets for these exports include India, Turkey, UAE, Jordan, and Saudi Arabia. Notable exporters in the region include Al-Mizan, Moumim Group, Som Seed, Liin, Horn of Africa Trading, and Danwadaag. However, these exporters grapple with various challenges that hinder their trading activities. These challenges encompass difficulties in obtaining permits, frequent fluctuations in foreign currency exchange rates, unpredictable shifts in international market prices, high export taxes imposed on shipments, the presence of militia checkpoints along routes to major ports such as

⁵⁰UNDP and SATG (2016b),

⁵¹ Value chain analysis on local & export marketable crops and crop products in Gedo, Bay and Lower Shabelle regions of Southern Somalia (European Union, May 2019).

Kismayo, Mogadishu, and Berbera, lack of sufficient production quantities as happened in 2022 as well as competition from international players, including exporters from India, Sudan and China⁵².

Over the period spanning from 2017 to 2021, the export value of sesame seeds consistently outweighed the value of imports. The highest recorded export value for sesame seeds occurred in 2019, reaching USD 38.763 M. In 2019, the import value of sesame oil surpassed the value of exported oil. However, from 2018 to 2021, the export value consistently exceeded the import value. Table 8 provides a detailed breakdown of the value of sesame seed and oil imports and exports in Somalia from 2017 to 2021.

Table 12. Import and export quantity and value of sesame seed & oil (2017-2021)

Year	Sesame seed				Sesame oil			
	Import		Export		Import		Export	
	Quantity (t)	Value \$1000						
2017	160.92	86.00	6961.00	5038.00	131.01	160.00	90.04	52.00
2018	275.37	434.00	12003.00	17787.00	20.00	34.00	179.09	89.00
2019	2.83	7.00	28943.48	38763.00	96.16	115.00	200.03	133.00
2020	8.13	29.00	17115.31	19858.00	0.89	1.00	318.98	217.00
2021	6.07	14.00	23261.10	30933.00	37.15	62.00	336.78	348.00

Source: FAOSTAT September 2023.

2.2.3.7 Distribution of Margins

Table 13. Sesame producer gross margins

Item	Unit / Value
Land size	1Ha
Land preparation cost	\$21
Seeds	\$25
fertilizer	0
Pesticides	0
Labor (weeding and harvesting)	\$30
Total production cost per Ha	\$76
Quantity harvested	650 KG
Sale price per quintal (100Kgs)	\$118.3
Total Cost of production	\$76
Cost of production per 100Kgs	\$11.6
Sale price of Total harvest (650kgs)	\$769
Gross margin per Ha	\$693
Gross margin per 100Kgs produced and sold	\$106.6
Gross margin as % of sale price for 100kgs	13.80%

⁵² Value chain analysis on local & export marketable crops and crop products in Gedo, Bay and Lower Shabelle regions of Southern Somalia (European Union, May 2019).

Table 14. Sesame Traders gross margins

Purchase price per quintal (100Kgs)	\$106.6
Load price	\$0.6
Transportation cost	\$2
Offloading	0
Fees	1
Total Cost per 100kgs	\$110.2
Total selling price to retailers	\$130
Gross margin	\$19.8
Gross margin as % of sale price	15.20%

Table 15. Sesame Wholesaler/Retailer gross margins

Purchase price (100ks)	\$200
Load price	
Storage and labor	\$2
Offloading	
Fees (licenses)	
Losses and other costs	
Total Cost for 100Kgs	\$210
Total selling price per Kgs	\$2.1
Total selling price for 100Kgs at retails	\$230
Gross margin for every 100Kgs sold	\$20
Gross margin as % of sale	15.30%

The difference of gross margins across the producer, trader and wholesaler / retailer is very narrow at 13.80% 15.20% and 15.30% respectively. This is partly informed by the high demand and hence the traders providing competitive prices.

2.2.3.8 Information and Knowledge

The establishment of knowledge-sharing and learning platforms among the various stakeholders in the value chain has been instrumental. Activities like exchange visits between sesame farmers and processors have significantly enhanced the sharing of knowledge and best practices. The PIMS program has harnessed a diverse range of interventions, including training and support for farmers, the development of digitalized market information systems, and the promotion of knowledge sharing and learning among different value chain actors to encourage the sharing of critical information⁵³.

⁵³ Promoting Inclusive Markets in Somalia (PIMS) Final Report, May 2019

Similarly, the use of the farmer field school approach and demonstration plots, for instance, has proven highly effective. Local service providers deliver training and support to farmers, covering vital aspects like sound agricultural practices, land cultivation, and information sharing. This approach also ensures that farmers have guaranteed markets for their produce. Furthermore, the emergence of digitalized market information systems has been an effective innovation in enhancing flow of information. These systems provide real-time data on market prices, demand, and supply, equipping all actors in the value chain with the information they need to make informed decisions regarding production, processing, and marketing.

Market linkages and access to market information for sesame farmers and other actors in the value chain have significantly improved through the development and implementation of digitalized market information systems. These systems offer real-time insights into market prices, demand, and supply, empowering farmers and other participants in the value chain to make well-informed decisions regarding production, processing, and marketing. Moreover, these digitized platforms have streamlined communication and coordination among the different actors in the value chain, thereby enhancing efficiency and reducing transaction costs.

Players along the value chain that are implementing the digitalized market information systems include local lead firms participating in the PIMS program. The program provided training and technical assistance on digitalized market information systems to the lead firms to help them develop and implement the systems, and also provided support for the development of mobile phone-based applications to facilitate access to market information.

2.2.3.9 Relationships and Linkages

Smallholder and family farmers, who typically have limited quantities to sell, often lack access to market information and are compelled to sell their sesame output immediately after harvesting when the market is saturated, resulting in lower prices. Their sales are heavily reliant on intermediaries, known as "dalaal" or middlemen traders⁵⁴.

Sesame value chain, is characterized by presence of multiple actors, including producers (comprising smallholders and commercial family farmers), small traders, wholesalers/brokers, oil millers, retailers, local consumers, and exporters. Producers often sell to local collectors or, in some cases, directly to oil millers and wholesalers, although the use of collectors is common. Commercial farms typically have better negotiating power and often sell directly to exporters. Village traders or collectors, acting as intermediaries, purchase sesame seeds from producers in smaller quantities and then resell them to brokers, wholesalers, oil millers, or exporters, thus serving as middlemen who do not add substantial value. Wholesalers or brokers, characterized by better financial capacity, further redistribute the sesame seeds to retailers, oil millers, and exporters. Oil millers primarily produce edible oil for the local market, with potential for export if production quality is enhanced. Retailers buy both sesame seeds and oil from wholesalers and oil millers, reselling these products to local consumers. The end-users, local consumers, are the final purchasers of sesame seed and edible sesame oil in the local market.

2.2.3.10 Gender Responsiveness

In Somalia, sesame production is primarily carried out by women, who make up approximately 70% of the sector's workforce. Specifically, women are engaged in the transformation⁴ (cleaning, salting,

⁵⁴ Abdullahi, A. A., & Arisoy, H. (2022); Improvements of Sesame Production: Marketing and its Export Trends in Somalia

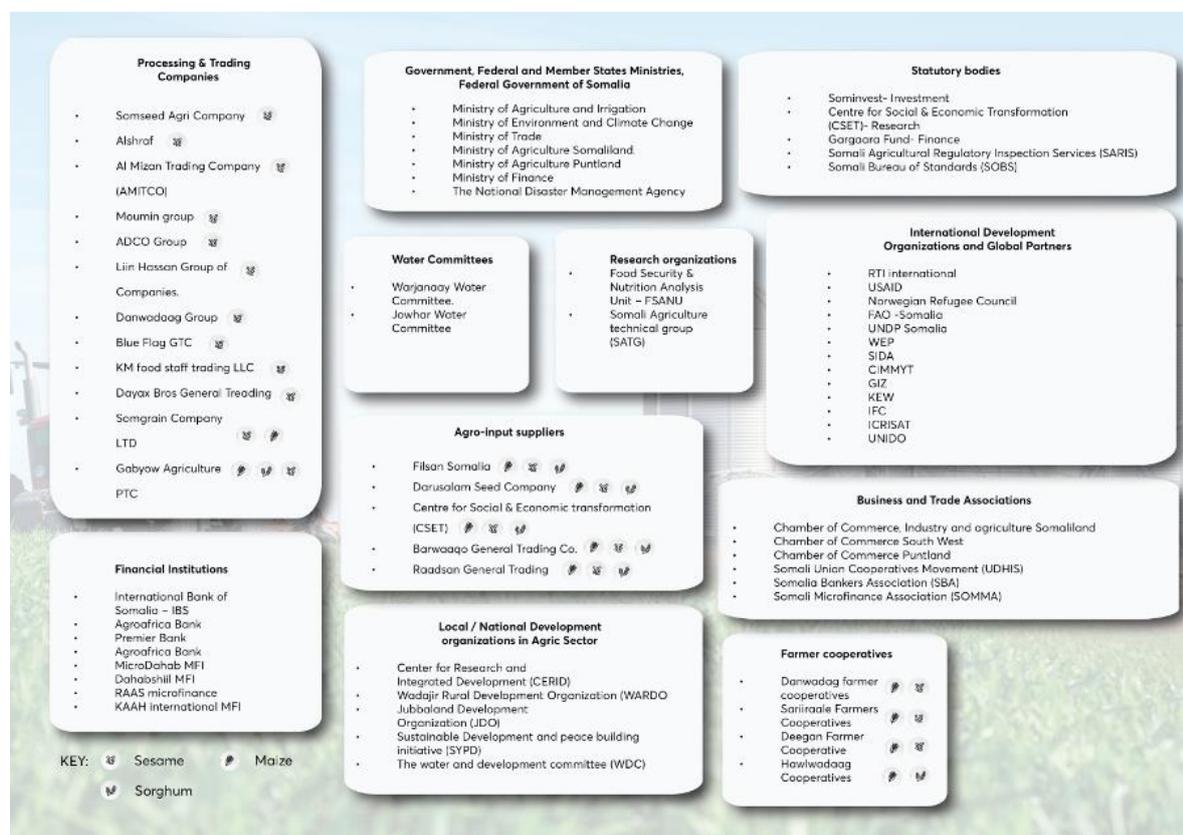
drying) and traditionally dominate small-scale trading and oil-processing cooperatives⁵⁵. Despite their central role, they face significant challenges in accessing crucial resources, information, and market opportunities, which restricts their full engagement in the value chain. To address these challenges, initiatives such as the Promoting Inclusive Markets in Somalia (PIMS) program to empowered and enhanced women involvement in the sesame value chain. This program has collaborated with local lead firms within the value chain, providing training and support to over 35,000 male and female sesame farmers using farmer field school approach and demonstration plots in South Somalia. To ensure broad female participation, sesame lead firms have engaged independent extension workers to villages to sensitize and mobilize the sesame-growing community. Some firms have even employed female graduates to conduct the training.

⁵⁵ ILO (2020) Sectoral Assessment of Women’s Entrepreneurship Development in the Agriculture and Renewable Energy Sectors in Somalia

3.0 PRIVATE SECTOR AND ECOSYSTEM MAPPING FOR SORGHUM MAIZE AND SESAME IN SOMALIA

This chapter covers the key private sector ecosystem actors and mapping of sorghum, maize, and sesame value chains in the Federal States of Southwest, Hirshabelle, Somaliland States. It describes the key actors and the service providers along the respective value chain. Ninety (90) actors have been identified for the three value chains. Detailed information can be found in Annex 1. The information was gathered through key informant interviews with the private sector actors these includes MFIs, cooperatives, processors, water committees and exporters in the Federal and State governments, Civil society organizations, non-governmental organizations and research organizations across the three states were also engaged. This was complemented with literature review of studies, publications and evaluations.

Figure 10 Value chain ecosystem



3.1. SMALL SCALE PRIVATE SECTOR

The actors discussed under this section include the farmers' cooperatives and producers, water committees particularly in Southwest, Somaliland, and Hirshabelle States. The report provides insights on their operations challenges, opportunities, effects of climate change and likelihood to contribute to climate investments.

3.1.1 Seydhelow co-operative farmers

Seydhelow Co-operative Farmers was established in 1980 in Seydhelow village approximately 20kms away from Baidoa district, Bay region, which was then under Upper Jubba region. It focuses on sorghum and maize, and currently has 22 branches spread-out in 5 separate locations namely; Bay region, Lower Shabelle region & Bakool with a well-structured leadership with an annual general meeting for all the projects held once a year and a chair selected every six years. The cooperative has 9 departments including department of seeds and food storage, livestock keeping, water source and sanitation, commerce, and general services amongst others. It started off with small-scale projects including warehouses, opening-up new roads, digging water catchments and wells, and designing and making farm tools. As of 1987, the cooperative members had cultivated 22,525 hectares of land and owned about 10,000 head of livestock. They currently own four small tractors, two bulldozers, four diesel water pumps, one oil pressing machine and two large trucks. The farmers are agro-pastoralist and practice rain fed, riverine and irrigation farming as well as source water from spring, and wells. The cooperatives store grass, sorghum and maize stalks, waste products of pounded grains and of sesame seeds after removing the oil. These are used to feed livestock when the rain fails.

The cooperative stores seed after every harvest season to be resold and redistributed to farmers who are unable to purchase. Currently over 6,000 families require humanitarian aid due to the recurrent drought over the past two years and are receiving support from various humanitarian organizations like United Nations Development Programme (UNDP) World Food Programme (WFP), Food and Agriculture Organization (FAO), United Nations Office for the Coordination of Humanitarian Affairs, International Fund for Agricultural Development, United States Agency for International Development (USAID), CARE International amongst others. Notably, the Cooperative also operates businesses such as pharmacies, grocery shops, cloths shops, cooking staffs and even mobile shops.

3.1.2 Sariiraale Farmers Cooperatives

Sariiraale Farmers Cooperatives is found in Shabelle region particularly Jowhar district and was registered in 2013 under the Ministry of Agriculture. The cooperatives grow maize and sesame, and have a membership of about 5174 members of whom 48.5% women. It has an active board with 20% of its members being women and it is comprised of farmers, traders, transporters, agro dealers, processors of sesame oil, peanut, and maize flour amongst others.

The members farm on about 10,000 Ha with an average size of 2.5 to 3 Ha per crop comprising of 21 villages. Only 4 villages such as iskaashi and timirre practice rain fed farming the rest comprising of about 70% of the farms are on the riverine. The farm sizes along the riverine range from 1-Ha while it's about 10ha in the rain fed zones where agro-pastoralism is practiced. The Internal canals are about 10Kms long, amongst the longest are Baakwo and Alshlber. Water has to be pumped when the river levels are low. The farmers grow cereals and vegetables. The main cereals grown are maize, rice, sesame and sorghum. In 2022, 700ha were under maize. The Cooperative have a warehouse where produce is kept if in excess, else farmers sell directly to traders. The cooperative promotes drought resistant crops including Sesame amongst its farmers, provides early warning systems, trains farmers

on Good Agricultural practices (GAPs) such as techniques of soil preparation, irrigation and weeding they also provide market information. They consider cost of farming of sesame to be less than maize, because they do not have to weed sesame, while sorghum cropping is less expensive than maize, though mostly grown during the dry season and in rainfed areas. Sesame is often grown as a commercial crop and maize is a staple crop.

The cooperative farmers face a myriad of challenges including insufficient water for household and farming during drought when even shallow wells run dry. Soil conditions are not as good, and farmers often use recycled seeds because majority find the hybrid seeds expensive hence the farmer yields are frequently below expected averages. The birds are also a nuisance to those farming sorghum and rice. Other challenges expressed include prohibitive cost of fertilizer, unaffordable quality seed, ploughing (tractor hiring), clearing of land and fuel. The Lack of good storage facility in the region results to cases fungi and Aflatoxin infestation. In the past, FAO and WFP have supported the farmers with hermetic bags to store the grain.

The farmers contribute about USD 25 per Ha annually; the actual amount is prorated based on the size of land. The money is used for the common good of the community and the farmers such as canal rehabilitations and it's also loaned to members at 30% of their total shares at the cooperative or their land can be used as collateral and payable in 2 to 3 seasons. The cooperatives also access loans from local banks such as Salam Bank. The funds are used for common purposes such as, purchase of fertilizer, draining the rivers, acquisition of water pumps, tractors, and other farming equipment.

3.1.3 Danwadaag Farmers Association

Danwadaag Farmers Association is located in Baidoa. Baidoa is a rain fed region. The association is comprised of 8 cooperatives united. All the cooperatives are represented by 3 members each in the association; 25% of the leadership is women. The Association manages about 2,500 Ha of farmland and their members cultivate sorghum, maize and beans; each producing about 450Kgs per hectare. The average farm size of each farm is 3 to 4 Ha and the average farm size for each crop is 1.5 Ha to 2 Ha. The produce is used at household level and the excess transported and sold in Mogadishu and the northern part of Somalia.

Amongst the key challenge expressed by the association include insufficient water for farming due the frequent and cyclic droughts. In 2022, the maize farmers of this association collectively lost about USD 675,000 while the sorghum farmers have lost USD 450,000; subsequently the farmers have received USD 250 from FAO for about 6 months. The other challenges include lack of adequate appropriate storage facilities and limited access to competitive markets. This year 1 Kg of sorghum goes for \$0.2 and \$0.4 at the farm and the Market respectively, while 1 Kg of maize USD 0.3 and USD 0.6 at the farm and the market, respectively. The Association trains its members on good agricultural practices such as soil preparation techniques, sowing, weeding and irrigation and small business management, and would like to be exposed more and acquire knowledge on issues related to climate change through training and exposure visits. Especially around good agricultural practices that enhance climate change adaptation.

3.1.4 Hawlwadaag Cooperatives

The cooperative has 209 members and is in Jowhar town of whom 40% are women. Its members farm various crops including sesame, Maize vegetables and Sorghum which they mostly sell through the local market as individuals; however, whenever the cooperative has the capacity and does aggregate whenever they get bulk orders. The income is used to acquire seeds and pay for tractor hours for the members. All the members farms are along the riverine and the sizes range from 2 – 20 Ha. They often

get seeds from FAO and WFP who source from the local market and distribute amongst the farmers as well as assist in maintaining the canals. FAO has trained them in land preparation, harvesting techniques and post-harvest management for sesame, maize and beans. A major impact has been on post-harvest management which has immensely decreased the incidences of aflatoxin. The cooperative has also benefit from governance and financial literacy trainings.

There farmers get about 480Kgs of Sesame per Ha and about the same for maize. They key challenges include access to water, during droughts, limited access to fertilizer because of the government ban, and scarcity of pesticides. The Cooperative is yet to access any loan from financial institutions and have plans to engage an MFI to facilitate its members access water pumping solar systems, purchase tractors and drill boreholes.

3.1.5 Warjanaay Water Committee

The Warjanaay Water Committees was established in 2009 in Baidoa. It manages the use of water in Baidoa and the surrounding villages that have around 300 farmers that use the water for livestock and growing of cash crops like tomato, cabbage, watermelon etc. The Committee often holds adhoc meetings with community members to solve water distribution and related complaints. Initially the source of water in Baidoa was from a natural spring but it dried up due to drought. The Committee opted to fundraise and drill 7 boreholes with support of World vision, United Nations International Children's Emergency Fund and Norwegian Refugee council (NRC), however, they only got water in one borehole. The scarcity of sufficient water to meet the communities needs due to drought continues to be a major challenge for the committee. Thus, Committee is in the process of purchasing a \$400,000 water drilling rig from India that can reach up to 1,000Meters. This will enable them drill a number of boreholes to provide sufficient water that can be distribute to distant farmers.

3.1.6 Jowhar Water Committee

The Ali shobare canal is found in Jowhar and is 10Kms long. It is managed by a water committee alongside village elders who play an important role in ensuring equitable access to water to over 1800 farmers occupying almost 2280.5 hectares of fertile land. The farmers mostly grow sorghum and sesame. The committee collects USD 20 from every farmer during the floods and the money is used to desilt and rehabilitate the canal. In the immediate past, the Food and Agriculture Organization of the United Nations -Somalia office has supported the rehabilitation of the Canal. Every Monday the committee holds meetings with the farmers and herders to address any concerns emerging from the use of the canal.

The lack of water storage facilities such as a dam was raised as a major concern that limits access to sufficient water throughout the year and hence over 1 million hectares in the region are underutilized. The farmers using the canal for irrigation sell a Kilo of sorghum and sesame at USD 0.7 and USD 1-1.5 respectively. The committee has limited knowledge on climate change adaptation or mitigation measures and are keen to acquire such knowledge to disseminate to the farmers.

3.2 MEDIUM AND LARGE-SCALE PRIVATE SECTOR

The entities discussed under this section include key traders, processors, and exporters at federal level who are likely to contribute to climate investments. The report indicates their locations, volumes, size, markets, challenges, opportunities, effects of climate change and likelihood to contribute to climate investments.

3.2.1 Gabyow Agriculture Product Trading Co.

This women-led enterprise is based in Mogadishu. It grows, trades and retails maize and sesame as well as groundnuts. The enterprise has a 100 Ha farms but only grows sesame on 10 ha and Maize on 21 Ha. The remaining 79 is yet to be ploughed. The company supports individual farmers through cooperatives with inputs specifically seeds worth about 150 USD per farmer which is paid back in 6 months. FAO also distributes seeds to the farmers in the same region for free. The company often buys back the produce from the cooperatives especially those in Jowhar and Balad. Through this arrangement they are linked to about 120 farmers with an average of 20 ha each carrying out mixed farming.

In the last season, the company traded in 1,025 MT of sesame 525 MT of Maize and 1,000 MT sorghum all sold locally. The sorghum they sell is mainly used for animal feed. They process all (100%) of the sesame they get into oil and sell the waste as animal feed at USD 0.5 per Kg . The company also processes maize into flour for the local market. As at the time of the engagement the following were market prices, they were using to source the produce in Jowhar and subsequently retail in Mogadishu.

Table 16: Jowhar market prices estimated @ USD per Kg (28th August 2023)

Crop	At farm gate USD	At Wholesaler USD	Retailer USD
Maize / kg	0.3-0.4	0.4	1.0
Sesame / kg	1.5-1.6	1.8	2.0
Sorghum / kg	0.4	0.6	0.8

The challenges expressed by Gabyow Agriculture Product Trading Co include the fact that they have to get different trade licenses to trade in the three value chains and the cyclic drought and floods that impacts on production and productivity. They are planning to drill boreholes on their farms for consistent water supply. Lack pure seed varieties contributes to un-uniform growth of the crops. The company sells some of the maize and sesame they produce as seeds to the farmers, projects and local NGOs. They got the knowledge on seed production from training by WFP. Accessibility to loans is limited by the local banks asking for collateral, at times the local markets are unable to absorb all the produce and occasionally the local products from Sesame oil and Maize flour are more expensive than the imports. The several taxes by regional governments, Ministry of planning and that of Agriculture limit the profitability of the traders in the respective value chains. The company does not belong to any platform but have adhoc meetings with government officers to discuss pertinent issues that affect their business including insecurity and poor status of the roads.

3.2.2 Liin Hassan Group of Companies

Liin Hassan Group of Companies is Women owned enterprises with a main focus on sesame export, while they import rice, cooking oil and sugar. Notably, at the time of the interview, they had not exported any sesame since the drought of February 2022. Most if not all the warehouses in Mogadishu have been empty the better part of 2022 and early 2023 since, but good harvest is expected towards the end of September 2023. The company sources and exports both irrigated and rainfed sesame. Rainfed Sesame is bought at much cheaper price of USD 1.5 per Kg cause has less oil compared to Sesame grown under irrigation that goes for about USD 1.9 per Kgs. During the severe drought in 2022, there was massive importation of sesame to sustain the local demand for household use. At the time, imported sesame was going for USD 1.5 and USD 2.0 per Kg for imported and local respectively. During bumper harvest the local prices can drop to as low as 0.9 per Kgs for sesame and oil to about USD 2 per litre from a high USD 4-4.5

Currently buys the sesame from wholesalers in Mogadishu. Its hulls 95% of its sesame which is exported to Bulgaria at about USD 2100 per ton and the other 5% Natural-(not hulled) to UAE at about 1900 per ton⁵⁶. Notably a certification is required from Ministry of commerce at a cost off USD 1500, to export any produce. Liin is putting up a sesame processing plant imported from India. The current sesame oil is about USD 4.5 USD per litre and goes for about USD 6.00 when exported; though the company will initially focus in selling in the local market.

Liin bought land in 2021 to grow sesame and is planning to buy more in Balcad an area near Johar. They plan to use irrigation as well as sink boreholes to access sufficient water to grow sesame. This is aimed at ensuring sufficient and timely access to sesame that they can export. Further, the company is exploring the possibility of supporting farmers grow sesame through contracts arrangement with the cooperatives. The company would take up the role of a guarantor for the cooperatives to get loans from the banks. The inputs and services to be offered on credit would include but not limited to; seeds, tractor hours, drilling boreholes amongst others. Lin is already in consultation and exploring collaboration with other development partners, Chamber of commerce and Agri-bank on this front.

Amongst the challenges expressed by the company are high cost of energy and have gone further to install solar panels. Other challenges include stiff competition in the international markets such as India, Nigeria , Pakistan Sudan and Ethiopia. Exporters in some countries are subsidized or in some cases not taxed e.g., India. Liin is a member of an informal platform of about 10 companies all registered with the chamber of commerce. The platform lobbies on taxation matters and shares the concerns through the chambers and also do share services amongst themselves.

3.2.3 Alshraf International (Sesame Exporters)

Alshraf international group initially used to source sesame directly from 2,000 out growers in Jowhar Shebelle region. However, they stopped due to insecurity and poor road infrastructure and now buy from wholesalers in Mogadishu who source from across the country. Quality control is often done at the company and payment is made thereafter to the wholesalers. They find the sesame harvested during the rainy season to contain high levels of impurities (i.e., stone and sand to a level of 20-30%). Based on their experience, a 50Kg of Sesame drops to about 30-35Kgs when cleaned. Sesame harvested during the dry season, often irrigate between November and March is of better quality. Notably the prices during rain fed seasons are lower and irrigated sesame fetches a better price being an off season crop. Over the last 3 years there has been insufficient sesame produced in the country. As a result, the company imported sesame from as far as Tanzania

In 2023 January, the prices in Baidor at the farm gate were USD 0.9, traders were selling at USD 1.4 and USD 1.6 in Mogadishu. Sesame is a commercial crop and farmers producing it are very sensitive and respond quickly to the market demands. Hence limited exports during the peak of Covid 2020 - 2021 contributed to substantial reduction in production in the subsequent seasons and this made exports prices to go as high as about USD 2,000 to 2,500 in 2022.

The company has been in the export market for the last 3 years and mainly exports to Turkey and India and has about 10-15% of sesame export market share⁵⁷. They exported 1,350 MTs and 500 MTs in 2019 and 2022 respectively. Even though they are expecting an improved production in 2023, the prices are still high with a 50Kg bag going for about USD 11 that about 0.22USD per Kg at the market. Transport for a medium sized truck with about 100 sacks of 50Kgs is charged USD 160 to Mogadishu.

⁵⁶ A 20 ft container weighs about 19 ton of sesame.

⁵⁷ World Bank & FAO of the UN (2018). Somalia Country Economic Memorandum Volume I: Rebuilding Resilient and Sustainable Agriculture in Somalia

Farmers they have engaged with in the past often get seeds from projects supported by development partners USAID and DFID, else they recycle seeds. The firm alludes to the fact that while there are several smallholder farmers in Somalia, in Tanzania, Ethiopia Chad and Nigeria have large scale farms with extension services and affordable /subsidized inputs enabling them to produce to as high as 1000kgs / ha (in Ethiopia) compared to 300Kgs per Ha in Somalia. Previous development projects have not been as effective in addressing production at scale because of lack of mechanization and machines. Besides, transportation is also expensive due to taxation at unauthorized check points.

Alshraf International have a farm in Jowhar about 600Ha. It has opened up two parcels measuring about 44Ha & 113 Ha which is now area accessible another 100-rain fed in Shabelle. All which they plan to plough and grow sesame as well as sorghum for animal feed. They plan to dig wells and make use of drought resistant seed varieties to mitigate climate effect. It also wants to build warehouse in Jowhar that meets the recommended standards.

Issues they consider need attention from the government include enhancing extension services to farmers. The trainings should include, land preparations, water management, selection of best sites, harvesting and post harvesting management and book keeping skills.

Other issues are; need to harmonize the several taxes at different government levels i.e., Federal, Ministry of Finance, port tax; fix the poor roads / Infrastructure, address insecurity in the production area that pushes up the prices due to illegal taxes, lower taxes on importation of machines and support establishment of storage facilities. Sesame with appropriate moisture content can be stored for up to 24 months. The Company is part of a platform with the 7 Sesame exporters that has been supported by UNIDO in the part to attend food exhibitions in Italy.

3.2.4 Al Mizan Trading Company (AMITCO)

The company sources and exports sesame from middle and lower Shebelle and Juba land. It has its own 300 Ha farm and is linked to about 6,200 smallholder farmers. The farmers in Mahaday in southwestern Middle Shabelle have access to the Chinese built canal about 17.5 Kms long initially and further extended by a further 17.5Km but have been unable access the river water because the small canals that channel water to their farms are silted up limiting them to have sufficient water through out for crop rotation and this subsequently reduces production. The farmers they source from have a committee of 24 who collect funds from the members; each paying about USD 67 per ha annually. The Company provides tractor services as well as desilts and rehabilitates the canals. In the past they have spent over USD 1.2M to desilt and open up over 12,000 Ha. 50% of the farms they work with are owned by women.

They currently buy most of the sesame approximately 75% from brokers and wholesalers in Mogadishu, and sell to India, Gulf countries, Europe and with China being the main market. They buy at about USD 1.5 per kg if cleaned and sorting however the prices increased after Covid and to USD 1.9 to USD 2.0 per Kg in the local market but expected to drop with increase in production. They consider USD 0.9 to 1.1 for exporters to be competitive in international markets. However, they have not exported in the immediate past because of scarcity of Sesame in the local market.

The major challenges experienced are drought and floods and canals need to be maintained annually. The latter becomes a bigger challenge as they only have 7 tractors. Farmer yields are still low, with the highest going to about 400Kgs per Ha due to the majority still applying traditional farming practices such as broadcasting and also lack of access to quality affordable seeds. Some of the farmers they work with have benefited from quality seeds supplied by FAO, DIRR and GEEL project 3 years ago.

Security in the south continues to be a challenge pushing up the cost to do business. Agri banks give loans to farmers in the region to a maximum of USD 5,000.

3.2.5 ADCO

ADCO is a private company established in 2014 and works with sesame and maize farmers in Shabelle and South West region. During the Promoting Inclusive Markets in Somalia (PIMS) project implemented by DAI they trained 3,000 farmers producing mostly maize, and sesame and on a small-scale sorghum on GAPs, including how to apply pesticides and also supplied them with inputs. They also took part in the GEEL projects. ADCO sells sesame in both local and export markets, and even occasionally import sesame to process into oil when local production is low. For the local markets the company sell its products in Mogadishu. The company has warehouses in Mogadishu, Jubba, Beledweyne and Baidor. It takes some of its produce for cleaning and sorting in Dubai at companies such as ETG. The rejects are about 3-4%. The main export markets are Japan, China and India. ADCO has about 25% of the sesame export market share⁵⁸.

The company operates on contract basis. Once an export order comes through, ADCO sources from farmers at an average of USD 0.6 or at the local markets at about USD 1.4 per Kg. They also have their own farm of 100 Ha in Shebelle. During they Deyr season they are able to plant both sesame and maize on a 50 by 50% basis along the riverine as well as on areas that are rainfed. During good harvests, the sesame goes for about USD 1 per Kgs and maize at USD 0.5 per Kg. Previously, the company used to use local seeds from the market on its farm and distribute to out growers but currently they buy hybrid maize and clean sesame seeds from Filsan Plc. This has reduced the Kgs of seed used for planting Sesame from 10-12kgs to 7kgs per Ha with 90-99% germination.

The company has 6 tractors distributed across the region which are used on their farms as well as hired out to farmers whom they also provide seeds. They also have shops in these regions where they sell agriculture inputs and also food stuffs such as rice and sugar which they import. Notably, the farmers can receive these products in exchange of sesame or maize. They mostly engage with individuals rather than cooperatives because they find most of the cooperatives not well organized and require capacity development on systems and structures. These farmers have limited knowledge on GAPs; currently producing 300Kgs of sesame per Ha, the ADCO on its farms are able to reach 550Kgs per Ha and are targeting to reach 800 Kgs and above. However, the farmers they source from occasionally have challenges in accessing sufficient labour due to the unconditional cash transfers from the NGOs to the community. The farm / casual labour costs about USD 6 per day compared to USD 100 per month cash transfer per adult in a household.

The company shared the new municipality tariffs that came into effect in September 2023 with a 50 Kgs sesame bag attracting a fee of USD 0.25. Previously the traders / exporters used to pay USD 44 per truck that carries about 1,000 to 1,200 sesame bags of 50Kg each. An extortion fee of USD 50- 100 per lorry is charged in the insecure areas when transporting from Afgoye; furthermore, for exporters, the charges per 50kg bag are as follows; Ministry of Finance USD 0.05, Chamber of Commerce introduced USD 0.002 and USD 90 per 40-foot container at the port.

As a company they don't have any clear strategies to mitigate the effects of climate change; and even work in some regions that do not have access to radios which can be used to frequently update weather information.

⁵⁸World Bank & FAO of the UN (2018). Somalia Country Economic Memorandum Volume I: Rebuilding Resilient and Sustainable Agriculture in Somalia

3.2.6 Moumin Group

Moumin group started the business in 2005 and have their own sesame production farms; 450 Ha in Afgoye and 750 Ha in Jowhar; but also, sources from 3 markets; mainly Jowhar, Bakera and Baidoa. They process and export to Turkey. Key challenges expressed is high bank interest rates for loans, high cost of energy, and hence use solar energy on the farms to reduce the cost, though unfortunately have to use generators at the processing facilities. Access to water during drought, high government taxes, insecurity, many illegal check points on the roads and having to renew licences annually were also expressed as major challenges. The Company takes part in trade exhibitions in Ethiopia, Turkey and Dubai to keep abreast to opportunities.

3.2.7 Shabelle Agro Corporation

The company has mostly focused on exporting Banana to Middle East and are keen to engage in the sesame export market. The Corporation previously partnered with GEEL project through which they trained farmers on banana GAP and over the past 4 years have partnered with Agriculture university to offer practical trainings / on farm sessions / attachment for over 500 graduates. They source bananas from Somali Wandeya Cooperative that has over 141 Ha in Afgoye and some of the farmers are keen to engage in the sesame value chain because the Somalia banana market is not as competitive as it was before

3.3. SEED AND INPUT SUPPLIERS

3.3.1 Centre for Social & Economic Transformation (CSET)

The Centre for Social & Economic Transformation is a social enterprise operating in the agriculture, Livestock, Forestry and Range in Somalia. It was established in 2016 and registered under the Ministry of Agriculture & Irrigation of Federal Republic of Somalia as a social enterprise and is based in Mogadishu. It has a consortium of 4 members namely, CSET Agriculture Research and Development, CSET seed production, Fa'ido Agri inputs and services and Somalia Agri-industry Federation Cooperatives. CSET seed production was established in 2018 and is active in seed production and processing, sale and marketing seeds.

Over the past two years, CSET has focused on production of cereal seeds specifically Maize and Sorghum. This has included cleaning of the traditional white sorghum and red Sorghum. The enterprise has established collaboration with ICRISAT through which they accessed seeds for trials that are on-going in different zones in Somalia both on irrigated and rain fed zones. Though a major focus has been towards the rainfed regions in lower Shabelle. Other sorghum varieties promoted by CSET for local human consumption are Sorghum-CSET (CR:35:5) Sorghum Gadamhamam and Kafisom (IESV214012DL); for animal feed include Nafcisom, Seredo and Deeqsom.

CEST also produces seeds for oil crops namely sesame and groundnuts. Besides partnerships with the relevant government ministries, CSET also partners with International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and International Maize and Wheat Improvement Center (CIMMYT) amongst others. The CEST Sorghum improved variety seeds take – 105 days / 3 months from plant to harvest and are grown for dual purpose i.e grain and fodder. These are Gadama White & Ansedela Red. In the past CEST has supplied 127MTs of Sorghum seeds to 900 farmers through the Inclusive Resilience in Somalia (IRIS) project funded by USAID and UKAID. The company has also partnered with Care international, NRC, Red cross society and distributed seeds in Hiiraan, Baay and Shabelle regions. Currently, CEST is having pearl millet on field trial.

CEST has set-up a facility in Baidoa that also has a one stop shop of agriculture inputs and services and also have laboratory for soil testing and plant pathology. They have partnered with World Vision and Danish Refugee Aid to provide extension services to farmers from production up to harvesting. They provide market and also occasionally buy back sorghum and cow peas and or link the farmers to wholesalers. Due to off take arrangements with the farmers, they at times act as guarantors for them to access finance. e.g. in the past they have signed 3 years contracts with farmer cooperatives in Baidoa, to provide inorganic fertilizer, pesticides and tractor hours. Challenges faced include infestation of locusts and fall army worms, recurrent floods and droughts, limited infrastructure i.e boreholes and dams and insecurity in the region. The Inclusive Resilience in Somalia (IRIS) facilitated the institution to join and participate in the Africa seed traders' association events

3.3.2 Somali Agricultural Technical Group -SATG

SATG is a registered non-profit association of Somali professionals and friends of the country dedicated to assisting in the reconstruction of Somalia and its agricultural heritage. Filsan is its enterprise wing. SATG works across the country and involved in research and training in Agriculture and livestock. They support the Sesame, Maize and Sorghum value chains amongst others such as cowpeas that are considered climate smart crops. USAID and UKAID have been amongst their major funders through SARIS and GEEL projects. The institution has supported seed systems in Somalia by building capacity of local seed companies to produce seeds on out-grower arrangements in SW Somalia in the Gu seasons, and in May 2023 floods in Balad affected the organizations seed production operations. SATG promotes GAPs amongst farmers through training and setting up of demonstration plot, and in the process enhance the use of improved variety and practices to increase production per unit area.

SATG has on going field trials on Sorghum and have previously conducted study on post-harvest losses of sorghum in Bay region. The survey revealed that grain losses associated with the traditional storage systems (underground pits) are significantly higher than those associated with post-harvest techniques (harvesting, transportation, and drying), at an estimated 40% and 20% respectively.

SATG supported the development of irrigation and seed policy which is yet to be adopted this is understood taking cognisant of the fact that Somalia is emerging from war and insecurity, and so the government is struggling to meet its mandate of implementing polices and regulations.

The challenges highlighted in regards to sesame production include; limited use of mechanization and access to financial services, need for disease resistant and drought tolerant varieties, limited competitive markets and lack of extension services. In regards to the latter, SATG is testing the village based extension workers approach in Shabelle , juba and southwest regions across various crops.

3.3.3 Filsan

Filsan is the commercial wing of SATG and engaged in basic and commercial seed production of various crop species including maize, legumes (cowpeas and mung beans) sorghum and sesame. Initially the company sold maize seed grain but now producing F1s hybrid Siman maize that is more resistant to pests and diseases, and it produces higher yields, more drought resistant, and early maturity than traditional varieties. The hybrids are not distributed for free to farmers unless paid through a project. F1 Hybrid seeds go fore about USD– 2.5 per Kg while none hybrid goes for 75 Cent per Kg. The company makes use of SATG plant breeders to produce the hybrids. Filsan has seed out growers in Balad whom they train on GAPs, supply them with certified seeds and buy back some of the improved seed for resale. Women account to 20% of their clients are women

In 2022, Filsan produced and sold 6MT of Siman hybrid seed and expects to reach 30MTs in in 2023. The seed has uniform growth, its parental lines are open for seed companies for multiplication and matures 2 weeks earlier than local varieties i.e 3.5 Months. While the hybrids have a better productivity of about 75% more than the local varieties, their prices are also very high for a smallholder farmer. i.e 1 ha of uses about 25Kgs of hybrid seed which would cost about USD 62.5 USD per Ha while a farmer only needs to spend USD 20 if using local varieties. One expects to get 2.72 MT per Ha for hybrid and 0.48MT ha for local varieties. Not many of the smallholder farmers can afford improved seeds, hence besides the medium and large-scale farmers, the development organizations who purchase and distribute to the smallholders are also amongst their large clients.

3.4 FINANCIAL SERVICE PROVIDERS

3.4.1 Banks

3.4.1.1 International Bank of Somalia - IBS

IBS is a commercial bank that finances various sectors including agriculture. Its amongst the few banks that have ventured outside Mogadishu and are now found in Kisimayu and Baidoa, generally across the country. They consider the banking sector Somalia to be still “young” about 10 years and thus the institutions still require a lot of learning to strengthen their operations and hence currently focusing in areas they understand well. Like other banks in the Somalia, IBS is Sheria compliant; they don't issue interest-based loans.

Sheria compliance is based on Islamic principles which forbids lending money to clients at a profit, but instead requires the financial institution to buy the underlying product—i.e., trading commodities, a car, a refrigerator, etc.—and then lease it or re-sell it on instalment to the client for a fixed price typically higher than the initial market value. Currently ranging between 8 to 12% at IBS Bank and averages at 10% in Somalia. The key notion here is risk sharing and the banks make a profit on the transaction as a reward for the risk they took with the customer. Instead of thriving off of interest rates like conventional banks.

The IBS is also working with The World Bank who are in partnership with the Federal Government of Somalia (FGS) to provide blended financing for Standalone off-grid solar (OGS) solutions as a viable alternative for electrification. This includes access to solar and other renewable energy especially for SMEs. This has created an interest in the bank to get into the climate change space and exploring to engage with potential partners to develop new products that address climate change challenges. The challenge they face and foresee will be there for a long time the high initial investment costs that the potential beneficiaries do not have sufficient collateral, they bank considers co-risk sharing through pooled resources as an opportunity to create an appetite for the facility.

Amongst the challenges expressed by IBS limiting the banks involvement in agriculture include:

- The banks consider the sector to be high risk hence lack of appetite. This is partly informed by the fact that the financial sector has not received sufficient attention to support the agriculture sector; hence do not have adequate information to engage in the sector and calls for capacity building for financial institutions to be equipped with relevant knowledge, skills and systems.
- The opportunity of working with the cooperatives is limited due to majority of them not operating within a clear frameworks and governance structure hence risky to engage; they too require capacity building.
- The uncertainty of markets occasionally contributes to wastage and losses by producers that subsequently affect their ability to pay back the loans
- High logistics of movement of goods to markets due to poor infrastructure is a challenge in sustaining competitive markets for producers and traders.

- The value chains targeting export markets need to meet certain certification standards which is not easy, and products can be rejected by the buyers.
- The disposable income of growing middle class who prefer imported products is increasing which may affect the local production in the long run.

3.4.2. Micro-Finance Institutions (MFIs)

3.4.2.1 IBS - MFI

IBS also has a MFI wing that has about 5,000 members from across the country in various sectors; majority are traders and farmers. The MFI has previously accessed funds from the European union, Central bank of Somalia and ILO to on led to the clientele; (credit lines of guaranteed schemes) mostly traders with Micro Credit loans between 500 to USD 2,000. They noted that a few farmers in Baidoa and Kismayu have gone into producing in greenhouses high value horticulture crops (tomatoes, vegetables etc.) due to proximity to markets, and alluded to the fact that Banks avoid investing in remote areas, where accessibility is a challenge because of poor infrastructure and insecurity. Even though Investment in the agriculture sector is growing gradually, the MFI considers the use of Credit Guarantee / loan schemes as the best way to enable MFIs better understand the agriculture financial sector

3.5.2.2 Midnimo Microfinance - MMIC

The MFI was established in Baidoa in 2020 and is a member of the Somali Microfinance institutions Association. They focus on providing services to farmers and small business owners respectively. About 32% of their portfolio is in the agriculture sector inclusive of maize, sorghum and sesame value chains. The MFI applies the Islamic sharia banking system and the guarantor often an individual takes the responsibility in case of any default. Applicants are also allowed to present collateral. MMIC loans to individual farmers range from a minimum of USD 3,000 and maximum is USD 5,000. While farmer groups and cooperatives can access up to USD 12,000. The loans are at an interest of 4%. So far, the MFI has served about 3,500 beneficiaries. The agriculture loans are often used for inputs such as seeds, tractor hours, irrigation pipes, generators and casual labor. The MFI is also keen and planning to avail resources for farmers to invest solar panels for irrigation. However, the bank officials indicated that reimbursing the loan on time is a one of the key challenges they are currently facing.

In the past MMIC lobbied to the municipality in the South West Region to have the charges to access identification (ID) cards to be reduced from USD 15 to USD 5 for the farmers. The IDs are essential to apply for loans. In partnership with Danish Refugee Council and Care International, the MFIs facilitated the establishment and training of VSLAs. The bank so far has relied on self-generated resources and hence expressed the lack of sufficient funds to on led to members as major challenge for its operations.

3.4.2.2. MicroDahab MFI

MicroDahab MFI is a subsidiary of Dahabshiil. The MFI applies sharia law. It targets low-income household especially youth and women in start-ups and small-scale business mostly traders and retailers with individual loans ranging from 100 to USD 5,000. Women form 60% of their clientele. The target sectors are Agriculture Fisheries renewable energy and livestock. The financing is often for fuel and seeds. The MFI has over 50 branches across the country including Afgoye Johwar , Balad and Bidoa. Its clientele is about 35,000 borrowers with a portfolio of USD 40 million. To access the funds a potential borrower is required to present a bank statement, a letter from local government if they have no Identity card and a passport photo. The loan is offered at an interest of 14%.

The MFI partners with different organizations like Mercy Corps, Nordic International Support (NIS) foundation Africa Enterprise Challenge fund (AECF) and IBS. MicroDahab has seen an increasing in the demand for climate equipment i.e., solar panels and boreholes. Only about 5 to 10% of its funds goes into agriculture due to what they consider a high-risk sector because of several uncertainties; such as access to market and unpredictable effects of climate change. The focus on agriculture sector includes buying inputs for farmers such as seeds and green houses for those in horticulture. The renewable energy loan offerings include solar powered water pumps, solar powered fridge and freezers and village household lighting. The MFI is amongst the 7 members of the Somalia micro finance association (SOMA) where they access capacity building, Lobby and advocate central bank for members interests. This includes seeking Central Bank to license the MFIs. Currently MFIs are only regulated.

3.4.3 Government MSME Funds

3.4.3.1 Gargaara

Gargaara was setup by the Ministry of Finance of Somalia in 2019. It was formed with a \$15 million convertible loan to encourage MSMEs to build their businesses and create jobs. An additional \$13 million was made available for lines of credit to Somalia Banks and private financial institutions (PFIs) through the World Bank. Key lenders including the German Development Bank – KfW are expected to contribute about USD 40 in 2023, that shall be split for direct loans and business support. World bank funding come to an end in 2026. Other identified potential funder identified are Qatar International Development, and SILATECH. Gargaara funds go through 7 Banks including – Sombank, AMANA, Mybank, IBS, Premier, Daryeel and Amal and recently onboarded 2 MFIs namely KIMS and RAAS. Currently, the Banks assume 100% risks of the funds, but there is an ongoing risk sharing mechanism assessment. Main sectors targeted across all the states in Somalia include agriculture, fisheries, renewable energy and livestock. Gargaara operates across the country. The recently on boarded MFIs are to enhance the distribution of microloans to MSME clients. This collaboration is particularly beneficial as banks primarily focus on catering to large-scale businesses.

Gargaara loans are Sheria compliant and charge the banks a 3% profit. The banks then add an additional 4% as they on lend to the enterprises. They fall into 3 windows (categories), Micro between 300- USD10,000, Small window ranges from USD 10,001 - 50,000 and large 50,001 to a maximum of USD 250,000. The requirement to access loans include a mandatory Environmental impact assessment, (EIA), business has to be registered and have collateral which could be a piece of land or guarantor; all these requirements are a challenge for micro and small enterprises.

As at the 3rd quarter of 2023, Gargaara had disbursed USD 12.5M and plans to disburse up to 30M before the end of 2024 as the institution continues to on boarded new banks during the first Q of 2024 under the various categories i.e., Micro Small, and Large Windows with 51% of total loans going into Agriculture as loans for equipment, seeds and related inputs as well as tractor hours; 19% Livestock, 18% energy and fisheries 12%. Payment is between 6 months to 4 years and women are 30% of the beneficiaries

The loan applications are approved by Gargaara and then submitted to the Ministry of Finance for the loan disbursement. At times the disbursement takes longer than the envisaged two months. The latter was experienced in the immediate past when a new tax regulation was introduced by the ministry which affected several loan applications. Another challenge revolves around the fact that financial institution require support to build their capacity on assessing environmental issues which is a requisite for accessing the loans.

Notably, Gargaara not only offers lending services to the Financial Institutions (FIs) but also provides technical support to enhance their in-house capacity and foster their involvement in the development of MSMEs in Somalia. To date, Gargaara has conducted two highly valuable technical training sessions for the senior staff of the banks. These training sessions were facilitated by the revered Kenya Institute of Bankers, an association with over 50 years of experience in the development of the financial sector.

3.4.4. Insurance Institutions

There are 9 insurance companies in Somalia of which 5 are regulated and active. These include Baraka and Takaful though none focuses on Agriculture. However, with the support from the World Bank some of them are to start Index-based livestock insurance (IBLI) in Somalia.

4.0 CLIMATE ANALYSIS

4.1 CLIMATE CHANGE IN THE CONTEXT OF SOMALIA AGRICULTURE

Climate change is a critical and evolving threat to global food security and agricultural yield. It is measured through various parameters including rainfall, temperature, and CO² emissions. The manifestation of climate change includes increasing occurrence and severity of extreme climatic events such as temperature increase, changes in rainfall patterns, prolonged drought incidents, water shortages, land degradation, and higher sea levels.

In the context of Somalia, it is considered one of the countries who are extremely susceptible to climate variations, even though the agriculture sector remains the backbone of the Somali economy since it contributes to GDP and country's total export earnings by approximately 75% and 93% respectively (Warsame et al., 2021).

Climate change induces a devastating effect on agricultural production in Somalia leading to crop yield to decline including sorghum, maize, and sesame. Somalia has recurrently experienced drought, moderate drought occurring every 3-4 years and severe drought occurring every 7-9 years. Severe droughts have occurred in Somalia in the past some with unforgettable names, e.g., "*Xaarama-cune, Harga-Cuna, Dabadheer*" in the years 1964, 1969, 1974, 1987, 1988, 2000, 2001, 2004, 2008, 2011, and 2016/2017⁵⁹. In 2022 Somalia also experienced a historic drought following five consecutive failed rainy seasons that have led to mass displacement, widespread death of livestock and a devastating food crisis and contributing to about 5.6 million people across the country experiencing high levels of acute food insecurity⁶⁰. These droughts have had disastrous effects on Somali communities, resulting in famine, malnutrition, displacement, and death. Further, the severe or prolonged droughts result in greatly reduced river flow and reduced harvestable crop yields in the Juba and Shebelle regions⁶¹.

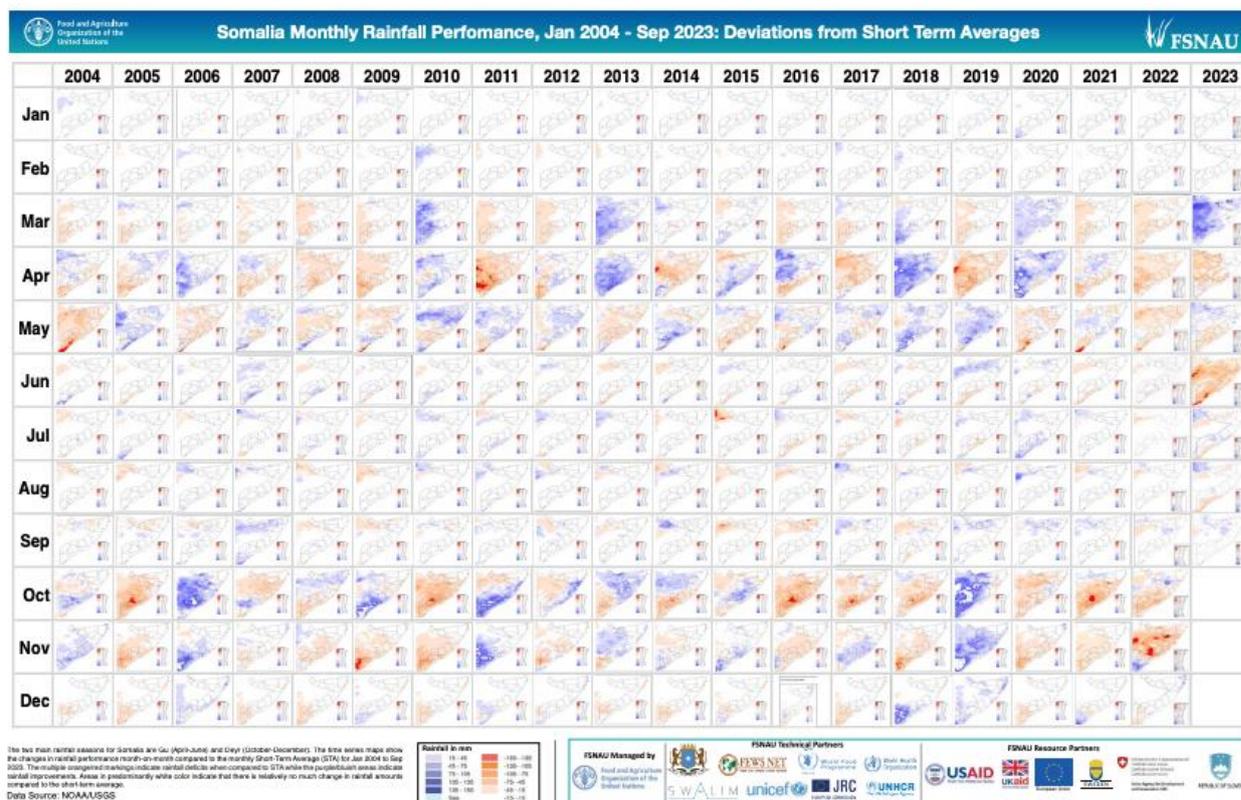
Somalia is part of Africa's dry and semi-arid zones with two seasonal rainfall seasons. The Gu rain season starts in March and intensifies in April across the country, except for the north-eastern coastline which receives the least amount of rainfall during this season. In June, rainfall starts to reduce in most parts. Precipitation is generally low across the country characterized by showers and localized torrential rains with high spatial and temporal variability. The second rainy season (Deyr) is characterized by a shorter duration and less amounts of precipitation in the months of October to the end of November. The monthly rainfall performance from 2004 to 2023 during the Gu (April -June) and Deyr (October -December) seasons is depicted in the figure below

⁵⁹ UNCCD. National Drought Plan for Somalia; 2020

⁶⁰ IOM Somalia Drought Response Report (November 2022)

⁶¹ Ali, M. A., Karim, M. R., & Osman, M. A. (2023). Impact of Drought on Sorghum Production and Its Adaptation Strategies in Baki District, Awdal Region, Somaliland. *Advances in Research*, 24(1), 24-31.

Figure 11 The monthly rainfall performance from 2004 to 2023



4.2 CLIMATE CHANGE RISKS AND VULNERABILITY IN TARGET VALUE CHAINS

4.2.1. Sorghum Climate Change Risks and Vulnerability

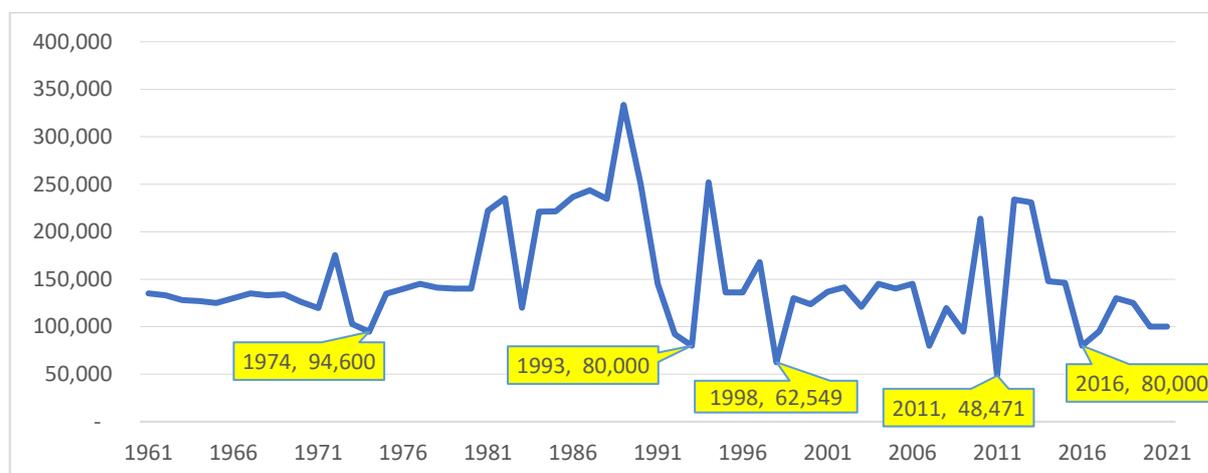
Sorghum is the largest cereal crop in Southern Somalia. The Lower Shabelle and Bay regions account for 70 percent of sorghum production in Southern Somalia. Baidoa (Bay region) is the main sorghum-trading hub in Somalia. Sorghum is remarkably widely adaptive and tolerant to high temperatures and drought stress. It grows well under high radiation, inadequate and erratic rainfall, and in soils of poor structure, low fertility, and low water holding capacity. Sorghum is mostly grown in the Deyr season.

However, production has been gradually decreasing over time. Crop failure or drop in crop production is the major climate change impact faced by farmers in the production of sorghum due to inadequate and poorly distributed rainfall. Climate change variations primarily influence sorghum during breeding or grain filling stages leading to crop loss. For instance, higher temperature significantly influences sorghum yields not only via pollen viability and seed set but also mainly by altering the pace at which biomass accumulates and the growing time of crops⁶². Sorghum production is particularly vulnerable to drought and extreme water shortages which inhibit fertilization or cause the spikes to dry out during the flowering phase, which may lead to a reduced yield.

⁶² Warsame A.A. (2022) Assessing the effects of climate change and political instability on sorghum production: Empirical evidence from Somalia - Journal of Cleaner Production 360 (2022) 131893

The fluctuating production matches the severe drought occurrences notably in the years 1974, 1993, 1998, 2011 and most recently 2016/17; average production in these years went below 100,000 tons. The production trends, with highlights of the severe years is highlighted in the figure 13.

Figure 12: Sorghum production (Tons) trends 1961 - 2021



Source: FAOSTAT

4.2.2 Maize Climate Change Risks And Vulnerability

Maize is typically grown irrigated land during the Gu Season, often by small-and medium-sized farmers. These landholders often employ family labour to manage their land. The major maize growing areas are lower Shebelle, Gedo and Juba land along the Shebelle and Juba rivers. These rivers originate from high rainfall areas of Ethiopia, and do cause subsequent flooding in Somalia. However, due to the initial dryness of the drought-affected soil and heavy rain cause, flash floods that damage road infrastructure and disrupt both population and trade movements. The rapidly rising water levels in the Juba and Shabelle rivers also resulted in flooding in riverine areas, destroying standing off-season crops and assets in affected areas and causing temporary population displacement in Middle Juba region, Jowhar district of Middle Shabelle, Beletweyne district of Hiiraan region and Baardheere district of Gedo region

The negative effects of climate change—variability in rain patterns, low level of water in the rivers, rising temperatures, and floods on maize production are a great challenge to meet the ever-increasing demand. Changes in temperature are associated with reducing soil moisture, causing evaporation, drier conditions, and rain failures. This ultimately decreases the water availability for irrigation which further causes maize crop yields to decline sharply (Warsame et al., 2021) as observed in the lower Shebelle region which is the country’s principal maize production region that experiences temperatures ranging from 26 to 28°C (Ryan et al., 2018). Naturally, maize crop is more sensitive to climate shocks than other crops⁶³.

Warmer weather conditions attributed to climate change triggered a severe outbreak of Fall Army worms in 2016 that affected both Maize and Sorghum in Somalia. This directly affects capital costs, through increased labour needed and the type of knowledge required to deal with the pest; through yield losses and the ability of agricultural lands to respond to shocks; and financially, through

⁶³ Warsame et al (2022) Examining the Effects of Climate Change and Political Instability on Maize Production in Somalia

increasing the cost of production due to costs of control (defined as the cost of technology and its application) and its effect on income⁶⁴.

Somalia has been identified as a key locust breeding area and adverse effects of cyclic droughts with seasons floods and rainstorms trigger locust swarming created by the moist soil conditions that locusts need for egg-laying and the growth of vegetation for food. Since 2019, highly mobile swarms of desert locusts have affected produce on farms and stripped vegetation in this dry country. Such swarming locusts can cause large-scale agricultural and environmental damage, as a single locust plague can lead to a loss of 170 000 tonnes of grain, enough to feed 1 million people for a year⁶⁵.

The four consecutive poor rainy seasons in 2016 and 2017, contributed heavy losses of sorghum, maize and sesame in the rain-fed and inter-riverine regions, which include the cereal basket of Bay and the Shabelle valley regions that farm under both rain-fed and irrigated conditions. The combined loss of maize and sorghum amounted USD 34.5 million⁶⁶.

Given the aridity of the soil, which absorbs water with difficulty, when the storms are more intense than usual, they can give rise to flash floods. This usually happens in the south, in the valleys of the two main rivers, the Juba and Shabelle, in the Gu rainy season and until July (therefore, from March to July), these floods also destroy and impede the functionality of agriculture infrastructure. The Somalia Drought Impact & Needs Assessment (2019) estimated that the Irrigation network canals 10 percent loss of functionality was attributable to effects of climate while 60% to civil war.

4.2.3 Sesame Climate Change Risks And Vulnerability

Sesame is mainly grown in lower Shebelle, Bay and Juba land mostly in the Deyr season as the floods recede. Drought reduces crop production by decreasing the amount of cultivated land, resulting in harvest failures. Certainly, there has been significant impact of climate change on sesame production in Somalia, as recurrent droughts and other extreme weather events have led to low yields, limited processing capacity, and missed cropping seasons.

During the severe drought in 2016-2017 the sector lost USD 27.5 million⁶⁷. Interviews with leading sesame exports affirmed that the warehouses were empty in the last quarter of 2022 and the first two quarters of 2023 hence a majority had last exported in mid 2022.

4.3 CLIMATE ADAPTATION CHALLENGES, SHOCKS AND NEEDS IN THE VALUE CHAINS

Infrastructure. Infrastructure such as roads, bridges and irrigation facilities often get destroyed by raging flash floods. This year vast swathes of farmland in South West State, Hirshabelle and Jubaland states, and Banadir region have been engulfed, properties destroyed and main roads to towns in these regions damaged with the main bridges in Luuq and Bardheere, were at risk of being swept away⁶⁸. The potential impacts of flash floods is further depicted by the current 2023 floods scenario in Gedo region where the riverine communities encountered substantial losses in their field crops.

⁶⁴ CABI (2017) Fall Armyworm: Impacts and Implications for Africa

⁶⁵ Un Women (2022) Gender, Climate and Conflict Analysis in Somalia and Assessment Of Opportunities For Climate Agriculture And Livelihood Opportunities For Crisis-Affected And At-Risk Women In Somalia

⁶⁶ Somalia Drought Impact & Needs Assessment (2019)

⁶⁷ Somalia Drought Impact & Needs Assessment Vol I synthesis report (2019)

⁶⁸ SOMALIA: 2023 Deyr Season Floods Weekly Situation Report No. 2 As of 24 November 2023

Approximately 20,410 Ha and crucial agricultural infrastructure, including 2,076 irrigation water pumps, 4,672 irrigation canals, 170 shallow wells, and 35,836 meters of irrigation pipes were washed away⁶⁹. Subsequently production and trade of agriculture produce, including food supply services across the country, is disrupted. This calls for investment in climate proof infrastructure.

Floods and Water Management. Floods also cause multiple displacements forcing people to move away from their homes. This coupled with subsequent food aid deliveries / unconditional cash transfer that flows to alleviate these disasters threaten availability of agriculture labour and market for locally produced food.

In terms of water management, the lack of water reservoirs to mitigate the impact of droughts makes the farmers vulnerable to the effects of extreme weather changes. In 2022, during the Gu season (main rainfall season) 80 per cent of the water sources across the country were drying up, including the Shabelle and Juba rivers whose water levels were below historic minimum levels. As of April 2022, an estimated 4.2 million people were facing acute water shortages with over 159 strategic communal boreholes in need of urgent upgrading to restore their functionality. This limits the amount of land that can be cultivated.

There are several initiatives led by The National Disaster Management Agency (SODMA) that pinpoints regions where special attention and caution are crucial based on weather forecasts. This proactive approach aims to minimize risks and ensure the safety of Somalia citizens. SWALIM and partners have taken the lead in placing early warning systems on high alert and encouraging other preparedness activities. In addition, as an early measure, to prevent a recurrence of the disruptive events that occurred during past El Niño events the FAO Somalia Water and Land Information Management (SWALIM) has developed a unique mobile phone-based alert and early warning system called DIGNIIN. It facilitates early detection of flood situations in the Juba and Shabelle rivers and enables timely warnings to be communicated to vulnerable communities, allowing evacuation and response.

Another initiative was supported by Cities Alliance (2020-2021) on Building and Strengthening Community through Inclusive Community-Based Disaster Risk Management in partnership with the Swedish Development Cooperation Agency (Sida) and the German Federal Ministry of Economic Cooperation and Development (BMZ) that used a grant of USD 29,994. The project worked in Lower Shabelle district to establish community-based disaster risk management committees. These committees have developed community action plans to prepare for disasters including drought and floods well before they strike.

Despite all these initiatives, the flood-prone, regions and droughts that are followed by torrential rains and unexpectedly overflowing rivers destroy crops, homes, and livelihoods, and displace thousands of people each year. Subsequently need for strengthen these systems to be coupled with actions to enhance adaptation.

Seed varieties. Limited availability of affordable drought-resistant seed varieties for the three crops has contributed towards farmers' vulnerability to drought incidences. Most of the seed varieties used in Somalia are all open-pollinated. As is typical of small farmers, they save part of their harvested grain to use as seed in the following season. Even though the seed are capable of producing high yields, they may lack certain attribute such as drought and pest resistant and early maturity traits which are key in adapting to climate change⁶⁹.

⁶⁹ Manyasa E and Ismail A. 2005. Guidelines for farmer-level sorghum seed production and marketing in northern Somalia

Land Tenure. Insecure land tenure also does affect the ability of farmers to make long-term investments on land that can potentially advance adaptation and mitigation. Like in other developing countries, a secure tenure through land certification is understood to have a positive correlation for household participation in sustainable land management initiatives.

4.4 ADAPTATION TECHNOLOGIES AND PRACTICES IMPLEMENTED

Sorghum and sesame unlike maize are drought tolerant crops and therefore able to significantly sustain the effect of drought. However, adoption of climate adaptive technologies, innovations and practices do contribute towards building resilience to climate change induced shocks.

Smallholder farmers make an effort to identify seed from the best crop of the previous season. This is complemented with support from development projects that provide for free or in kind. The middle and large-scale farmers in the case of maize and sesame can afford improved varieties that are available in the market. CEST, SATG and its commercial partners Filsan collectively produce clean and improved seed varieties for the three crops in the market. Notably, Filsan produces F1s hybrid Siman maize that is more resistant to pests and diseases, and it produces higher yields, more drought resistant, and earlier maturity than traditional varieties. To enhance affordability of improved varieties to the smallholder farmers, some of the seed companies jointly with development and research organizations use farmers within the target regions to do seed multiplication. Examples include partnerships between SATG and Red cross, CEST and CIMMYT.

Farmers along the river have adapted to using irrigation during the dry season and about, 25% of the crop production in Somalia is through irrigation while rest 75% is through rain-fed farming⁷⁰. Irrigation is practiced in the floodplains along the permanent rivers in south Somalia (the Juba and the Shabelle) and along the seasonal streams and springs and those that can afford have dug shallow and deep wells. As floods recede, farmers also do take advantage to replant any destroyed crops though its mostly sesame and sorghum which are hardier to the effects of drought. In the north, water is available within pockets of deep soil for irrigated orchards, or from shallow wells and springs, which are the major sources of water for crop irrigation, with water pumped to the fields.

The communities in the areas that depend on irrigation have set-up water management committees whose aim is to ensure equitable distribution of water for household and farming use. The committee also collects funds and repairs basic infrastructure including desilting the smaller canal networks.

Sesame exporters are also buying land in the agricultural areas to farm and are establishing alternative water sources such as drilling boreholes to stabilize production in order to sustain their markets.

The development organizations including FAO, WFP, GIZ amongst others are promoting the adoption of climate-smart agriculture and sustainable land management practices amongst farmers 'to enhance resilience to weather shocks. These practices are aimed at reversing the growing problems of deforestation, and land and soil degradation.

The smallholders have also established crop diversification including intercropping of cereals with legumes such including cowpeas and mung beans with maize and sorghum as a mechanism to manage total crop failure from effects of climate change.

Through the support of development organizations small holder farmers have also been introduced to soil and water conservation technologies such as *soil banding* to optimize soil moisture by storing and boosting absorption while decreasing runoff and evaporation. These techniques have been

⁷⁰ UNIDO (2020) Mapping & Value Chain Analysis of The Fruits and Vegetable Sub-Sectors in Somalia

essential in enhancing agricultural production to climate change, especially in regards to rainfall fluctuation at small scale.

Sesame processors decry they high cost of energy and are investing in the use of solar energy in some aspects of their operations that do not require large amounts of kilowatts such as lighting and other light operations; though, they mention the high initial cost as a deterrent investing.

4.5 CLIMATE-POSITIVE BUSINESS MODELS

Sorghum and maize are mainly grown by smallholders and are often for household consumption with excess finding its way into the market, unlike sesame which is produced majorly as a commercial crop and hence the difference in the emerging positive business models. The commercial nature of sesame attracts private sector to invest in out grower arrangements that provide of improved / clean seeds and other related inputs, as well as good agricultural practice extension services, provide tractor hours and occasionally opening the canals networks. The amount invested by the private sector, who are often the exporters is recovered during harvest.

Smallholder farmers occasionally deliberately flood farmland in an attempt to use these areas for flood-recession agriculture. In this regard farmers take advantage to replant any crops destroyed by floods; mostly sesame and sorghum which are hardier to the effects of drought.

Closer to the cities and major towns, farmers are investing in greenhouses to produce high value horticulture crops, e.g., tomatoes, vegetables etc. While the large-scale farmers in Sesame and maize are increasingly accessing credit for borehole, Solar equipment for irrigation systems and water pumps. Notably the medium to large maize farmer segment of maize farmers is increasingly growing to be the most important maize producers due to the farmers returning to large farms and the heavy investment, especially on land preparations in Shebelle and Juba regions. These farmers represent over 40% of Somali market maize and have commercial interest in increasing production to meet the urban demand. The large commercial farmers have the financial capacity and are often organized and able to purchase inputs including improved and drought resistance seeds and make use of good agricultural practices.

Given the fact that access to finance plays acritical role in investing climate resilience practices the formation of the village savings and loan associations (VSLAs), where people save together and loan money to each other have supported vulnerable smallholder farmers access the much-needed irrigation infrastructure, adopt good agriculture practices and farming inputs.

4.6 GENDER ASPECTS

The three value chains offer a platform for active participation by women, who engage in various aspects of farming, including planting, weeding, and harvesting. The productivity of women in these value chains has been constrained by weak land tenure and limited access to extension services, especially when compared to men, with negative implications for food security, rural poverty, and overall economic growth⁷¹. The insecurity of land tenure for women partly reflects complex dynamics extending from the interaction of multiple legal systems and socio-cultural norms that undermine women's capacity and agency within Somali society. Agricultural extension also does not reach women farmers effectively. Women in Somalia are also heavily burdened by their double role as workers and family care providers, which limits their time and mobility to engage in more productive work.

⁷¹Somalia Drought Impact & Needs Assessment (2019)

Other constraints that agricultural women face include lack of access to financial resources. A survey by UN-Women in Somalia ⁷² in regions that grow maize, and sesame such as Baidoa, Afgoye Beletweyne and Garowe established that women’s relatively low level of participation in agriculture including investing in adaptation strategies such as access to drought resistant improved seeds, or improving of access to water by clearing / desilting the canals that pass through their farms is affected by their inability to access financial services from lending institutions. About three-quarters (74.1%) of women who participated in this survey revealed that they did not have access to any financial or credit facilities. This lack of access, according to the women, was mainly attributed to not qualifying for loan services (44.3%), and (16.3%), since tradition did not allow women to take loans. The female participants further highlighted challenges they experience when accessing credit facilities, including lack of financial literacy (29.0%), the requirement by financial institutions that there must be a male guarantor (24.9%), and lack of security to access loans (19.8%), capping of the amount of money that women can access (16.6%).

4.7 GAPS HINDERING ENGAGEMENT IN CLIMATE DIALOGUE

The Somalia’s First Adaptation Communication to the UNFCCC (2022) presents constraints and gaps that limit engagement in climate dialogue. This includes incomplete and weak policy and regulatory frameworks, inadequate financial resources, especially for core institutions, weak institutional arrangements, including deficiency of mandates and lack of effective coordination on climate change and lack of mechanisms for enforcement of existing policies and laws.

The lack of strong farmer associations and cooperatives, unions or platforms along in the value chains has limited their effective engagement climate change dialogue as they are not adequately represented by a collective body. In addition, formal communication mechanisms to raise value chain and climate concerns with the government are inexistent. As a result, initiatives to discuss climate change and potential interventions have been localized to specific areas through development projects that do not focus on specific value chains but more on the community such as the Building Resilient Communities in Somalia (BRCiS) that worked in Banadir, Bay, Galgaduud, Lower Juba, Gedo, Lower Shabelle amongst others. The project invested in the existing community structures in efforts to support them to prepare for, mitigate and recover from the impact of climate extremes⁷³.

Sesame exporters have an informal platform that they usually use to engage the Chamber of Commerce to lobby and advocate for initiatives that enhance their enabling environment. However, as a platform they hardly address climate change issues and each approaches investment in that regard individually. This include but not limited to investment in drilling boreholes, solar equipment for the factories and irrigation facilities, amongst others.

⁷² Gender, Climate and Conflict Analysis in Somalia and Assessment of Opportunities for Climate Agriculture and Livelihood Opportunities for Crisis-Affected and At- Risk Women In Somalia

⁷³ BRCiS (2022) The final report covers the period 1 September 2018 to 30 March 2022.

5.0 MARKET AND FINANCIAL ANALYSIS

5.1 Strengths, Weaknesses, Opportunities, and Threats Analysis (SWOT)

This market analysis identifies the constraints and opportunities for expanding the sorghum, maize, and sesame market at each stage of the value chain. It addresses them from various aspects including governance, regulation, strategy, financing, innovation, training, production, transformation/processing, quality and consumption. Thereafter a SWOT of the three value chains is summarized in Table 17.

Table 17 SWOT Analysis Table

Strengths	Weaknesses
<p>Market Demand:</p> <ul style="list-style-type: none"> Maize and sorghum are staple and important for food security crops hence they have high demand in the local markets. Sesame highly demand for export market and oil production for the local market. <p>Access to Inputs:</p> <ul style="list-style-type: none"> Research institutions and seed companies introducing drought tolerant & short-maturity varieties of the crops; especially in maize and sorghum. <p>Water Management and Infrastructure:</p> <ul style="list-style-type: none"> Irrigation available for the lands along / close to the river (which crops, where?). <p>Production:</p> <ul style="list-style-type: none"> Good adaptation practices already implemented could be replicated at larger-scale. <p>Enabling Environment and Governance:</p> <ul style="list-style-type: none"> The Sesame exporters platform could serve as an example of governance structure for sorghum and maize producers. <p>International cooperation</p> <ul style="list-style-type: none"> There are several donors and international development investing in climate adaptation related activities through past and ongoing projects. These include, USAID, GIZ, NRC, UNDP, FAO amongst others 	<p>Financing:</p> <ul style="list-style-type: none"> Limited access to formalized credit and business support services across the value chain segments. Lack of appropriate financial products to finance storage facilities, inputs and irrigation systems. <p>Enabling Environment, Regulation and and Governance:</p> <ul style="list-style-type: none"> Weak or absence of regulatory frameworks and policies on crop production, processing, quality and standards, traceability, value chain investment and public-private partnerships. No formal communication channel or mechanism to raise climate concerns. Lack of collective body representing farmers' needs. High taxes and road fees. The unstructured nature of the value chains makes it difficult to regulate and monitor them, which contribute to quality control issues and market inefficiencies. No reliable data at production level. <p>Water Management and Infrastructure:</p> <ul style="list-style-type: none"> Poor irrigation, market, & road infrastructure. The lack of infrastructure and services, such as roads and electricity, limit the ability of producers and traders to access markets and earn a sustainable income. <p>Training and Innovation:</p> <ul style="list-style-type: none"> Farmers have low technical skills and use low-yielding traditional practices, Low capacity of farmers' cooperatives and water committees. <p>Access to Inputs</p> <ul style="list-style-type: none"> High cost of improved varieties leads to application of low yielding varieties of seeds. <p>Logistics, Quality and Compliance:</p>

	Little processing and value addition; especially for maize and sorghum.
Opportunities	Threats
<p>Logistics, Quality and Compliance:</p> <ul style="list-style-type: none"> Improving storage facilities could benefit both producers and traders by reducing post-harvest losses due to spoilage and pests. Opportunity to upgrade the sesame value chain. <p>Training and Innovation:</p> <ul style="list-style-type: none"> Providing skills training on fertilizer use and pest control could benefit producers by increasing crop yields and reducing wastage. Promoting the adoption of climate-smart agriculture practices across value chains could benefit all actors in the value chain by improving the resilience of the sector to environmental shocks and reducing the risk of crop failure. Identification of competent non-state organizations that could provide extension services to farmers. <p>Financing:</p> <ul style="list-style-type: none"> Improving access to credit and business support services could benefit both producers and traders by enabling them to invest in their operations and improve their efficiency. Development of specific financial products targeted to the needs of value chain actors (farm inputs, mechanization, processing, irrigation equipment, etc..). Development of fiscal incentives for value chains actors. Increased interest by Diaspora investors in the local economy. New investments in large-scale processing of maize emerging. Donor interest in agriculture. 	<p>Security:</p> <ul style="list-style-type: none"> Recurring security challenges. <p>Climate shocks:</p> <ul style="list-style-type: none"> Vulnerability to environmental shocks, such as droughts and floods, lead to crop failure and reduced yields. <p>International Cooperation:</p> <ul style="list-style-type: none"> Food aid deliveries / unconditional cash transfer threaten availability of agriculture labour and market for locally produced food. <p>Financing:</p> <ul style="list-style-type: none"> The value of foreign investments in agriculture not significant.

Production

Most of the development partners are promoting good adaptation practices. Those already being implemented and can be replicated at larger scale include intercropping of cereals and legumes, planting of improved seed varieties (early maturity and drought tolerant), planting in row rather than broadcasting of seeds, soil banding amongst others.

Water Management and Infrastructure

Somalia is a water scarce country and most of the infrastructure including roads and irrigation facilities were destroyed during war; these together with access to limited and costly sources of energy have limited the ability of producers and traders to access markets and earn a sustainable income as well as those processing to compete effectively with the imported products and or the export market.

Enabling Environment, Regulation and Governance

There are about 181 registered cooperatives in Somalia. Cooperatives are among the key governance structures at the farmer level; their efficiency in delivery of services emerges from strong leadership and effective systems and structures and collaborative efforts with other cooperatives through a union. However, a majority are weak with a lot of support coming through development projects. Institutions such as The Somalia Union Cooperative Movement (UDHIS) that is mandated to play advisory and coordination role in the sector has weak systems and structure in the member states so unable to play an effective role.

Somalia is emerging from a war and hence access to services such as extension and inputs is very low and non-existence in some areas. Notably there are no specific formal platforms within the value chains that can lobby for these services. However, the sesame value chain is slightly better more structured at the processing and exporter level, where they have an informal platform facilitated by previous projects such as GEEL and UNIDO used for lobbying and advocacy through the Chamber of Commerce. The members of the platform have previously received support from these projects to attend international food festivals and also occasionally do share equipment.

The Federal Government of Somalia's establishment of the Somali Agricultural Regulatory and Inspection Service (SARIS) is a key milestone to mainstreaming efforts at creating a conducive policy environment and supporting policy implementation. (SARIS) has an integral role for regulating agricultural activities around the country including phytosanitary regulation and the sale of agro-chemicals. SARIS remains the only regulation enforced by the Ministry. While there now exists an array of Agricultural laws and policies, the institution is not as effective as it lacks sufficient funds and capacity in terms human resources and infrastructure. This has led to uninspected imports of seeds and other agriculture inputs getting into the country.

Logistics, Quality and Compliance

There are over 300 small scale sesame oil processors in Mogadishu; however, the produced oil is of low quality and hygiene cannot be guaranteed by sides and is neither inspected or certified by the Somalia Bureau of Standards. The same applies to the majority of people who sell milled maize. The latter also do not have standards. Thus, they face competition from similar imported products. There is a growing middle class in the urban areas of Somalia who are exposed to imported products that of better quality when compared to those produced and processed locally e.g., sesame oil. Its therefore imperative that investments are made to enhance the quality of the locally processed products.

The Somali Business Registration and Licensing System (SBRL) been effective in reducing the business registration period from months to just about three days. While on the other hand, the capacity at Somali Bureau of Standards (SoBS) whose role is to control product quality and the safety of consumers is limited when it comes to offering export certification. Hence, FGS is ongoing an accession program to the World Trade Organization and other regional trade bodies, to move towards the adoption of international standards to ensure consistency with global trade rules.

Financing

There is limited understanding of the opportunities in agriculture sector by the financial and insurance institutions in Somalia; Subsequently, there are no specific financial or insurance products for the sector along and across the three value chains. Those in the sector who are keen to obtain loans have to adhere to the terms and conditions for standard loans that do not take into account the seasonal nature of agriculture. However, the Village Saving and Loans Associations (VSLA) and initiatives by development organizations provides the smallholder farmers with an opportunity to mobilize and get loans to purchase basic inputs including seeds, payment of labour services / Tractor hours. A few strong well-established cooperatives are able to give loans or act as guarantors for farmers needing to access loans from the banks.

In the sesame value chain, a trend is emerging where some of the processors are acting as guarantors for farmer cooperatives to the banks and financial institution to access loans for agriculture inputs and services such as tractor hours. They also provide extension services and ultimately buy of the crop.

Access to Inputs

Access to affordable inputs especially quality seed remains to be a challenge to the smallholder farmers who are the majority. They end-up sourcing from the local market or recycle from the previous crop or improved seeds from donor projects. Recycled seeds have less vigour contributing to poor production and productivity and may as well spread pest and disease. The emerging local seed companies i.e., Fillan, SATG, CSET amongst others provide an opportunity to avail affordable clean and hybrid seeds. They currently support seed multiplication initiatives through donor support and buy back the seeds which again they sell to development organizations to give the farmers for free. This arrangement is certainly unsustainable.

Market Demand

The productivity of all the three crops at farm level in Somalia is at about 40 when compared to the expected potential. This is partly due to limited knowledge on GAPs and minimal use of quality agriculture inputs, if any. This is ultimately reflected when compared to low import prices of sorghum, maize and even sesame. An outstanding difference amongst the value chain is the commercial drive within the Sesame value chain. This brings in opportunities for exporters to engage in out grower arrangements with small and medium scale farmers and subsequently advancing inputs and relevant services.

Training and Innovation

Government agriculture extension services are scarce in Somalia; the services are mostly available in areas that are benefiting from donor projects, or where the private sector is sourcing the produce. Development organizations are promoting Village based Agriculture advisors to complement the member states extension services. These are members of the respective communities and are impacted with knowledge on agribusiness of the target value chains and subsequently help farmers to gain access to farm inputs in their villages and occasionally link them to markets.

Security

Just like most of the other areas in Somalia, there is insecurity in the agriculture growing zones including the states of Southwest and Hirshabelle. This limits access and investment by the private sector operating as input suppliers and or as buyers to these regions. The insecurity comes along with illegal taxes especially when transporting the produce. This is ultimately reflected in the high prices of local produce when compared to imports.

International Cooperation

An array of development support in climate change adaptation related activities in various sectors is coming through several donors and international development partners. These include, USAID, FCDO, GIZ, NRC, UNDP, FAO, Action Against Hunger, Concern Worldwide amongst others

Climate Shocks

Climate shocks continue to be a threat in Somalia. The country is vulnerability to environmental shocks, such as droughts and floods that lead to crop failure and reduced yields. The loss of the four main staple food crops' output namely maize, sorghum cowpeas and sesame during the 2016-2017 drought was estimated at USD 71.2 million

5.2 FINANCIAL ANALYSIS

The analysis looks into the barriers to access finance in the value chains, financial losses due to effects of climate change, potential investors and the Value chain financing opportunities and constraints.

5.2.1 Barriers to Access Finance

All actors including farmers, exporters, traders, seed suppliers etc. along the agriculture value chains can access loans from the bank; though none is tailored specifically for agriculture. However, bank's such as IBS prefer to work through cooperatives and Community Based Organizations (CBOs) that can then provide guarantee or collateral which is mostly in form of land on behalf of their members. They use this approach because the smallholder farmers are diverse and with different requirements and therefore not easy to manage. Besides, banks are keener on larger loan sizes -i.e., medium to higher value loans i.e USD 100,000 and about USD 10,000 for Cooperatives. The community-based organizations (CBOs) can also co-guarantee one another between USD 3,000 to 5,000.

There is an increased demand for credit for drilling as well as buying bore hole equipment, for solar irrigation systems and water pumps and green houses around Mogadishu all due to the recurrent drought; however, the challenge has been the high initial investment cost which makes the banks avoid such investments without credible guarantors or international organizations that supports these initiatives. Notably, the bank has also supported a cooperative in Galole acquire and import a tractor from Italy.

The banks find the cyclic nature of agriculture production unpredictable and too risky to finance; However, IBS has partnered with United Nations Industrial Development Organization (UNIDO) to offer enterprise loans products to Somali private sector entities looking to diversify their operations, start-up a new venture or boost their productivity. They target is micro-enterprises loans with loans ranging from 500 to USD 5,000, which are mostly in the business of trading and service, or larger businesses with investment loans between (\$5,000 to \$100,000). A few farmer cooperatives have benefited from these loans to buy seed and equipment. The loans are backed with support in business development services, financial literacy and market access, but not backed by the traditional mainstream insurance products.

This initiative is part of the project 'Agro-Technology Development for Economic Growth in South and Central Somalia,' funded by the Italian Agency for Development Cooperation and implemented by UNIDO, in close cooperation with the federal Ministry of Commerce and Industry, the Jubaland Ministry of Commerce and Industry, and the South West State Ministry of Commerce and Industry. Generally, the Agro-Technology Development for Economic Growth is aimed at contributing to improved farming practices, increased agricultural productivity, increased incomes, better living standards, increased value addition activities including processing or manufacturing businesses and increased employment particularly of the youth and women and other disadvantaged groups.

Majority of the MFI's including MicroDahab and, IBS who are the largest MFIs in the country also do not have specific loan products for agriculture, instead they give loans to small-scale business mostly traders and retailers with individual loans ranging from 100 to USD 5,000 and those in the agriculture value chains have meet similar conditions to access loans. Subsequently the farmers face several barriers and constraints in accessing finance such as requirement for collateral which a majority of Smallholder farmers do not have and those who access get limited loan sizes, which restrict the ability of value chain actors to make significant investments and scale their operations effectively. Additionally, inflexible repayment option cause financial stress for borrowers, particularly when their

income is seasonal. Traditionally marginalized groups, such as women and the elderly often face exclusion and discrimination when seeking credit, emphasizing the need for tailored and inclusive financial products. The challenges are further compounded by the remote locations in which many smallholder farmers producers operate, limiting their access to formal financial institutions.

Moreover, the informality and lack of regulation in informal lending practices raise concerns about lenders legal protections discouraging some from seeking financial assistance. The limited financial literacy prevalent among value chain actors contribute to poor financial management and decision-making, impacting creditworthiness and overall financial access. The lack of alignment between current financial services and the specific needs and opportunities within the target value chain reduces their effectiveness of the existing financial products to the smallholder farmers and traders

74

5.2.2. Financial losses due to droughts and floods and climate change impacts in the value chain

The greatest impact of the drought in the agriculture sector in Somalia has been on crop production losses arising from both reduced land area under cultivation and much reduced yields at harvest. In Rain-fed staple food crops (mainly sorghum, cowpeas, and also some rain-fed sesame) in the inter-riverine regions of Bay and Bokool suffer from a multiple-season lack of rains starting in good time. Throughout 2022, and for five consecutive seasons, poor rains have put the country in severe drought conditions surpassing the 2010–2011 and 2016–2017 droughts in terms of duration, severity, and scale⁷⁵. During that period drought contributed to an estimated at USD 71.2 million loss associated with four main staple food crops' output namely maize, sorghum cowpeas and sesame, with maize and sorghum combined at USD 34.5 million, sesame at USD 27.5⁷⁶. The already badly deteriorated roads get worse during the floods making the farm inaccessible and subsequently lose out on markets.

The 2019 floods though localized, contributed to Crop production losses of about \$7.5 million in a few districts located in two (Hiraan and Middle Shabelle) of the three regions along the Shabelle river, in one (Gedo) of the three regions along the Juba River, and in a semi-arid region (Galguduud) in central Somalia.

5.2.3 Financial, Credit and Insurance Products

Finance is crucial to the private sector, but opportunities are limited in Somalia. Banks are reluctant to lend, or lend on difficult terms, and personal savings or loans from friends and family simply do not amount to enough productive capital for significant business growth. MFI's such as MicroDahab and Midnimo Microfinance (MMIC) provide loans to farmers in form of inputs such as seeds, tractor hours, irrigation pipes, generators and casual labor: their products are not necessarily designed to accommodate the cropping cycle. The same applies in the other nodes of the value chain, where SMEs, processor including traders can access loans with standard terms upon meeting standard requirements from financial institution.

The current financial institutions can support and the agriculture investments if aided with the appropriate technical capacity to develop and deliver such loans. This is demonstrated through the GEEL project (2016-2021) which pioneered the transition from direct funding by development

⁷⁴ ILO, 2008a

⁷⁵ The World Bank in Somalia (September 2023) <https://www.worldbank.org/en/country/somalia/overview#1>

⁷⁶ Somalia Drought Impact & Needs Assessment. Vol I Synthesis report.

partners to the private sector to long-term commercial investment through financial institutions like local banks and microfinance institution. The investments typically went toward essential business equipment, warehouses, laboratories, vehicles, and cold storage, and brought new technologies to the private sector including climate-smart and renewable energy solutions, irrigation, and soil testing equipment, and solar-powered retail kiosks and motorbikes.

There is no agriculture insurance in the country however the World Bank project “De-risking, Inclusion and Value Enhancement of Pastoral Economies (DRIVE)” is supporting the provision of an integrated package of financial services to build the climate resilience of pastoralists through delivery of drought index-insurance, digital accounts and financial education and awareness creation amongst other initiatives. It will be important to pick lessons how the insurance companies respond to this opportunity and replicate in the crops sector.

5.2.4. Value Chain Financing Opportunities and Constraints

Potential opportunities across the sorghum, maize and sesame exist. This includes accessing quality farm inputs, infrastructure, equipment such as solar pumps and irrigation pipes, and machinery tractors and their accessories at the farm level. Standard warehouses are required for storage by the traders, wholesalers, and exporters, while process requires funding for upgrading processing equipment.

However, the challenge expressed by the financial institutions include lack of internal capacity to design specific products that can support this climate sensitive sector when compared to trade finance and construction where majority give loans. According to the Central Bank of Somalia credit given by banks to the private sector in 2022 was US\$253.8 million with trade financing getting the largest share of 32 percent, followed by construction at 17%. There was none categorized as Agriculture.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSION

Effects of climate change have great impact on the agriculture sector in Somalia, and USD 71.2 million loss is associated with four main staple food crops' output namely maize, sorghum cowpeas and sesame during the 2016-2017 drought. The situation is further exacerbated by conflicts lack of access to inputs , appropriate GAPs knowledge and skills, equipment and financial resources. Therefore, efforts need to be put in place to enhance adaptation initiatives along the value chains.

Notably, the choice of the three value chains namely sorghum, maize and sesame are the ideal entry points to embrace climate change initiatives as the first two are staple crops and the latter is commercial crop whose demand for export continues to grow. Collectively the three crops have the potential to cushion the smallholder farmers from the cyclic nature of weather.

Majority of the cooperatives do engage in more than one value chain, just like the households they serve. This is a way of managing risks of total crop failure. However, most of the farmer cooperatives have weak system and structures and lack appropriate facilities and their leaders have limited management skills. All these limits their competitiveness and growth opportunities in the respective value chains as well miss out on engaging the private sector and access to funds from financial institutions.

There are several ongoing adaptation initiatives promoted by the development partners in collaboration with Government, research institutions and private sector. These revolve around livelihood diversification, access to weather forecasts and early warnings system, land use planning, use of drought-tolerant and short-duration crop varieties, integrated farming system, soil, and water conservation, changing the time of sowing, planting, and harvesting, Water harvest for irrigation use, Zero tillage to conserve soil amongst others.

Less than 10% of MFI and bank investments go into production aspects in agriculture even though great potential for financing opportunities across the three value chains exist e.g., providing credit for quality farm inputs, mechanizations, processing, irrigation equipment amongst other agriculture related services. However, the lack of good understanding of the sector has limited the capacity of financial institutions in Somalia to design specific products that can support this climate sensitive sector. The few MFIs that support the sector have also imposed strict prerequisites including having guarantor to mitigate potential risks of on lending to the sector. The prerequisite conditions limit farmers access to financial services. Credit guarantee funds could be applied to buy down the risk.

Unconditional cash transfers from the NGOs to the communities occasionally limits availability of sufficient farm labour contributing to reduction in acreage of land cultivated. The private sector farming on large scale also affected by this phenomenon thus negatively impacting on timely farm operations. The farm / casual labour costs about USD 6 per day compared to USD 100 per month cash transfer per adult in a household. During floods communities also have to relocate hence reducing availability of farm labour.

In fairly structured value chains where there are many private sector actors driving demand by trading in large volumes like in the sesame sector, the exporters / processors are keen to explore and invest in innovative models that ascertain access to sufficient volumes. i.e., getting into tripartite arrangements where the act as guarantors for cooperatives to financial institutions. However, these arrangements are few.

There are no specific platforms for sorghum, sesame, or maize value chains where the actors share knowledge and lobby for intervention that support climate change initiatives. Nonetheless, where farmer platforms exist, they are often project based and donor driven with specific agenda during the project hence not sustainable.

High taxations and insecurity have negatively impacted on the competitiveness of the value chains making imports of higher quality sorghum to be cheaper than that produced locally and sesame destined for export attracting small margins in order to remain competitive.

There are already several localized adaptation interventions initiated by past and on-going projects supported by various development partners in collaboration with the FGS. These include Rural Livelihoods Adaptation to Climate Change (RLACC II), Resilient, Inclusive and Competitive Agriculture Value Chain Development in Southern and Central Regions of Somalia (OUTREACH), Building Resilient Communities in Somalia (BRCiS) amongst others. They provide good lessons for upscaling best practices.

Some adaptation measures require investment now, while the benefits may not be realised overtime, and thus discouraging investing adaptation measures; especially for those with limited resources; besides some such as improved flood defences, has a public good element, and thus discourage investment by individual firms.

Gender delineated customary laws mean that women potential contribution to the agricultural economy is substantially unrealized even though they comprise approximately 50 percent of Somalia's agricultural labour force, The clan structure and traditional social norms and patterns, largely exclude them from owning land, having access and use rights mainly through their husbands or brothers and owned fewer productive agricultural inputs than men. Thus, they disproportionately face extraordinary difficulties accessing rural finance and/or business loans that require land titles or other fixed assets as collateral.

6.2 RECOMMENDATIONS

The Somalia's National Climate Change Policy (2020) provides the governments strategic directions for climate change, especially adaptation and mitigation. This policy includes sectoral laws and policies that provide a legal basis for specific activities that need to be evaluated for potential improvements to address climate change challenges and improve their ability to seize new opportunities. These recommendations put forward are aligned this policy and focus on potential interventions, activities and areas for engagement of private sector across targeted value chains.

Governance, Regulation and Enabling Environment.

- There are several categories of member organizations, formal and informal, that can be used as an entry point to enhance knowledge and better understanding of the impact of climate change and the need for mitigation measures. These include farmer cooperatives and associations, Somali Microfinance institutions Association, Somali Bankers Association Somali Chamber of Commerce & Industry, and the Sesame exporters platform. These organizations are important platforms for localizing and upscaling emerging private sector partnerships promoting adaptation to climate change.
- Sesame has been identified as the most promising, better organized value chain compared to the other two. A key recommendation is to strengthen and formalize the sesame platform at national level, whose creation was facilitated by previous projects (USAID's Growth,

Enterprise, Employment and Livelihoods (GEEL) & UK DFID's Promoting Inclusive Markets in Somalia (PIMS)), to continuously advocate for an enabling environment for sesame exporters in areas such as tax reduction and energy costs to remain competitive in the export market and raise climate concerns. This can be addressed in conjunction with The Chamber of Commerce & SOMINVEST.

- The Union of Cooperatives (UDHIS) needs to be strengthened to play an effective advisory and coordination role in the sector. This would also be an appropriate platform for introduction and cascading adaptation related information and technology to the cooperatives and ultimately the actors in the value chains. Besides they would lobby the government to act on insecurity and illegal taxes. This would be in collaboration with the Ministry of Agriculture.
- There is a need to strengthen PPPs in the sesame value chain between exporters, producers, and seed companies, allowing exporters to act as guarantors for small holders to access inputs and services, developing out grower arrangements through cooperatives and investing in rehabilitation irrigation infrastructure. Through such arrangements farmers are able to secure a market and access climate smart agricultural practices including improved quality seed.
- The Somali Agricultural Regulatory and Inspection Services (SARIS) human resource and infrastructure capacity as well as the systems and structures need to be enhanced to enable the institutions to be effective in playing a supervisory and regulatory role through the implementation of the agriculture policies and regulations.
- The on-going public private partnerships policies, regulations and frameworks need to be fast tracked in order to attract the private sector to invest in existing opportunities in agriculture including managing irrigation and the agro-parks infrastructure that was once efficiently managed by the FGS. This would also provide a platform to showcase climate smart technologies that can be subsequently adopted by the smallholders in maize and sesame value chains.
- The nascent seed companies have developed clean and pure varieties seeds for sesame seeds and clean and hybrid seeds especially in maize and sorghum. However, the sorghum hybrid seeds are yet to be released after trials hence the need for the Government to fast track the approval process for them to be released to the farmers. Besides there is a need to explore innovative last mile delivery mechanisms of inputs for the smallholder farmers through partnerships between farmers organizations, agro-dealers and seed companies.

Financing

- The MFIs and mainstream banks do not have loan facilities for specific value chains or climate change adaptation investments; nonetheless, some of the loans they provide are ultimately used to invest in climate change adaptation initiatives such as irrigation and solar equipment, improved seeds, the loan facilities. While these institutions find the sector risky to invest in given the unpredictable weather patterns, they also acknowledge the need to build capacity to better understand the sector and develop appropriate products. Hence the need to provide technical assistance to financial institutions to develop and pilot test innovative Agri products that are responsive to the needs of sesame, sorghum and maize value chains. The Bankers Association and Somalia Microfinance Associations (SOMA) in conjunction with the Central bank are appropriate platforms for engagement.

- The Gargaara funds from the Ministry of finance delivered through several banks in Somalia require a mandatory environmental impact assessment for an enterprise to access the loans, hence potential to explore the funds to also focus climate change adaptation investments. However, this would require capacity building to the fund and the institutions delivering the service. However, its recommended that the fund not only works with the banks but also MFIs.
- An emerging trend in sesame value chain that needs to be strengthened and upscaled to other value chains is the partnership between cooperatives, private companies such as the seed and exporters exporting companies providing collaterals for cooperatives to access to loans for farm inputs and production services.
- Development organizations including CBOs and associations are promoting village-based savings and loans should be supported. The VSLA's are an important foundation of financial literacy to the smallholders and provide them an opportunity to access basic Agri resources for production. Once they mature, they are linked to MFIs and banks.
- Climate change-related seasonal and annual rainfall variations increasingly hamper access to fresh resources, leading to water shortages for livestock, agriculture, and human consumption. In regard to agriculture, there is an opportunity to explore crop insurance to mitigate the losses that arise from the frequent floods and drought in Somalia. This can build on lessons learned from the crop insurance experiences in the neighboring countries and the livestock insurance to be piloted in Somalia through De-Risking, Inclusion and Value Enhancement of Pastoral Economies in the Horn of Africa Project (DRIVE) the world bank project.
- An important recommendation to the Government is seek an additional grant from SCALA program to carry out an in-depth assessment of Banks/MFIs capacity and their ability to provide relevant financial products to agriculture stakeholders in the value chains including cooperatives, exporters amongst others.

Training and Innovation

- Agriculture Extension support is essential in supporting promoting and adaptation of GAPs that promote adaptation practices. Currently the Member states and FGS agriculture extension system are not as effective and various models are being applied to support extension services by development organizations which can be upscaled. This includes village-based advisors (VBAs) and Farmer Field Schools (FFS). The VBAs can be linked and complement initiatives of the village one-stop shops to strengthen the last mile delivery system. These advisors can play a critical and efficient role in supporting out grower arrangements that promote adaptation practices including but not limited to cultivation of drought tolerant and pest resistance varieties, soil, and water conservation technologies amongst others. Besides it would be important to introduce ICT in agriculture extension to complement VBAs and FFS to enhance outreach.
- The water committees are community structures that play a critical role in the equitable distribution of water for agriculture, livestock, and household use. Besides management and maintenance of the distribution systems they also play an important role in managing conflict over access and control of water points, especially among pastoral communities during drought periods. However, they have limited knowledge on how best they can promote efficient use of water as a mechanism to support adaptation and to manage the basic irrigation

facilities, hence require capacity building in that regard. This mainly impact on sesame and maize value chains.

- Poor post-harvest practices and storage facilities at both household and enterprise levels contribute to high post-harvest losses. The losses in grain are estimated at about 20-30% of the total harvest translating to about 50,000 to 80,000 tonnes per year. Hence the need to promote appropriate technologies at the household level. Currently the harvest, especially sorghum and maize, is kept in underground granaries and 50 Kgs bags. SATG is promoting a metal grain silo which can easily be manufactured within the target communities. At the enterprise level, exporters have previously benefited from co financing by development projects such as GEEL through banks to put up warehouses in the agricultural zones. Financing in these areas is yet to be fully explored.
- Specifically, where there is a strong presence of private sector such as in the sesame value chain, the emerging tripartite models where private sector develops out grower arrangements through cooperatives and invests in rehabilitation irrigation infrastructure and or opens up new land should be upscaled. Through such arrangements farmers are able to access climate smart agricultural practices including improved quality seed as well as assured of the market. In addition, there are investment opportunities to introduce high-quality machines (for seed cleaning and oil extraction) with efficient processing capacities in order to satisfy local and international market needs.
- Increasingly, the communities and the private sector through development partners are becoming aware of technologies that can contribute to their adaptation to climate change such as improved seeds, use of solar as a source of energy for irrigation and households, appropriate post-harvest technologies amongst other technologies. However, the challenge has been in the last mile delivery especially to the rural communities. Partnerships with agriculture input service providers through a one stop arrangement linked to MFIs would be an effective mechanism to promote the technologies.
- The early warning systems for timely and appropriate anticipatory action in the medium and long term need to be strengthened to mitigate losses especially in the southern regions along river Juba and Shabelle that frequently burst their banks and destroy the farms during the rainy season. The early warning systems are also able to inform potential threats of pending droughts to rain fed crops such as sorghum and farmers can subsequently make a decision to feed to livestock before all its lost.

Water Management and Infrastructure

- Information on monetary value of infrastructure destroyed during floods is scarce. Especially that of Agriculture infrastructure i.e. storage and irrigation facilities, canals etc. It is recommended that the Ministry of Agriculture takes up a lead role in establishing the value of agriculture related infrastructure destroyed as a result of extreme weather effects in future. Meanwhile there is need for more knowledge and investment into infrastructure that can withstand these effects.

Quality and Compliance

- Minimum standards should be defined to ensure food safety, traceability, quality, and hygiene specifications from production to consumption across targeted value chains. The Somalia

Bureau of Standards (SoBS) should be engaged and trained to enhance their capacity and ensure crops are compliant with minimum standards for national and international consumer safety, and competitive market access.

- Ensure farmers have access to certified and clean seeds and production material. Joint work could be explored with the Ministry of Agriculture to understand best practices implemented by the Centre for Social & Economic Transformation (CSET) and Filsan on seed multiplication to facilitate knowledge transfer and strengthen the government's extension services.
- Enhance production practices to increase yields, since the production per acre is still very low and beyond its potential.
- The smallholder sesame oil processors who process for the local market require support in training and better equipment to produce quality sesame oil to compete effectively with similar imported products. This calls for linkages with financial institutions to provide loans for better equipment and training by Somalia Bureau of Standards to enhance their quality and meet recommended standards.

7 REFERENCES

- 1 Abdullahi, A. A. (2023). Improvements of Sesame Production: Marketing and its Export Trends in Somalia.
- 2 Adam Smith International (2029) Maize Value Chain Analysis: EU funded project; Outreach Program, Somalia,
- 3 Agriculture Development Strategic Plan 2021-2025; Federal Republic of Somalia Ministry Of Agriculture And Irrigation
- 4 Country food and agriculture delivery compact.
- 5 DAI (2019) Promoting Inclusive Markets in Somalia (PIMS) Final Report
- 6 European Union (2019). Value chain analysis on local & export marketable crops and crop products in Gedo, Bay and Lower Shabelle regions of Southern Somalia.
- 7 FAO. (2021). Analyzing Resilience for Better Targetting and Action.
- 8 FAO. (2022). Food Systems Profile - Somalia Catalyzing the Sustainable and Incusive Transformation of Food Systems.
- 9 FAO. (2022). General information on crop production in Somalia.
- 10 FAOSTAT. (2023). Maize and Flour Export Import/Export in Somalia(2017-2021).
- 11 Framework, S. N. (2022). Federal Government of Somalia.
- 12 Gavin R, Hussein H, Jelinski N & P Porter. 2018. On-farm irrigated maize production in the Somali Gu season. African Journal of Agricultural Research
- 13 ILO (2015) Opportunity Mapping in Baidoa and Beletweyne, Somalia
- 14 IMF Country Report No. 22/376 - Prepared by Chandana Kularatne, in collaboration with Altan Butt and Muriel Calo of the World Food Program.
- 15 IMF Country Report No. 23/187 (May 2023)
- 16 Outreach Project (2018): Maize Value Chain Analysis Somalia
- 17 Somalia, F. R. (2020). Somali National Climate Change Policy.
- 18 SOMINVEST (2022) Priority Sector Investment Study
- 19 UNIDO. (2020). Mapping & Value Chain Analysis of the Fruits and Vegetables Sub-sectors in Somalia.
- 20 Warsame, A. A., Mohamed, J., & Mohamed, A. A. (2023). The relationship between environmental degradation, agricultural crops, and livestock production in Somalia. Environmental Science and Pollution Research, 30(3), 7825-7835.
- 21 WFP (2011): Food Market and Supply Situation in Southern Somalia.

8 ANNEXES

ANNEX 1. LIST OF STAKEHOLDERS MAPPED

S/N	Organization	Type of stakeholder (public, private, non-state),	Description	Contribution to Research	Value Chains	Position in the value chain	Location	Interviewed Y/N
1	Ministry of Environment and Climate Change	Public	Government entity responsible for management and coordination of environmental activities.	Provide information on environmental priorities in the country, available policies and possible challenges for effective response.	Sesame Sorghum Maize	Government entity or regulator	Mogadi shu	Y
2	Ministry of Agriculture and irrigation	Public	Governmental institution responsible for coordination of agriculture activity in Somalia	Provide comprehensive information on the three value chains	Sesame Sorghum Maize	Government entity or regulator	Mogadi shu	Y

3	Ministry of Finance	Public	The role is in allocation of resources; better management of public expenditure; enhanced mobilization of both internal and external resources; greater performance in public investments and strengthening of public enterprises productive capacity;	Provide comprehensive information on Government investments in the three value chains	Sesame Sorghum Maize	Government entity	Mogadi shu	N
4	Ministry of planning, investment and economic development	Public	Pursues best practices in economic planning, and preparation of effective national development plans and strategies through the use of sound macro-economic research and policies, data and technological systems.	Provide comprehensive information on the three value chains	Sesame Sorghum Maize	Government entity	Mogadi shu	N
5	National Disaster Management Agency	Public	coordinate the government's response to various natural disasters. It is part of a broader effort by the federal authorities	Provide information on impact of disasters on the value chains	Sesame Sorghum Maize	Government entity	Mogadi shu	N

			to re-establish national institutions.					
6	Ministry of Agriculture South West	Public	Governmental institution responsible for coordination of agriculture activity in South West	Provide background information on the value chains in South West state	Sesame Sorghum Maize	Government entity or regulator	South West	Y
7	Ministry of Agriculture Somaliland	Public	Governmental institution responsible for coordination of agriculture activity in Somaliland	Provide background information on the value chains in Somaliland	Sesame Sorghum Maize	Government entity or regulator	Somalil and	Y
8	Ministry of Agriculture Puntland	Public	Governmental institution responsible for coordination of agriculture activity in Puntland	Provide background information on the value chains in Puntland	Sesame Sorghum Maize	Government entity or regulator	Puntland	Y
9	Somali Agricultural Regulatory and Inspection Service (SARIS).	Public	mainstreaming and creating a conducive policy environment and supporting policy implementation	Provide information regulating agricultural activities around the country including phytosanitary regulation and the	Sesame Sorghum Maize	Government entity or regulator	Mogadi shu	N

				sale of agro-chemicals				
10	Somali Bureau of Standards (SoBS)	Public	Role is to control product quality and the safety of consumers is limited when it comes to offering export certification	Provide insights on standards and challenges faced by value chain actors	Sesame Sorghum Maize	Government entity or regulator	Mogadi shu	N
11	Chamber of Commerce, Industry and agriculture Somaliland	Public	Government agency responsible in assisting all business members including agriculture in an equitable manner	Provide information on business development challenges surround these three value chains in Somaliland	Sesame Sorghum Maize	Government entity or regulator	Mogadi shu	Y
12	Chamber of Commerce South West	Public	Marketing of the value chains	Provide information on business development challenges surround these three value chains in South West	Sesame Sorghum Maize	Government entity or regulator	South West	N

13	Chamber of Commerce Puntland	Public	Marketing of the value chains	Provide information on business development challenges surround these three value chains in Puntland	Sesame Sorghum Maize	Government entity or regulator	Puntland	N
14	Som Invest	Public	Government entity responsible for promotion of investment in Somalia including the Agricultural production	Provide information on investment opportunities/challenges on these three value chains	Sesame Sorghum Maize	Government entity or regulator	Mogadi shu	Y
15	RAAS microfinance	Private	providing loans to SMSE, training on business development	provide information on challenges faced by SME and recommendations on how best can SME business be developed	Sesame Sorghum Maize	Financial institution	Mogadi shu	N
16	Gargaara Finance Limited	Private	providing loans to SMSE, training on business development	provide information on challenges faced by SME and	Sesame Sorghum Maize	Financial institution	Mogadi shu	Y

				recommendations on how best can SME business be developed				
17	KAAH international Micro Finance	Private	providing loans to SMSE, training on business development	provide information on challenges faced by SME and recommendations on how best can SME business be developed	Sesame Sorghum Maize	Financial institution	Puntland	N
18	Somali Union Cooperatives Movement (UDHIS)		Umbrella organization for all cooperatives in Somalia established in 1973	highlight challenges faced by cooperatives in Somalia	Sesame Sorghum Maize	Cooperatives	Mogadishu	Y
19	Norwegian Refugee Council	Non state actor	International organization based in Somalia supporting the agriculture in SouthWest state of Somalia	Provide information on the support they have provided for the agricultural sector in south West and particularly these value chains	Sesame Sorghum Maize	Intl development/multilateral/UN	Mogadishu	N

20	Wadajir Rural Development Organization (WARDO)	Non state actor	Local CBO supporting the agriculture sector in South west state of Somalia with support from UN agencies	provide information on the Challenges faced by these three value chains in South West State	Sesame Sorghum Maize	CSOs		N
21	Jubbaland Development Organization (JDO)	Non state actor	Local CBO supporting the agriculture sector in South west state of Somalia with support from UN agencies	provide information on the Challenges faced by these three value chains in South West State	Sesame Sorghum Maize	CSOs		N
22	Sustainable Development and peace building initiative (SYPD)	Non state actor	Local CBO supporting the agriculture sector in South west state of Somalia	provide information on the Challenges faced by these three value chains in South West State	Sesame Sorghum Maize	CSOs		N
23	Somali Agriculture technical group(SATG)	Non state actor	SATG was established to provide sustainable home-grown solutions to alleviate the rampant food shortages caused by conflict and the lack of agriculture and food policy	provide technical solutions that will help boosting these three value chains	Sesame Sorghum Maize	CSOs	Mogadi shu	Y

24	Al Mizan Trading Company (AMITCO)	Private	Registered agribusiness company in Somalia and Mogadishu and Kenya, and one of the largest sesame producers and processors in the country.	Challenges they are facing and existing opportunities to further develop their business		Exporter	Mogadi shu	Y
25	Danwadaag Group	Private	Danwadag Group of Company is a certified registered Company that was founded in Feb-2008 in Middle Shabelle, Jowhar. Company engaged in sesame value chain since 2016 and trained sesame growers reaching 7000 farmers.	Challenges they are facing and existing opportunities to further develop their business	Sesame	Exporter	Mogadi shu	Y
26	Alshraf	Private	AL-ASHRAF INTERNATIONAL GROUP (AIG) was global footprints in Kuwait, UAE, Oman, Turkey, and India. processes Sesame Seed.	Challenges they are facing and existing opportunities to further develop their business	Sesame	Exporter	Mogadi shu	Y

27	KM food staff trading LLC	Private	locally owned private company that exports Sesame outside the country	Challenges they are facing and existing opportunities to further develop their business	Sesame	Exporter	Mogadi shu	N
28	Moumin group	Private	Established in 1983 Company is involved in different businesses among them agri business, pharma & health care and general trading. They have offices in Pakistan, UAE and Djibouti.	Challenges they are facing and existing opportunities to further develop their business	Sesame	Exporter	Mogadi shu	Y
29	ADCO	Private	ADCO established in 1980 with offices in However, ADCO Group is also specialized in the field of agriculture with emphasis in fruits and horticulture produce	Challenges they are facing and existing opportunities to further develop their business	Sesame	Exporter	Mogadi shu	Y
30	Liin Hassan Group of Companies	Private	Liin Hassan General Trading L.L.C., was opened in 2008. Sesame seeds are the main product of the company shipping	Challenges they are facing and existing opportunities to	Sesame	Exporter	Mogadi shu	Y

			approximately 10,000 MT a year in raw and hulled sesame	further develop their business				
31	TARAN general trading Company	Private	Locally owned private company that exports Sesame outside the country	Challenges they are facing and existing opportunities to further develop their business	Sesame	Exporter	Mogadi shu	N
32	Dayah Brothers Company	Private	locally owned private company that exports Sesame outside the country	Challenges they are facing and existing opportunities to further develop their business	Sesame	Exporter	Mogadi shu	N
33								
34	Daryeel GTC	Private	Shipping and logistics company based in Mogadishu that exports Sesame	Challenges they are facing and existing opportunities to	Sesame	Exporter	Mogadi shu	N

				further develop their business				
35	BLUE FLAG GTC	Private	locally owned private company that exports Sesame outside the country	Challenges they are facing and existing opportunities to further develop their business	Sesame	Exporter	Mogadi shu	N
36	JMBC	Private	locally owned private company that exports Sesame outside the country	Challenges they are facing and existing opportunities to further develop their business	Sesame	Exporter	Mogadi shu	N
37	Food Security and Nutrition Analysis Unit - FSANU	UN	FSNAU, It provides a broad range of information users with timely and relevant information and analysis for better decision-making	Provide information on the distribution of the value chains in Somalia	Sesame Sorghum Maize	Intl development/m ultilateral/UN	Mogadi shu	N
38	MicroDahab MFI	Private	MicroDahab Microfinance Institution (MicroDahab) is a non-deposit taking	provide information on challenges faced by SME and		Financial institution	Mogadi shu	Y

			microfinance limited liability Company .	recommendations on how best can SME business be developed				
39	Darusalam Seed Company (DASE)	Private	Darusalam Seed Company (DASE) is a sustainable seed company and delivers agricultural seeds, fertilizers and other farm inputs and machineries. Specialized in sesame and maize	information on seed distribution in Somalia & challenges they face etc	Sesame	Exporter	Mogadi shu	N
40	Somseed Agri Company	Private	Somalia's largest sesame processing and exporter company	provide in-depth information on sesame value chains	Sesame	Exporter	Mogadi shu	Y
41	Growth, Enterprise, Employment & Livelihoods Project (GEEL/USAID)	Private	USAID funded project supporting development of the value chains	Provide in-depth information including lessons learned from projects on the three value chains	Sesame, maize and Sorghum value chains	Agriculture Project	Mogadi shu	N

42	Somali Chamber of Commerce and Industry	Private	SCCI is a vibrant organization focused on enhancing business opportunity in the Country	provide information that related to these value chains	Sesame, maize and Sorghum value chains	Business Association	Mogadi shu	Y
43	Dahabshiil	Private	Privately owned bank and money transfer agency. The bank has micro finance section called DahabMFI	highlight challenges faced funding Agri SMEs	Sesame, maize and Sorghum value chains	Financial institution	Mogadi shu	Y
44	International Bank of Somalia - IBS	Private	Local Bank	highlight challenges faced funding Agri value chain	Sesame, maize and Sorghum value chains	Financial institution	Mogadi shu	Y
45	Premier Bank	Private	Local Bank	highlight challenges faced funding Agri value chain	Sesame, maize and Sorghum value chains	Financial institution	Mogadi shu	N
46	Gargaara Fund	Private	GARGAARA was incorporated in April 2019 by the Ministry of Finance of Somalia in GARGAARA was formed with a \$15 million convertible loan to encourage MSMEs to	highlight the opportunities that they have for SMSE and particularly these value chains	Sesame, maize and Sorghum value chains	Financial institution	Mogadi shu	Y

			build their businesses and create jobs					
47	Agroafrica Bank	Private	GRO AFRICA BANK (BANK BEERAHA) is a commercial private bank. Agro bank is actively involved in charting the growth and development	highlight the opportunities that they have for SMEs particularly these value chains	Sesame, maize and Sorghum value chains	Financial institution	Mogadi shu	N
48	KFW	Private	KfW Development Bank has been helping the German Federal Government to achieve its goals in development policy and international development cooperation for more than 60 years	highlight the opportunities that they have for SMSE and particularly these value chains		Financial institution	Mogadi shu	N
49	Filsan Somalia	Private	Filsan Ltd. (referred to as Filsan) is a registered company in Somalia involved in various agriculture related activities. Over the past	Challenges in Seed ecosystem in Somalia	Maize and sorghum	Breeder and Trader of seeds	Mogadi shu	N

			few years Filsan, in partnership with the Somali Agriculture Technical Group (SATG),					
50	Somgrain Company LTD	Private	SomGrain is a business fully owned by Somali businessmen keen on revamping the country's manufacturing industry and by extension, the national economy. the core business is value addition to locally produced cereals through milling and processing. the company mill maize grain into sifted flour for human consumption.	Provide more indepth information on Maize value chain	Maize	Exporter		Y
51	Center for Research and Integrated Development (CERID)	Non State actor	Supports programmes in Climate change mitigation and adaptation, environment and natural resource management, livelihoods and economic empowerment,	provide in-depth on challenges faced and existing opportunities by communities in the target value chains	Sesame, Maize and Sorghum.	NGO	Mogadishu	N

52	Water and Development Committee (WDC)	Non State actor	Promoting community-driven humanitarian and development approaches to transform poverty, vulnerability, and marginalization through mobilization of their consciousness for peace, self-determination, equity, WASH, emergencies,	provide in-depth on challenges faced and existing opportunities by communities in the target value chains	Sesame, Maize and Sorghum.	NGO	South-Central Region of Somalia.	N
53	Sariiraale Farmers Cooperatives	Private	The Cooperative Society advocates, represents and serves farmers living in Hirshabelle state, Somalia. Founded in 2013,	provide in-depth information on sesame value chains and maize . the challenges and opportunities	Sesame & Maize	Cooperatives	Jowhar	Y
54	Danwadag Farmer Cooperatives	Private	Danwadaag farmers cooperatives operates in south west state of Somalia they advocate and lobby for the development of the farms in the state.	provide in-depth information on sesame value chains	Sesame, Maize and Sorghum.	Cooperatives	South West	Y
55	Warjanaay Water Committee	Non State actor	It manages the use of water in Baidoa and the	provide in-depth information on water	Maize and Sorghum	Committee	Baidor	Y

			surrounding villages that have around 300 farmers	management experiences				
56	Jowhar Water committee	Non State actor	The Ali shobare canal is found in Jowhar and is 10Kms long. It is managed by a water committee alongside village elders who play an important role in ensuring equitable access to water to over 1800 farmers occupying almost 2280.5 hectares of fertile land.	provide in-depth information on water management experiences	Sesame, and Sorghum	Committee	Jowhar	Y
57	Deegan Farmer Cooperative	Private	Deegaan farmers cooperatives operates in Jowhar District they advocate and loopy for the development of the farms in the state.	provide in-depth information on sesame value chains	Maize & Sesame	Cooperativ es	Jowhar	Y
58	Kulmis Farmers' Cooperative	Private	Kulmis farmers is an agricultural cooperative formed in 2013 and owned by vegetable growers	provide	Maize & Sesame	Cooperativ es	Jowhar	N

59	Gabyow Agriculture Product trading Co.	Private	Female owned business company trading in the Agricultural sector specifically Maize, sesame and sorghum.	Sesame, Maize and Sorghum.	Trader		Mogadi shu	Y
60	Mamo Agro Group	Private	Established in 2014, MAMO AGRO-GROUP specializes in the construction of unique agriculture and agro-industrial-fishery projects in developing countries. The company collaborates with local populations, engaging them in local agricultural operations and projects creating job opportunities during the projects	provide in-depth information private sector challenges and opportunities in target value chains	Sesame % Sorghum	Trader	Mogadi shu	N
61	Centre for Social & Economic transformation (CSET)	Private	Centre for Social & Economic Transformation (CSET) is a social enterprise Agriculture Livestock, Forestry and Range. Seed	Provide more information on agricultural research	Sorghum Maize & Sesame &	Research institution	Mogadi shu	Y

			production, encouraging farming and agro-process.					
62	World food Programme (WFP)	Development Organization	Support and implement development programmes addressing transformation of agri-food systems in Somalia	Provide in-depth information on these value chains through the programmes they support	Sorghum Sesame & Maize	Intl development/multilateral/UN	Mogadi shu	N
63	Shabelle Agro Corporation	Private	The company works on sesame seed production and corn maize production	Provide more in-depth information on Maize & sesame value chain	Sesame & Maize	Exporter	Mogadi shu	Y
64	Dayax Bros General Treading	Private	Sesame exporter company based in Mogadishu	Sesame export related information	Sesame	Exporter	Mogadi shu	N
65	Somali Bankers Association	Private	SBA is the financial sector's leading advocacy group and the umbrella body of institutions licensed and regulated by the Central Bank of Somali	Present insights of challenges and opportunities faced by Banks in supporting Agribusiness in the face of Climate Change	Sorghum Sesame & Maize	Lobby and Advocacy Association	Mogadi shu	N

66	Mofar Trading Limited	Private	Sesame exporter company based in Mogadishu	Sesame export related information	Sesame	Exporter	Mogadi shu	N
67	Nabuko General Treading	Private	Sesame exporter company based in Mogadishu	Sesame export related information	Sesame	Exporter	Mogadi shu	N
68	Som Seed Agri	Private	Som Seed Agri founded 1997 manufacturing and exporting various products like hulled sesame seed, natural sesame seed and other agro products.	provide information on sesame manufacturing and exporting	Sesame	Exporter	Mogadi shu	Y
69	Somalia Microfinance Association (SOMA)	Private	SOMA is the financial sector's leading advocacy group and the umbrella body of institutions licensed and regulated by the Central Bank of Somali	Present insights of challenges and opportunities faced by Banks in supporting Agribusiness in the face of Climate Change	Sorghum Sesame & Maize	Lobby and Advocacy Association	Mogadi shu	N
70	Somalia Sisin Holing & Oil Industry	Private	Sesame exporter company based in Mogadishu	sesame export related information	Sesame	Exporter	Mogadi shu	N

71	Nakuja General Treading	Private	Sesame exporter company based in Mogadishu	sesame export related information	Sesame	Exporter	Mogadi shu	N
72	Darusalam Seed Company	Private	Darusalam Seed Company was established in 2007. Prior to the civil war, the company worked with Somalia's Seed Multiplication Center, agricultural research station and entities from the Somali Its main crops are maize, cowpea and sesame.	The company also offers fertilizers, other farm inputs and machinery. Smallholder farmers constitute the company's main clientele.	Maize & Sesame	Trader		N
73	RTI international	Developm ent Organization	The Somalia Growth, Enterprise, Employment and Livelihoods (GEEL) project, funded (USAID), works through Somalia's private sector	Provide in- depth information on these value chains	Sesame & Maize	Intl development/m ultilateral/UN	Mogadi shu	N
74	FAO Somalia	Internation al Development Organizations and Global Partners.	Support and implement development programmes addressing transformation of agri- food systems in Somalia	Provide in- depth information on these value chains through the	Sorghum Sesame & Maize	Intl development/m ultilateral/UN	Mogadi shu	Y

				programmes they support				
75	GIZ	International Development Organizations and Global Partners.	Supports Agriculture, rural development and water resource management and Resilience building to address the root causes of migration	Provide in-depth information on these value chains through the programmes they support	Sorghum Sesame & Maize	Intl development/multilateral/UN	Mogadi shu	N
76	KAHH -MFI	Private	Privately owned bank	Highlight challenges faced funding Agri SMEs	Sesame, maize and Sorghum value chains	Financial institution	Mogadi shu	N
77	UNDP	International Development Organizations and Global Partners.	UNDP support the Somali government and people access the skills, technology and funding they need to drive their own development in areas including climate adaptation and mitigation job creation and skill development, innovation	Provide in-depth information on these value chains through the programmes they support	Sorghum Sesame & Maize	Intl development/multilateral/UN	Mogadi shu	N

78	SIDA	International Development Organizations and Global Partners.	Support interventions on related to the environment, climate and energy in Somalia	Provide in-depth information on the value chains through the programmes they support	Sorghum Sesame & Maize	Intl development/multilateral/UN	Mogadi shu	N
79	BMZ	International Development Organizations and Global Partners.	Supports transformation of the agricultural and food systems – shifting towards sustainable and climate-friendly growing and processing methods that also conserve biodiversity.	Provide in-depth information on the value chains through the programmes they support	Sorghum Sesame & Maize	Intl development/multilateral/UN	Mogadi shu	N
80	CIMMYT,	International Development Organizations and Global Partners.	Develops and distributes improved maize inbred lines and hybrids to partners.	Provide in-depth information on the value chains through the programmes they support	Maize	Research	Mogadi shu	N
81	ICRISAT	International Development Organizations and Global Partners.	Provide technical support for sorghum production in Somalia.	Provide in-depth information on the value chains through the programmes they support	Sorghum Sesame & Maize	Research	Mogadi shu	N

82	UNIDO	International Development Organizations and Global Partners.	Promotes infrastructure investment and capital investment, stimulate sustainable production, avoiding post-harvest losses, developing markets access for an inclusive economic growth and job opportunities for all.	Provide in-depth information on the value chains through the programmes they support	Sorghum Sesame & Maize	Intl development/multilateral/UN	Mogadi shu	N
83	IFC	Development Organization	Supports the country's goal to strengthen its private sector, attract investment, improve public services, and create jobs.	Provide in-depth information on these value chains through the programmes they support	Sorghum Sesame & Maize	Intl development/multilateral/UN	Mogadi shu	N
84	RAAS MFI	Private	Privately owned bank	Highlight challenges faced funding Agri SMEs	Sesame, maize and Sorghum value chains	Financial institution	Mogadi shu	N

85	Centre for Social & Economic transformation (CSET)	Private	Centre for Social & Economic Transformation (CSET) is a social enterprise registered in - economic, trade market analyses, promoting agro-business opportunities and business partnerships, Seed production, encouraging farming and agro-process.	provide in-depth information on the three value chains	Research	Research institution	Mogadi shu	Y
86	Asma Moumin	Private	Medium sized private company	provide in-depth information on the three value chains	Sesame	Exporter	Mogadi shu	N
87	Horn Africa- Jowhar	Private	Medium sized private company	provide in-depth information on the three value chains	Sesame	Exporter	Jowhar	N
88	East Africa Seed (EASEED)	Private	Established in 1972 with the objective of providing quality seeds to east African farming communities	provide in-depth information on the three value chains	maize and Sorghum	Trader	Mogadi shu	N
89	Pop Vriend Seeds	Private		provide in-depth information	Sesame	Trader	Mogadi shu	N

				on the three value chains				
90	Premier Bank	Private	Privately owned bank	Highlight challenges faced funding Agri SMEs	Sesame, maize and Sorghum value chains	Financial institution	Mogadi shu	N
91	Norwegian Refugee Council	Development Organization	Provide smallholder farmers with access to improved seeds, fertilisers and irrigation systems to increase yields and training to empower farmers and other community members with new skills	Provide in-depth information on these value chains through the programmes they support	Sorghum Sesame & Maize	Intl development/multilateral/UN	Mogadi shu	N
92	Barwaaqo General Trading Co.	Private		provide in-depth information on the value chain	Sesame	Trader	Mogadi shu	N
93	Ikow Agrovit	Private		provide in-depth information on the value chain	Sesame	Trader	Mogadi shu	N
94	Barwaaqo General Trading Co.	Private	Seed production company	provide in-depth information on the value chain	Sesame	Trader	Mogadi shu	N
95	Raadsan General Trading	Private	Seed production company	provide in-depth information on the value chain	Sesame	processor	Mogadi shu	N

**Food and Agriculture Organization
of the United Nations**

www.fao.org/in-action/scala/en

**United Nations
Development Programme**

www.adaptation-undp.org/scala

International Climate Initiative (IKI)

www.international-climate-initiative.com

**German Federal Ministry for the
Environment, Nature Conservation,
Nuclear Safety and Consumer Protection
(BMUV)**

www.bmu.de/en/

Supported by:



based on a decision of
the German Bundestag