



FNS-REPRO Somaliland - Key Findings from literature review, rapid fodder value chain assessment and stories of change

Report on key findings that emerged from a literature review on the fodder value chain in Somaliland, a rapid fodder value chain assessment and stories of change in selected FNS-REPRO supported communities

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This report describes the key findings that emerged from a literature review on the fodder value chain, a rapid fodder value chain assessment and stories of change in a few communities supported by the Food and Nutrition Security Resilience Programme (FNS-REPRO) in Somaliland. The FNS-REPRO is designed to strengthen the resilience of food systems for food and nutrition security in conflict affected regions in the Horn of Africa and focuses on Somaliland, South Sudan and Sudan. These findings have been summarized and are used as input for the annual sensemaking event in June 2022, during which they were reflected upon by FAO & WUR staff and key stakeholders, so as to generate key suggestions for improvement of the programme but also of staff and stakeholders to learn lessons and take action within their own sphere of influence and control. The analysis of these findings and the facilitation of the sensemaking events have been carried out by Wageningen Centre for Development Innovation, Wageningen University and Research, as a key partner for the FNS-REPRO knowledge agenda.

Keywords: fodder value chain, food security, producers, rapid value chain assessment, stories of change, Somaliland

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Contents

List of abbreviations and acronyms	7
Executive Summary	9
Key insights on the fodder value chain	9
Key findings from the Rapid Fodder Value Chain Assessment	12
Key findings from the stories of change	14
Conclusions and suggestions for improvement	14
1 Introduction	15
1.1 Introduction to FNS-REPRO	15
1.2 Introduction to FNS-REPRO in Somaliland	16
1.3 Background to this document	17
1.4 Somaliland: context update	17
1.4.1 Key issues – worsening drought leading to increased risk of famine in Somaliland	17
1.4.2 Somaliland livestock and fodder sector	20
2 Methodological approach	22
2.1 Literature review	22
2.2 Rapid Fodder Value Chain Assessment (RFVCA)	22
2.2.1 The value chain approach	23
2.3 Stories of change	24
3 Literature review of the fodder value chain in Somaliland	25
3.1 Main stages of the fodder value chain in Somaliland	25
3.1.1 Fodder production	25
3.2 Main actors in the fodder value chain	31
3.3 Distribution of profit and value along fodder value chain	33
3.4 Key challenges and bottlenecks along the fodder value chain	35
3.4.1 Fodder harvesting and production challenges	37
3.4.2 The dynamics of fodder in relation to other natural resource challenges – increasing pressure on and conflict over natural resources	37
4 Key findings from the rapid fodder value chain assessments	38
4.1 Key findings in relation to the fodder value chain in Booca and Dagaar villages in Sanaag	38
4.1.1 Pre-production	39
4.1.2 Fodder production	40
4.1.3 Post-harvest situation	41
4.1.4 Fodder market	42
4.1.5 The enabling environment	43
4.2 Key findings on mapping the fodder value chain	44
5 Key findings from the stories of change	45
5.1 Stories of change	45
5.2 Summary	51

6	Recommendations from the sensemaking event	54
6.1	Suggestions for improvement	54
6.1.1	General suggestions	54
6.1.2	Suggestions to improve the fodder value chain	55
	References	56
	Appendix 1 Dynamics of fodder in Somaliland	58
	Appendix 2 Threats, risks & opportunities	59
	Appendix 3 Recommendations to enhance women’s involvement in the fodder value chain	60
	Appendix 4 Fodder value chain mapping table	61
	Appendix 5 Key interventions & services influencing the fodder value chain in Booca and Dagaar villages	66
	Appendix 6 FNS-REPRO Drought response plan from July to December 2022	68

List of figures

Figure 1	A schematic representation of the fodder value chain, its actors and linkages.	9
Figure 2	FNS-REPRO Theory of Change.	16
Figure 3	Map showing FNS-REPRO target villages in Sool and Sanaag (green), added villages (purple). Source: FAO, 2021b.	17
Figure 4	Projected Acute Food Insecurity by region, October – December, 2022. Source: IPC, 2022.	18
Figure 5	IPC estimates over time Source: data from Somalia IPC workshops; data from the Somalia Food Security Cluster; FEWS NET; FSNAU.	18
Figure 6	Current Acute Food Insecurity, May 2022 (IPC, 2022). Source: IPC, 2022.	19
Figure 7	Projected Acute Food Insecurity, June - September 2022 (IPC,2022). Source: IPC, 2022.	19
Figure 8	Somaliland drought conditions map (May, 22). Source: IPC, 2022.	20
Figure 9	Somaliland drought map (July-Sep, 22). Source: IPC, 2022.	20
Figure 10	Drought measurement scale. Source: IPC, 2022.	20
Figure 11	Livestock export patterns vis-à-vis Somaliland. Source: FAO, 2017.	21
Figure 12	Defining the value chain.	23
Figure 13	A schematic representation of the fodder value chain, it's actors and linkages. Source: FAO, 2021b.	25
Figure 14	Land use/land cover map for Sool and Sanaag. Source: FAO, 2021b.	26
Figure 15	Most preferred fodder species by men. Source: FAO, 2021b.	27
Figure 16	Most frequently stated fodder species by gender. Source: FAO, 2021b.	27
Figure 17	Stated modes of fodder production by gender. Source: FAO, 2021b.	28
Figure 18	Purpose for which naturally growing grass is used by gender. Source: FAO, 2021b.	28
Figure 19	Fodder growing households by district. Source: FAO, 2021a.	30
Figure 20	RFVCA in Dagaar village, Sanaag region.	44
Figure 21	Story of Change with Ahmed Hassan (left).	46
Figure 22	Stories of Change in Booca village Sanaag.	46
Figure 23	Stories of Change in Sanaag region.	46
Figure 24	Harvesters collect fodder on a wooden bed to avoid the risk of flooding after harvesting.	46
Figure 25	Mohamed Hassan, an NRM committee member.	48
Figure 26	Zahra, FNS-REPRO beneficiary in Dagaar Village.	50

List of tables

Table 1	Actors in the fodder value chain.	32
Table 2	Cost of fodder production.	33
Table 3	Cost of processing fodder (value addition).	34
Table 4	Benefit of trading in fodder.	35

List of abbreviations and acronyms

CoP	Community of Practice
FAO	Food and Agriculture Organization of the United Nations
FGD	Focus Group Discussion
FNS	Food and Nutrition Security
FNS-REPRO	Food and Nutrition Security Resilience Programme
FVC	Fodder Value Chain
GAP	Good Agricultural Practices
GNAFC	Global Network Against Food Crises
HAVOYOCO	Horn of Africa Voluntary Youth Committee
IPC	Integrated Food Security Phase Classification
KII	Key Informant Interviews
MEAL	Monitoring, Evaluation, Accountability, Learning
MoLFD	The Ministry of Livestock & Fishery Development
NRM	Natural Resource Management
RIMA	Resilience Index Measurement and Analysis
RFVCA	Rapid Fodder Value Chain Assessment
SoC	Stories of Change
USD	United States Dollar
UVRDO	Unique Vision for Research and Development
VC	Value Chain
VSLA	Village Savings and Loan Association
WCDI	Wageningen Centre for Development Innovation, Wageningen University & Research
WUR	Wageningen University & Research

Executive Summary

This report describes the key findings from a series of assessments that were undertaken in preparation for the annual FNS-REPRO sensemaking workshop held in Hargeisa, Somaliland in June 2022. The purpose of these events is to consolidate and critically reflect on key evidence that relates to the Food and Nutrition Security Resilience Programme (FNS-REPRO) and its context, and to support evidence-based decision making and adaptive management. In particular, the development of upcoming annual plans and to adjust mid-year planning in response to key contextual issues affecting the success of the programme. To support and strengthen this evidence-based and adaptive programming process, three key assessments were undertaken in 2022. Below is a summary of the key findings that emerged from each of these three main assessments: a literature review on the fodder value chain (chapter 4), a Rapid Fodder Value Chain Assessment (RFVCA, chapter 5) and Stories of Change (chapter 6). Below a summary is provided for each of the relevant chapters.

Key insights on the fodder value chain

A brief literature review was conducted on the Fodder Value Chain (FVC) in Somaliland. Key FAO documents that were reviewed include the report of the multidisciplinary context and fodder value chain analysis in Sool and Sanaag (FAO, 2021a); the Somaliland RIMA baseline study (FAO, 2021b); FNS-REPRO Annual Plan (October 2021 – September 2022) (FAO, 2021c); and the Annual Progress Report (2021) was also reviewed. In addition, key monitoring and evaluation data from FAO Somaliland team was also assessed to evaluate the impact that the FNS-REPRO programme has had on the development of the FVC and target regions thus far. External sources have also been reviewed. The evidence and findings obtained from the literature review, the RFVCA and the stories of change, combine to answer a set of **key learning questions** as described below.

What are the main stages in the fodder value chain?

The fodder value chain in Somaliland is generally ordered as follows: production > processing (harvesting and drying) > aggregation > distribution > consumption. FAO studies and assessments (e.g., FAO, 2021b) adapted a fodder value chain that is considered typical of Somaliland (Figure 1).

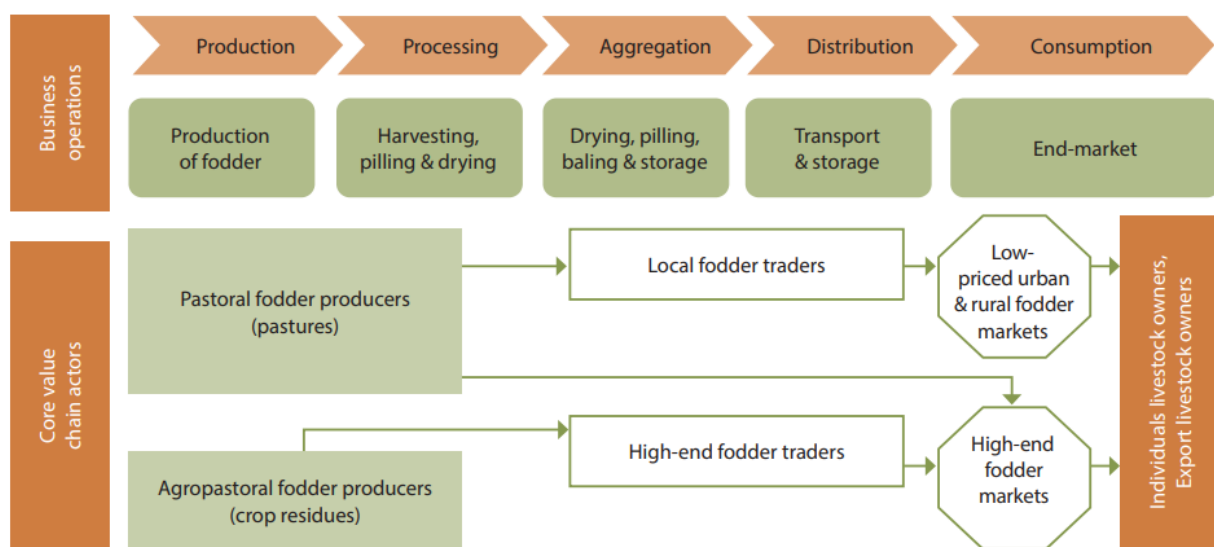


Figure 1 A schematic representation of the fodder value chain, its actors and linkages.

A key take-away to emerge from the literature review, is that while there is a considerable amount of information focusing on fodder production, there is less so on other stages or aspects of the fodder value chain (FVC). This highlights the need to better understand other components of the FVC such as harvesting, processing, aggregation, distribution and also the sale of fodder and at which markets. This is key, given the fact that the literature points to the need to strengthen market infrastructure and linkages such as between fodder storage, transport and trade.

Who are the main actors at each point in the value chain?

The key players in the FVC in Somaliland include (FAO, 2019a):

- i. A few fodder producers (mainly smallholder farmers),
- ii. Fodder transporters/traders,
- iii. Livestock traders and end consumers (FAO, 2019a).

However, a poor policy and regulatory environment, as well as a lack of coordination between key value chain actors, and an absence of fodder marketing infrastructure and institutions are all seriously hindering the development of the FVC in Somaliland, including in Sool and Sanaag.

Which stages of the value chain are most profitable for which actors?

Distribution of profit amongst different actors along the fodder value chain varies significantly depending on whether you are a producer or fodder transporter/trader. Another important factor is whether the fodder is being purchased at farm-level or retail level.

- "Fodder producers receive an average of USD 250–500 as farmgate price for a 10-tonne truckload of fodder" (FAO, 2021a).
- "Traders then sell a 10-tonne truckload for USD 900–1000 at the livestock export market in Berbera Port, with the higher price earned during the dry seasons" (FAO, 2021a).
- "In the commercial fodder-growing areas of the Togdheer Region, prices for all types of fodder are between USD 100–150 per 10-tonne truck load at farm level and USD 200–250 per truck load at retail level, which increase to USD 300–450 per 10-tonne truck load during dry seasons" (FAO, 2021a).

The above evidence indicates that traders receive much more profits than fodder producers. This is because the traders control the market price and thus, dominate the fodder value chain. This structure causing this market domination and unequal distribution of value, is largely due to the control of market information and prices by traders.

What are key bottlenecks along the fodder VC?

The literature review identified numerous challenges in the FVC. Some of these challenges overlap, like inadequate water, lack of a market and pests and diseases. At production levels, fodder production is affected by the unpredictable changes in weather patterns and soil erosion (caused by drought), combined with poor land tenure, overgrazing deforestation and unregulated grazing and animal mobility. The lack of access to in particular water but also to land and other natural resources, due to climate change, population growth and urbanization, increases the likelihood of conflict over natural resources between pastoralists and settlers. Whilst the lack of water and land affect fodder production, there are also inadequate inputs for fodder production such as good quality, nutritious fodder seeds. Furthermore, there is lack of skills and knowledge around fodder production and processing, which can be related to inadequate access to technical assistance services. Farmers lack skills and training on improved farming practices and management, including fodder production, harvesting, preservation and storage and value addition at farm level. Often women are excluded from training. Access to inputs is also a challenge as farmer's lack finance and capital to invest in commercial fodder production. There is also lack of storage facilities causing poor quality fodder and post-harvest losses. Lack of storage facilities was consistently cited as a challenge during focus groups discussions held for the purpose of capturing stories of change. Furthermore, there is lack of a market for fodder and this results into low farm-gate prices. In addition, there is no system in place to share market information on fodder prices and trends. Some of challenges relate to lack of private sector investment in fodder infrastructure and services, but more so, there is no regulatory framework in place to govern the fodder value chain.

Below are a summary of the key challenges that emerged from the RVCA (prior to FNS-REPRO interventions). These are further described in chapter 5.

Pre-production phase	Fodder production phase	Fodder harvesting phase	Market phase
<ul style="list-style-type: none"> Land preparation equipment and cost (tractor and cultivation cost); Seed viability; Irrigation; Knowledge and skills for GAP; Limited awareness and mobilization; Market linkages; Women participation. 	<ul style="list-style-type: none"> The fodder production was not substantial due to; Recurring droughts, diminished rainfall; Locusts; Lack of knowledge and skills; Cost of inputs (rented tractors, labour and water). 	<ul style="list-style-type: none"> Labour safety pre- and post-harvesting; Storage facilities; Upgrading the skills for harvesting; Lack of tools for harvesting; Risk of fire – need for fire prevention and management approaches. 	<ul style="list-style-type: none"> Lack of cooperative (disoriented fodder producers); Decreased capacity of the fodder producers in terms of fodder trade; Exploitation of the fodder profit by small groups e.g. fodder traders and brokers; Absence of direct interaction between the fodder producers and traders; Transportation challenges; Decreased production versus high demand.

Below some key gaps (after FNS-REPRO interventions) are described as derived from the discussions during the rapid value chain assessments and stories of change, and particularly relevant to the fodder value chain.

Existing gaps in preproduction 2022 after FNS-REPRO interventions

- Irrigation system is not adequate: rain is the main determinant factor for production. Suggestion to include water catchment and create awareness on water conservation awareness;
- Seed: the beneficiaries are still sensitive to obtain seeds from the externals, NGOs and aid agencies. Suggestion to introduce good/relevant seeds gradually and to ensure that seed input suppliers and universities play a leading role in this;
- Some inputs /equipment are not yet provided, such as sickles, sisal twine, shovels, hay folks, safety hand gloves, scissors, plastic bags;
- Suggestion to provide these in the appropriate time (when production is expected, otherwise wasting can occur).

Existing gaps in fodder production 2022 after FNS-REPRO interventions

- Water is still a challenge. Water catchment mechanisms need to be put in place;
- Locust: a potential threat to fodder production;
- Recurring drought; drought has a huge impact on fodder production and has also demotivated the project beneficiaries.

Existing gaps in harvesting 2022 after FNS-REPRO interventions

- Hand gloves to reduce human diseases;
- Harvesting equipment not yet received;
- Chopper machines not yet provided all the targeted villages;
- Skills and knowledge are enhanced but no practice (to observe trial and error);
- Completion of the storage facilities.

Existing gaps in the market after FNS-REPRO interventions

- The cooperatives trader teams have not yet received trainings (capacity building/ trainings should be received by the trader groups in order to maximize the profit of the fodder producers;
- Unbalanced supply of fodder and demand in the market (need to scale up fodder production);
- Transportation.

Existing gaps in the enabling environment 2022 after FNS-REPRO interventions

- Rain water: recurrent droughts has a huge impact on fodder and pasture;
- Locust: potential threat;
- Conflict: adequate conflict resolution mechanism;
- Conflict resolution committee;
- Lack of agro-investment.

Key findings from the Rapid Fodder Value Chain Assessment

A key information source for the 2022 evidence-based and adaptive programming cycle was a Rapid Fodder Value Chain Assessment (RFVCA) that was undertaken in May 2022 in Sanaag region of Somaliland. This was commissioned by WUR and undertaken by its partner Sanaag University, based in Erigabo in Sanaag region. The assessment targeted two villages in the regions in which FNS-REPRO has been operational. Booca and Dagaar villages in Sanaag. The RFVCA was designed by WUR in collaboration with the WUR Learning Agenda Focal Points (LAFPs), who undertook the assessments with the assistance of technical staff from the partner Sanaag University. The objective of the RFVCA was to assess the existing fodder value chain (VC) before the FNS-REPRO interventions, identifying the existing actors and other influencing factors, the existing gaps, how the FNS-REPRO intervention has changed the value chain over time, and what services have been provided by FNS-REPRO and other actors in the fodder VC. The full RFVCA assessment is presented in chapter 5. Provided here is a brief summary of the key findings that emerged from the RFVCA.

Summary of pre-production phase

The main gaps and challenges before FNS-REPRO interventions

- Land preparation equipment and cost (tractor and cultivation cost);
- Seed viability;
- Irrigation;
- Knowledge and skills for GAP;
- Limited awareness and mobilization;
- Market linkages;
- Women participation.

Changes made by the intervention (FNS-REPRO) in the pre-production phase

- The greatest change was in mindset - the communities' awareness and readiness for fodder production;
- Capacity building/trainings about GAP were provided (knowledge and skill gap improved);
- Free tractor hours were provided (140 Minutes for each household in 120 HHs in the selected villages);
- Seed for planting fodder was provided;
- Fodder chopper machines were provided in some villages.

Existing gaps in preproduction in 2022 after FNS-REPRO interventions

- *Inadequate water conservation*: rain is the main determinant factor for production and drought has had a negative effect on fodder production. Suggestion to include water catchment and create awareness on water conservation;
- *Quality seed*: The beneficiaries are still sensitive to obtain seeds from the externals, NGOs and aid agencies. Suggestion to introduce good/relevant seeds gradually and to ensure that seed input suppliers and universities play a leading role in this;
- *Some inputs /equipment are not yet provided*, such as sickles, sisal twine, shovels, hay folks, safety hand gloves, scissors, plastic bags. Suggestion to provide these at the appropriate time.

Summary of fodder production phase

The main gaps and challenges before FNS-REPRO interventions

The fodder production was not substantial due to the following reasons:

- Recurring droughts, diminished rainfall;
- Locust;
- Lack of knowledge and skills;
- Cost of inputs (rented tractors, labour and water).

Changes made by the FNS-REPRO interventions in the production phase

The FNS-REPRO interventions have enhanced the community's willingness and readiness for engaging in fodder production, strengthened the capacity of the fodder producers through trainings on GAP, and covered the costs of the inputs directly or indirectly.

Existing gaps in fodder production in 2022 after FNS-REPRO interventions

- Recurring drought and lack of water. Drought has a huge impact on fodder production and has also demotivated the project beneficiaries. Water catchment mechanisms need to be put in place;
- Locust: a potential threat to fodder production.

Summary of fodder harvesting phase

The main gaps and challenges before FNS-REPRO interventions

- Labour safety pre- and post-harvesting;
- Storage facilities;
- Upgrading the skills for harvesting;
- Tools for harvesting;
- Risk of fire – need for fire prevention and management approaches.

Changes made by the FNS-REPRO intervention in the harvesting phase

The FNS-REPRO interventions have led to the provision of storage facilities and enhanced the knowledge and skills on fodder harvesting, processing, aggregation, quality preservation, and storage.

Existing gaps in harvesting in 2022 after the interventions of FNS-REPRO

- Hand gloves to reduce human diseases;
- Harvesting equipment not yet received;
- Chopper machines not yet provided all the targeted villages;
- Skills and knowledge are enhanced but no practice (to observe trial and error);
- Completion of the storage facilities.

Summary of fodder market phase

The main gaps before FNS-REPRO interventions

- Lack of cooperative (disoriented fodder producers);
- Decreased capacity of the fodder producers in terms of fodder trade;
- Exploitation of the fodder profit by small groups e.g. fodder traders and brokers;
- Absence of direct interaction between the fodder producers and traders;
- Transportation challenges;
- Decreased production versus high demand.

Changes made by the FNS-REPRO interventions in the fodder market phase

FNS-REPRO has led to formation of cooperatives (fodder trader groups) which will subsequently assist the fodder producers in terms of market information aiming to maximize the profit.

Existing gaps in the market after the FNS-REPRO interventions

- The cooperatives trader teams have not yet received trainings. Capacity building/ trainings should be received by the trader groups in order to maximize the profit of the fodder producers;
- Unbalanced fodder supply and market demand (need to scale up fodder production);
- Transportation.

Summary of the enabling environment

The two regions (Sool and Sanaag) have an ideal enabling environment for fodder production due to: appropriate vast land, manpower, rainwater, consumer trends and high demand for fodder.

Changes made by the FNS-REPRO interventions in the enabling environment

- The land is invested in in terms of preparation/cultivation (free tractor hours);
- Equipment is provided;
- Trainings are provided (GAP);
- Willingness & participation: significant change in the mindset of communities and great extent of behavioural changes towards their attitude to the environment, NRM and fodder production;
- Seeds are provided;
- Storage facilities are provided.

Note: many of these are catered for by the program. However, no mention is made of the enabling environment in terms of accessing the market, government support, policies and enforcement etc.

Existing Gaps in the 'enabling' environment 2022 after FNS-REPRO interventions

- Inadequate rain & water catchment: recurrent droughts have a huge impact on fodder and pasture;
- Locust: potential threat;
- Conflict: adequate conflict resolution mechanism;
- Conflict resolution committee;
- Lack of agro-investment.

Key findings from the stories of change

Coupled with the WUR commissioned RFVCA, the data collection mission by Sanaag University also collected ten stories of change from different communities. The stories of change, being of qualitative nature, assessed a wider range of impacts (so far) by FNS-REPRO in the respective target communities and identified what worked well, what did not work well, what good practices were emerging and remaining key challenges. Chapter 5 presents the complete stories of change from different groups (fodder producers, NRM) formed by FNS-REPRO, and including the key findings that emerged from the stories of change, disaggregated into either Booca, Tuurka or Dagaar Villages.

The stories show that people have learned new knowledge and skills in relation to NRM; fodder production, preservation and storage; crop production; and taking care of livestock. The NRM training and the development of a NRM community action plan has made them more aware of taking care of their natural resources. It has led to for example setting aside part of the community land for regeneration and to prevent overgrazing. The beneficiaries appreciated being trained on different topics, and receiving inputs (e.g. seed, equipment) for fodder production, as well as the free tractor hours for land preparation. Also setting up savings and loan (women's) groups has helped them to pull through in difficult times and give each other support. By being organized in groups, the community has learned to work together.

Drought is a key constraining factor, and the lack of water has affected fodder and crop production, and led to conflict over land and resources as pastoralists have to travel far in search of water. So, whilst people have been trained on fodder production, the capacity was too low to be able to be sold on the market. Locust is also a key problem, whilst the effects of Covid are also still lingering.

Conclusions and suggestions for improvement

One of the FNS-REPRO key principles is flexible and adaptive programming. This means that the programme can change over time to increase fit with day-to-day and longer-term realities faced by communities on the ground. Given the complex and protracted crisis context of the programme's target areas, there is a need to be able to identify emerging issues and adapt to changes and negative impacts that affect beneficiaries and the FNS-REPRO outcome and objectives. This makes FNS-REPRO more effective, efficient, and relevant for its beneficiaries.

With the above in mind, this report and the subsequent suggestions for improvement provided below, are intended to support the evidence-based decision making and adaptive programming cycle of FNS-REPRO in its final year of implementation and can also be useful for other stakeholders that hope to strengthen resilience of communities in protracted crises.

Based on the evidence and discussions during the sensemaking event, suggestions for improvement include:

- *Drought response & safety net*: address the Horn of Africa drought emergency; provide safety net during lean periods;
- *Access to water*: enhance water infrastructure/catchment;
- *Capacity development*: enhance training and capacity building; strengthen capacities of fodder producer groups/associations in particular but also the trader groups; enhance not only knowledge & skills but also practice;
- *Inputs*: provide quality seeds & other inputs; improve on tools and equipment;
- *Pests and diseases*: improve dealing with locust;
- *Storage*: ensure & complete storage facilities;
- *Fodder market*: strengthen market linkages; ensure organised marketing & commercialize fodder from rangeland;
- *Conflict*: improve dealing with conflict; support conflict resolution committees;
- *Women*: engage women in the fodder value chain and address gender-based violence;
- *Income generation*: support other income generating activities; strengthen stakeholder collaboration;
- *Adaptive management*: improve complementarity and adaptation;
- *Communication*: ensure continuous communication and consultations;
- *Sustainability*: ensure sustainability & exit strategy.

1 Introduction

1.1 Introduction to FNS-REPRO

The Netherlands-funded Food and Nutrition Security Resilience Program (hereinafter: FNS-REPRO) is the first programme in Eastern Africa specifically designed to foster peace and food security at scale, through a livelihood and resilience-based approach, in some of the least stable regions, where interventions are normally of humanitarian programming nature exclusively¹. Its design allows FAO and partners to set examples of building food system resilience in protracted crises. The four-year programme (2019-2023) is implemented in South-Sudan, Sudan and Somaliland. FNS-REPRO adopted a food system resilience approach and focusses on strengthening strategic value chains at country level. In Somaliland, the focus is on strengthening the fodder value chain in Sool and Sanaag².

The programme is an initiative by the Dutch Government to operationalise United Nations Security Council Resolution 2417³, which forbids the creation of food crises and famine as an act or result of war, by investing in food system resilience in times of crises and situations of conflict.

The programme is also unique in its approach to programme across the Humanitarian, Development and Peace (HDP) Nexus and encompasses a rigorous learning and capacity building agenda implemented by Wageningen Centre for Development Innovation (WCIDI) of Wageningen University & Research (WUR). The uniqueness of the learning agenda lies with a grassroots and localised approach to learning where targeted communities and local institutions will be active participants in the design and implementation of the intervention – rather than just being key informants. Furthermore, the learning agenda will contribute to quality programme implementation (through flexible and adaptive programming) as well as to policy dialogue as it will be linked to the Global Network Against Food Crises (GNAFC), through alignment of learning targets, processes and methodologies.

The programme's overall outcome is resilient livelihoods and food systems, and contributions to sustainable localized peace. This will be achieved through:

1. Improved, inclusive access and management of local natural resources,
2. Improved livelihood and income opportunities along the fodder value chain,
3. Enhanced knowledge, skills and capacity of local communities around nutrition-sensitive livelihood support, and
4. Establish and implement a learning mechanism that reinforces field activities and facilitates improved policy and practice on food system resilience.

The FNS-REPRO Theory of Change is illustrated in Figure 2 below⁴.

¹ To read more about FNS-REPRO: [FNS-REPRO: building food system resilience in protracted crises - WUR](#)

² To read more about FNS-REPRO in Somaliland: [Somaliland - Food and Nutrition Security Resilience Program \(fns-repro.com\)](#)

³ To read more about UNSCR2417: [Security Council Resolution 2417 - UNSCR](#)

⁴ For the revised and updated Theory of Change for FNS-REPRO in Somaliland: <https://edepot.wur.nl/579196>

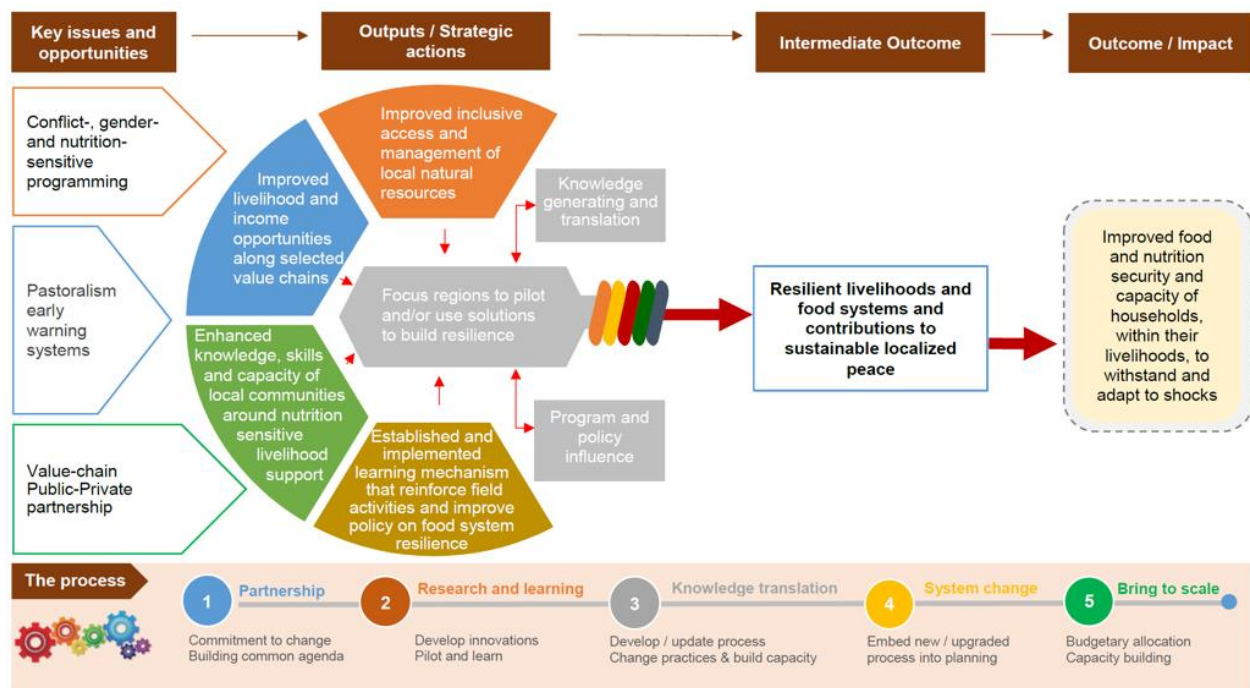


Figure 2 FNS-REPRO Theory of Change.

1.2 Introduction to FNS-REPRO in Somaliland

In Somaliland, FNS-REPRO continues to work on the sustainable development of fodder value chains in the extensive natural rangeland grazing areas within some of the production valleys in Sool and Sanaag Regions.

FNS-REPRO proposed activities centred on the fodder value chain in Somaliland will increase the resilience of communities and their food security status by:

- Increasing fodder and feed production and reducing production costs, through capacity building, aggregation, increasing storage capacity and processing capacity, and achieving economies of scale;
- Restoration of degraded rangelands and actions against desertification, such as Prosopis management and community tree planting;
- Strengthening the capacity of agro-pastoral and pastoral producer organizations to effectively participate in the feed/fodder value chain, and;
- Promoting good agriculture practices to maximize crop yields and improve the nutrition quality of crop residues while diversifying food available for people.

Specific locations include 10 villages in Xudun, Lasanood and Ainabo Districts in Sool region and 13 villages in Erigabo, Badhan and Ceelafwen districts of Sanaag region of Somaliland. The objective is to promote improved food and nutrition security in these villages that are usually affected by acute food crises during drought, mostly as a result of shortage of animal feed which impacts on livestock productivity (and therefore on milk and meat availability for households, both for consumption and sale) (FAO, 2021a). The project aims to enhance sustainability of introduced initiatives by continuing to build and strengthen the capacity (especially through training) of the local communities on improved fodder production, good grazing management practices, good agronomic practices for fodder production, processing, conservation and marketing and strengthening of groups and cooperatives on commercialization of fodder (FAO, 2021a). The geographic focus areas of FNS-REPRO in Somaliland are Sool and Sanaag (Figure 3).

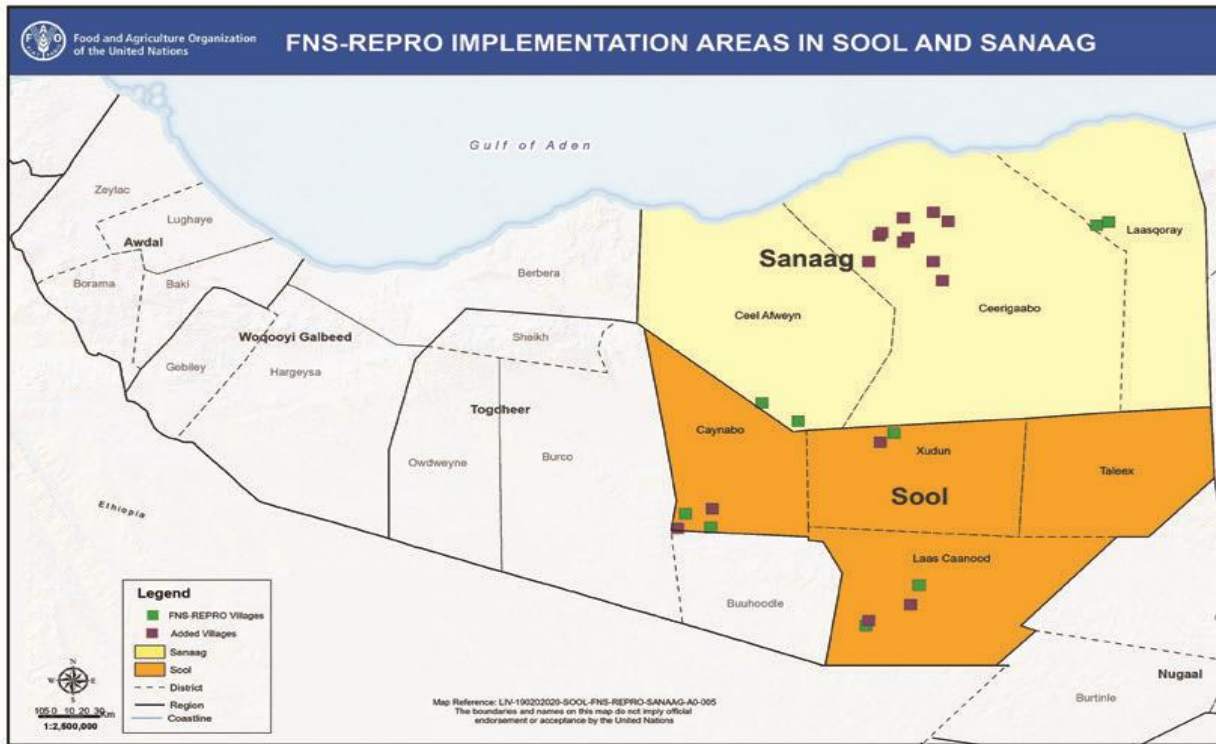


Figure 3 Map showing FNS-REPRO target villages in Sool and Sanaag (green), added villages (purple). Source: FAO, 2021b.

1.3 Background to this document

This document describes the key findings that result from assessments that have been undertaken in support of the second annual evidence-based and adaptive programming cycle of FNS-REPRO. These findings informed the sensemaking event held in June 2022 in Somaliland⁵. The purpose of these events is to consolidate and critically reflect upon key evidence that relates to FNS-REPRO and its context, and to support evidence-informed decision making and adaptive management. Earlier FNS-REPRO sensemaking events were organized in June 2021 (first annual sensemaking event), and in February 2022 (mid-year sensemaking event). In particular, the development of the upcoming annual plans and adjust mid-year planning in response to key contextual issues affecting the success of the program. For the purpose of the annual sensemaking event in June 2022 the following key activities have been undertaken:

1. Rapid literature review
2. Rapid fodder value chain assessment
3. Stories of change (producer groups, community committees)

The approaches and key findings are further explained in this document.

1.4 Somaliland: context update

1.4.1 Key issues – worsening drought leading to increased risk of famine in Somaliland

Looking at the current context of Somaliland, IPC evidence highlights that the worsening food insecurity situation is linked to the worsening drought conditions across the country. This section provides a snapshot

⁵ To read the 2022 sensemaking event workshop report for Somaliland: <https://edepot.wur.nl/579196>

of the most recent IPC data emerging from the Somalia IPC Acute Food Insecurity Analysis report (IPC, 2022⁶), which covers the July - December 2022.

- **Historic multi-season drought leads to Emergency (IPC Phase 4 and 5), with risk of further deterioration.** “Approximately 6.7 million people across Somalia are expected to face high levels of acute food insecurity (IPC Phase 3 or above) between October and December 2022. This includes 2.2 million people who are expected to be in Emergency (IPC Phase 4) and at least 300,000 people in Catastrophe (IPC Phase 5)”. See Figure 4 for the projected food insecurity levels for October – December, 2022.
- **Drought is expected to further intensify.** “The 2020 and 2021 rainy seasons (known as Gu and Deyr) produced below-average rainfall, the 2022 Gu rainy season that occurred from Apr-Jul 2022 was the highest cumulative moisture deficit on record, and the failure of the upcoming Deyr (Oct-Dec 2022) is predicted to be just as severe. Even in the absence of other factors, a fifth straight failed rainy season will likely be enough to push at least some proportion of the population into famine. It bears remembering that in 2010-11, it took only two significant failed rainy seasons to drive many people into famine.”

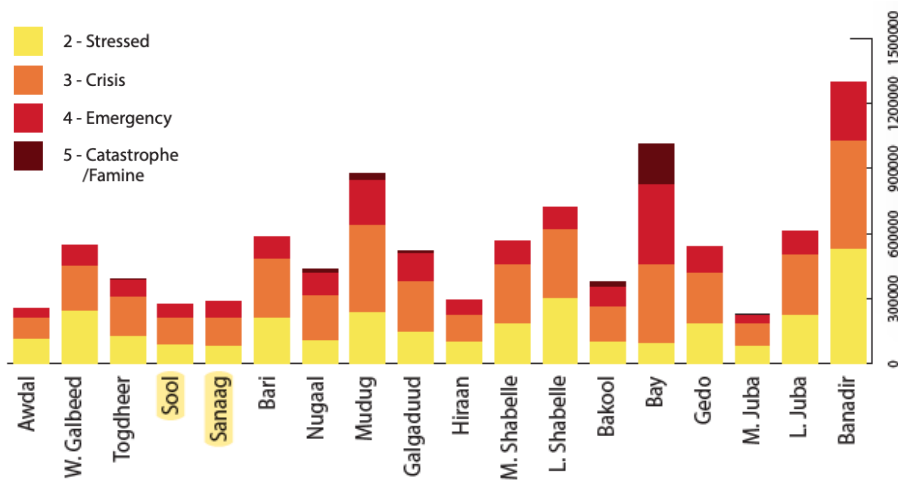


Figure 4 Projected Acute Food Insecurity by region, October – December, 2022.
Source: IPC, 2022.

Figure 5 shows the IPC estimates (August 2016 to Jan 2022) and FEWS NET/FSNAU estimate (February 2022) of the percent of the total Somali population in Crisis (IPC Phase 3) or worse and the average share of the Somali population that received humanitarian food assistance.

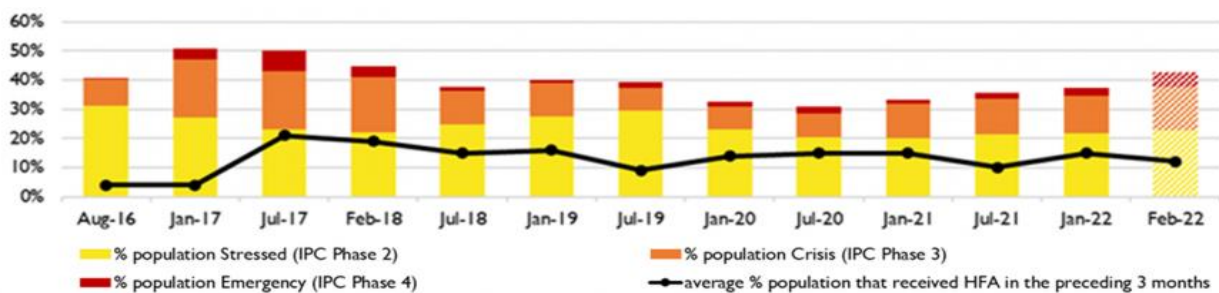


Figure 5 IPC estimates over time.
Source: data from Somalia IPC workshops; data from the Somalia Food Security Cluster; FEWS NET; FSNAU.

⁶ For a more detailed analysis, you can access the most recent IPC published data [here](#).

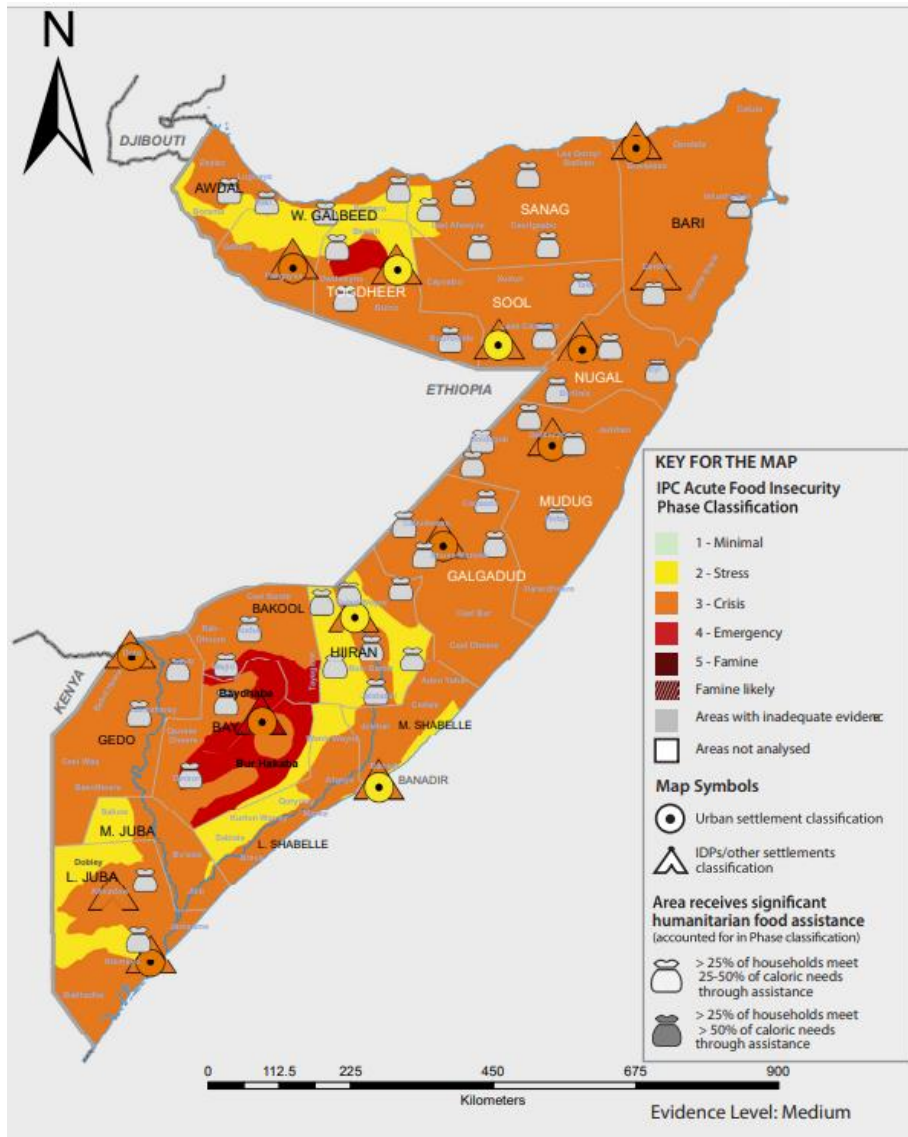


Figure 6 Current Acute Food Insecurity, May 2022 (IPC, 2022).
Source: IPC, 2022.

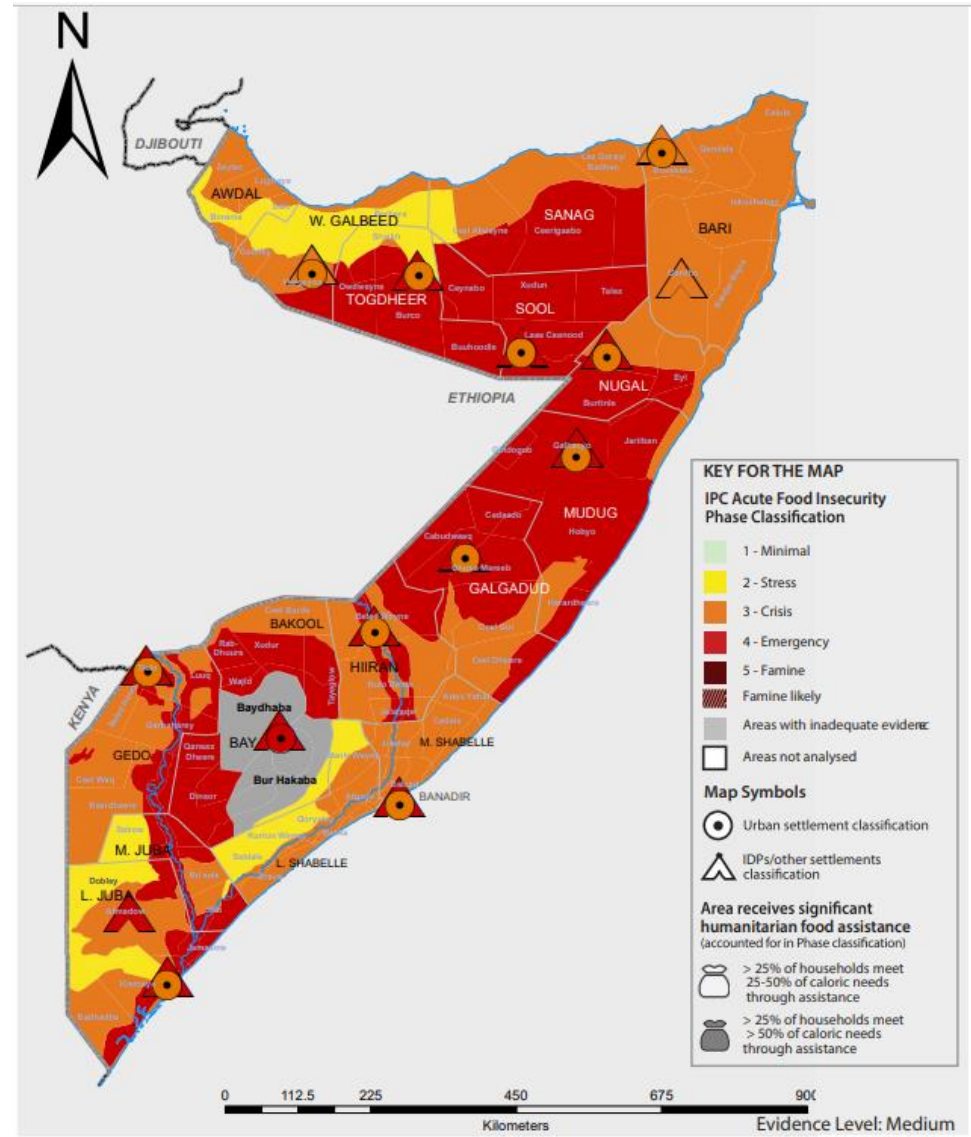


Figure 7 Projected Acute Food Insecurity, June - September 2022 (IPC, 2022).
Source: IPC, 2022.

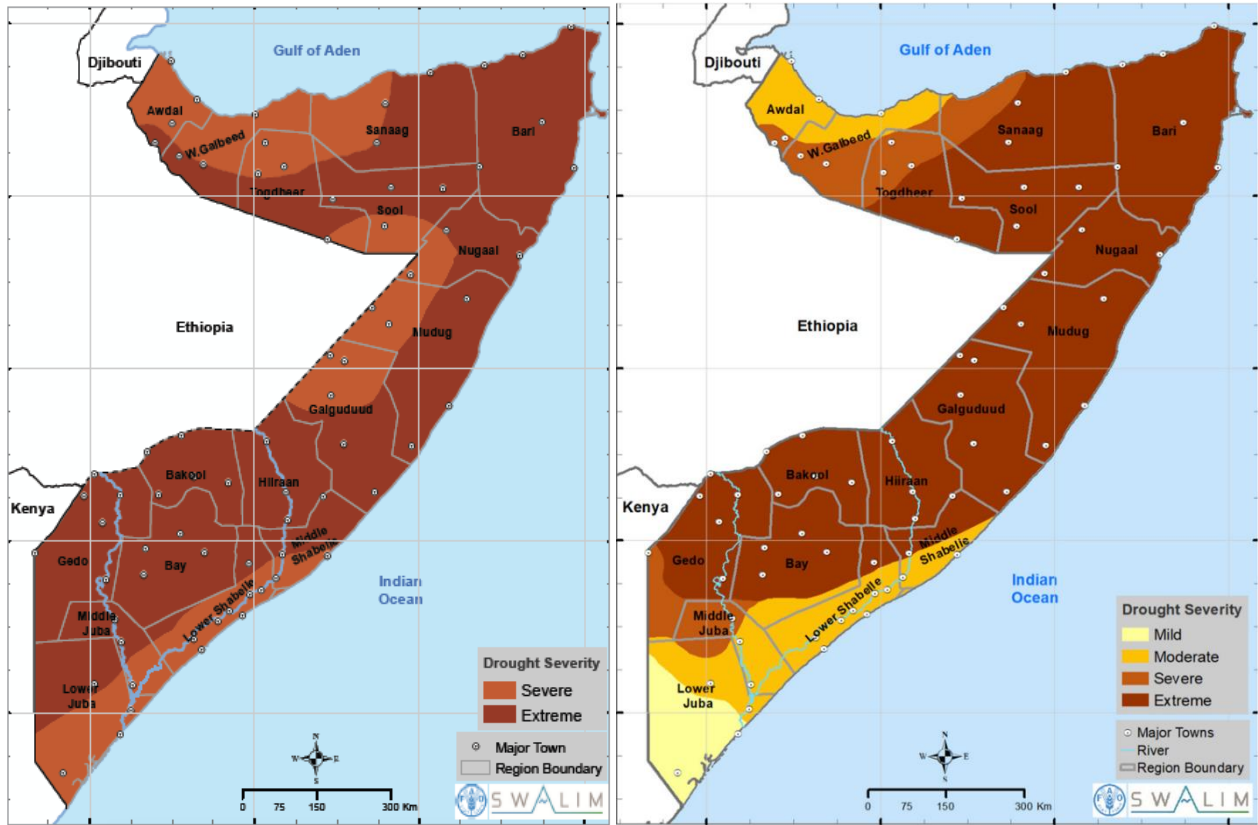


Figure 8 Somaliland drought conditions map (May, 22).
Source: IPC, 2022.

Figure 9 Somaliland drought map (July-Sep, 22).
Source: IPC, 2022.

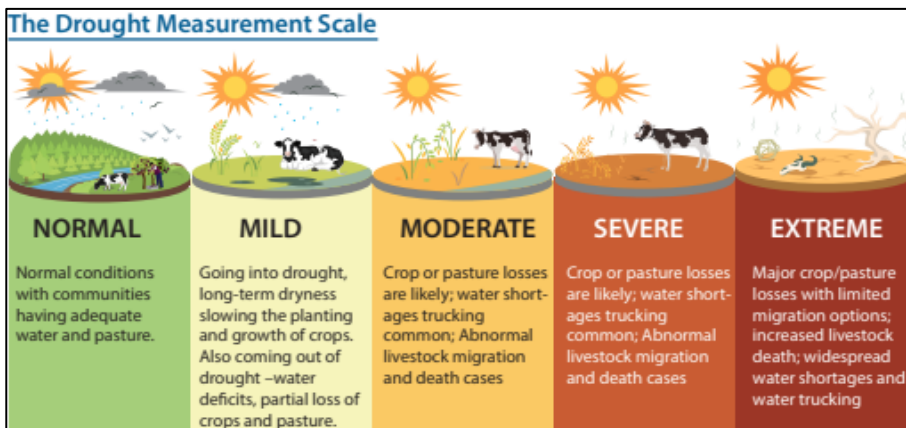


Figure 10 Drought measurement scale.
Source: IPC, 2022.

1.4.2 Somaliland livestock and fodder sector

Much of Somaliland’s economic growth is attributable to livestock production and trade and export. Livestock continues to be the most important source of foreign income in Somaliland, with international exports to Saudi Arabia, UAE, Oman and Yemen, passing through various domestic markets and Berbera port (Figure 11). It accounts for nearly 65% of the economy (Somaliland biz, 2022). The sector provides a vital source of domestic consumption of meat and milk, household savings, and trade, including livestock exports and hides and skins. Goats, sheep, camels, and cattle are the primary domesticated animals in Somaliland.

A quick observation of the livestock markets in Somaliland reveals a critical commodity - fodder. The fodder value chain is turning into an increasingly significant investment due to the growth of livestock demand, as well as the implementation of quarantine facilities for export animals and feeding systems during shipment (Musa, et.al, 2022). Some key figures² demonstrate the crucial role of livestock/fodder in Somaliland's economy:

- Sector **employs** 70% of the population;
- Contributes to 60% of **GDP**;
- Makes 85% of **foreign export earnings**;
- **Sool, Sanaag and Togdheer regions** account for 75% of all livestock;
- **Sheep and goats** account for 91% of all animal exports.

However, due to climate change, recurrent drought, poor natural resource management, a drop in exports as a result of Covid-19 and inadequate fodder production, livestock owners face increasing challenges to feed their animals. Continuing natural disasters, most notably drought and desert locust infestations, have in many cases destroyed livestock pastures, which are the primary source of income for pastoral families, exacerbating the underlying conflicts within the communities (Reliefweb, 2021). Such challenges, including recommended actions for improvement, are looked at in more detail throughout this report.



Figure 11 Livestock export patterns vis-à-vis Somaliland.

Source: FAO, 2017.

² For more information see: Somaliland Biz, 2022: <https://www.somalilandbiz.com/sector-guides/livestock/>

2 Methodological approach

For the purpose of the annual sensemaking event in June 2022 the following key activities have been undertaken:

1. Literature & document review
2. Rapid fodder value chain assessment
3. Stories of change (producer groups, community committees)

The methodological approaches and key findings are further explained in this document.

2.1 Literature review

Purpose and key learning questions

The purpose of the literature review was to answer the following key learning questions, so as to get a better understanding of the fodder value chain in Somaliland and generate useful insights for FNS-REPRO:

- **What are the main stages in the fodder VC?**
- **Who are the main actors at each point in the fodder value chain?**
- **Which stages of the fodder VC are most profitable for which actors?**
- **Where and to what degree is value added, or value lost, as the product moves along the VC?**
- **What are key bottlenecks along the VC?**
- **What has been the role of FNS-REPRO in VC development?**
- **What are options for change?**

These learning questions also formed the basis for the rapid fodder value chain assessment.

Sources

Key FAO documents that were reviewed include: the report of the multidisciplinary context and fodder value chain analysis in Sool and Sanaag (FAO, 2021b); the Somaliland RIMA baseline study (FAO, 2021a); FNS-REPRO Annual Plan (October 2021 – September 2022); and the Annual Progress Report (2021). Also included are key findings from the Somaliland Community of Practice (CoP) survey (2021).

External sources were also reviewed, which included a study led by the International Livestock Research Institute (ILRI), titled, 'The dynamics of natural resources in Somaliland – Implications for livestock production' (Pfeifer et al., 2018). Findings from the Somaliland Ministry of National Planning and Development (MoNPD, 2017–2021), also provided information pertaining to the future demand for fodder and expansion of the fodder value chain in Somaliland. In addition, key M&E data from the FAO Somaliland MEAL team were also assessed to evaluate the impact that the FNS-REPRO programme has had on the development of the FVC and target beneficiaries thus far. The findings of the literature review are structured around a set of key learning questions (above) as set out above and at the start of each section in chapter 4.

2.2 Rapid Fodder Value Chain Assessment (RFVCA)

The **purpose** of the rapid fodder value chain assessment included:

1. To map the changes along the fodder value chain (VC) in Somaliland in selected FNS-REPRO project areas.
2. To relate these changes in the VC to FNS-REPRO interventions & to other factors & actors.
3. To identify key gaps in the VC & opportunities to strengthen the VC in FNS-REPRO project areas.

Note: the idea was not to be complete but rather to undertake a light VC assessment so that it could serve as input in the sensemaking event in June 2022 and following events and processes related to the fodder value chain.

Key overarching question to be addressed was: *What did the value chain look like at the onset of FNS-REPRO interventions (early 2020), how did it change over time and why did these changes happen (relate to role of FSN REPRO and other actors & factors)?*

Approach for the rapid fodder value chain assessment (RFVCA):

A participatory RFVCA was undertaken by actively engaging stakeholders in selected FNS-REPRO areas so that learning takes place and realistic and relevant options for change are identified. Focus was on changes in the VC as a result of FNS-REPRO and other influencing factors and actors. There were 2 key activities:

1. Mapping the VC since the FNS-REPRO interventions started (early 2020).
2. Mapping VC related services & influencing factors.

What is a 'Value Chain'?

"A value chain includes all the activities that are undertaken in transforming raw materials into a product that is sold and consumed. These include the direct functions of primary production, collection, processing, wholesaling and retailing, as well as the support functions, such as input supply, financial services, transport, packaging and advertising. The terms "value chain" and "supply chain" are often used interchangeably. In this guide we use the term value chain to reflect the understanding that value is added at each point in the chain." (Vermeulen et al, 2008).

Figure 12 *Defining the value chain.*

2.2.1 The value chain approach

Studies illustrate the importance of a value chain approach for understanding how to contribute to the agricultural sector's growth and expansion (UNDP, 2020). The value chain approach illustrates the various actors playing a role as a primary agriculture product moves along a chain, in addition to the relationship between these actors, from inputs to production, post-production, processing, and distribution/marketing. Indeed, a World Bank (2019) report, looking at the linkages between agriculture and job creation, argues that "applying a value chain lens to investments in the sector can contribute to creating direct, indirect, and induced labor in the larger food system." Indeed, one of the main paradigms shifts in agricultural knowledge building and implementation has been the inclusion of the value chain approach. Given the growing consensus amongst development practitioners that agriculture is key for lifting rural populations out of poverty and improving livelihoods, it is important that the conversation around agriculture moves from one simply being about cultivation and harvest to one that focuses on the entire value chain approach.

As noted in Devaux et al. (2018), what is needed is a holistic approach that takes into account the entire agriculture chain, looking at the challenges and opportunities of the input suppliers all the way to the consumption of a final product itself and, in fact, an evaluation of the final product following its consumption. "For agricultural research to benefit the rural poor, it needs to complement other efforts that improve the policy environment, alleviate resource constraints, and build local capacity for responding to changing technological and economic challenges and opportunities" (Devaux et al, 2018).

Primary actors are usually more actively involved in input supply, production, storage, retain, and consumption - with farmers usually being associated as primary actors. On the other hand, secondary actors are involved in the value chain more indirectly through provision of services and functions to primary actors, such as transportation and credit provision, without working in the actual crop production (World Bank, 2019). The value chain approach considers how different actors - such as energy service providers, technicians, researchers, traders - can interact with the agriculture sector and, in fact, become key value chain actors themselves.

There are also support activities that help enable the success of more primary activity. The value chain approach looks at activities such as infrastructure, technology, social capital, and other resources (Porter, 2001). The supporting activities and the surrounding atmosphere are key in the value chain approach. As such, it is worth asking how the environment surrounding stakeholders can be improved. The value chain approach also necessitates that understanding the market looks at both the domestic and export oriented, international scale. Moreover, a constructive and amenable policy environment that prioritizes rural populations and agricultural development is necessary. Technology that enables higher productivity and up-scaling of crops to make them more likely to be exported is also included in this.

This RFVCA, hence, seeks to incorporate this approach in its analysis of Somaliland's FVC, through using the approach as a framework for understanding the country's challenges and opportunities to develop its FVC.

2.3 Stories of change

The **purpose** of the stories of change included:

- To identify key stories of change for FNS-REPRO target groups (producers/producer groups, committees);
- To identify the role of FNS-REPRO and other influencing factors and actors that affect their ambitions (livelihoods);
- To identify stories of change, emerging good practices & lessons learned from FSN REPRO (& other programs), relevant for food system transformation initiatives and related challenges and opportunities;
- To identify key options for FNS-REPRO support in the final year of implementation.

The **approach** for the stories of change included interviewing producers/producer groups & community committees to tell their stories of change in relation to being engaged in FNS-REPRO.

Key question to be addressed: *How & why have the producers/producer groups, committees (and the community) changed since the onset of FNS-REPRO interventions (early 2020)?*

3 Literature review of the fodder value chain in Somaliland

The literature review was conducted on the Fodder Value Chain in Somaliland. See chapter 2 for the methodological approach. The literature review is structured around a set of **key learning questions**, described at the start of each section below.

3.1 Main stages of the fodder value chain in Somaliland

Key learning question: What are the main stages in the fodder value chain?

For most agricultural value chains, the steps in the value chain are generally ordered as follows: production > aggregation > processing > distribution > consumption; but for the fodder value chain, processing (harvesting and drying) comes before aggregation. FAO studies and assessments (e.g. FAO, 2021b) adapted a fodder value chain that is considered typical of Somaliland (Figure 13). In the next sections information is provided on fodder production practices in particular.

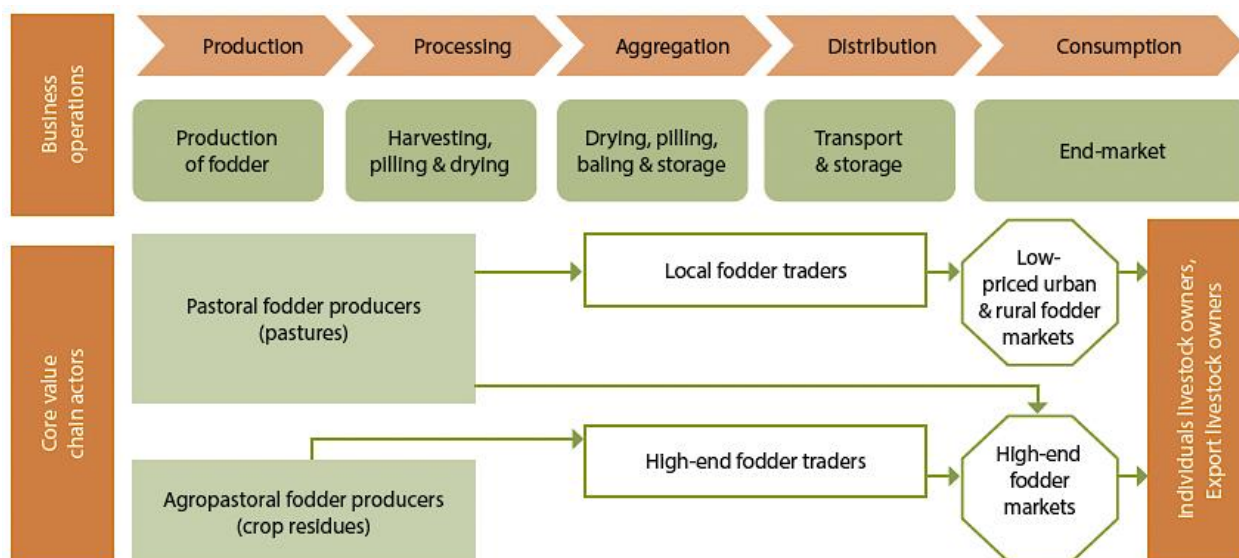


Figure 13 A schematic representation of the fodder value chain, its actors and linkages. Source: FAO, 2021b.

3.1.1 Fodder production

3.1.1.1 Fodder production practices

The report of the multidisciplinary context and fodder value chain analysis in Sool and Sanaag (FAO, 2021b), describes the different practices of fodder production, as indicated below.

Natural regeneration of rangeland pastures within flooded plains and depressions within the rangeland areas

The bulk of the fodder marketed at Berbera Port comes from extensive floodplains in Togdheer Region, especially in Burao District. The floodwater from one of the major seasonal rivers (Beer River) in Burao District is also systematically directed to the floodplains as a spate irrigation practice. Under a spate irrigation practice, land is cultivated prior to flooding before redirecting the water for fodder and crop production. The residual water maintained in the soil allows the fodder to grow to maturity with at least two harvests per season. There is no fertilizing or manuring of the pastures to boost forage productivity (FAO, 2021b).

Reseeding of degraded rangeland areas to trigger biological revival and plant recolonization

The preferred reseeding method is sowing of seeds within semicircular, crescent-shaped micro-catchments dug using hoes or oxen-drawn ploughs. FAO has successfully introduced drought-tolerant pasture species for reseeding degraded areas in the Togdheer and Awdal Regions of Somaliland, which include *Cenchrus ciliaris*, *Chloris roxburghiana* and *Enteropogon macrostachyus* (FAO, 2015). The traditional practice of collecting dry animal dung and broadcasting this in the degraded areas with the expectation that the seeds imbedded in the dung will germinate to improve vegetative cover, is no longer applied. It is common to find farmers burning manure rather than applying it into pasturelands. Complementary soil and water-harvesting structures such as contour earthen bunds improve water recharge/infiltration and reduced runoff within the reseeded areas (FAO, 2021b).

Cultivated fodder

This involves planting of crops such as maize and sorghum principally for food. The resultant crop residues (maize/sorghum stovers) are valuable sources of fodder especially during the dry seasons. This is the commonest fodder production practice in the agropastoral areas of Awdal, Woq Galbeed and Togdheer regions. Surplus fodder destined for the livestock export markets at Berbera Port and Djibouti is sold to traders. Farmers sometimes utilize the intermediate rains observed in Somaliland (Karal and Hais) that may not be adequate for cropping for fodder production. The local demand for fodder, especially along livestock marketing routes and export ports, is higher than the local supply. Fodder exports from Ethiopia bridge this fodder supply gap (MoNPD, 2017; FAO, 2019a). There are also pockets of specialized dairy farms located in peri-urban areas which put pressure on the demand for fodder (FAO, 2021b).

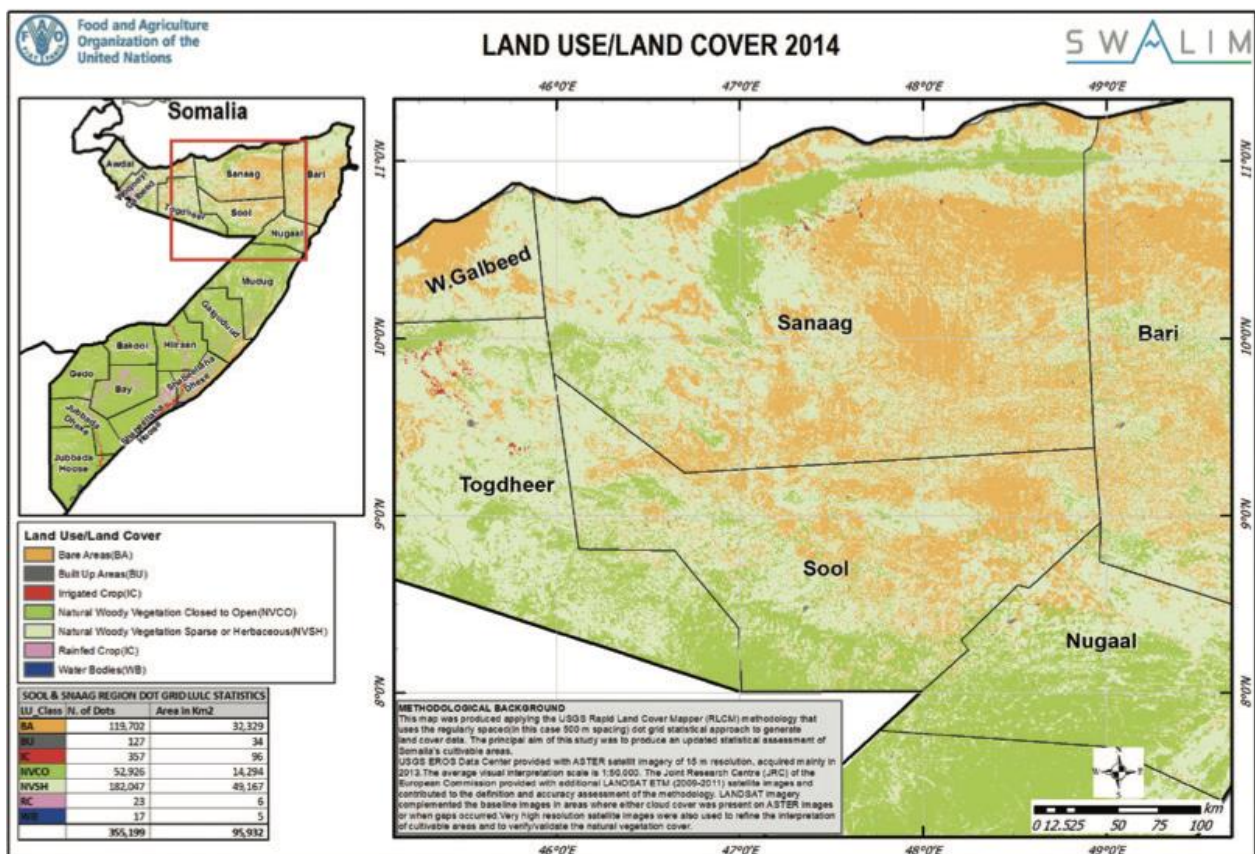


Figure 14 Land use/land cover map for Sool and Sanaag.

Source: FAO, 2021b.

Common types of fodder growing ranked according to specified attributes

Men and women were asked to name and rank fodder according to the following attributes – biomass productivity, palatability, milk yield and effect on body condition. Women were not able to classify fodder in this manner, but the men’s responses were used to aggregate the preference ranks to one. In terms of all

stated attributes combined, Garogaro appears to be the most suitable grass, followed by Doomaar, then Duremo, Gudoomaad and Dihi (Figure 15).

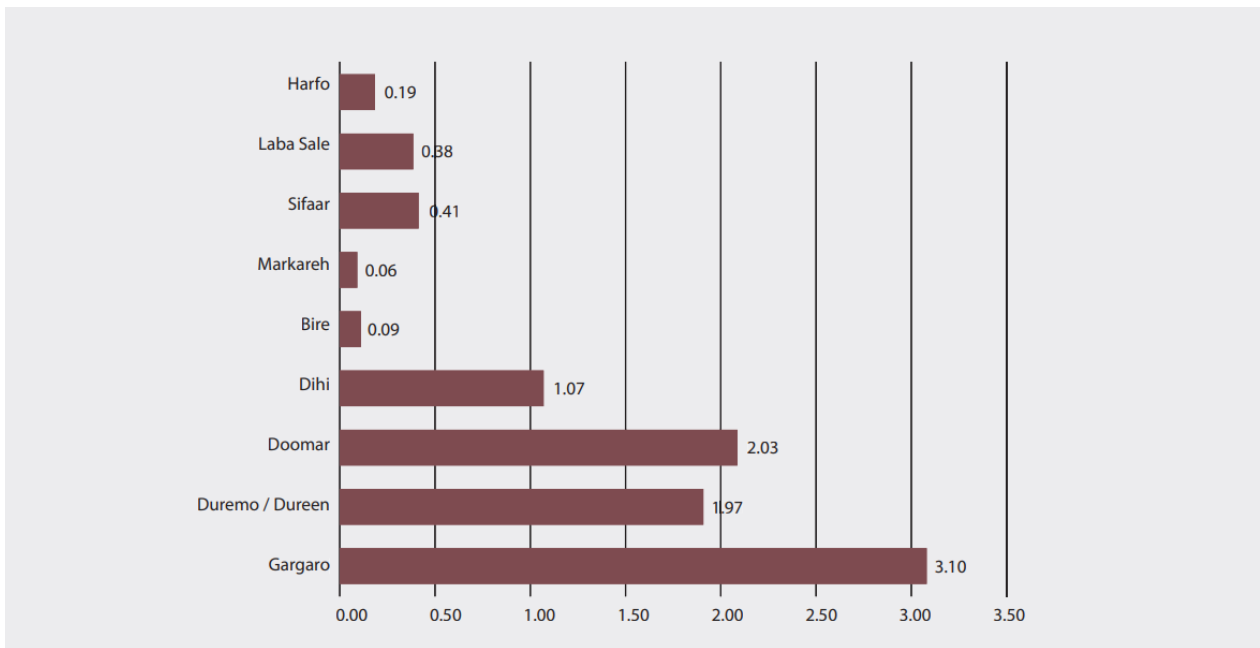


Figure 15 Most preferred fodder species by men.
Source: FAO, 2021b.

Most frequently stated fodder species

Most fodder species in Sool and Sanaag are not planted but sprout from remnants of the previous season. Most communities interviewed have not had fodder seeds to plant since the onset of the civil war in 1991. Grass fodder therefore just grows naturally. The most frequently stated, and hence best known, fodder species according to men and women are shown in Figure 16.

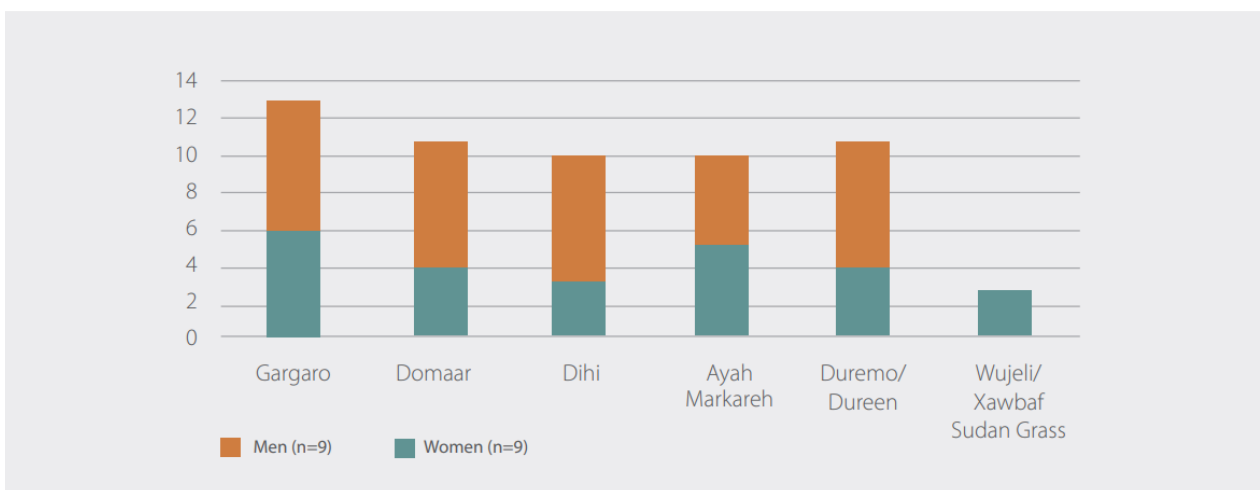


Figure 16 Most frequently stated fodder species by gender.
Source: FAO, 2021b.

Most suitable periods and modes for production of different fodder types

Rainfed unplanted grass was the form of fodder most frequently used by women and men. Men, more than women, reported planting and irrigating grass. Rainfed planted maize and sorghum were reported by men

only. Irrigated planted lucerne (alfalfa) was reported by one male focus group. One group of men and three groups of women stated that they did not grow fodder (Figure 17).

Fodder production was not associated with conflict. Fodder grew or regenerated best in the rainy season. Other than one group of women that planted Sudan grass, the rest of the groups of women interviewed did not plant grass but harvested whatever grass sprouted. This finding was revised at the validation workshop where some women stated that they planted grass fodder. Men indicated that the Gu rains (late March to June) were the most suitable and that rainfall availability was the greatest determinant of fodder suitability.

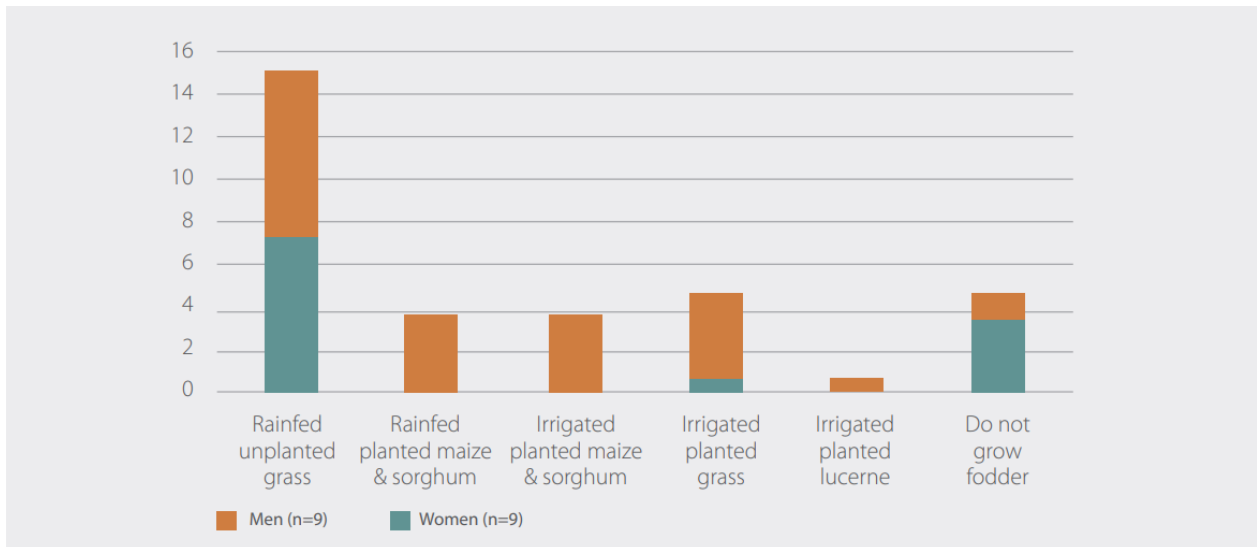


Figure 17 Stated modes of fodder production by gender
Source: FAO, 2021b.

Purpose for which fodder is produced

Fodder mostly grew as wild grasses that people harvested, except in rare cases when people planted fodder crops and grasses. The grasses are mainly used as fodder for own livestock or sold (Figure 18).

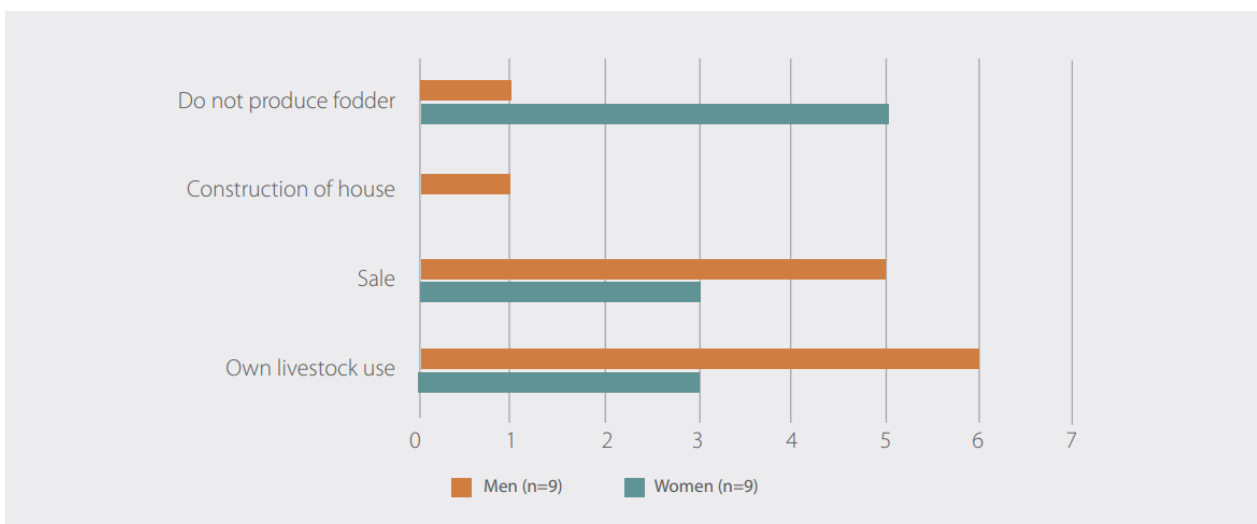


Figure 18 Purpose for which naturally growing grass is used by gender.
Source: FAO, 2021b.

Fodder species needing to be improved

Because only a few women produce fodder, women did not know which fodder species needed to be improved. Four groups of men stated that all fodder species needed to be improved. One men's group was pure pastoralist and their community did not preserve fodder. Dureemo (African couch grass) was mentioned by all four groups and Doomar (Bermuda grass), Garogaro (Water crown grass) and Dihi twice. So Dureemo might benefit the most from improvement, but it might be advisable for FNS-REPRO to get improved seeds, or initiate improvement of seeds, for all or most of the grasses mentioned (FAO, 2021b).

In response to the question on the presence of *Prosopis* spp., only one group of women (Daryare, >35) stated that *Prosopis* spp. grew along the river. They said that people in Laascaanood use the pods as fodder in the dry season. FNS-REPRO should conduct some action research on the preparation and marketing of *Prosopis* fodder blocks with women from Daryare (FAO, 2021b).

Use of crop residues as fodder

Five out of nine groups of women indicated that they use sorghum and maize crop residues for fodder. Older women from Wadaamagoo said that they use their own fodder during the rainy season but bought fodder from Burao in the dry season. Six out of nine groups of men stated that they used sorghum and maize stover as fodder. One group (Wadaamagoo) stated that they used sorghum, maize and cowpea residues as fodder (FAO, 2021b).

Food crop residues have the potential to feed the livestock of communities that grow food crops, like in Wadaamagoo. FNS-REPRO should investigate the benefits of these residues as fodder in addition to the human nutritional benefit they bring to determine the value of food crop residues and ways of enhancing their nutritional value (FAO, 2021b).

Inputs used for fodder production

Seven groups of women stated that they do not have or use any inputs. One group from Habari Heshay (>35) stated that they had faregeeto (machete) for cutting fodder. The other group from Daryare (>35) stated that they used water from wells to irrigate, sickles when available (currently unavailable), machete and seeds from the market. They do not have extension services (FAO, 2021b).

Three groups of men did not use any inputs. Men from Habari Heshay said that they purchased maize and sorghum seeds from Burco. Those from Caynabo relied on natural regeneration for grasses and selected seeds from harvested maize and sorghum. Other inputs used by men included water, fencing, cultivation labour, carrying labour, maize, sorghum and alfalfa seeds (and extension services occasionally hired by the NGOs, not farmers) (Wadaamagoo). They also stated that they rented tractors, bought seeds from shops, diverted rainwater and hired labour. Men from Habari Heshay said that they used sickles to harvest fodder. Rainwater is the main source of water throughout the villages in Erigabo, but some villages such as Dayaha, Kulmiye, Laanqiciye and Hamaas have streams and boreholes for irrigation (FAO, 2021b).

There appears to be a dearth of tools and limited extension services. FNS-REPRO should provide or support the provision of extension services through the formation of pastoral and agropastoral field schools that benefit men and women equally/equitably and facilitate the establishment of agro-dealer supply shops for the sustainable provision of inputs as well as extension and advisory services (FAO, 2021b).

3.1.1.2 Additional findings on fodder production in the project area

According to the Somaliland RIMA study (FAO, 2021a), "approximately 10% of the households in Sool and Sanaag relied on fodder production as a livelihood source in the last 12 months". Furthermore, "over 10% of households in Erigabo, Lasanod and Caynabo are engaged in fodder production (71% male-headed households and 29% are female-headed households)" (Figure 19). However, most of the households are not registered in fodder production groups/associations: only 5% of the households involved in fodder production belong to groups/associations, namely Illad fodder association and Buq agricultural organization. Other important fodder production aspects include:

- The main types of fodder crops that households grow include natural grass (73%), sorghum (59%) and maize (23%).

The households got their fodder seeds from multiple sources: 61% of the households purchased the seeds, 40% got seed stored from previous harvest and 11% borrowed from neighbours.

- Among the households growing fodder 9% reported to have received training by FNS-REPRO on land preparation, pest and disease control, and fertilizer application (adapted from FAO, 2021a).
- The three main challenges faced by households in fodder production are pests and diseases, limited availability of fodder inputs and inadequate water.

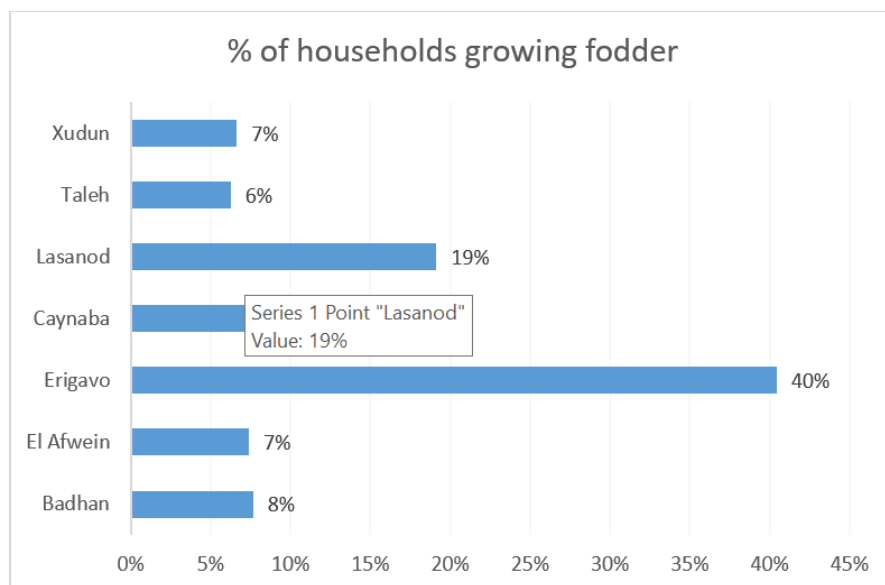


Figure 19 Fodder growing households by district.
Source: FAO, 2021a.

3.1.1.3 Situation and challenges in terms of fodder production

Reviews of various reports suggest that Somaliland suffer frequent fodder shortages (e.g. FAO, 2017). During the dry season, rangelands are often not able to sustain the large number of animals in Somaliland, hence the need for (commercial) fodder production. In this commercial value chain, cooperatives sell their fodder mainly to traders in Buraq, Berbera and Bosaso, as well as smaller quantities to individuals. However, fodder producers and cooperatives experience several challenges and constraints in production and marketing, including:

- **Storage issues:** "There is currently no storage capacity, and sometimes fodder gets wasted. Availability of storage will also make it possible to keep fodder when there is a surplus and then selling it during times when there is high demand (and high price)" (FAO, 2017: 30).
- **Lack of production and marketing skills:** "This includes training on harvesting, seeding and value addition" (FAO, 2017: 30).
- **Lack of knowledge on Propolis management:** "Using prosopis pods for animal feed is seen as a potential value addition and source of income, but capacity to process pods is very limited" (FAO, 2017: 30).
- **Market imperfections in terms of fodder prices exist that disfavor producers:** "the fodder producers seem not well connected to the high-end markets (export market ports) – compared to traders" (FAO, 2017).

Additional threats, risks and opportunities along the fodder value chain is provided in Appendix 2.

3.1.1.4 Livestock distribution and trade routes

Based on the FAO study, 'Water and fodder availability along livestock trade routes in the Horn of Africa' (FAO, 2017), it is revealed how livestock in Somaliland is traded through a network of markets and participants at different level of the value chain, including producers, traders, and brokers. While the focus is on the livestock value chain, the assumption is that these routes also serve as key routes for the transport and distribution of fodder.

The chain starts with primary markets located close to production areas where petty traders buy and sell animals to district markets. The secondary markets located close to regional capitals receive livestock from primary markets, trekked or trucked along trade routes, in which the key players are export traders. Such markets include Bossaso and Berbera which are terminal sea ports. Thus linking the markets are the livestock export trade routes (FAO, 2017). In the FAO study, the following livestock export routes were identified (and mapped) for Somaliland.

Berbera corridor

- Boroma - Gebiley - Hargeisa – Berbera
- Erigabo - Burao – Berbera

Bosaso corridor

- Galkayo - Garowe – Bossaso

Mogadishu Corridor

- Dolo - Baydhaba – Mogadishu
- El Barde - Hudur - Baydhaba - Mogadishu

See the next page (Figure 20) for the Somalia livestock export trade route map, which includes the major geographical distribution of the major clans.

Whilst there exists a significant amount of information on fodder production, the literature review found a lack of information and research on other stages of the fodder value chain, such as harvesting, processing, aggregation and distribution. For this reason, these issues will be further explored in the RFVCA (chapter 5) and Stories of Change (chapter 6).

3.2 Main actors in the fodder value chain

Key question: Who are the main actors at each point in the value chain?

The demand for fodder is high and growing. Fresh fodder is transported to neighbouring towns in Somaliland during the rainy season to be sold to dairy farmers and livestock owners. However, most of the fodder is dried up and sold to merchants who then sell it at the Berbera port, where 1.5 million animals transit each year on their way to Middle Eastern markets. Because of the increasing demand, countries like Saudi Arabia have outlawed domestic fodder production as a national water conservation measure (Musimba, et al., 2021).

The key players in the fodder value chain in Somaliland include (FAO, 2019a):

- Fodder producers (mainly smallholder farmers);
- Fodder transporters/traders;
- Livestock traders and end consumers.

However, “a poor policy and regulatory environment, as well as a lack of coordination between key value chain actors, and an absence of fodder marketing infrastructure and institutions are all seriously hindering the development of the FVC. The FVC has low or weak involvement of key value chain enablers such as government authorities, who should be playing a big role in creating conducive policy and regulatory environments that provide incentives for all other value chain actors” (Guthiga et al., 2015).

“Men and women of different ages participate in the fodder value chain, but a gender analysis of this value chain has not been conducted to establish if all gender and age categories of actors benefit equally or equitably from this participation” (FAO, 2021b).

“There are no formal linkages among producers, traders and consumers, including high-end fodder consumers at livestock export points of Berbera and Bosaso ports. Neither is there fodder marketing infrastructure or institutions/organizations working with the different actors in the value chain. The producers and traders largely operate at individual capacity. As such, no formal fodder producer and trader associations

or cooperatives exist to maximize economies of scale or enhance organizational capacities” (FAO, 2021). However, the Somaliland Livestock Policy (MoLFD, 2017) recognizes the importance of producer cooperatives and pastoral associations in providing several services such as: “extension, input supplies, credit mobilization, processing and marketing channels to support increased livestock production and productivity. These also facilitate adoption of new technologies.”

Table 1 provides an overview of primary and secondary actors in the fodder value chain.

Table 1 Actors in the fodder value chain

Actors		Level / Scale	
Primary actors	Names and roles	Local	National (export ports)
Local input suppliers (agrodealers/fodder seeds sellers and farm tools)	Agrodealers in Borama, Hargeisa, Burao	+	
Fodder producers (small-scale retailers)	Farmers in Awdal, Togdheer and Wog Galbeed Regions		
Informal local producer groups/cooperatives	E.g. Mandeeq cooperative in Burao District		+
Fodder traders (collectors) – small-scale retailers (bundles)	Men and women fodder traders in Awdal, Togdheer and Wog Galbeed Regions; includes Djibouti and Ethiopia border points		
Fodder traders (collectors) – bulk truck transportation	Fodder growers, private truck owners		+
Fodder consumers (retailers)	Livestock owners in Borama, Hargeisa and Burao towns		+
Fodder consumers (livestock quarantine export points)	Livestock owners/traders at quarantine centres – Berbera and Bosaso Ports, Djibouti and Ethiopia border points		+
Fodder consumers (peri-urban cattle and camel dairies)	Emerging dairy cattle and camel owners in peri-urban Borama, Hargeisa and Burao towns		
Secondary actors / enablers			
FAO and partners	Partners, such as PENHA	+	+
International organizations	Interpeace	+	+
Line ministries (MoLFD) – Limited extension/advisory services, includes fodder quality assurance inspection at quarantine points	MoLFD Somaliland	+	+
Local/national government authorities (fodder taxation)	Municipal authorities, local administration	+	+
NGOs, community-based organizations	APFS	+	+
Financial institutions/microfinancing (money transfer services to primary value chain actors such as ZAAD)	Dahabshil, ZAAD	+	+
Communication companies	Telesom, Somtel	+	+

Source: FAO, 2021b.

3.3 Distribution of profit and value along fodder value chain

Which stages of the value chain are most profitable for which actors? Where and to what degree is value added, or value lost, as fodder moves along the chain?

Distribution of profit

The multidisciplinary context and fodder value chain analysis in Sool and Sanaag (FAO, 2021b), provides insight into the distribution of profit amongst different actors along the fodder value chain. In particular, a rapid field assessment of the fodder value chain conducted by FAO teams in the Sool and Sanaag regions of Somaliland in 2019, indicated that:

- “Fodder producers receive an average of USD 250–500 as farmgate price for a 10-tonne truckload of fodder”.
- “Traders then sell a 10-tonne truckload for USD 900–1000 at the livestock export market in Berbera Port, with the higher price earned during the dry seasons” (FAO, 2019b).
- “In the commercial fodder growing areas of the Togdheer Region, prices for all types of fodder are between USD 100–150 per 10-tonne truck load at farm level and USD 200–250 per truck load at retail level, which increase to USD 300–450 per 10-tonne truck load during dry seasons” (FAO, 2019a).

The above evidence indicates that traders receive much more profit than fodder producers. This is because the traders control the market price and thus, dominate the fodder value chain. This structure causing this market domination and unequal distribution of value, is largely due to the control of market information and prices by traders. This is further explained here: “Even after accounting for transportation costs, the price differentials show that traders tend to overexploit the producers as they seem to determine the prices. The producers’ poor access to market information and the traders’ apparent unwillingness to share this information with producers could explain this price disparity. It is also not clear from the current value chain arrangements what share of benefits accrue to women fodder growers and traders” (FAO, 2021b).

Cost of fodder production

In addition to looking at how the profits are distributed along the value chain between different actors, it is also necessary to look at cost of fodder production to get the full picture. However, “It was extremely difficult to obtain the cost of production probably because fodder producers and traders do not really cost production or value addition” (FAO, 2021b).

“The following table (Table 2) constructed during the validation workshop demonstrates the incoherence with which data on activities and their costs were presented. In sum, nobody knew the actual costs and benefits of the fodder value chain. These findings suggest that fodder producers need to be trained in good agronomic, management and record-keeping practices” (FAO, 2021b).

Table 2 Cost of fodder production.

Input required	Kg required per hectare of land	Cost in USD per kg of fodder	Total cost (USD)
Sudan grass seeds	1	20 (special price during 2016 drought)	20
Sorghum	8	0.5	4
Maize	9	0.8	7.2
Lucerne/alfalfa	2	30	60

Source: FAO, 2021b.

Cost of fodder processing

Like in the case of production costs, the costs of value addition stated during data collection were too varied and either too high or too low. See also Table 3.

Table 3 Cost of processing fodder (value addition).

Process	Cost (USD) per unit (tonne/kg/bale)
Cutting and baling	(About 15–20 kg bale or bundle) – grass is cut when completely dry. USD 150 per 6-tonne truck (takes 135 bales at about USD 1.1 per bale).
Loading	Loading is done at the same time as cutting/baling. Labour cost for loading: <ul style="list-style-type: none"> • USD 40 for 6-tonne truck (135 bales); • USD 60 for 8-tonne truck (203 bales); and USD 80 for 24-tonne truck (270 bales).
Transportation	The data collected from the Wadaamagoo participants: 6-tonne truck (takes 135 bales at about USD 1.1 per bale transported at USD 150 over 280 km – Wadaamagoo to Berbera Port). 8-tonne truck (takes 203 bales at about USD 1.08 per bale transported at USD 220 over 280 km). 24-tonne truck (takes 270 bales at about USD 1.1 per bale transported at USD 300 over 280 km).
Sale price	About 10 kg bag – USD 15 per bag. 6-tonne truck (takes 135 bales – sold for about USD 400 at Livestock Ground holding market at Berbera Port @ USD 2.96) 8-tonne truck (takes 203 bales – sold for USD 600 at Berbera port market @ USD 2.96) 24-tonne truck (takes 270 bales – sold for USD 800 at Berbera port market @ USD 2.96) Tax 6T @ USD 20\$=@ USD 0.145 per bale); 8T @ USD 40=@ USD 0.295 per bale; 24T @ USD 60 = @ USD 0.296 per bale).

Source: FAO, 2021b.

Benefit of trading in fodder

There are also indications that traders make a loss or that they don't want to disclose all data. "The calculations show that the traders are making USD 0.247–0.316 per bale of hay sold at Berbera, which translates to USD 40, 57 and 63 per 6-, 8- and 24-ton truck, which is a loss (Table 4). The results suggest that the traders had not documented their costs and were overestimating them or operating at a loss. It is also possible that those who traded as a business did not want to disclose the values. These findings call for training in business planning and financial record keeping" (FAO, 2021b).

However, despite the profit disparity amongst value chain actors, the future demand for fodder and expansion of the fodder value chain in Somaliland looks promising largely due to the increase in live animal exports as well as proliferation of dairy farms. As stated by the Ministry of National Planning and Development (MoNPD, 2017):

- "The demand for fodder in Somalia, especially along livestock-marketing routes, is substantial and will continue to increase as live animal exports grow and extreme weather events become more frequent. Part of the feed to meet the extra demand is sourced from Ethiopia, especially during Hajj periods when large numbers of animals are held at the quarantine centres prior to exportation. The demand for fodder is likely to grow in the years ahead as the number of livestock exported increases following improvements in the quarantine facilities" (MoNPD, 2017).
- "The demand will also grow with the increased proliferation of dairy farms in peri-urban and urban areas that have become new niche markets for fodder. A solid understanding of the entire fodder value chain in Somaliland is required to inform the appropriate interventions required, not only to boost fodder turnover sales and create a win-win situation among actors but also to make fodder marketing competitive" (MoNPD, 2017).
- However, the current and worsening drought situation in 2022 will likely disrupt the above-mentioned progress and severely affect the entire FVC in Somaliland. As the most recent IPC data indicates: "Drought has led to widespread crop failure and livestock deaths, depriving millions of people their sources of livelihood. The increasing dependency on food imports in the context of high global food prices will also make food inaccessible for many households" (IPC, 2022). As a result, the demand for fodder is likely continue to decrease due to loss of livestock, as a result of five consecutive droughts in Somaliland.

Table 4 Benefit of trading in fodder.

Truck size	6 tonnes (cost per bale)	8 tonnes (cost per bale)	24 tonnes (cost per bale)
Number of bales/truck (15–20 kg bales)	135	203	270
Cost of cutting and baling (USD)	150 (1.1)	Not given (guesstimate) 223 (1.1)	Not given (guesstimate) 297 (1.1)
Cost of loading (USD)	40 (0.296)	60 (0.296)	80 (0.296)
Cost of transportation from Wadaamagoo to Berbera Port – 280 km	150 (1.1)	220 (1.08)	300 (1.1)
Tax	20 (0.15)	40 (0.198)	60 (0.22)
Total cost less unknown production cost	360 (2.646)	543 (2.674)	737 (2.716)
Sale price	400 (2.962)	600 (2.955)	800 (2.963)
Profit (excluding cost price)	40 (0.316)	57 (0.281)	63 (0.247)

Source: adapted from FAO, 2021b.

3.4 Key challenges and bottlenecks along the fodder value chain

What are key bottlenecks along the fodder VC?

A fodder value chain faces numerous challenges. The International Labour Organization (ILO) conducted a conflict analysis of the fodder value chain in the Togdheer region of Somaliland. The report highlights numerous challenges, which are also apparent in Sool and Sanaag:

"A major challenge in the fodder value chain is the overall shortage of fodder, affecting all the actors and processes in the value chain. At production level, fodder production is affected by the unpredictable changes in weather pattern and soil erosion, combined with poor land tenure. Farmers lack skills and training on farming practices and management, including fodder production, harvesting, preservation and storage and value addition at farm levels. Access to inputs is also a challenge as farmers lack finances and capital to invest in commercial fodder production. Lack of storage facilities was consistently cited as a challenge. Limited storage capabilities leads to losses through rain and too much dust in the fodder, with the added challenge that fodder dealers have limited skills or techniques in fodder handling" (ILO, 2017:10).

The multidisciplinary context and fodder value chain analysis in Sool and Sanaag (FAO, 2021b), also highlights a myriad of challenges and bottlenecks present within the fodder value chain. This is supported by various other literature and sources below.

Climate change and poor natural resource and rangeland management

The pastoral system, in which the bulk of animals are marketed, solely depends on natural rangeland pasture and browse trees forage and is therefore highly susceptible to climatic shocks such as droughts and floods. According to the Somaliland Livestock Policy (2006–2016), common challenges to fodder and livestock production include:

- "Scarcity of pastures and fodder, rangeland degradation due to climate change and human-induced activities;
- Animal health problems, disease burdens, limited animal health services;
- Shortage of pasture and water, and improper use of land and surface water."

"Because of these challenges, livestock production is characterized by poor productivity performance and low income derived by pastoralists. This leads to low quality of life for pastoralists, an increase in poverty and consequently increased migration to urban centres with limited employment opportunities (FAO, 2021b)"

The report of the multidisciplinary context and fodder value chain analysis in Sool and Sanaag (FAO, 2021b), further confirms the challenge of poor natural rangeland grasses and agriculture crop residues as being a

major constraint to the development of the industry in Somaliland. "Livestock largely depend on extensive rangeland pasture grasses, browse tree forage for most parts of the year and agricultural crop residues derived from maize, sorghum, beans and sesame during the periods after crop harvests. The poor quality and quantity of both the natural rangeland grasses and agricultural crop residues are the greatest constraints to improving the productivity of the livestock sector in sub-Saharan Africa as well as in Somaliland" (Winrock International, 1992).

Overgrazing and deforestation and unregulated grazing and animal mobility

Grazing resources are dwindling. "A myriad of factors has resulted in the dwindling of grazing resources in Somaliland. These include overgrazing, rapid degradation of forest cover due to charcoal production, unregulated grazing and animal mobility due to a breakdown of customary and state institutions, as well as vague tenures or resource ownership and illegal land encroachment of former grazing areas" (MoNPD, 2017).

Lack of reliable feed markets and lack of access to markets

In addition to poor natural resource and rangeland management, there is also a lack of reliable feed markets and a lack of direct access to markets: "There are no systematic ways of managing the rangeland for improved forage production and only a few (or no) feed markets to supply concentrate feeds to bridge the nutrient gaps when natural pastures are inadequate. Fodder conservation to mitigate dry season feed shortage is hardly practiced" (FAO, 2021b).

Low farm-gate prices as pastoralists lack access to markets

"Pastoralists normally get lower prices for their products as they cannot access markets directly and require intermediaries to sell their produce. Furthermore, a few firms dominate (monopoly and cartels) the livestock export sector, which leads to a reduction in the price that pastoralists get from the sale of their livestock" (FAO, 2021b).

Unavailability of seeds, naturally growing pastures and low nutritional value

"The capacity of producers to enhance fodder production to make the fodder trade competitive is limited due to the unavailability of seeds. Many producers relying on naturally growing pastures as the source of fodder depend on the natural regeneration of pastures at the onset of rains (FAO, 2019a). "The bulk of fodder is sold on an "as is" basis mainly in semi-dried form and is cut while at advanced stages of maturity, which implies it is generally of low nutritional value" (FAO, 2019a).

Lack of storage facilities causing poor quality fodder and post-harvest losses

"Stacking the fodder – either harvested grass or crop residues – in the open fields before marketing is a common practice due to limited options for controlling post-harvest losses. The practice results in mould formation on the fodder, making it prone to accumulation of aflatoxins (toxic compounds produced by moulds that are harmful to animals when consumed in large quantities). Animals fed with contaminated fodder could also impart the toxins to humans through their milk" (FAO, 2019a).

"There are generally poor perceptions of the quality of fodder produced. A recent field assessment showed that some fodder traders operating at the quarantine centres prefer fodder that is not contaminated with mould" (FAO, 2019b). Lack of fodder bulking facilities does not allow farmers to store fodder for marketing when prices are more favourable, which normally coincides with the drought period" (FAO, 2019a).

Lack of skills and knowledge around fodder production and processing

"Producers also lack the necessary skills and knowledge to improve fodder production and processing, especially of crop residues, to enhance market access. Due to weak and ineffective government ministries and a poor enabling environment for private sector development, limited technical information and advice about production techniques or any aspect of value chains are available to producers" (FAO, 2019b).

Women excluded from training

"This particularly disadvantages women as they play a key role in the production and marketing of fodder in Somaliland" (FAO, 2019a). Although they are engaged in day-to-day farm work, including fodder production, women in Somaliland are traditionally excluded from social activities, including training. Special efforts to involve women in the training should provide significant benefits" (FAO, 2021b).

Lack of livestock extension services and unsustainable donor-funded training

"The available livestock extension technical personnel are too few to meet the demand by producers for technical training. Besides being under-capacitated, they have limited knowledge and skills to train producers in best agricultural (livestock) practices, including fodder production and how to facilitate the formation of public-private sector linkages in the fodder value chain. The limited training of producers during the implementation of donor-funded projects is not sustained, as no mechanisms to ensure this knowledge is embedded within the community have been put in place" (FAO, 2021).

Lack of private sector investment in fodder infrastructure and services

"There are no mutually supportive investments from the private sector to provide extension and financial services to fodder producers, develop infrastructure such as fodder stores and fodder-irrigation water-harvesting structures or rehabilitate rural access roads" (FAO, 2019a).

No regulatory framework in place to govern the fodder value chain

"The government does not have a framework to regulate the fodder trade domestically within border points and animal quarantine and holding centres, which would provide a level playing ground among all fodder value chain actors" (FAO, 2021b).

No system in place to share market information on fodder prices and trends

Similarly, there is "no system in the fodder value chain for sharing market knowledge and intelligence, especially on fodder market prices and trends to allow value chain actors such as producers and traders to make informed choices and decisions" (FAO, 2019a).

3.4.1 Fodder harvesting and production challenges

The Somaliland RIMA study (FAO, 2021a), identified the main challenges faced by households in fodder production as follows:

1. Pests and plant diseases (50%)
2. Low availability of fodder inputs (39%)
3. Inadequate water (32%)
4. Low access to technical assistance services (26%)
5. Lack of market for fodder (25%)

3.4.2 The dynamics of fodder in relation to other natural resource challenges – increasing pressure on and conflict over natural resources

A study led by the International Livestock Research Institute (ILRI), titled, 'The dynamics of natural resources in Somaliland – Implications for livestock production' (Pfeifer et al., 2018) provides some noteworthy findings concerning the dynamics of fodder production in relation to the management and control of other natural resources in Somaliland. It points to the importance of lack of access to in particular water but also land and other natural resources, due to climate change, population growth and urbanization. This increases the likelihood of conflict over natural resources between pastoralists and settlers. Key findings of the study include:

- "The study showed that increasingly there are multiple claims on natural resources and land in Somaliland and that these competing claims are being exacerbated by climate stress, in conjunction with other factors such as population growth and urbanization."
- "Water points and water access are at the centre of these claims. However, these water points and the surrounding areas are increasingly settled, and often enclosed, by pastoralists who have lost their animals."
- "Settlers have also established enclosures for production of crops and fodder. This effectively blocks the transhumance routes and herders' access to the water vital to their livelihoods, damaging livestock production and herders' adaptive capacity. This is exacerbated by the practice of harvesting trees around the settlements to make charcoal, which further degrades community pastures. As such, there is increasing likelihood of conflict between pastoralists and settlers".

Appendix 1 provides a more detailed insight into the dynamics between livestock feed, grass, fodder and crop residues.

4 Key findings from the rapid fodder value chain assessments

Another key information source for the 2022 evidence-based and adaptive programming cycle was a Rapid Fodder Value Chain Assessment (RFVCA) that was undertaken in May 2022 in Sanaag region of Somaliland. This was commissioned by WUR and undertaken by its partner Sanaag University, based in Erigabo in Sanaag region. The assessment targeted two villages in the regions in which FNS-REPRO has been operational: Booca and Dagaar villages in Sanaag. The rapid fodder value chain assessment was designed by WUR in collaboration with the WUR Learning Agenda Focal Points (LAFPs), who undertook the assessments with the assistance of technical staff from the partner Sanaag University.

The objective of the RFVCA was to assess the existing fodder value chain before the FNS-REPRO interventions, identifying the existing actors and other influencing factors, the existing gaps, how the FNS-REPRO intervention has changed the value chain over time, and what services have been provided by FNS-REPRO and other actors in the chain.

The below RFVCA for Booca and Dagaar villages in Sanaag were undertaken during the period of May 15-19, 2022. These villages are targeted by FNS-REPRO in terms of Natural Resource Management (Output one - *Improved Inclusive access and management of local natural grazing rangeland resources*) and fodder value chain development (Output two - *Improved livelihood and income opportunities along the fodder value chain in Sanaag region*).

Scope of the study

- Mapping of the existing Fodder Value chain in the region (Sanaag);
- Analysing the fodder value chain operating within the sub-sector in terms of:
 1. Pre-production;
 2. Production;
 3. Harvesting and post-harvesting;
 4. Market channels (demand and supply analysis);
 5. Enabling environment.

Data collection was mainly qualitative, using focus group discussions (FGD) and one-on-one interviews, making use of structured and semi-structured questions. The RFVCA focused on identifying changes which have taken place along the fodder value chain as a result of FNS-REPRO interventions, and other influencing factors and actors since the interventions started in early 2020. It also focused on mapping the related services and influencing factors along the value chain since early 2020.

4.1 Key findings in relation to the fodder value chain in Booca and Dagaar villages in Sanaag

The table in Appendix 4 provides the summary of responses from the FNS-REPRO beneficiaries, fodder producers, traders, input suppliers and government staffs from Booca and Dagaar Villages in Sanaag region. In particular, the table presents a summary of the responses received by FGD participants on changes along the FVC from early 2020 until May 2022. The table also summarizes the mapping exercise of the FVC since the FNS-REPRO interventions started (early 2020). The responses are based on FGDs and KIIs. The trends of the changes were mapped, though the changes in FNS-REPRO were accumulated over years and so it was condensed in the final year. In addition, gaps before FNS-REPRO interventions and the gaps after FNS-REPRO interventions are identified in the first year and the final year respectively. Below you can find the description for each of the phases in the fodder value chain, in terms of situation, gaps and challenges and changes since FNS-REPRO interventions.

4.1.1 Pre-production

Situation in early 2020 – prior to FNS-REPRO interventions (pre-production)

During the FGD, the respondents of both villages (Booca and Dagaar) were asked the following question randomly: *How was the fodder preproduction⁷ in terms of input (Agri- inputs and Agri- Finance) before 2020 prior of FNS-REPRO?*

The respondents of Booca and Dagaar villages overwhelmingly answered that there were some inputs from fodder producers in terms of pre-production prior to FNS-REPRO interventions. Those inputs included, for example, tractors which the producers used to rent for land preparation. The cost of the tractor was 15 USD per hour. They also hired labour for cultivation or they cultivated the plot by themselves. For this particular input, female respondents stated that the land preparation was not an easy task for female producers so they used to hire a male labourer for cultivating, or they had to seek other ways for acquiring manual labour (for example, the family youth members or from relatives if possible). Other inputs included fencing the land plot using a simple wooden fence (Ood in Somali) which prevents the animals (such as wild horses) from grazing the fodder. The male respondents stated that horses are the main threat to grazing the fodder during night time.

On the other hand, there was no known fodder seed being used as an input, the only seed available was the natural seed from the grass residues, especially the well-known fodder (Doomaar). Nearly half of the respondents mentioned that the other seed available was the sorghum and maize seed varieties which were readily available in the market.

In relation to irrigation, the majority of the respondents from Booca and Dagaar villages stated that the main water source was rain water and that producers should align the time of the cultivation with the rainfall season (Gu'). A few respondents in Booca village answered that the other water sources, such as boreholes and wells, were accessible and used for fodder production. The main types of fodder being grown are sorghum, maize and Doomaar Grass. However, the Dureemo grass mainly grows widely as a wild grass and as such, is not suitable in both villages.

The only available fertilizer was the animal manure. The majority of the respondents mentioned that this kind of input was practical among the fodder producers, although it was expressed that producers have no knowledge or skills of using organic fertilizers and as a result, were unable to maximize yields, and unable to avoid the associated health risks.

The fodder producers also stated that there was not any kind of agri-finance or direct investment in fodder producers to maximize fodder production in the respective villages.

The existing gaps prior to FNS-REPRO interventions in terms of pre-production:

- Land preparation equipment and cost – (tractor and cultivation cost);
- Seed viability;
- Irrigation;
- Lack of knowledge and skills on GAP;
- Low women participation;
- Poor market linkages;
- Limited awareness and mobilization.

What has changed after 2020 and during the initial stages of FNS-REPRO, and later on in 2020 in terms of pre-production?

- Enhanced awareness and mobilization (increased awareness engagement in the community and their willingness to produce fodder);
- Fodder stakeholders interaction enhanced;
- Enhanced awareness and willingness to produce fodder;
- Groups were formed (initial aggregation of the community);
- Women inclusion enhanced (in FGD women respondents stated that their participation and inclusion in the groups were satisfied).

⁷ Preproduction includes land preparation, seed, irrigation, residents' willingness and engagement and so forth.

What has changed in the mid and late stages of the project (2021) in terms of pre-production?

- Continued enhancement and awareness amongst the community;
- Enhanced willingness and readiness of the community to produce fodder;
- Cooperatives formed (there are four groups in each village) three fodder producers and one for marketing;
- Women inclusion enhanced (female fodder producers engaged);
- Adequate trainings on GAP, fodder production, harvesting, and storage;
- Adequate training and real-life practice in land preparation (demo farm established);
- Quality preserved through proper harvesting technique and storage;
- Inputs pledged (the fodder chopper machines) are not yet in the target villages, though the assigned persons undertook the training;
- Increased land allocation for fodder production for each household.

What has changed in 2022 in terms of pre-production?

The respondents stated in both villages that the following changes have been observed in 2022:

- The greatest change is the 'mindset change', the respondents answered that the communities' awareness and readiness for production has been enhanced;
- Capacity building/trainings about GAP were provided (knowledge and skills are enhanced);
- Free tractors were provided (140 minutes for each house hold in 120 HHs in Booca and Dagaar);
- Seed for fodder was provided;
- Fodder chopper machines were provided in some villages, but not yet provided in Booca and Dagaar.

GAPS which still exist:

- Irrigation system is not adequate. Rain is the main determining factor for fodder production;
- Seed - it is very difficult for the fodder producers to accept a new seed variety - or any unknown seed from the NGOs. There is a concern amongst producers that the seeds will cause damage in the environment – so the issue of introducing new seeds is always a contentious issue in the field;
- Some inputs are not provided yet (sickles, sisal twine, shovels, hay forks, safety hand gloves, scissors, and plastic bags).

4.1.2 Fodder production

Production before FNS-REPRO interventions (2020, Booca and Dagaar Villages)

How was production before FNS-REPRO interventions?

The respondents in both villages (Booca and Dagaar) stated that the production of the fodder was not substantial, justifying their answer that the fodder production was mainly dependent on the rainfall. So production decreased due to decreased rainfall. The other reason why the production decreased was that the involved number of people for fodder production was very limited. Also, female and youth participation was inadequate. The respondents stated that the main type of fodder production for livestock consumption or trade included three types: Gargaro, Doomaar, and Dureemo.

In relation to the purpose of fodder production, during FGD's the two group's respondents from the Booca village stated that the purpose of the production was mainly for local livestock consumption and trade.

In Booca village the respondents were asked about the enabling factors to assist them trade the fodder. The two groups stated that the village and the surroundings were initially allocated for agricultural production. The land is planned and distributed by the government evenly so that each household has a minimum of 200x200 meters of land.

The households in Booca village have few livestock heads. Consequently, the local consumption of fodder is less and there is a surplus for trade, unlike the other village of Dagaar, where households have a large number of livestock and for this reason, local fodder consumption is high and there exists a limited supply of fodder for trade.

The other reason why fodder production / yield was low before FNS-REPRO interventions was that the input was inadequate in terms of land preparation, mobilization/awareness of knowledge & skills, and limited seed.

Furthermore, the major community producers were unable to cover the cost of inputs, as the agri-finance was non-existent.

Summarized the main causes why the fodder production was not substantial:

- The fodder production was mainly depending on the rain fall - so the production varied in line with climate change.
- Not the whole community was involved in producing fodder.
- The inputs were inadequate and not readily available.
- The land preparation cost, e.g., rented tractors, or hiring labour for cultivation was a challenge.
- The most common type of fodder grass (Doomaar) was neglected widely and no inputs were allocated for it to grow properly.
- The main purpose for fodder production in the Booca village was to sell the fodder (trade), because this village has a smaller number of livestock. The households have a very limited number of livestock (just few cattle for dairy production), so the fodder surplus is for trade.
- In Dagaar village fodder trade was not very common. The community was agropastoral with a large number of animals, so the fodder was mainly grazed by the local livestock and the remaining might perish due to negligence, overgrazing, and animal movement.

The existing challenges prior to FNS-REPRO interventions:

- Diminished rainfall;
- Recurrent droughts;
- Locusts;
- Lack of knowledge and skill;
- High cost of inputs (rented tractors, labor, water).

What has changed in terms of production since FNS-REPRO interventions?

The village respondents of the two villages identified that the fodder production is very low, due to decreased rainfall and recurrent drought in the last three years.

Gaps that FNS-REPRO interventions filled are the following in terms of production /pre-production:

- Awareness and mobilization are enhanced;
- The fodder producer groups are formed (female fodder producer groups are formed and strengthened);
- The cost of land preparation is covered (free use of tractors were provided for three hours in each village) (16,800 hrs.- for 120 HHs) for Booca and all other target villages (10 villages);
- Trainings and capacity building workshops are held on fodder production, harvesting, and storage (GAPs developed);
- Demo farms for fodder production are allocated.

4.1.3 Post-harvest situation

How was the post-harvest value creation before FNS-REPRO interventions?

In the FGD the two villages' respondents answered that the harvesting method was either using hands, knives, and Majo (sickles). This resulted in a large reduction of fodder during harvesting, so the producers had to hire or engage a significant number of people to harvest at once. The production was directly proportional to labour, equipment used, hours spent, motivation and reward. The producers mentioned that sometimes, the fodder producer was not willing to harvest if he/she was troubled by the prior harvesting period, due to loss, or undesired output.

After harvesting the fodder was aggregated by hand, and the producers left the fodder in the harvesting site in the water streamlines where the fodder favourably was growing. This practice has increased the risk of the flood to wash away the fodder. For this reason, the producers must obtain a car or a donkey cart for fodder aggregation and place it a safe place (they either build a wooden bed or store the fodder in a higher location).

There was no fodder value added after harvesting, rather than that the fodder was exposed to pesticides, wind, rain, and sun which devalue the fodder. The two village respondents stated that the colour of the fodder changes within days after harvesting and that this disappoints them if there is no ready market available after harvesting, or a proper storage facility to store the fodder over a longer period of time. The other risk after harvesting is fire. Some of the fodder types are at high risk of catching fire (Doomaar).

Existing challenges in terms of post-harvest value creation prior to FNS-REPRO interventions

- Human diseases (fungi diseases) - hand gloves are needed;
- Lack of storage;
- Poor skills on how to effectively harvest fodder;
- Lack of equipment for harvesting;
- Risk of fire.

What has changed in terms of post-harvest value creation after 2020 and after FNS-REPRO interventions?

The changes were accumulated from the onset of FNS-REPRO between 2020 and 2022. There is no significant change on the ground. The respondents answered that there is no harvesting due to drought and absence of fodder production, so the post harvesting situation after FNS-REPRO can't be assessed as required due to absence of this activity among the community. The changes that the fodder producers stated is that they have gained knowledge and skills on fodder harvesting, processing, aggregation, quality preservation, and storage. During the FGD the respondents stated that there are no inputs received in terms of harvesting equipment. A number of male respondents stated that they receive the chopper machines and have been trained on how to operate the chopper machine, but these are not yet delivered to the villages, and no other inputs have been received, such as silage bags, hay bailing, forks, hand gloves.

What are the missing elements?

- Hand gloves to reduce human diseases;
- Harvesting equipment not yet received;
- Chopper machines not yet received in the village of (Booca, and Dagaar);
- Skills and knowledge are enhanced but not practiced in the field.

4.1.4 Fodder market

Situation of the fodder market in 2020 prior to FNS-REPRO interventions

Both the villages (Booca and Dagaar) answered that the market for fodder was very poor. Prior to FNS-REPRO the village fodder producers were disoriented, the volume of fodder production varied regarding the producer's input and affordability of inputs. For that reason, the market was dominated by just a few fodder producers who were capable of producing a large amount of fodder. So the conditions for the other fodder producers were not adequate in terms of income, motivation and yield. The main challenges were: transportation, decision making on pricing, lack of cooperation, inclusion of all people in fodder production and market availability. The linkage of fodder producers in the market was also weak - the only facilitation they had was that the middle-men could inform them where to sell and at what price.

The existing situation of fodder markets before FNS-REPRO interventions

- Livestock quarantine areas (that is predominantly the two port cities Berbera and Bossaso);
- The neighbouring villages where there is a market (this can only happen during the dry season);
- Feed of the dairy animal in the cities, e.g., Erigavo;
- The fodder producers sell the load of the fodder grass at a price of 400-500 USD per medium sized truck;
- The price varies, depending on the drought, and seasonal opportunities such as festivals;
- Seasonal opportunities exist: during the pilgrimage the livestock export increases so the fodder market enhances;
- There was no value added to the fodder after harvesting.

What has changed after FNS-REPRO interventions?

The respondents of both villages stated that the market linkages are not yet sufficient though the fodder demand exists throughout the year and reaches its peak during the festivals, e.g. Hajj/ pilgrimage season. Market demand and supply is sporadic as it depends on the season and level of production.

Few of the formed cooperative members (in the fodder trade group)⁸ mentioned that they had not yet received the training/ workshops about market knowledge, market techniques and that they were feeling there exists a gap in capacity building in terms of market access. The significant changes which have occurred and indirectly affect the market, include:

- Cooperatives formed (three fodder producers and one trader group);
- Awareness and mobilization for fodder production as income generation is enhanced;
- Some of the inputs were received, this will add value to fodder production and the market as well.

The existing fodder markets after FNS-REPRO interventions:

- Domestic market: neighbouring villages have an increased fodder demand during the drought period;
- Domestic market (livestock quarantine sites): the producers have difficulties in fodder aggregation, transportation, and quality preservation, also there is a lack of fodder bags and labour.

The existing gaps related to fodder markets after the FNS-REPRO interventions:

- Conflicts;
- No training yet provided for the trader group in the existing cooperatives;
- Market linkage still poor as no connections are being made;
- Transportation (time, cost, and vicinity);
- Market expansion not yet developed;
- Fodder aggregation - no inputs (e.g., fodder bags) received yet;
- Income generation from fodder does not exist or is low;
- The transportation facility and fodder distribution is very poor. There is no designated market for fodder and there are no intermediaries between the producer and the seller.

4.1.5 The enabling environment

The two villages have an enabling environment for fodder production due to the availability of land for production, a willingness by the community to learn and make use of the inputs, the availability of manpower, and a large number of male and female youth who are enthusiastic and ready to work in fodder production activities. The ability of the community to resolve conflicts and their willingness to work with other institutions and actors engaged in fodder production is also promising for the development of the fodder value chain.

Since the onset of FNS-REPRO, the communities in the two villages have experienced a significant change in their mindset and behavioural changes towards environmental issues, including rangeland management and fodder production. The following factors have contributed to this enabling environment:

- Appropriate land
- Equipment
- Investment
- Knowledge
- Conflict resolution Committees
- Trainings
- Manpower
- Seeds
- Rain/water
- Storage facilities (warehouses completed)
- Consumers trends
- Tax / tariff – The fodder tax is actively practiced by the government though it was abandoned in 2017, but it is still collected by the government (the draft-article/law of the fodder tax is under process).

⁸ The formed cooperatives are divided into two groups: The producer groups and trade groups.

4.2 Key findings on mapping the fodder value chain

The table in Appendix 5 presents the summary responses from the FNS-REPRO beneficiaries, fodder producers, fodder traders, input suppliers, and Government staff from Booca and Dagaar Village in Sanaag region. This table looks at the key interventions and services provided by FNS-REPRO and how each of these are influencing the fodder value chain in Booca and Dagaar villages.

It highlights the key interventions by FNS-REPRO during different phases of the fodder value chain. Many activities centre around capacity development, such as GAP, and for example through demonstration farms. Furthermore cooperatives were formed, including women cooperatives, as well as savings groups were organised. Tractors were provided free of charge, storage facilities were being constructed, and chopper machines were said to be delivered for processing. Limited attention has been given to trader groups.

Few services were provided by other actors, such as the government, seed suppliers, local NGOs (training) and Sanaag University (training).

Key external factors that influenced the fodder value chain included: drought; locust; lack of knowledge and skills (and related lack of extension services); lack of seed; lack of irrigation; labour; conflict; competition; (lack of) investment.

FGD's were held with fodder producer groups, government officials, and fodder traders in Dagaar and Booca villages, located in Sanaag region of Somaliland.



Figure 20 RFVCA in Dagaar village, Sanaag region.

5 Key findings from the stories of change

The stories of change generated qualitative information in relation to the effects of FNS-REPRO in its target areas. Below are the key findings of the Stories of Change obtained from Booca, Dagaar and Tuurka villages, located in the Sanaag region of Somaliland which were carried out in May, 2022. The following narrations are the notes taken during the interviews. The respondents' answers were similar in many angles, so similar stories were omitted. This chapter presents the stories of change from different groups (fodder producers, NRM) formed by FNS-REPRO, and also includes the key findings that emerged from the stories of change, disaggregated into either Booca, Tuurka or Dagaar Villages.

5.1 Stories of change

Mohamud Ali Awed

Gender: Male
Age: 42
Village: Dagaar
House hold: 7
Duty: Fodder producer group

How have the groups developed and what changes have you experienced?

"Am a father of 8 children whose livelihood depends on mostly cattle keeping and agriculture. Before the intervention we used to migrate to other places in search for pasture and water but now we have hope that everything will be available in our area since we have gained knowledge and skills to do both land preparation, harvesting and storage of fodder.

The groups made a big change. I learned a lot on fodder and cereal crop production, but our main challenge is drought and water shortage since we have done all other activities like land preparation."

Sahra Hassan

Gender: Female
Age: 54
Village: Booca
Household size: 8

How have the groups developed and what changes have you had experienced?

"The groups were formed mid of last year (2021). We are comprising of 40 members from the village residents. The project helped us to bring together all the previous fodder producers and even other members who were not involved in fodder production before."

"We had been organized by the HAVOYOOOCO team and FAO. Now we are 40 females in our group, the changes I experienced include that I learned new people, new friends, I learned a lot about the fodder harvesting methods, bailing, and storage. The most longstanding change is that I know how to preserve the quality of the fodder, I think all my group members learned a lot."

Ali Abdilajhi

Gender: Male
Village: Dagaar

How have the groups developed and what changes have you experienced?

“The groups were formed in 2021. The formation process was a long process, because this kind of project was a new in this village, and initially some of the members were reluctant and suspicious about the project until we understood that the fodder potential is the main objective of the project.

At this moment most of the groups are formed. The formed groups are four in number, three out of it are fodder producers and one group is for fodder trade. The group I belong to is the fodder producer group.

We didn't produce any fodder yet, but the preparation is complete, we have the land prepared by FAO. We received free tractor hours. Each household had more than two hours of cultivation by the tractor.

The biggest experience is that I learned that harvesting time is important and if you don't harvest on the right time the fodder will experience a period of changes and loss of quality. I learned that proper storage is also very essential. Now, the groups work together side by side in harvesting period.”



Figure 21 Story of Change with Ahmed Hassan (left).



Figure 22 Stories of Change in Booca village Sanaag.



Figure 23 Stories of Change in Sanaag region.



Figure 24 Harvesters collect fodder on a wooden bed to avoid the risk of flooding after harvesting.

Ahmed ALI Hassan

Age: 54

Gender: Male

Village: Dagaar

Household: 8

Interview date: 17/5/22

How have the groups developed and what changes have you experienced?

"The groups were formed in 2021. Initially we did not know what the aim of the groups created was, but gradually we understood the objectives. It was formed by FAO with the help and acceptance of the village residents.

The changes I experienced include: the conflict was too much because of many members in the groups or in the beneficiaries of the project did not fully understand the aims of the project. They were thinking that they would be receiving cash or food from the project. So, the conflict was always here, but we resolved them. I am an elder man and one of my roles in the community is to resolve conflicts. The fodder producer groups facilitated us to bring all the ideas and skills in one place. Before everyone was doing his own thing whether it was right or wrong and there were no directions/plans and measurements at all. Now it is clear we are going to produce fodder - we should redouble the production, and the other groups should seek and provide a market for our production, in this way we will succeed together.

How was the production before the onset of the FNS-REPRO intervention?

"The yield was not enough since the land we prepare was small due to high cost of the tractor and quality of seeds since we do not have modern fertilizer, we are using manure. Locust and other insects were also another factor that reduced the yield and production volume."

How was the harvesting before the onset of the FNS-REPRO intervention?

"During the harvesting period, we used different equipment for harvesting such as machete, grass sickle and other equipment that was limited in terms of number. We used to borrow from friends and this was a challenge during the harvesting period. We also used to keep the fodder near the harvesting site since there was no warehouse for keeping the fodder."

How was the marketing before the onset of the FNS-REPRO intervention?

"There was no significant marketing since there was not enough fodder. The production was mainly for local consumption but it rarely used to happen. We do marketing and we used to take fodder to Bossaso and Berbera. And why it happens is that there was poor marketing due to many factors including decreased knowledge and skill for marketing and at the same time our output was not exceeding beyond consumption".

"Since we have been in drought and irregular water rainfall for the last three years, we have not produced any fodder due lack of water".

What are the key challenges?

"The key challenges in our residential area are persistent drought, poor rainfall which left us behind in terms of development. Therefore, we are requesting the organization if they could help us with alternatives like constructing boreholes instead of waiting for rain water for fodder and other crop production. Other challenges include: locust, conflicts."

What are key opportunities?

"The key opportunities we have are plenty of land and the knowledge and skills we gained during the intervention."

Mohamed Hassan

Gender: Male

Age: 52

Village: Dagaar

Household size: 18

Interview date: 17 May-2022

How have the groups developed? And what changes have you experienced? How was your performance in terms of fodder before the onset of FNS-REPRO?

"The group formation came after this project. Before there was no one single group working together, we are now four groups, three producer groups and one for trade. We experienced different changes. For example, before the FNS-REPRO the land preparation was not practical for fodder grass (Doomaar) in (Dagaar) areas and no one was thinking to grow the fodder and sell it.

The grass grows naturally as a wild, but some people in the area used to make some preparation like cultivation and pouring animal manure just before the rainfall "GU season" and that was just a very few people, but now people are working as a group.

The seed was available in the market but the people were not eager to buy it (some people used to plant sorghum and maize and also fodder grass). Now the groups can buy the seed they want because they have savings to cover the expenses."

What changes have you experienced since the onset of FNS-REPRO?

"I personally experienced a longstanding memorable benefit, after all other activities provided by the FNS-REPRO, including the awareness and inputs.

I had an opportunity to be part of the capacity building workshop held in Erigavo about livestock health. I learned about the very common animal diseases, their symptoms, and diagnosis. Before this training I lost more than 200 heads of livestock due to disease in different times, but now I can understand the symptoms, so I can either treat or seek advice from livestock health facilities. Now I advise and help others about livestock health."

What are the key challenges?

"The biggest challenge is the drought, we never complained before but the last decade the rainfall was irregular and drought frequency increased, the fodder and animal feed dramatically reduced and we lost a big number of livestock.

The other main challenges I personally experienced is Locust, this is tragedy, it takes only few minutes for the locust to devastate all the production you invested in all the year, it is a tragedy. Other challenges include decreased number of equipment and facilities for fodder and other crop production."



Figure 25 Mohamed Hassan, an NRM committee member.

Farhan Ahmed

Age: 28

Duty: Member of NRM committee

Village: Tuurka

Household size: 4

How was the situation of rangeland and natural resource management before the onset of FNS-REPRO?

"The community were not aware of the rangeland condition and natural resources. The ranges were no man's land. There was no responsible person or concerned group about the ranges and other resources. We did not know what the NR meant to us. We never talked about the challenges facing our resources and even we never questioned what is the cause of the negatives changes that we had experienced in the last decade. We all witnessed that the ranges and other natural resources were deteriorating, if you see the recurrent droughts, decreased number of livestock, water shortage."

What changes have you experienced as an NRM committee?

"The project changed the way I used to think towards the ranges and natural resources. It is very new content in my mind. I never had a meeting/discussion about the natural resources. This is a very big change to me, we are now aware of the resources, the ranges, we know how much it costs if we leave it neglected. So, the changes that the committee experienced is that we established the NRM community action plan, we plotted all the resources we have, including the ranges, water resources, domestic and wild animal, trees, pasture. We identified the problems and solutions. I think this one of the biggest changes we felt after the project (FNS-REPRO). We also demarcated land for regeneration to overcome overgrazing.

What are the challenges?

"The first challenge is water shortage and drought; nothing will go smooth if water shortage and drought stay longer. It will be hard for people to survive. Now the pastoralists travel to everywhere crossing the boundaries, it is miserable. The other challenges I remember include covid 19 impact, and locust in 2021.

Mohamed Jama

Age: 48

Village: Tuurka

Duty: NRM committee Member

How was the situation of the rangelands and natural resource management before the onset of FNS-REPRO? And what changes have you experienced as a NRM committee?

"There was nothing about natural resource management, and nothing about rangelands before FNS-REPRO. We were kind of wild, the livestock used to pasture the ranges constantly and whenever a section of a land degraded, we relocated into another section. It never happened in this village that the community came together to discuss about natural resource management and how to solve the problems related to natural resources."

How has the FNS-REPRO project changed your life and also the NRM committee you belong to?

"I can say it changed my behavior, it changed how I used to think towards the environment. Now I feel I am a responsible of all the natural resources in my surroundings. I learned what kind of resources I have, what problems we are facing, and how we can solve the problems. The project built my capacity about the ranges and how we can utilize the resource in a best way. Now I can understand the overgrazing and we created a solution for overgrazing. With the help of the project, we established a NRM Community Action plan". We set aside land for the community. We intended to not to use this land during the rainy season until it regenerates, and our plan is to regenerate many degraded areas of our land."

What are the major challenges?

"The challenges include the drought. The drought affected this village and surroundings severely, the pastoralists travelled hundred miles seeking for pasture. Water is a challenge, people depend on the rain water and they don't know water catchment mechanisms, this is a challenge. The conflict is also a challenge here. For example, in this typical project we had a conflict, fortunately it was solved. The conflict is all about the resource, water and land."

What do you think is an opportunity?

"The opportunity we have is: the different resources including the land, (ranges) livestock, and now we had a different training, our capacity towards the ranges is strengthened, we also established NRM committee. I think the opportunity depends on how we manage these resources."

Zahra

Village: Dagaar village

Age: 30 years

Engaged in fodder producer group formed by FNS-REPRO

Due to impacts of recurrent droughts, FNS-REPRO has been offering village residents with low incomes, access to opportunities to improve the livelihood and create income. Village fodder producer cooperatives, savings and loan (VSL) groups have been formed, with a particular emphasis on encouraging participation from female members of the community to join and play a leadership role in the groups. Zahra Hassan, 30 years old, is widowed mother of 6 children, 4 of which live with her while the other 2 live with her sister in Erigavo in order to reduce the load of the expenses and to get school.

Dagaar village, where FNS-REPRO has been working and assisted with the establishment of the fodder producer and saving groups. The group began saving and covering expenses of the fodder production activities. The group started September 2021 up to now. It did the first share-out distribution to cover water trucking expense for land irrigation and other required inputs.

Zahra says: "Because I have a very low educational level and did not have the opportunity to have access formal employment, the only traditional system I knew for livelihood and income generation was herding the livestock. Unfortunately, this business is not an easy task for everyone and every time. The drought in 2016 and 2017 severely affected me and I lost (livestock) several times."

"I have been herding and accumulating the livestock since 2010 but in one season I lost 80 percent of my livestock. This left me desperate. I decided to leave the village and join in the IDPs. I joined the IDPs in Eilafwayn. After a while I realized that the life in IDPs is not pertinent. Finally, I decided to prepare my plot of land back home for farming to produce some fodder and vegetables to sell for an alternative income parallel with the few livestock that remained. I've done this since 2019 as the main source of income for the support of my family. But the irregularity of the rain and recurrent droughts affected the fodder production and made it difficult to manage and keep the business running. Again, I got heartbroken about the farming production."

"I abandoned the fodder production and decided to move to the main city (Erigavo) despite of knowing that I lack skills and knowledge to work in the main city. But still I insisted to go there, because you can't wait till you lose everything and you can't be stable mentally having nothing to feed your children. And again, I realized that living in the main city imposed me with another burden of expenses."

"It has been very helpful to get access to this project FNS-REPRO. It gave me strength to find myself again and devote. Now I see the future ahead. Now I am able to produce fodder and other crops (sorghum, maize). I am not afraid of failure. I have the strength and courage to produce. I have the inputs. The cost of everything is covered by the group (our savings covered the land irrigation). The land preparation is covered by the FNS-REPRO (free hours of tractor work were provided to each house hold) as well as the seed. Now I am very happy to see the female cooperative beside me sharing with me the ups and downs. I realized that there is still hope to lift up any one left behind. Now I encourage my peers to rely on themselves, create saving groups, engage more in fodder and other crop production. The FNS-REPRO project is helping directly providing us material inputs and skills, but for me it was also a message arousing the dead initiatives inside me. I am motivated and energized. Thanks, FNS-REPRO for thriving the livelihood for me and for many men and women like me".



Figure 26 Zahra, FNS-REPRO beneficiary in Dagaar Village.

5.2 Summary

The stories show that people have learned new knowledge and skills in relation to NRM; fodder production, preservation and storage; crop production; and taking care of livestock. The NRM training and the development of a NRM plan for the community has made them more aware of taking care of their natural resources. It has led to for example setting aside part of the community land for regeneration and to prevent overgrazing. The beneficiaries appreciated being trained on different topics, and receiving inputs (e.g. seed) and equipment for fodder production, as well as the free tractor hours for land preparation. Also setting up savings and loan (women's) groups has helped them to pull through in difficult times and give each other support. By being organized in groups, the community has learned to work together.

Drought is a key constraining factor, and the lack of water has affected fodder and crop production, and led to conflict over land and resources as pastoralists have to travel far in search of water. So, whilst people have been trained on fodder production, the capacity was too low to be able to be sold on the market. Locust is also a key problem, whilst the effects of Covid are also still lingering.

Summary stories of change from Booca Village

How the producer groups were developed

- The fodder producer groups were formed mid last year (2021) and are comprised of 40 members from the Booca village residents.
- FNS-REPRO project helped bring together fodder producers as well as members who were not previously involved in fodder production.
- Producer groups were organized by Horn of Africa Voluntary Youth Committee (HAVOYOCO) and FAO.

Key changes experienced in Booca Village

- *Increased cooperation*

As Sahra Hassan explains: *"The [FNS-REPRO] project helped us to bring together all the previous fodder producers and even other members who were not involved in fodder production before."*

- *Increased knowledge and skills on fodder production*

As Sahra Hassan explains: *"I learned a lot about the fodder harvesting methods, baling, and storage, the most longstanding changes, is that I know how to preserve the quality of the fodder, I think all my group learned a lot."*

Summary story of change from Tuurka Village

Situation of natural resource management before the onset of FNS-REPRO

- No attention or focus on NRM or rangeland management before FNS-REPRO

Mohamed Jama: "There is nothing about Natural resource management, and nothing about rangelands before FNS-REPRO."

Key changes experienced in Tuurka Village

- Positive impact of FNS-REPRO on behavior changes towards NRM

Mohamed Jama: "I can say it changes my behavior; it changes how I used to think toward the environment...the project built my capacity about the ranges and how we can utilize the resource in a positive way."

- Positive impact of FNS-REPRO on rangeland management to control overgrazing

Mohamed Jama: "...we created a solution for overgrazing. With the help of the project, we established a NRM Community Action Plan...we set aside a land for community...we intended not to use it during the rainy season until it regenerates, and our plan is to regenerate many degraded areas."

- Establishment of NRM Community Action Plan

Farhan Ahmed: "The changes that the committee experienced is that we established the NRM community action plan, we plotted all the resources we have, including the ranges, water resources, domestic and wild animal, trees, pasture, we identified the problems and solutions, I think this is one of the biggest changes we felt after the project (FNS-REPRO)."

Key challenges

- Drought and water shortages

Mohamed Jama: "...the drought affected this village and surroundings severely, the pastoralists travelled hundreds of miles seeking pasture."

- Conflict over natural resources

Mohamed Jama: "The conflict is also a challenge in here...the conflict is all about the resources, water and land."

- Land degradation

Farhan Ahmed: "...we all are witnessed that the ranges and other natural resources were deteriorating, if you see the recurrent droughts, decreased number of livestock, water shortages."

Key opportunities in Tuurka Village

- Improved opportunity for improved NRM

Mohamed Jama: "The opportunity we have is: the different resources including the land, (ranges) livestock, and now we had a different training, our capacity towards the ranges is strengthened, we also established NRM committee, I think the opportunity depends on how we manage these resources."

Summary story of change from Dagaar Village

How the groups were formed

- The groups were formed in 2021 by the FAO with the help and acceptance of the village residents.
- Four groups were formed: of which three are fodder producers and one group for fodder traders.

Key challenges

- Long formation process;
- Some members "reluctant and suspicious" about the FNS-REPRO project;
- Drought and water shortages;
- Dependence or 'handout mentality';
- Limited harvesting equipment and lack of fodder storage facilities represented a major challenge before FNS-REPRO intervention;
- Low yields due to high cost of farm inputs and poor-quality seeds;
- Poor market opportunities for fodder due to lack of knowledge and skills on marketing;
- Locust invasions.

Key changes experienced in Dagaar Village

- *Provision of tractors for cultivation*

As stated by Ali Abdilajhi: "Households received free usage of a tractor, which they each used for 2 hours of cultivation."

- *Increased knowledge and skills on fodder production*

Mohamud Ali Awed: "...before the intervention we used to migrate to other places in search for pasture and water but now we have hope that everything will be available in our area since we have gained knowledge and skills to carry out both land preparation, harvesting and storage for fodder".

- *Potential platform for enhanced conflict resolution*

Ahmed Ali Hassan: "...the conflict always was here, but we resolved, I am an elder man and one of my roles in the community is to resolve the conflict."

- *Fodder producer groups helped to foster collaboration and cooperation*

Ahmed Ali Hassan: "The fodder producer groups facilitated us to bring all the ideas and skills in one place, before every one was doing by his own whether it is right or wrong and there was no directions/plans and measurements at all."

- *Change or improvement in land preparation techniques for fodder production*

Mohamed Hassan: "...we experienced different changes. For example, before the FNS-REPRO the land preparation was not practical for fodder grass (Doomaar) in (Dagaar) areas and no one thinking to grow the fodder and sell it...but now people are working as a group."

- *Purchasing of seeds due to increased savings*

Mohamed Hassan: "The seed was available in the market but the people were not eager to buy it...Now the groups can buy the seed they want because they have savings to cover the expenses."

- *Capacity building workshop on livestock health*

Mohamed Hassan: "I had an opportunity to be part of the capacity building workshop held in Erigavo about livestock health, I learned the very common animal diseases, their symptoms, and diagnosis. Before this training I lost more than 200 heads of livestock for disease in different times, but now I can understand the symptoms, so I can either treat or seek advice from livestock health facilities, now I advise and help others about livestock health."

- *FNS-REPRO formed Village Savings and Loan (VSL) groups*

Zahra: "FNS-REPRO assisted with the establishment of the fodder producer and saving groups. The groups began saving and covering expenses of the fodder production activities."

Key opportunities in Dagaar Village

- *Availability of land and existing knowledge and skills*

Ahmed Ali Hassan: "The key opportunities we have is plenty of land and the knowledge and skills we gained during the intervention."

6 Recommendations from the sensemaking event

This report has presented valuable information and knowledge generated by FNS-REPRO assessments including a Literature Review (Chapter 4), the Rapid Fodder Value Chain assessments (Chapter 5) and the Stories of Change (Chapter 6). These assessments provide useful insights into the key challenges and opportunities along the fodder value chain in target areas of Somaliland. The critical insights generated in this report were reflected upon during the annual sensemaking event which was conducted in Hargeisa, Somaliland on 5-6 June, 2022.

One of the FNS-REPRO key principles is flexible and adaptive programming. This means that the programme can change over time to increase fit with day-to-day and longer-term realities faced by communities on the ground. Given the complex and protracted crisis context of the programme's target areas, there is a need to be able to identify emerging issues and adapt to changes and negative impacts that affect beneficiaries and the FNS-REPRO outcome and objectives. This makes FNS-REPRO more effective, efficient, and relevant for its beneficiaries.

With the above in mind, this report and the subsequent suggestions for improvement provided below which stem from the sensemaking event (and related workshop report)⁹, are intended to support the evidence-based decision making and adaptive programming cycle of FNS-REPRO in its final year of implementation and can also be useful for other stakeholders that hope to strengthen resilience of communities in protracted crises.

6.1 Suggestions for improvement

During the sensemaking event a few topics were discussed in more detail so as to better understand the issues at hand and also come up with suggestions that could be included in the next, final annual plan. The sensemaking workshop successfully generated additional insights on how to sharpen specific activities under the three main outputs of the programme, being: 1) improved management of and access to natural resources, 2) improved income opportunities along selected value chains and, 3) nutrition sensitive livelihoods support. Furthermore key challenges were identified to which suggestions to address those have been formulated, including the Horn of Africa drought emergency response, generating evidence for MEAL and learning and the nutrition and healthy diets component of FNS-REPRO. Here we focus only on the suggestions that relate to the work on NRM and conflict management (output 1) and the work on fodder production and related value chain development, in line with the topics in this report, and based on discussions during the sensemaking event.

6.1.1 General suggestions

Suggestions to address the Horn of Africa drought emergency: As the FAO Somalia team already had developed a draft drought response plan for FNS-REPRO during the February mid-year sensemaking event, and recent developments have been taken onboard now, an updated drought response plan has been finalized directly after the sensemaking event in June 2022 and will be undertaken as part of FNS-REPRO's adaptive and flexible programming approach across July-December 2022. The drought response plan is included in Appendix 6.

Enhance water infrastructure: drought and lack of water was mentioned as the main challenge the target community faced during implementation of the project. Therefore, the issue of water is not a matter of 'if' but 'how' we can assist in tackling it. Key recommendations include; rehabilitation/construction of water catchment e.g. berkads, contour bands at strategic points, large capacity water storage tanks at the fodder

⁹ To read the 2022 sensemaking event workshop report for Somaliland: <https://edepot.wur.nl/579196>

sheds, provision of collapsible water bladder digging wells and training on water harvesting and management.

Enhance training and capacity building: the beneficiaries are appreciative of the trainings and capacity building, highlighting it as one of the key benefits brought by the project. They however request and recommend continuous and more practical training especially on GAP, cooperative management, financial education, diverse crop production, Community Animal Health Workers, water harvesting and management.

Strengthen groups/associations: there is need to continue improving the formed groups/associations to consolidate and maximize the gains already being experienced. This can be done by tailored capacity building on key areas of interest like group management, financial education, VSLA's and conflict management.

Strengthen market linkages: the beneficiary local traders have links and contacts with the main fodder traders and also the fodder middle men. The project should take advantage of the already existing market networks and improve on the gaps that may exist to ensure maximum benefits for the producers.

Provide tools, machines and equipment: there was a request for transportation equipment from all FGD participants across the board. The main equipment recommended was donkey cart for transporting harvested fodder to the fodder processing shed. Wheelbarrow was recommended for carrying manure and aggregating harvested fodder in the farm. Other tools mentioned were jembe, shovel, hoe, and spraying machine.

Improve complementarity and adaptation: the project needs to be adaptive to changes and emerging issues for it to be more impactful and successful. One way this can be achieved is through complementing project activities with other FAO activities especially emergency interventions in the project areas or with other stakeholders like Government, UN-agencies and NGO's.

Continuous communication and consultations: there is need for continuous, timely, accurate and clear communication and consultations with the community leadership and beneficiaries on project activities and plans. This will ensure relevance and sustainability is achieved in the long-run through community buy in.

Ensure sustainability & exit strategy: there is need to start deliberate planning for a closure (exit strategy) that will support sustainability in the long-run. Informing stakeholders and especially beneficiaries that the project will end at some point is crucial for action and planning towards sustainability.

6.1.2 Suggestions to improve the fodder value chain

Key suggestions for improvement include:

- Deal with (the effects of) the drought: emergency response and water catchment
- Strengthen capacities of trader groups
- Improve dealing with locust
- Improve dealing with conflict
- Improve implementation: enhancing not only knowledge & skills but also practice; complete storage facilities; improve on tools and equipment (e.g. harvesting, gloves).

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Appendix 1 Dynamics of fodder in Somaliland

	Grass	Fodder	Crop residues
What are the current conditions in different seasons?	Grass is plenty in rainy seasons, but scares in the dry seasons	Seasonal	Seasonal
Who has rights and responsibility relative to the natural resource? How do they gain access?	Grazing land is a public good, the government tries to keep some for the dry season. The government does not allow animals to graze in certain areas in the rainy seasons e.g. in Qool Caday, Gacanlibaah. Some people produce grass for sale or for their own animals.	Private property	Private
How are the different users interacting? Are there conflicts of interest?	There is overgrazing during the dry season, i.e. the grass is used before flowers and seeds are grown. Government regulates access in some places. Yet conflicts occur when nomadic pastoralist come in contact with those who do not move	Production for own livestock by only a few people	Used for own livestock and sometimes sold to others
Are there any regulating policies or (customary) practices? What are in your opinion the major drivers of change in recent years? and b) in the future?	In principle, customary law foresees free access anytime, even in the dry season Charcoal production Climate change Droughts Deforestation Land degradation Overpopulation	There are no regulations	There are no regulations
What adaptation strategies have you observed?	New migration patterns like migrating from west to east instead of the normal pattern of south to north Settlement in urban areas Internally displaced people (IDPs). Those no longer able to rear animals or grow feed for their animals lose everything and become IDPs in town Government enclosures	This is an answer to the lack of feed. Fodder production also calls for zero grazing.	This is also an answer to the lack of grass as crop residues can be stored and used during the drought.

Source: Pfeifer et al., 2018.

Appendix 2 Threats, risks & opportunities

Fodder value chain component	Threats	Risk	Existing opportunities in the communities
Production	<ul style="list-style-type: none"> • Locusts • Floods • Conflicts • Cyclones • Fire outbreaks • Diseases • Droughts • Bad seeds • Pests and insects 	<ul style="list-style-type: none"> • Loss of soil nutrients • Lack of water • Disagreements between employees and employers • Injury related to conflict, fire, cyclone, etc. 	<ul style="list-style-type: none"> • Appropriate land • Equipment • Investment • Knowledge • Conflict resolution committees • Trainings • Manpower • Construction of schools • Rehabilitation of roads • Seeds • Rain/water
Processing	<ul style="list-style-type: none"> • Soil erosion • Conflicts • Floods and cyclones • Human health • Droughts 	<ul style="list-style-type: none"> • Floods wash away fodder • Lack of knowledge/skills • Unsuitable land for processing • Lack of financing for harvesting • Injury sustained by people during harvesting • Lack of storage facilities 	<ul style="list-style-type: none"> • Equipment • Storage facilities/ warehouses • Transport • Labour • Economic support
Storage	<ul style="list-style-type: none"> • Droughts • Floods and cyclones • Human health • Conflicts • Fire outbreaks 	<ul style="list-style-type: none"> • Damage and loss 	<ul style="list-style-type: none"> • Storage facilities/ warehouses
Transportation	<ul style="list-style-type: none"> • Human health • Floods • Inaccessibility (poor infrastructure) • Conflicts 	<ul style="list-style-type: none"> • Damage and loss • Transport accidents 	<ul style="list-style-type: none"> • Equipment • Financial support • Labour
Marketing	<ul style="list-style-type: none"> • Market conflicts • Human diseases • Floods and cyclones • Livestock diseases • Fire outbreaks 	<ul style="list-style-type: none"> • Market downturn • Mismatch between production and selling • costs 	<ul style="list-style-type: none"> • Reduced import of fodder • Livestock export during the Hajj pilgrimages • Reliable markets • Muslim festivals • Application of modern livestock herding

Source: FAO, 2021b.

Appendix 3 Recommendations to enhance women's involvement in the fodder value chain

Issue	Suggestion for the FNS-REPRO intervention facilitators
<p>Participation by women very marginal and mainly in production and local sale of small quantities of grass/fodder.</p> <p>[Limited access to natural resources, income, credit, markets.]</p>	<p>Women to be allowed to participate as groups, as individuals and as household members in mixed-gender fodder cooperatives. Women group cooperative members to get special support as women groups to produce fodder and participate in the fodder value chain in age-appropriate ways, e.g. demonstration plots for fodder farmer field schools to be made accessible to young mothers with low mobility as key actors. These young mothers to be trained and assigned roles of fodder field school trainers. Older women, who have greater mobility, to be supported to deliver fodder in trucks to large markets such as Berbera.</p>
<p>Gender-based violence for Waqdari women fodder harvesters (women prefer to stop harvesting this fodder if given other options).</p> <p>[Limited access to land, financial assets and skills.]</p>	<p>Support women fodder traders in Waqdari – by asking the leadership to set aside communal land along the river for these women (as a women's group) to grow fodder. Other women who can identify own fodder plots will be allowed to participate in the women groups.</p> <p>Project to capacitate the women – skills, tools, initial inputs, drying and storage facility.</p>
<p>How can women's access to credit be enhanced (financial assets)?</p> <p>[Limited access to finance; low mobility; reproductive chore.]</p>	<p>Women to initiate or continue table banking and start saving money.</p> <p>Table banking women to be linked with credit service providers for training and provision of credit (FNS-REPRO can either work with CARE or Save the Children or learn from them and do what they do).</p> <p>Women need credit support for initial input (seed and tools), some cash to purchase fodder from themselves and other producers and for transport to markets. Older women, who have higher mobility, can transport fodder to markets. Younger women are less mobile but will be included in the project by enabling them to host demonstration plots for and train in farmer field schools.</p>
<p>What to do about women's time poverty (one barrier in access to health services).</p> <p>[Drudgery.]</p>	<p>Provide time-saving support, e.g. energy-saving stoves/training in building; water storage tanks to save time spent searching for firewood (by reducing consumption) and water (by providing storage) by linking them with organizations that provide energy-saving stoves and technology on alternative fuels.</p>
<p>Many women are ashamed of being unwell, so they suffer alone until it is too late... or self-medicate.</p> <p>[Devalued status.]</p>	<p>Advocacy of not being ashamed of illness to normalize illness and the need for treatment, rest and recuperation.</p> <p>Sensitization on self-care as a necessary norm. The need to seek professional health services.</p> <p>[This intervention is beyond the scope of FNS-REPRO, but any women empowerment advocacy agency in the area can be informed. This recommendation will therefore not be listed among the recommendations.]</p>

Source: FAO, 2021b.

Appendix 4 Fodder value chain mapping table

Time line	Preproduction (including agro-inputs, agro-finance)	Production (including agricultural practices, yield etc)	Post-harvest value creation	Marketing relations & sales	Uptake/use	Enabling environment (e.g., policies, strategies & enforcement; formal & informal business environment)
<p>Situation in early 2020 (prior to FNS-REPRO) (key events in this period: start of Covid pandemic, locust....)</p>	<p><i>What kind of preproduction existed prior to FNS-REPRO interventions?</i></p> <ol style="list-style-type: none"> 1. Land Preparation 2. Rent Tractors for land preparation (\$15 per hour) 3. Used to Natural fertilizers (Animal manure) 4. Fencing 5. Fodder grass seeds are not available in the market E.g. Dureemo seeds, doomar seeds are absent, but can be found as a natural remnant of the previous grass residue. However, other seeds like sorghum and maize were available in the market 6. Irrigation – water from wells, bore holes (not everyone has access to irrigation) 7. Timing of land preparation was (just before the 'GU' season i.e. first rainy season of the year) 8. Cultivation of land either by ourselves or by hired labour <p>The existing Gaps /challenges before FNS-REPRO</p>	<ol style="list-style-type: none"> 1. The production was low due to poor input. 2. Primitive practice (no GAP) 3. Three types of fodder grass were common for production (Dureemo, Gargaro, Doomaar) 4. Other major production included sorghum and maize 5. The main purpose of production was for the market in Booca Village (because this village had less livestock to feed locally. The HHs had only few dairy animal. 6. The production and the surplus were high during the rainy season 7. The fodder decreased quality due to lack of shelter <p>The existing challenges-Gaps before FNS-REPRO</p> <ol style="list-style-type: none"> 1. Drought 2. Locust 	<ol style="list-style-type: none"> 1. Method of harvesting (producers use (Majo) sickle, & rake 2. No other machinery for harvesting 3. Producers leave the fodder in the site of the harvesting 4. Need to aggregate the fodder from the stream lines using donkey cart or carrying labour. (Wheelbarrow) 5. Producers put the fodder a high plateau area or form wooden bed to collect the fodder on it to avoid risk of flooding 6. No shield from the sun (quality preservation reduced) 7. The Female HH were not able to harvest, (Hire labour man to harvest) 8. Poor HH were not able to harvest 	<ol style="list-style-type: none"> 1. No market relations existed 2. No market skills and knowledge 3. Middle men (brokers in the main cities) are the means of communication 4. Sales volume depended on the situation and season: <ol style="list-style-type: none"> a. During drought season the sales raised b. During the rainy the sales volume went down. 5. The revenue of one load of a truck (400-500 USD in drought season and 250 in rainy season). 6. Major market zone (quarantine sites in Bossaso and Berbera) 7. The neighbouring villages buys the fodder during the dry season (for consumption) 8. The major FNS- REPRO target areas have an existing fodder trade between them. 	<ol style="list-style-type: none"> 1. Local consumption of fodder 2. Livestock Quarantine site (Bossaso city and Berbera) 3. Local Livestock consumption Depends on the drought 4. No awareness on overgrazing 5. Loss of the fodder (for trade and for livestock) 6. Loss of quality due to poor storage of fodder at production level and along the value chain up to the end consumers. 	<ol style="list-style-type: none"> 1. Existing Land policy 2. Land planning esp. in Booca village which accommodated individual /group cultivation 3. No taxes on fodder production (see analysis) 4. No restrictions fodder harvesting 5. Enhanced Awareness 6. Trainings and workshops of the fodder producers 7. Conflict resolution mechanism and bodies existed (elders, security forces, court)

Time line	Preproduction (including agro-inputs, agro-finance)	Production (including agricultural practices, yield etc)	Post-harvest value creation	Marketing relations & sales	Uptake/use	Enabling environment (e.g., policies, strategies & enforcement; formal & informal business environment)
	<ol style="list-style-type: none"> Inadequate awareness on fodder production, processing, and fodder sale Limited skills and knowledge Seed input Land preparation cost (tractors) or Labour for land cultivation Observed that women participation in fodder activities was low No existing Agro-finance In adequate equipment e.g., shovel, rake machete, hand gloves, wheel barrow. Poor irrigation system. Conflicts (during the cultivation and preparation. 	<ol style="list-style-type: none"> Lack of seed or Bad seed Lack of skill and knowledge for production Lack of full participation of fodder production activities of all community In adequate equipment for production and harvesting 	<p>Existing Gaps prior of FNS-REPRO</p> <ol style="list-style-type: none"> Floods Human Disease/injury Lack of skill and knowledge of harvesting Lack of Storage Lack of Transportation during the harvesting. Equipment of harvesting 	<p>Existing Gaps</p> <ol style="list-style-type: none"> Conflicts lack of skills and knowledge (to maximise the profit) Risk of fire catchment Due to lack of storage and negligence cost of transportation for some poor HHs producers lack of insurance Un expected losses occur due to fire catchment on fodder (improper storage), fraud due to market information and pricing decision on sale and transportation cost. 		
Changes in late 2020 & why (progression of Covid)	<ol style="list-style-type: none"> Enhanced awareness and willingness to produce fodder Fodder producer Cooperatives formed by the FNS-REPRO Fodder stakeholders interaction enhanced Women inclusion enhanced (female fodder producers engaged) Land preparation timing (GU) 	<ol style="list-style-type: none"> Enhanced awareness and willingness for production Fodder producer Cooperatives formed by the FNS-REPRO Fodder stakeholders' interaction enhanced. Women inclusion in the fodder producer groups Demo farms for fodder production allocated. Trainings and workshops for capacity building in terms of production (GAPs developed) 	<ol style="list-style-type: none"> Enhanced awareness and willingness to produce and harvest Fodder producer groups formed Storage (Warehouses were built but not completed) Women inclusion enhanced (female fodder exist) Trainings and workshops conducted for harvesting techniques 	<ol style="list-style-type: none"> Cooperatives formed (three fodder producers and one trade team) Trainings for fodder producers, no trainings for trade group yet Awareness and mobilization for fodder production enhancement as income generation enhanced Inputs for fodder quality preservation pledged. 	<ol style="list-style-type: none"> Trainings for fodder producers, no trainings for trade group yet Awareness and mobilization for fodder production enhancement as income generation enhanced Inputs for fodder quality preservation pledged. No significant changes in the market due to decreased production 	

Time line	Preproduction (including agro-inputs, agro-finance)	Production (including agricultural practices, yield etc)	Post-harvest value creation	Marketing relations & sales	Uptake/use	Enabling environment (e.g., policies, strategies & enforcement; formal & informal business environment)
Changes in early 2021 & why (locust, ...)	<ol style="list-style-type: none"> 1. Adequate trainings for GAP, fodder production, harvesting, and storage 2. Fodder Quality preserved through proper harvesting technique and storage. 3. Inputs pledged by the FNS-REPRO project during the initial years of the project: e.g. seeds, harvesting tools, chopper machines, hand gloves, warehouse for fodder storage. 	<ol style="list-style-type: none"> 1. Cooperatives developed 2. Awareness and mobilization redoubled 3. Training on GAPs continued 4. Demo farm practices for the fodder producers on GAPs 5. Other events include: <ol style="list-style-type: none"> a. Locust b. Poor rainfall c. Covid impact on food price and HH income 	<ol style="list-style-type: none"> 1. Continued awareness and willingness to produce and harvest 2. Fodder producer cooperatives formed 3. Storage (Warehouses were built but not completed) 4. Women inclusion enhanced (female fodder exist) 5. Trainings and workshops conducted for harvesting techniques 			
Changes in late 2021 & why (poor rainfall)	<ol style="list-style-type: none"> 1. Locust invaded this year and damaged the production, (though some respondents didn't agree on the timing of this change) 2. Poor rainfall 3. Covid 19 restrictions affected fodder producers, traders, directly and indirectly (money remittance from the family aid lost) 4. Awareness on fodder activities enhanced, willingness and readiness for fodder production enhanced (highly motivated) 5. Inputs are pledged by the project (FNS-REPRO) for harvesting, storage, and market linkages 6. The fodder production cooperatives formed by the FNS-REPRO mainly target women. 7. Saving money techniques enhanced 	<ol style="list-style-type: none"> 1. Cooperatives formed by the project (FNS-REPRO) 2. Mobilization and awareness continued 3. GAP workshops and trainings enhanced 4. Other events include <ol style="list-style-type: none"> a. Locust b. Poor rainfall c. Covid 19 impacts 5. Demo farms (nursery) established for training of fodder producers 	<ol style="list-style-type: none"> 1. Locust invaded in this year and damaged the production, (though some respondents didn't agree on the timing of this change) 2. Poor rainfall 3. Covid 19 4. Trainings and workshops conducted for harvesting techniques 	<ol style="list-style-type: none"> 1. Cooperatives formed (three fodder producers and one trade team) 2. Trainings for fodder producers, no trainings for trade group yet 3. Awareness and mobilization for fodder production enhancement as income generation enhanced 4. Inputs for fodder quality preservation pledged. 5. No new market relations developed 		

Time line	Preproduction (including agro-inputs, agro-finance)	Production (including agricultural practices, yield etc)	Post-harvest value creation	Marketing relations & sales	Uptake/use	Enabling environment (e.g., policies, strategies & enforcement; formal & informal business environment)
	8. Groups saved money monthly 20,000 Somaliland shilling per person (2.2 USD) 9. Demonstration farms established and trained more people for GAP					
Changes in early 2022 & why (severe drought, inflation, increased price of food & fuel)	<p>1. Poor rainfall 2. Covid 19 restriction affected directly and indirectly 3. Awareness enhanced, willingness and readiness enhanced (highly motivated) 4. Free cost tractors were provided by the FNS-Repro 5. Demonstration farms formed and beneficiaries were trained 6. Women cooperatives formed, (motivated women for fodder production. 7. Saving money groups formed (to cover input expenses)</p> <p>Existing Gaps after FNS-REPRO Intervention:</p> <p>1. No input received in terms of preproduction 2. Seed is provided but the willingness to use is low 3. Water catchment 4. Climate change(drought) 5. Absence of Agri-finance 6. No irrigation system (dependent on rainfall)</p>	<p>1. Cooperative formed 2. Mobilization and awareness continued 3. GAP workshops and trainings enhanced 4. Other events include: a. Locust b. Poor rainfall c. Covid 19 impacts 5. Demo farms (nursery) established for training of fodder producers</p> <p>Existing Gaps after FNS-REPRO intervention</p> <p>1. No input received in terms of equipment for production and harvesting 2. Drought 3. No water catchments established 4. No pesticides 5. Seed storage</p>	<p>1. Locust 2. Poor rainfall 3. Covid 19. 4. Storage (Warehouses were built but not completed) 5. Women inclusion enhanced (female fodder producers exist) 6. Trainings and workshops conducted for harvesting techniques.</p> <p>Existing Gaps After FNS-REPRO intervention</p> <p>1. No input received in terms of harvesting equipment 2. Human disease; hand diseases due to lack of hand gloves 3. No loading equipment during fodder aggregation 4. Some shelters not completed yet.</p>	<p>1. Cooperatives formed (three fodder producers and one trade team 2. Trainings for fodder producers, no trainings for trade group yet 3. Awareness and mobilization for fodder production enhancement as income generation enhanced 4. No significant changes in the market occurred.</p> <p>Existing gaps After FNS-REPRO intervention</p> <p>1. Conflicts 2. No training yet provided for the trade group in the existing cooperatives. 3. Market linkage still poor, no connections are made. 4. Transportation 5. No market expansion yet developed 6. Income generation from fodder not exist or low.</p>	<p>1. Trainings for fodder producers, no trainings for trade group yet 2. Awareness and mobilization for fodder production enhancement as income generation enhanced 3. Inputs for fodder quality preservation pledged. 4. No significant changes in the market occurred.</p> <p>Existing aps After FNS-REPRO intervention.</p> <p>1. Number of fodder consumers are yet limited 2. Transportation Facility to reach the consumption site.</p>	

Time line	Preproduction (including agro-inputs, agro-finance)	Production (including agricultural practices, yield etc)	Post-harvest value creation	Marketing relations & sales	Uptake/use	Enabling environment (e.g., policies, strategies & enforcement; formal & informal business environment)
Key challenges	<ol style="list-style-type: none"> 1. Water accessibility 2. Fencing 3. Floods 4. Seed 5. Labour cost 	<ol style="list-style-type: none"> 1. Horses pasture the fodder during night time if there is no proper fencing 2. Insects, pests 3. Lack of Fodder preservation and storage facility 4. Locust 	<ol style="list-style-type: none"> 1. Harvesting equipment 2. Human diseases (e.g. skin diseases caused by fungus during fodder harvesting) 3. Physical injury 4. Losses due to poor storage 	<ol style="list-style-type: none"> 1. Fuel price 2. Labour cost 3. Fire 4. Reduced fodder production 5. Lack of market techniques. 		
Key opportunities	<ol style="list-style-type: none"> 1. Appropriate land (Booca village is already allocated for fodder growing, residents have enough land to cultivate minimum (200x200) each HH) 2. Conflict (history of conflict of land issues was not existing- though the other conflict source such as clan based still exists, but conflict resolution committees and elders are able to solve it in timely manner) 3. Trainings by FNS-REPRO 4. Investment 5. Storage facility 6. Transport- though the price of fuel raised. 7. Residents' willingness and readiness to produce the fodder 8. Well mobilized cooperatives (this reduces the cost of labour and give hands to the poor small HH/Female/orphans to cultivate) 	<ol style="list-style-type: none"> 1. Appropriate Land 2. Stability and conflict resolution mechanism exist (involved bodies are traditional elders and government) 3. Fodder producers Cooperatives 4. Training and knowledge 5. Demonstration plots for motivation and practice 6. Female participation enhanced 7. Money savings mechanisms and cash collection for the cooperatives can cover the expenses of land preparation, irrigation, harvesting, and marketing. 			<ol style="list-style-type: none"> 1. Livestock export during the Hajj pilgrimage and Muslim festivals 2. Transportation 	

Appendix 5 Key interventions & services influencing the fodder value chain in Booca and Dagaar villages

Key interventions & factors influencing VC	Time line	Preproduction (including agro-inputs like quality fodder seed, tools & equipment, agro-finance)	Fodder production (including agricultural practices, yield etc)	Post-harvest value creation (e.g., treatment, packaging etc)	Marketing relations & sales	Uptake/use (by pastoralists, institutions, traders, etc)	Enabling environment (e.g., policies, strategies & enforcement; formal & informal business environment)
FNS-REPRO interventions /Service	Situation in early 2020 (prior to FNS-REPRO) (key events in this period: start of Covid pandemic, locust....)	<ol style="list-style-type: none"> 1. Awareness enhanced, willingness and readiness enhanced (highly motivated) 2. Free cost tractors were provided by the FNS-REPRO 3. Demonstration farms formed and beneficiaries are trained 4. Women cooperatives formed, (motivated women for fodder production). 5. Saving money (to cover input expenses) 	<ol style="list-style-type: none"> 1. Cooperative formed 2. Mobilization and awareness continued 3. GAP workshops and trainings enhanced 4. Demo farms (nursery) established for training of fodder producers 5. Saving money groups created ability to afford the cost of irrigation/seed, labour. 	<ol style="list-style-type: none"> 1. Storage (Ware houses were built but not completed) 2. Women inclusion enhanced (female fodder exist) Trainings and workshops conducted for harvesting techniques 3. Chopper machines delivered by FNS-REPRO for fodder processing 	<ol style="list-style-type: none"> 1. Cooperatives formed (three fodder producers and one trade team 2. Trainings for fodder producers, no trainings for trader group yet 3. Awareness and mobilization for fodder production enhancement as income generation enhanced 4. Savings groups created were able to cover the fodder production expenses and can now afford to buy water for irrigation of their farms, and also can afford the labour cost. 	<ol style="list-style-type: none"> 1. Cooperatives formed (One trader group) for market relations issues, 2. Received trainings but not adequate 3. No significant service on ground in this sector 	<ol style="list-style-type: none"> 1. Land policy 2. Land planning exist for individual/group cultivation 3. Taxes on land property ensures the ownership and reduces the conflict of land production. 4. No restrictions fodder harvesting 5. Awareness 2022 6. Proper storage 7. Capacity enhanced 8. Conflict resolution mechanism and bodies exist (elders, security forces, court)
Key services along VC by other actors	Government, and seed input suppliers: provide some services for fodder potentiation. Local NGOs (AADO) provide trainings on GAP. FNS-REPRO currently provides livelihood services on fodder producers, traders	<ol style="list-style-type: none"> 1. Rented tractors for cultivation 2. Seed suppliers (sorghum and maize) 3. Hiring labour for cultivation 4. Conflict resolution by the elders, government 	<ol style="list-style-type: none"> 5. No service provided by other actors for fodder production 	<ol style="list-style-type: none"> 1. No service provided by other actors for post-harvest value creation 	<ol style="list-style-type: none"> 1. Middle men play a role of communication between the producer and the supplier. 2. Saving money groups (hagbad) are able to cover the costs 	<ol style="list-style-type: none"> 1. Fodder delivery to end user by the truck (transport) 2. Sanaag University provided trainings about maize and sorghum production and fodder trade (2020) at Booca village. 	

Key interventions & factors influencing VC	Time line	Preproduction (including agro-inputs like quality fodder seed, tools & equipment, agro-finance)	Fodder production (including agricultural practices, yield etc)	Post-harvest value creation (e.g., treatment, packaging etc)	Marketing relations & sales	Uptake/use (by pastoralists, institutions, traders, etc)	Enabling environment (e.g., policies, strategies & enforcement; formal & informal business environment)
Other factors influencing VC		<ol style="list-style-type: none"> 1. Drought 2. Locust 3. Skill and knowledge 4. Input- seed 5. Irrigation 6. Willingness and participation 	<ol style="list-style-type: none"> 1. Drought 2. Locust 3. Lack of knowledge and skills 4. Input- seed 5. Irrigation 6. Willingness and participation 	<ol style="list-style-type: none"> 1. Labour 2. Drought 3. Skill and knowledge of harvesting 4. Equipment of harvesting 5. Number of equipment received 6. Health skin diseases and self-injury 7. Storage facility 8. Conflict mitigation 	<ol style="list-style-type: none"> 1. Drought 2. Market knowledge skill 3. Competition 4. Quality preservation 5. Storage facilities 6. Investment 7. Service extension 	<ol style="list-style-type: none"> 1. Production Capacity and yield of the production 2. Availability of the goods (fodder) 3. quality preservation 4. consumer feedback 5. demand and supply matching 6. season (drought,) 7. festivals (hajj) 	Other factors influencing VC

Appendix 6 FNS-REPRO Drought response plan from July to December 2022

Objectives	Outputs	Activity	Estimated budget	Resources diversion	Remarks
Improve utilization of locally available feed (Browser) through the use of Novel browser forage enhancers	<ul style="list-style-type: none"> Conduct trial on utilization of browse enhancer (Polyethylene glycol -PEG) in four villages 	<ul style="list-style-type: none"> Dialogue with government on the trial Identify and select four villages Define the trial protocol Identify the control and treatment groups Undertake the field trial Analysis of the data and reporting 	25,000 USD	5014 Contracts 5013 Consultants 5021 Travel 5023 Training	Currently the only forage option available in FNS-REPRO regions particularly Sool are browser forage and with browse enhancers animals, the feed availability is improved. This has an opportunity of success that can be replicated and scaled up within the larger Somaliland
Improve water and food availability in FNS-REPRO Villages in Sool and Sanaag	<ul style="list-style-type: none"> 6000 households to receive continuous water supply for their livestock from the existing wells and boreholes 18 demonstration farms to produce vegetable 	<ul style="list-style-type: none"> Procurement and distribution of water pumping machines Procurement and distribution of water pipes Procurement of vegetable seeds 	100,000 USD	5024 Expendable procurement 5014 Contracts	<p>There has been consensus within project beneficiaries and the FNS-REPRO team on the need for water for livelihood consumption. This activity would empower the existing water infrastructure and contribute towards sustained water supply to the demonstration farms.</p> <p>The demonstration farms are critical component for the nutrition and diversification aspects of the project.</p> <p>The demonstration gardens will enable the women groups to plant a variety of vegetables and fruits that are a good source of vitamins and other vital nutrients. and there is future prospect of scaling up to kitchen gardens.</p>
Improve food and nutrition security of the beneficiaries	<ul style="list-style-type: none"> 3600 pastoralists supported with cash in exchange for drought weakened non-productive small ruminant through slaughter - destocking intervention 	<ul style="list-style-type: none"> Engagement of local and central government Mobilization and sensitization of the communities Formation of village slaughter destocking committees Procurement of livestock for slaughter 	250,000 USD	5024 Expendable procurement 5014 Contracts	<p>The focus is to reduce livestock, improve protein availability and inject cash to the communities. The rational in the short term, is to make use of severely weakened, unproductive but otherwise healthy animals in order to reduce animal and human mortality risk and improve the nutritional status of malnourished and vulnerable community</p>

Objectives	Outputs	Activity	Estimated budget	Resources diversion	Remarks
	<ul style="list-style-type: none"> 3600 heads of sheep and goat destocked 2400 vulnerable HHs receiving an equivalent of half sheep/goat's carcass of meat per month for two months 	<ul style="list-style-type: none"> Slaughtering and distribution of meat Arrangements for pre- and post-mortem inspection and waste disposal put in place 			members and pressure on the limited available pasture/water.
Improve feed availability and nutrition for core breeding animals	<ul style="list-style-type: none"> 3500 beneficiaries receiving survival feeding for their core productive animals 900 tons of local fodder distributed to 3500 Beneficiaries 	<ul style="list-style-type: none"> Procurement and distribution of local fodder 	170, 000 USD	5014 Contracts 5024 Expendable procurement	Import of livestock feed take longer period and there is an urgent need for survival feeding for the core breeding animals, and locally procurement of livestock feed
Improve animal health conditions	<ul style="list-style-type: none"> 210,000 sheep and goat received veterinary service including deworming against internal and external parasites Reinforcement of 50 community-based Animal Health workers 	<ul style="list-style-type: none"> Engagement of the regional coordinators for the MoLFD to facilitate veterinary service delivery to REPRO village Refresher training for CAHWs in Sool Procurement and supply of veterinary drugs Provision of veterinary service to FNS-REPRO beneficiaries 	35, 000 USD	5024 Expendable procurement 5023 Training 5021 Travel	
Provide timely weather information (rainfall, pasture and water availability) to reduce vulnerability of the beneficiaries	<ul style="list-style-type: none"> 3500 beneficiaries provided timely weather information and climate advisories Beneficiaries to make informed drought mitigation measures 	<ul style="list-style-type: none"> Mobilization and sensitization of communities 	0	Activity exists but to be strengthened due to ongoing drought situation	This activity will enhance the information for early warning systems so that beneficiaries have detailed and accurate historical, real-time and forecast weather information can help them understand and track the growth status/stage to make informed decisions
TOTAL			580 000 USD		

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To explore
the potential
of nature to
improve the
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