NAROK COUNTY GOVERNMENT

The Land of Diversity

LIVESTOCK FEEDS STRATEGY

2024 - 2034

Department of Agriculture, Livestock and Fisheries

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SNV Netherlands Development Organisation facilitated the development, launch and publishing of this strategy as a lead implementer of the Integrated & Climate Smart Innovation for Agropastoralist Economies and Landscapes in Kenya's ASALs (ICSIAPL project)

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SNV Impact that matters

KALRO Kenya Agricultural & Livestock Research Organization

FOREWORD

The Narok County Livestock Feeds Strategy is an important milestone in the agriculture sector towards achieving sustainable feed production hence improved access and utilization. Livestock farmers have continuously been faced with huge challenges in livestock feed availability and quality especially during the dry seasons.

The Strategy comes in the wake of rising adverse climate change shocks which affects the normalcy of the dry and wet seasons in Kenya leading to decreased quantities of forage resources within and outside the county. The Narok County Livestock Feeds Strategy (2024-2034) has been developed through concerted efforts of stakeholders in the sector to enhance adequate planning, coordination and implementation of strategic interventions that promote all year round availability and accessibility of forage and feed resources. This will boost the livestock sub-sector productivity hence livelihoods of majority of Narok agro-pastoralists whose main economic activity is livestock rearing.

This Strategy will have far reaching positive impacts across the livelihood zones of the county, support commercialization and increase availability of feeds within and outside the county. It is, therefore, our strong belief that the County Government that proper implementation of the strategy is a precursor to achievement of these results. Concerted efforts among the National government, County government, private sector and development partners is required in mobilizing resources and provision of technical assistance in the implementation phase.

We are grateful for this milestone and wish to thank all stakeholders who participated in developing the strategy. As we implement the County Livestock Feeds strategy, we take the earliest opportunity to welcome all stakeholders to invest in the livestock and forage sub-sectors in Narok County- The land of Diversity.

Hon. Joyce Keshe
County Executive Committee Member
Department of Agriculture, Livestock & Fisheries

PREFACE

Livestock productivity is closely linked to the availability of animal feed resources. Feed is a major factor of production across all livestock production systems and account for about 70% of the production cost. Livestock Feed Inventory conducted by FAO 2019 indicated that Narok County has a negative feed balance. Productivity of livestock in the county is low due to inadequate quantity and poor-quality feeds.

Rapid population growth and sub-division of land has reduced grazing land sizes in Narok available for production of feeds thus limiting area for forages production. This has been compounded by shift in climate and weather patterns resulting in low forage productivity. Narok County is endowed with rich natural resource base which if properly planned can contribute to increased livestock productivity. New forage varieties have been introduced and promoted by the National Government, County Government, and other development partners. Adoption of appropriate varieties and technologies will significantly contribute to self-sufficiency in animal feed resources and enhance their commercialization. Pasture and fodder promotion and conservation are key in ensuring sustainable livestock industry.

The Narok County Livestock Feed Strategy is envisioned to provide midterm (10 years) 2024-2034 interventions for implementation with the support of all the stakeholders. The success of this strategy requires the participation and coordination of all stakeholders and development partners to help realise its objectives.

Augmented feed usage in the County is on the rise as farmers increasingly commercialize livestock production. There is, however, need to regulate the quality of these feeds at the county level in order to protect farmers and consumers of livestock products. This strategy provides action plans to be undertaken by the relevant stakeholders to ensure only quality feeds are sold to livestock keepers.

Livestock Feed Strategy clearly outlines the strategic objectives, strategies to achieve each of the objective as well as priority activities. This Strategy also provides a detailed implementation plan and a clear monitoring and evaluation criteria.

To successfully implement this strategy, the department will endeavor to collaborate with National and County governments, as well as other development partners and agro-pastoralist households.

Ms. Queen Kimorgo
County Chief Officer- Livestock Development

ACKNOWLEDGEMENT

The development of this strategy was realized through concerted and consultative process of the key stakeholders involved in livestock feeds value chain. Among the key players who have shaped this plan are; National Director of Livestock Production, County Department of Agriculture, Livestock and Fisheries, Netherlands Development Organization (SNV), Kenya, Agriculture Sector Development Support Programme (ASDSP), National Drought Management Authority (NDMA), Water Resources Authority (WRA) and farmers' representatives. The National Bureau of Statistics (KNBS) and FAO are knowledge institutions whose reports that provided invaluable data.

We wish to express special gratitude and appreciation to the Governor, H.E Patrick Ole Ntutu for his thought leadership and support to the Department of Agriculture, Livestock and Fisheries. The preparation and completion of this plan would not have been realized without guidance and stewardship provided by Hon. Joyce Keshe-CECM for the Department of Agriculture, Livestock and Fisheries.

The contribution and tireless coordination efforts offered by the Chief Officers of the Department of Agriculture, Livestock and Fisheries; Queen Kimorgo -Livestock Development, Livingstone Chepukel –Agriculture and Samuel Teum- Fisheries is highly appreciated. They rallied technical teams to work together in collecting data and putting the strategy to shape.

We also wish to thank the heads of the four sector directorates and the selected team of the technical staff [list annexed] who contributed immensely to the development of this strategy. Your commitment and determination in finalizing this document is highly appreciated.

Last but not the least, we wish to thank SNV for their technical and financial support to the Department during the development of this strategy. SNVs Integrated & Climate Smart Innovations for Agro- Pastoralists Economies and Landscapes for Kenya's ASAL project came in at the right time.

Francis Njogu
A.g. Director of Livestock Production

TABLE OF CONTENTS

STRATEGY'S FRAMEWORK..

03

04

STRATEGY IMPLEMENTATION, MONITORING & EVALUATION

ANNEXES

05

LIST OF TABLES

LIST OF FIGURES

ACRONYMS & ABBREVIATIONS

AKEFEMA	Association of Kenya Feed Manufacturers
ASALs	Arid and Semi-Arid Lands
ASDS	Agriculture Sector Development Strategy
ASDSP II	Agriculture Sector Development Support Programme Phase Two
ASTGS	Agricultural Sector Transformation and Growth Strategy
CBO	Community Based Organizations
CE	Chemical Energy
CECM	County Executive Committee Member
CFA	Community Forest Association
CIDP	County Integrated Development Plan
CGR	Cumulative Growth Rate
CIH	Climate Information Hub
CO	Chief Officer
CSP	County Spatial Planning
DE	Digestible Energy
DLP	Directorate of Livestock Production
DM	Dry Matter
DoALF	Department of Agriculture, Livestock, Fisheries
DTI	Dairy Training Institute
EKN	Embassy of the Kingdom of the Netherlands
ENDEV	Energizing Development
EU	European Union
FAO	Food and Agriculture Organization
FAOSTAT	FAO Corporate Statistical Database
FCI	Forage Condition Index
FPAK	Fodder and Pasture Association of Kenya
G	Gram

GDP	Gross Domestic Product
GESI	Gender and Social Inclusion
GHG	Greenhouse Gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GMMEMP	Greater Masai Mara Ecosystem Management Plan
ICSIAPL	Integrated & Climate Smart Innovations for Agro- Pastoralists Economies and Landscapes in Kenya's ASAL
IFIF	International Feed Industry Federation
ILRI	International Livestock Research Institute
KALRO	Kenya Agriculture and Livestock Research Organisation
KEBS	Kenya Bureau of Standards
KEPHIS	Kenya Plant Health Inspectorate Services
Kes.	Kenya Shillings
Kg	Kilogram
Km	Kilometre
KNBS	Kenya National Bureau of Statistics
LFS	Livestock Feeds Strategy
M	Million
M & E	Monitoring and Evaluation
MIS	Management Information System
MJ	Megajoule
MMT	Million Metric Tons
MMWCA	Maasai Mara Wildlife Conservancies Association
MoU	Memorandum of Understanding
MT	Metric Tonnes
MT/HA	Metric Tons per Hectare
MTP	Medium Term Plans
NAIPs	National Agriculture Investment Plans

NARIGP	National Agricultural and Rural Inclusive Growth Project
NCASIOR	Narok County Agricultural Sector Investment Opportunities Report
NCDP	Narok County Development Plan
NCPB	National Cereals and Produce Board
NDMA	National Drought Management Authority
NDVI	Normalized Differential Vegetation Index
NEMA	National Environmental Management Authority
NGO	Non-Governmental Organizations
NRM	Natural Resource Management
SNV	Netherlands Development Organization
TVET	Technical and Vocational Education and Training
VCI	Vegetation Condition Index
WRA	Water Resources Authority
WRUA	Water Resource Users Association

DEFINITION OF TECHNICAL TERMS

Feed balance –This is a comparison between the requirements of livestock at any given time (demand) and the amount of utilizable feed (supply). This approach may also be undertaken to develop balances for specific nutrients.

Augmented Feeds – Manufactured feeds with enhanced nutritional levels.

Water Balance – water available against water resources needed in an area.

Soil Hydrolysis – Reaction of certain compounds in the soil with water.

Catchment – an area of land, usually surrounded by mountains or hills, over which water flows and is collected.

Vegetation Cover Index – is a spectral imaging transformation of two or more image bands designed to enhance the contribution of vegetation properties and allow reliable spatial and temporal inter-comparisons of terrestrial photosynthetic activity and canopy structural variations.

Tropical Livestock Unit – Livestock numbers converted to a common unit measuring 250 kg of live weight.

Dry Matter – what remains after all of the water is evaporated out of a feed.

Crude Protein – Estimate of the amount of protein in an animal feed.

Metabolizable Energy - The amount of energy in the feed minus the energy lost in faeces and urine.

Feed Resource Balance – the net difference between feed availability and demand.

Landscape Approach – Methodology that recognizes the interconnections between people and nature in places of productive land uses – such as agriculture, livestock and mining.

Integrated Landscape Management – The joint/participatory management of production systems and natural resources in an area large enough to produce vital ecosystem services and small enough to be managed by the people using the land and producing those services.

Vegetation Biomass – the sum of leaf, stem branches, and root biomass or sum of above-ground and below-ground biomass.

Forage Condition Index - is a single value calculated by transforming the observations from multiple spectral bands. It is used to enhance the presence of green, vegetation features and thus help to distinguish them from the other objects present in the image.

Vegetation Condition Index – a single value calculated by transforming the observations from multiple spectral bands. It is used to enhance the presence of green, vegetation features and thus help to distinguish them from the other objects present in the image.

Normalized Difference Vegetative Index (NDVI) - is a measure of the amount and vigour of vegetation on the land surface and NDVI spatial composite images are developed to more easily distinguish green vegetation from bare soils.

EXECUTIVE SUMMARY

The Strategy is divided into 4 Chapters as summarised in the following paragraphs: **Chapter 1** provides the value of livestock sector regarding county economic growth and development, the relevance of the strategy aligned to global and national direction and strategies, the objective of the strategy at county level. It ends by explaining the features and the processes of the strategy. **Chapter 2** gives a situational analysis of efforts and outputs or results at Narok county's development of the livestock feeds industry. The efforts are categorised into policies, sustainable land production, productivity and profitability, commercialization, financing and coordination and lastly communication and knowledge management. The Chapter also provides a summary of challenges and constraints.

Chapter 3 is all about the strategic framework. It gives a narrative of the goal, mission, vision, the guiding principles and the Strategic pillars. **Chapter 4** explains the coordination, financing and implementation, monitoring and evaluation arrangement. In tabulated format, it gives the implementation, the communication and the financing plans for the years 2024 to year 2028. Persons responsible and stakeholders during implementation are also listed in the implementation plans.

The overall objective of this strategy is to implement policy statements outlined in the Sessional Paper No. 3 of 2020 on National Livestock Policy to provide guidance on feed production and utilization by outlining SMART interventionsfor sustainable development of the Livestock feed industry. The strategy addresses the challenges in the feed industry with a view to ensuring adequate availability of quality feeds for increased productivity in the livestock sector. The strategy proposes interventions informed by empirical data sourced from the national livestock feed balance report of 2022.

Narok County Government will be instrumental in the implementation of the strategy through development of approaches and allocation of required resources; undertaking the oversight role in development of the necessary feed industry infrastructure; provide technical and extension services to stakeholders in the feed industry; and ensure adequate production, storage, conservation and distribution of quality feed on a timely basis.

The Strategy will provide livestock producers with a holistic approach to facilitate sustainable and lasting solutions to livestock feed challenges in the county. It is envisaged that the interventions outlined in the strategy will contribute to improvements in feed resources and livestock feeding through increased feed availability year-round, a critical step in building the resilience of livestock-dependent communities in Narok and by extension the whole country.

The Strategy is structured into five (5) main priority areas, each of priority area has been broken into several activities that upon implementation will result in outputs, as follows: - improved feed resources, better feed quality and safety, increased feed processing and manufacturing, increased access to markets and trade, research and development, and public and Private Partnerships.

The County Government of Narok, in collaboration with private sector and development partners is committed to implementing the strategy through mobilization of resources to fund the interventions proposed. It is expected that the implementation of this strategy will positively transform the livestock feed industry in the county.

CHAPTER 1

INTRODUCTION

Location, size and human population

Narok county is situated in the equatorial-tropical region at between latitudes 0° 50′ and 1° 50′ South and longitude 35°28′ and 36°25′ East. The county borders the Republic of Tanzania to the South, Kisii, Migori, Nyamira and Bomet Counties to the West, Nakuru county to the North and Kajiado county to the East. It covers an area of 17,933 km2 representing 3.1% of Kenya's surface and is administratively divided into 8 sub-counties and 30 wards. The sub counties include: Narok North, Narok Central, Narok West, Narok East, Narok South, Transmara East, Transmara South and Transmara West. Further, the county has 16 divisions constituting the administrative sub-units of the National Government. Narok County Government was formed by the County Governments Act of 2012 as prescribed in the 2010 Constitution of Kenya and is headquartered in Narok Town, off Narok Nakuru Road (CIDP 2018-2022). As per the KNBS Census 2019 the county human population stood at 1,157,873 increasing at estimated inter-censual growth rate of 4.7%. The population is projected to increase to 1,282,097 by 2029 assuming constant mortality and fertility rates.

Narok County Ecological and Agro-climatic zones

Narok county has three agroecological zones namely: Upper Midland, Lower Highland and Upper highland at 66, 17 and 15 percent respectively while others (Tropical Alphine, Inner Lowland and Lower Highland) contributing to two percent as indicated in figure 1. While the in agro-climatic zones the county has three main zones namely Semi humid, Semi-Arid and Humid at 60, 25 and 15 percent. Two-thirds of the county is classified as semi-arid (Figure 2).

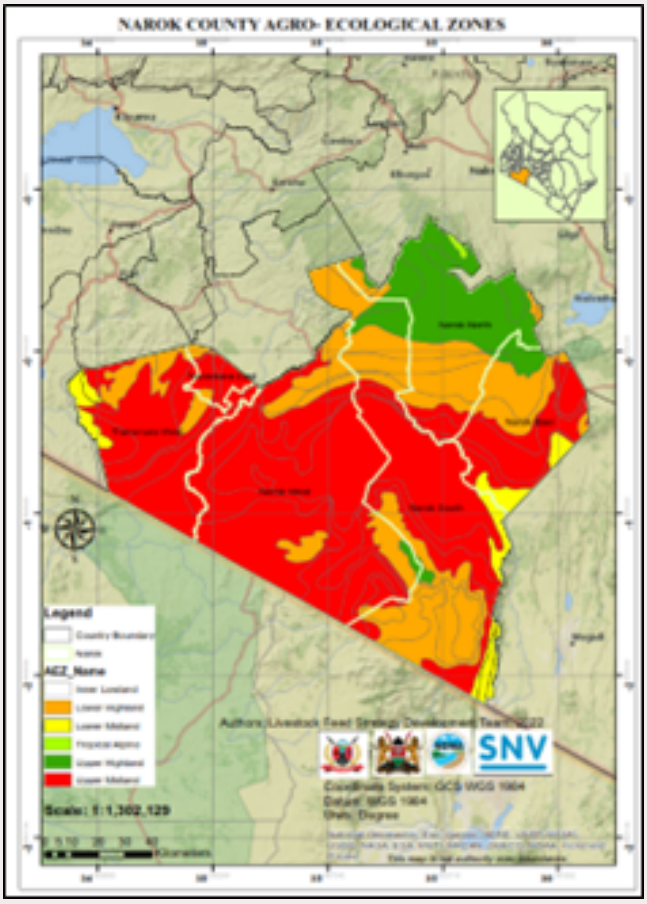

Figure 1: Narok Agro-Ecological Zones

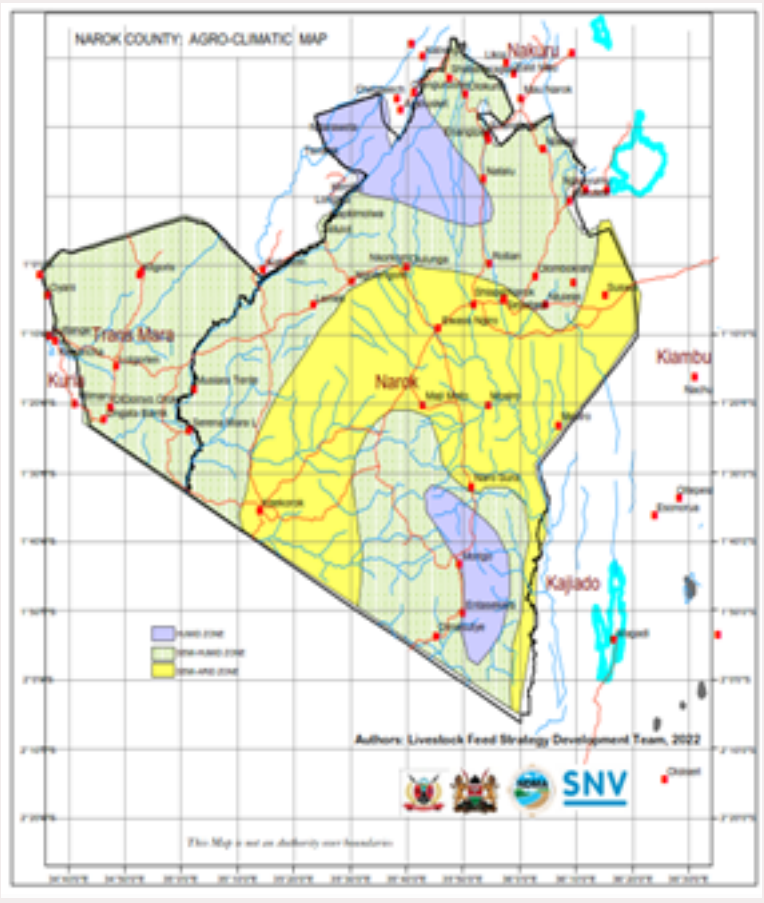

Figure 2: Narok Agro-Climatic

Narok County Livelihood Zones

The county has four main livelihood zones which include Pastoral, Mixed Farming, Agro pastoral and Business/tourism/trade as shown in Figure 3. These livelihoods contribute to 39, 34, 17 and 10 percent of the cumulative livelihoods respectively. Agro Pastoral livelihood zone is considered to be the transition zone to Pastoral livelihood zones. The livestock holding capacities of Pastoral livelihood zones are mainly sheep, goats and cattle with approximately 40, 30 and 10 as average number per household respectively, while for the Mixed farming being at 30, 20 and 10 for sheep, goats and cattle respectively. In the Agro Pastoral being at 30, 20 and 10 for sheep, cattle and goats respectively.

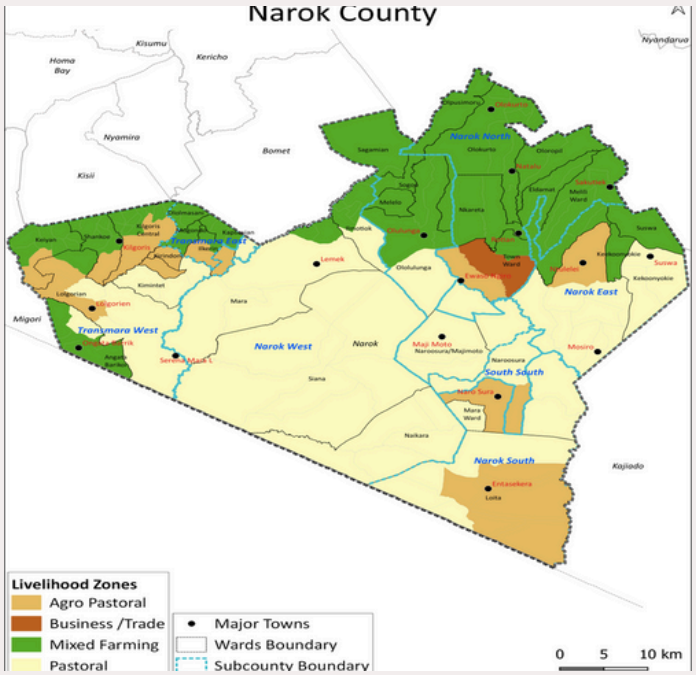

Figure 3: Narok County Livelihood zones

Narok County Climatic Conditions

Temperatures range from 20^{0}C (January-March) to 10^{0}C (June- September) with an average of 18^{0}C that are ideal for growth and performance of most tropical-adapted livestock and plants. The trend in ambient temperature shows no increment over the past 30 years but the variability is unusually significant. Variability in temperatures without increment is an indication of reduced vegetation cover and increased human settlement.

The average rainfall of Narok County is 700 mm per year where the long-season rains are received between the months of February and June while the short rains between August and November. Annual rainfall amount ranges from 500 mm during the dry season to 2,500 mm in the wet season and depending on location, low altitude versus higher altitude. The rainfall in the county suits growth and performance of most plants and animals adapted in the tropics.

Livestock Production

According to (KNBS Census 2019), the main livestock species in Narok county are cattle, sheep and goats and the emerging species (Table 1). Dominant breeds in the county include Zebu, Dorper sheep, Red Maasai sheep, gala goats and small East African goats. Communities have continued to diversify into high quality breeds for dairy due to shrinking land sizes and increased demand for beef and dairy milk. Thus Sahiwal, Boran, exotic dairy breeds and their crosses are progressively becoming popular. The dairy value chain is growing faster under intensive and semi-intensive production systems. Exotic dairy breeds reared include Friesian, Ayrshire, Jerseys and their crosses in the dairy rich sub-counties Narok West, Narok South and Transmara.

Table 1.: Value (in Kes) of livestock in Narok County

LIVESTOCK NAMES		Number in thousands ('000)								
SPECIES No.	CLASS/ Type	N. East	N. North	N. South	N. West	T.M. East	T.M. West	TOTAL in Narok	UNIT Value	TOTAL Value
Cattle	Dairy	1	20	24	18	8	16	96	45	4,328,852
Cattle	Beef	128	215	317	393	50	328	1,430	30	42,910,553
Sheep	Wool	20	29	9	14	0.04	0.06	72.1	10	720,861
Sheep	Hair	346	500	606	914	27	204	2,597	5	12,984,123
Goats	Dairy	0.4	0.5	1.5	1	0.1	1.2	5	12	58,243
Goats	Meat	145	130	318	281	13	109	996	7	6,971,027
Pigs	All	0.7	0.7	0.6	0.1	0.03	0.06	2	12	26,292
Donkeys	All	11	24	19	9	3.5	18	86	12	1,027,879
Rabbits	All	0.4	1	1	0.6	0.5	0.4	4	0.6	2,349
Poultry	Main	4	181	179	25	139	225	763	0.45	343,127
Poultry	Emerging	0.2	0.4	0.3	0.3	0.2	0.2	1.6	0.5	805
County Value										69,374,108

Source: Department of Livestock Reports, 2022; N= Narok, T.M. = Transmara.

The majority of the people in Narok county depend on livestock, crop production, trade and tourism for income and food. The pastoral Maasai community is shifting from pastoralism to agro-pastoralism. This community is strongly traditional with much cultural and economic attachment to livestock. In Narok county there are two major livestock farming systems (Figure 4) identified as follows: (i) intensive farming system which is characterized by a cut and carry feeding system which can be a feedlot for beef or stall feeding in a zero-grazing unit, and (ii) extensive farming characterized by grazing on natural grassland. A hybrid of zero-grazing and extensive farming systems is the semi-intensive farming system, which entails grazing on natural grassland with some supplementation in a feedlot. The intensive farming systems are further characterized by mixed farming made of food crop/livestock.

Livestock Farming Systems, Adoption and Contributions

Extensive livestock farming (pastoral, agro-pastoral and ranching) comprises 61 percent of the total whereas intensive and semi-intensive livestock farming systems comprise 39 percent. These farming systems contribute to majority of the livelihood zones in Narok county that constitute 39 percent Pastoral-all species, 34 percent Mixed Farming, 17 percent Agro-pastoral and 10 percent tourism

(Livelihood Review report, 2021) Grazing is the main method of feeding animals under the extensive systems in Narok County (Figure 4).

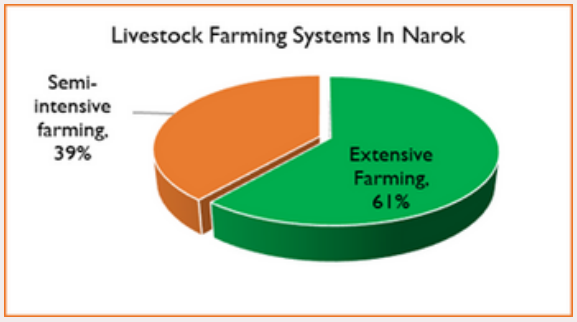

Figure 4: Livestock production System

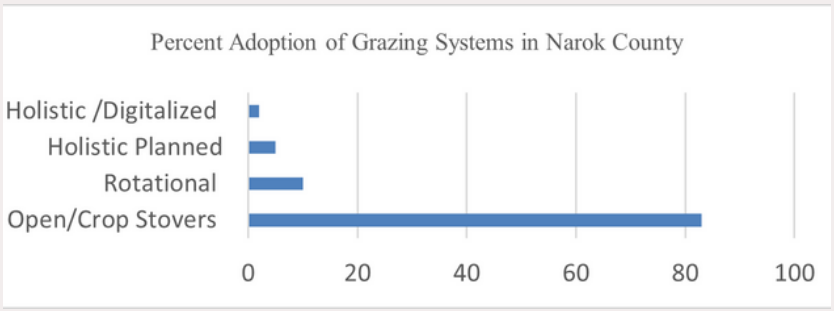

Figure 5: Percentage Adoption of Grazing Systems

The county adoption of grazing systems has been mainly on open/crop stovers (80 percent) due to high pastoralism especially in the rangelands while rotational grazing systems is practised due adoption of ranching at ten percent. Holistic and or holistic/digitalized is adopted at five and 2 percent respectively (Figure 5).

Livestock contribution to cash income is 85, 66 and 40 percent for pastoral, agro pastoral and mixed farming livelihood zones respectively, through sales of meat, milk, hides, skin and by products. The county had four (4) company owned ranches and 156 classified as group ranches (NCDP, 2013). The group ranches have been sub-divided to individually owned ranches. Ranchers have regrouped and formed about 30 community managed wildlife conservancies found in Narok county. There are a few large-scale commercial farms keeping dual-purpose dairy and beef cattle, goat and sheep. In the extensive farming systems, cattle and small ruminants are kept on rangeland grasses where they obtain the largest proportion of their feed. The choice of the farming system in Narok is determined by socio economic factors like the cultural traditions and the desire to optimize on the limited resources. In the medium altitude areas with a high population density, land tends to be the limiting factor, whereas in extensive farming systems water is the limiting factor as it affects yields of herbage.

In semi-intensive system the animals get some feed supplementation at night and during finishing for the meat market. At times they are supplemented, during milking or only during periods of drought. Under the extensive farming system, there is either very minimal or no improvement of the grassland done. Grassland management practices such as holistic landscape management has either been introduced recently or is not yet in place completely. It is common to have degraded grassland and forage scarcity during the dry seasons.

Feeds in Narok county

There are two main strategies for feeding livestock in Narok county-the cut and carry and the grazing. Irrespective how the livestock is fed, the diet consists mainly of forage plants and there is a wide range of exotic and indigenous forages used in Narok, depending on the agro-ecological zones, soil fertility, feeding systems and type of land use.

Most forage cultivars are unregistered for commercial use in Kenya and those registered at the National Crop Variety List (most recent August 2019) are shown in table 2.

Table 2. National Fodder/Pasture Crop Variety Registration List 2019

Name of forage	Oldest entry on the variety list	Latest addition to the variety list	No of varieties
Rhodes	1960	1976	3
Seteria	1956	1956	2
Panicum	1955	1955	1
Lucerne	2015	2015	5
Bracharia	2016	2016	3

Source: KALRO Website

The commercial forages in Narok are largely "outdated improved variety" and development of strategies that promotes on-farm research and registration of improved varieties is overdue. Several forages e.g., Rhodes grass (Chloris gayana) are highly adopted in the County due to favourable growing, packaging characteristics and demand in the market. Plans for scaled diversification and adoption for increased production and productivity are envisaged.

In intensive farming system under zero grazing and semi zero grazing, Napier grass (Cenchrus purpureum) mainly the varieties Bana, Kakamega I and Kakamega II are the most popular grass used. Star grass (*Cynodon dactylon*) and Kikuyu grass (*Cenchrus clandestinum*) grow, depending on location, naturally and are used for grazing. Rhodes grass is mainly used for hay making and mostly targeted for commercial purposes. The use of forage legumes including desmodium, cow peas (*Vigna unguiculata)*, lucerne (*Medicago sativa*), Dolichos lablab (*Lablab purpureus*), Sun Hemp (*Crotalaria juncea*) and lupin (*Lupinus albus*) have increased mainly due to interventions by governments, research systems and development partners. Use of maize (*Zea Mays*) and sorghum spp (*Sorghum drummondii*) for silage making have emerged too albeit not widespread. Maize for forage has shown to have high potential in medium to high rainfall areas whereas sorghum is preferred in the low rainfall regions. The Panicum (*Panicum maximum*), Bracharia varieties namely, Xaeres, Piata, Basilisk, MG4 and Mulato II have been introduced recently and being adopted at mixed farming systems. On some farms cut and carry grass, Lucerne and/or forage Sorghum is grown under irrigation.

In the extensive farming systems, located mainly at the rangelands, indigenous forage species are the most common. The main grass species found in free grazing on natural grassland systems include: *Cenchrus ciliaris, Eragrostis superba, Enteropogon macrostachyus, Panicummaximum, Themeda triandra* and in minor proportion, *Digitaria abyssinica, D. milanjiana,* and *Leptochloa obtusifolia.* Some of the naturally grown legumes include *Stylosanthes scabra, Macrotyloma axillare, Leucaena leucocephala,* and *Acacia spp.* In these systems, interventions to improve or sustain forage yields has been recently introduced through the holistic planned grazing strategies. The grasslands in Narok are of poor soil hydrolysis parameters and invaded with invasive species such as Sporobolus africanus and the tobacco plant indicating a high level of vegetation degradation mainly due to poor grazing and land management practices amongst the majority of traditional pastoralism. Several ranches and conservancies in Narok county are however reaping from adoption of strategies for increasing forages yields in the grasslands such as holistic planned grazing strategies that restore and/or rehabilitate vegetation.

In both extensive and intensive livestock farming systems, all year-round access to quality and adequate forage (seeds and herbage) is low and subsequently adversely affecting meat and milk yields. The quantity and quality of forage available depict a seasonal fluctuation with an acute shortage of supply during the dry period. There are several storage facilities for both hay and silage in the county but as per the Long Rains Assessment (LRA) 2023 report, notably, only 10% of the capacity is occupied across the year indicating lack of feeds and feeding plans by the livestock keepers and thus high exposure to shocks such as drought associated with climate change.

Improved forages (e.g., Napier) could contribute to improved milk production as shown in Table 3. Often, the forages available during dry season is of poor nutrients yields. Napier grass in Narok can offer circa 6-7 MjME/kg DM (Dry Matter) and 6% CP, and low-quality hay with an average ME of 5-6 MJ/kg DM and 4% CP. The low yielding forages (low energy density and high fiber content) hardly nourish livestock since the low digestibility limits the feed intake before they cover their nutrients requirement levels, particularly of exotic breeds resulting to low yields of livestock products. Low yielding forages are also reported to be responsible for increased emission of greenhouse gases such as methane.

Table 3. An example of forage quality and milk production relationship

Forage crop & cutting stage	NDF* g/kg DM	ME MJ* g/ kg DM	CP* g/kg DM	DMI* kg/day	Milk l/day	ME* %	MP* %	CH4* g/l	MAFC* KES/day
Napier > 120 cm	681	7.4	4.2	10.5	1.3	100	50	261	0
Napier = 120 cm	695	8.1	8.8	10.3	2.7	100	111	129	4
Napier < 60 cm low CP	630	9.0	12.5	11.3	6.4	100	132	51	115
Napier < 60 cm high CP	611	9.0	15.3	11.7	7.0	100	163	47	161

(550 kg body weight (BW) stall-fed dairy cow, 150 days in milk, 70 days pregnant, DMI based on 1.3 % NDF, milk 3.7 % fat and 3.1 % protein. Milk price: KES 35/ltr, Napier grass price: KES 2.0, 1.6, 1.0 per kg (from poor to high quality)

*NDF: Neutral-Detergent Fibre, ME MJ: Metabolizable energy in Megajoules, CP: Crude protein, DMI: Dry matter intake, MP: Metabolizable protein, ME%: ME supply as a percentage of total requirement, MP%: MP supply as a percentage of total requirement, CH4: methane, MAFC: Margin Above Feed Cost.

The number of tropical livestock units (TLUs) in Narok county does not match with the quality of forages available in terms of meeting the nutritional requirements of the livestock. The skill levels required to manage rangelands and improved-pastures among most livestock keepers/farmers is low. In addition, grazing arrangements and Seasonal calendars to rest pastures for natural restoration have not kept pace with the changing land ownership and the competition for other land uses. It is fundamental to target rangeland management through good pasture management skills to promote sustainable management of the forages and also to avoid mortality and overgrazing, in combination with good quality rations for ruminants during periods of increased nutrient demand (for example when cows are milked, during finishing before slaughtering). This aims to increase performance per animal (milk and growth) and eventually can be an incentive to reduce the number of TLUs stocked.

Based on the feed and fodder inventory report for Kenya (MALFI-FAO, 2017) the total livestock fodder requirement in terms of dry matter for Narok county was 2,928,223 tons, but the potential dry matter production was approximately 2,266,367 tons. However, actual availability of feed in 2017 was less by 46% standing at 1,339,777.3 tons. The county scored adversely in terms of DM, CP and ME as follows: DM = 54.2%, CP = 69.2% and ME = 72.2 % respectively.

That means that the supply of feed (dry matter, metabolizable energy and protein) was below the effective feed demand for the ruminants in the county. Due to improved rainfall in the last three years most of the farmers indicated that they have not faced severe forage scarcity and a number of them had conserved hay for use during the dry season. In addition, many of the large livestock keepers have negotiated for grazing grounds in different parts of the county where they move their animals once their own pastures are depleted.

Justification of the Livestock Feeds Strategy

The livestock sector in Narok County is valued at Kes 69 billion (Table 1) and contributes 50% of the total county's agricultural value (NCASIOR, 2015) [1]. Thus, development of a county specific livestock feeds strategy for efficient feeds production, access and utilization should drive sustainable economic growth and development. Livestock is a main driver of food and nutrition security as well as other social security and income generation in pastoral communities.

The average Kenyan consumes approximately 15kg of meat per year (Njenga, 2022; KMT 2019) against the WHO recommendation of 26Kgs per year. This represents a meat deficiency of 300,000 metric tons per year as at year 2019. Kenya`s demand for livestock products is expected to double by 2050 (Gatsby Africa). The market for livestock and livestock products both within and without the county is ever on the rise due to increasing human population and the expanding middle class with increased consumption of animal proteins. Thence a well-thought and globalized feeds strategies should create diversified markets and ability to compete for ecologically and organically certified animal products in the wider markets.

Livestock is a tool for landscape management and is the main vehicle for nutrients cycle in the fragile ASALs. Livestock feeds strategies that are climate smart, promotes conservation of carbon and reduction of emitted methane gas will accelerate ecosystem health and sustainable production in the usually fragile pastoral systems. Attaining a sustainable and adequate supply of products and services from feeds resources requires an adapted, wholesome and intertwined strategies necessary for guiding the developmental agenda within the livestock industry.

This livestock feeds strategy will address challenges causing feed deficits and information gaps identified over time and documented in chapter 2 of this document. The challenges include those regarding policy, landscape management, production and productivity, commercialization as well as communication.

[1] Narok County Agricultural Sector Investment Opportunities Report, 2015

Existing Policies and Strategies

The Strategy is incorporated and aligned to the Narok County livestock programs, priorities and flagship projects planned for implementation between year 2023 to 2027. It is also linked with the global and national livestock management and development agenda. The County Spatial Plans/ GMMEMP sought to peacefully share and distribute grazing resources used by livestock and game animals and also for human consumption. The governor's manifesto and the CIDP III 2022- 2027 (county master plan for Development for the next 5 years) prioritize investment in livestock feeds. The County DoALF strategic plans seek to enhance extension services delivery and a holistic approach to training. The climate change information service plan sought to provide information required for ecological monitoring and assessment of ecological outcomes and Animal health and production bill (draft) seek to propel commercialization, coordinated herd movements and feeds standards.

Strategy Objectives

1. To drive sustainable livestock sector development and in line with the CIDP (2023-2027) and the Governors' manifesto, it has become necessary to develop a Narok County Livestock Feeds Strategy with a view to guiding the feed industry development and attract investment.
2. Its aim is to ensure coordination and integrated planning and implementation of action plans in pastoral, agro-pastoral and mixed farming livelihood zones. To achieve this, the strategy set out 5-year stakeholder-agreed vision and goal, strategic objectives and actions that will be implemented to achieve the goal.
3. The Strategy will provide policy guidance required for sustainable growth of the feeds industry. The planned interventions will be employed to ensure increased efficiency of resource allocation for sustainable, adequate and quality Livestock feed production hence increased profitability and accelerated development of the Livestock Sector.

CHAPTER 2

SITUATION ANALYSIS

This chapter present the status and challenges in the feed industry based on experience from players in the national and county governments, development partners, the private sector and the feed users. The analysis is presented in seven subsections including: 1) enabling environment, 2) financing and coordination, 3) communication and knowledge management, 4) landscape management, 5) forage production and productivity, 6) commercialization and quality and, 7) livestock feeds resource inventory and balances.

Enabling Environment

Narok county is dependent on national government and global livestock policies, regulations, legislations and strategies for supporting livestock feeds sector development and management. The table below shows some of the existing policies supporting the feeds industry sector.

Table 4: Feeds relevant Policies, regulations and strategies

Relevant Policies, Regulations,	Objective
Kenya ASAL Policy-Sessional Paper No. 8 of 2012	The policy also focuses on challenges facing the pastoral communities in rangelands and come up with measures to manage drought & strengthen livelihoods
Vision 2030 Development Strategy for Northern Kenya and other Arid Lands	Envisions a holistic and sustainable management of land and natural resources across the Rangelands to allow for maintenance of their traditional movement arrangements. Integration of traditional systems of natural resource management in all other policies affecting the natural resource base; recognition in law of the role of traditional institutions in dispute resolution
Kenya Rangeland Management and pastoralism strategy of 2021-2031	Kenya's rangelands account for over 83% of the country's land mass and support over 70% of the country's livestock and 85% of wildlife populations. Unfortunately, the productivity of these rangelands has been greatly affected by the frequent droughts and floods that characterize the impacts of climate change and variability. This has resulted to major threats to the integrity of these critical ecosystems that support over 10 million people who directly derive their livelihoods from the existing natural resources. The impacts of the droughts on the population have been increasing exponentially from 1970s to date.

Relevant Policies, Regulations,	Objective
The National Livestock Policy (Revised 2019)	The Livestock Policy covers key issues relating to: farm animal genetic resources, livestock feeds and nutrition, inputs, animal diseases and pests, livestock marketing, research and extension and food security. In developing this sub-sector policy, it is appreciated that over 80% of Kenya's land mass is arid and semi-arid and livestock is the main source of livelihood in these areas. It is further noted that even in the non-ASAL areas, the livestock sub-sector constitutes an important source of family income and food security.
Agricultural Sector Transformation and Growth Strategy (ASTGS) 2018-2028	The ASTGS prioritizes three anchors as follows: increase small-scale farmer, pastoralist and fisherfolk incomes; increase agricultural output and value add; and Increase household food resilience.
Constitution of Kenya 2010	Ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources
The Community Land Act, 2016	Recognizes that more than 80 percent of the Rangelands are located in communal lands and for the communities to utilize their land sustainably, they must have ownership of the land, and be engaged in decisions for sustainable utilization and protection
County Government Act 2012	Management of natural resources, biodiversity, forests and water resources
Kenya Agricultural and Livestock Research Act, 2013	Research on appropriate Rangeland management e.g livestock breeds, Range livestock feeds, pasture/ fodder grass seed varieties for higher productivity in rangelands and other regions

Narok is in the process of developing county specific policies and strategies that impact on livestock and animal feed development including: -

- County spatial plans
- GMMEMP,
- Governor's Manifesto
- DoALF strategic plans,
- Climate change information service plan,
- County integrated development plans and,
- Animal health and production bill (draft).

Challenges on creating an enabling environment.

Include inadequate funding for development/domestication of policies, inadequate technical capacity in development of policy, legal and institutional frameworks and Weak enforcement of feeds standards

Financing and Coordination

Financing: Narok county government directly or indirectly provide support to livestock feeds sector stakeholder. The financial support is in form of grants, subsidies, loans and favourable policies. The support comes from governments, private investors and public donors and is channeled through the following financing mechanisms;

- CIDP where departments are involved in plans development and are financed from the county treasury.
- Strategic partners conditional grants mainly from the national government
- The state- and privately-owned financial institutions such as banks and SACCOs.
- The development partners and private sector players that provide financial assistance directly to the communities. Some partners also use the conditional grants approach.
- The private sector players such as banks, producer organizations, cooperative societies, ranchers are supported through regulated guidelines and technical assistance.

Coordination: Several stakeholders are involved in the livestock feeds industry in Narok county. A summary of the sector stakeholders, their current roles and potential contribution in implementation of the Strategy is presented in table 4 below.

Table 5: Stakeholder analysis and mapping

	Stakeholder	Role/ Responsibilities	Strength / Comparative Advantage
1.	State Department of Livestock	• Provide guidelines on policy development • Capacity building of stakeholders	• Technical expertise on policy development • Diverse networking capacity
2.	NARS: KALRO, CGIAR, Colleges, Universities	• Forage plants breeding • Adaptive research, • Weather forecasting, • Training	• Breeding, expertise and on-farm research. • Feeds balances forecasting • Provision of adapted research outputs
3.	Forage crop seeds merchants; growers, stockists, distributors	• Seeds production, multiplication, distribution, stocking and trade. • Training and extension support on multiplication	• Accessibility to the producers. • Financing arrangement with producers • Extension services.
4.	Financial institution e.g., Banks, SACCO, insurance company	• Provision of Financial services : loans and credit facilities, deposits and insurance • Business plans support • Financial education support	• Have matching and liquid capital. • Have usable models of money lending • Information on business management • Risk management
5.	Feeds companies; growers, processors manufacturers & processors.	• Fodder growing, trade • Value addition in feed and feed products. • Manufacturing of high quality/safe feeds, trade. • Feeds reservation, marketing	• Facilities for commercial production • High expertise in value addition, quality control & growing. • Ability in heavy investments • Wide markets and networks, • Could establish/ operate feed business centers

	Stakeholder	Role/ Responsibilities	Strength / Comparative Advantage
6.	Farmer organizations: Cooperative, Groups, WRUA, & conservancy	• Feeds growing resource-land, • Feed resource bulking & sales • Lobbying for quality feeds, policies, services	• Mobilization of resources (human and financial resources) • Dissemination of new technologies. • Advocacy for consumers rights.
7.	Feeds and feed transporters	• Product delivery of products along the VC nodes.	• Facilitate distribution of feed products
8.	Trainers and extension service providers	• Linkage to goods/inputs, services and markets • Provision Extension Services	• High technical and ICT expertise • Adequate linkage to all actors • Available all over the county
9.	Machinery and equipment providers	• Import, assemble, fabricate, sell, leasing • Aftersales services provision	• Locally accessible and available to farmers • Credit facilities provision
10.	Development partners, INGOs & local NGOs	• Technical capacity providers • Grants to investors/innovators • Advocacy for GESI	• Access to many donors/ partners/ financiers • Vast technical & partnership expertise & experience. • Functional systems, structures, networks • On-going and funded ICSIAPL and other Projects
11.	Training institution: University, TVET College, School	• Curriculum development & Provision of training materials • Training of feeds industry actors. • Research and innovation	• Technical capacity and infrastructure • Develop and regulate training materials i.e., quality control in feed training. • Existing infrastructure and land
12.	Feeds consumers	• Markets/ sales regulation • Quality control	• Advocate for quality; bargaining power. • Team up for increased purchasing power
13.	DoALF & strategic partners (e.g., NARIGP & ASDSP II)	• Regulation policy/ Advisory • Economic plans development & implementation • Grazed lands management	• Existing partnership with donors such as SIDA, European Union and Embassies • Main source of technical expertise and has tools and structures for data collection and dissemination. • Policy formulation and implementation. • M & E and appraisal of the feed industry. • Coordination of industry players

	Stakeholder	Role/ Responsibilities	Strength / Comparative Advantage
14.	National Drought Management Authority	• Water sources development; Macro dam's project. • Vegetation & water data gathering. • Vegetation and water issues communication • Feeds inventory and reserves/contingency plans	• On-going funding from National government for Macro dams' construction. • ICT systems and personnel or expertise in knowledge and communication. • Readily designed systems and bulletins • Secretariat to the CSG and County structures for drought response
15.	Department of environment, energy, water natural resources & Kenya Met	• Weather monitoring • Climate change management • Forage trees • Forest conservation • Land degradation management	• Ecological monitoring for sustainability in addition to drought info alone • Vegetation and water issues communication • Awareness creation • Advertisements and linkages
16.	Ministry of Information, Communication section in relevant departments and Private media	• Awareness creation on tools, materials, TIMPs e-training/learning of actors, • Hosting and updating of the feed's subsector proposed websites	• Ability to reach the masses via the existing structures and systems e.g., telephones, radio stations and TVs • Available expertise- private and public • Availability of ICT labs, data and systems • Legislated/licensed communicators
17.	Regulators: STAK KEBS, KEPHIS, AKEFEMA,	• Quality control and assurance • Advocacy & advisory • Linkage to donors/markets	• Increased access at county level • Clear specifications and standards
18.	Professional and technical bodies	• Animal Production Society of Kenya • Fodder and pastures society of Kenya	• Registration of feeds producers • Technical support • Financial support

Source: Strategy 2024-2034 planning team, 2022

For enhanced coordination Narok has established structures at County and communities' levels that mainly includes:

- The CSG co-chaired by the County Governor and the County Commissioner and all stakeholders are represented.
- County Food Security Committees responsible for emergency funds planning
- The CASSCOM led by the DoALF and responsible for coordination of agricultural sector activities.
- Community driven development committees and value chain committees supported by NARIGP.
- Beef and dairy value chain committees supported by ASDSP II.
- WRUAs supported by water resource authority,
- CFAs supported by Kenya Forest Service
- ENDEV committees support the NDMA regarding drought management.
- Technical working groups or steering committees supporting mainly NGOs.
- Other structures involved in feeds subsector includes private companies, cooperative societies, community groups, dairy and beef producers.

Challenges regarding financing and coordination

- Inadequate skills and networks for resource mobilization and leveraging,
- Limited opportunities for the county to mobilize resources
- Weak coordination structures for the stakeholders in the feed industry.
- High cost of financing investments
- Lowly diversified financial sources, products and models that leave out carbon credits, insurance and innovation funds as well as funding targeted to women and youth (affirmative funds).
- Dairy and meat business plans models that lack the component of feeds hence making it uneconomical
- Inability by financial institutions to develop financial productstargeting feeds industry,
- Inadequate financing leading to low investment in pasture and fodder development.
- Uncoordinated project implementation leading to duplication of activities.
- Inadequate business development skills trainers.

Communication and Knowledge Management

Knowledge management is the process of acquiring, storage, sharing and dissemination of information acquired on process, operations and techniques to enhance service delivery. Further it refers to getting the right knowledge at the right place at the right time to enable the right person to make and implement the right decision to enhance performance. The purpose of the communication and knowledge management is to provide a means through which stakeholders will create and share information on feeds strategy implementation in order to achieve its purpose. In Narok county, the county department of Information Technology and E-Government is responsible for communication and it serves all the other departments.

Narok has made efforts to manage knowledge and communicate through an integrated set of initiatives, systems and behavioral interventions in the feeds sector. The focus has been on volumes, risk, hazard, and vulnerability analysis through coordinated Information Technology (IT) systems. Managed databases are stored and retrievable in relation to available livestock feeds.
The county government capacity of data collection, verification, validation, dissemination, monitoring, evaluation and learning of best practices is low and there is reliance on other institutions such as NDMA. Institutionalizing of knowledge management in the livestock feed sub-sector has been faced with challenges that include:

- Inadequate county policy, legal and institutional framework for coordination of knowledge management in identifying, creating, capturing, analysing, storage, retrieving, sharing, protecting and application of knowledge.
- Inadequate financial resources to fund knowledge management activities.
- Weak monitoring, evaluation ,learning and reporting mechanisms.
- Weak knowledge management culture and practice that hinders knowledge flow.
- Lack of county data capture and protection system both digital and analogue
- Lack of multi-sectorial forums and processes
- Inadequate logistics to support the social media channels.
- Inconsistence communication channels

Landscape Management

Land use zones mapping efforts and challenges.

Narok County is classified into three major agro-climatic zones. The semi-arid zones receive rainfall less than 762 mm per annum and this area is mainly used for production of grazed feed resources mostly the natural browse and grasses as well as saltlicks. The sub-Humid zones that receive between 762 mm and 1270 mm per annum is used for production of commercial cut and carry feed resources such as barley, oat, maize, Rhode and signal grass. Production of high protein yielding legumes such as purple vetch, lucerne, desmodium is common at the humid Zone with rainfall above 1270 mm per annum. The trend and variability in rainfall must be updated with support from the Kenya MET and matching of forage crops adapted for each zone conducted through working with researchers.

Narok county soils are mapped as mainly sandy clay loam and few places with clay soils and humid topsoil. Based on colour, the soils are deep dark to reddish brown. The soils are moderately drained indicating a moderate fertility. The existing soil maps are weak in soil carbon, soil hydrolysis attributes and there is need for working with researchers to update the soil maps and match core parameters with vegetation diversity.

The County Spatial Plan and the GMMEMP[1] have been developed and launched. The landscapes management plans focus mainly on wildlife (indigenous plants and game animals) conservation and movement. They are inadequate on plans in feeds (water and biomass) resources, stocking rates, grazing density, livestock movement and grazing agreements.

Grazing areas have substantially shrunk in Narok due to encroachment by cropped land and settlements (Said et al. 2019) and resulting to reduced yields in livestock feeds. Through support from SNV project, capacities of county staff and local communities in digitalization and implementation of grazed landscape management plans have been enhanced. The purpose is to train groups or households in land use zones (grazing, settlement, riparian, cropland and wetland) layout, develop grazing resources management plans, agree on herd mobility routes and grazing schedules and develop formal grazing resources sharing agreements. Still, landowners have been capacitated to conduct ecosystem health monitoring and evaluation based on ecological outcomes. Implementation of the landscape plans through holistic grazing innovations that conserve while enhancing yields of livestock feeds resources have commenced and few pastoralists have adopted the climate resilient innovations, technologies and practices. Need for scaled interventions as well as training on ecological outcome verification/auditing and implementation of climate resilient and regenerative agriculture.

Challenges in land use mapping

- Inadequate information on land use mapping
- Inadequate developed land use mapping related policies and strategies aligned to national and county policies and plans
- Poorly governed and uncoordinated livestock movements
- Inadequate knowledge and skills in spatial planning in county and communities.

[1] Greater Masai Mara Ecosystem Management Plan, 2022-2032

Vegetation mapping efforts and challenges.

Effort has been made to map vegetation in the ASALs including Narok county by researchers, the wildlife conservationists and the development partners. Based on the dominant vegetation types, Narok county is characterized into 3 vegetation type: the forest land in the higher altitude areas, natural grasslands/ shrubs in the low rainfall areas and the zone occupied mainly with introductions of exotic forage and food crops.

Using the vegetation cover index (VCI), health of the vegetation at forestland and cropped land is at below 50% and is clearly mapped. The area under exotic trees, natural forest, cereal crops, sugarcane, potatoes and the associated yields per hectare is mapped.

Challenges in vegetation management

- Inadequate vegetation diversity surveys and health monitoring:
- Inadequate data on feed inventory and balances at the grasslands.
- Inadequate of funds to restore the vegetation especially in the grasslands.
- Climate change impact (Recurrent drought and floods).
- Inadequate developed policies and strategies for plant genetic materials transfer; including invasive plants
- Inadequate capacity in drafting vegetation restoration plans.
- Inadequate capacity for appropriate tillage and mechanization.
- Inadequate documentation of ethno-ecological data for promotion of conservation, protection initiatives.

Water management.

Narok county water comes from various sources as shown in Table 5 below. The contribution of each water source to livestock water demand varies depending on rainfall amount. Over 27% of the water comes from pans/dams, boreholes and shallow wells.

Table 6: Water sources and the percent contribution to total supply across 3 years in Narok County

Water sources	Contribution Year 2021	Contribution Year 2020	Contribution Year 2019	Contribution during drought	Contribution during non-drought	Contribution across drought & non-drought
	%	%	%	Value	Value	Value
Boreholes	10%	7%	8%	0.07	0.10	0.08
Pans and dams	25%	25%	27%	0.25	0.27	0.26
Piped water	10%	10%	8%	0.08	0.10	0.09
Rivers	18%	18%	19%	0.18	0.19	0.18
Shallow wells	12%	11%	12%	0.11	0.12	0.12
Springs	4%	6%	3%	0.03	0.06	0.04
Water Trucking	6%	6%	7%	0.06	0.07	0.06
Rock catchment	6%	7%	7%	0.06	0.07	0.06
Other	3%	4%	5%	0.03	0.05	0.04
Traditional River Wells	6%	7%	7%	0.06	0.07	0.07

Source: Livestock Feed Strategy Development Team, 2022

The water sources are served by varied water sub-catchments landscapes that span from the Mau Water tower and other watersheds. The WRA supported development of digital SCMPs that expired in 2022. The objective of the SCMPs is to promote community led development and implementation of water resources management plans. The existing plans focus mainly on water , soil conservation and protection. However, chapters on climate change livelihoods and economics in the reviewed SCMPs plans are being included.

Challenges in water management

- Complex hydro-geological conditions for pans, dams and boreholes.
- Poor governance of WRUAs
- Inadequate inclusion of SCMPs action plans in the County spatial plans
- Inadequate ownership of action plans in SCMPs
- No data on soil ecosystem health: soil carbon, fertility and hydrolysis
- Inadequate sustainability and business plans by WRUAs
- Underdeveloped ecological outcome monitoring plans

Production and Productivity

Narok county have made efforts to increase livestock feeds yield through introduction and promotion of innovative technologies and practices.

Forage growing: The interventions include; distribution of high yielding forage seeds (table 7) on-farm performance validation, training and visits, field days trainings at both the natural grasslands and cultivation areas. In the natural grasslands, the grazing management strategies are promoted while in the cultivated fields, fodder crops production is the main focus.

Table 7: Estimated area of land under forage crops in Narok County

YEARS		2018	2019	2020	2021	2022
Cultivar Name	**Type**	**Ha**	**Ha**	**Ha**	**Ha**	**Ha**
Natural grassland	Mixers	598,500	595,000	598,000	596,000	595,000
Natural browse land	Mixers	49,500	48,500	48,000	47,500	46,000
Indigenous Kikuyu grass	Mixers	67,280	68,000	68,000	67,800	66,000
Napier grass	Grass	6,980	7,500	8,000	9,200	10,200
Rhodes grass	Grass	10,200	13,000	15,000	19,500	25,000
Columbus grass	Grass	108	110	110	120	150
Maize/sorghum silage	Grass	60	100	100	115	130
Panicum grass	Grass	0	0	1	20	26
Bracharia grass	Grass	0	0	3	5	7
Sweet potato vines	Forbes	3	5	8	10	15
Calliandra	Tree	2	2	2.5	3	5
Sesbania	Tree	0.5	1	1	1	2
Leucaena	Tree	0.5	1	1	1	2
Lucerne	Legume	7.2	8	10	12	20
Desmodium	Legume	11.5	11.5	11.8	12.2	15
Others*	numerous	0	0	0.5	40	64
TOTAL		732,653	732,239	737,246	740,309	742,636
*** Improved cultivars introduced by SNV and other development partners in the recent past including-: purple vetch, Sunn hemp, Sugargraze, Nutrifeed, lupin, Cenchrus, Eragrostis, Enteropogon, Mucuna, Dolichos and cowpeas.**						

Source: 2022 Livestock and livestock products annual data projection estimates.

Industrial by-products and farm waste: The agro-industrial by- products common in Narok are bagasse and molasses produced at Trans Mara sugar company. In terms of fresh weight and annually, Narok county produces 175,200 tonnes of bagasse, 68% is dumped, 2% is used as animal feeds, 20 % is used for power generation and 10% is used to make briquettes. About 26,280 tonnes of molasses is produced, 30% animal used as livestock feeds, alcohols take up 50% and 20% is used for sweets production (Source: Strategic Plan Team 2022).

Hydroponics and insects: The hydroponics feeds are soilless crops growing technology where mainly barley and Azola are grown. Adoption and scaling of hydroponics in Narok is low due to high cost of production and limited accessibility of seeds. Insects are highly suitable to be used as feed due to their high nutritional values, feed efficiency, and reproductive capacities. Adoption of this innovation is very low in the county however, sensitization is ongoing. Insects can produce by-products; are naturally present in some livestock diets (e.g., fish, poultry, pigs) and can create additional socio-economic and environmental benefits. A wide range of suitable insects exists, e.g., beetles, black soldier fly (BSF) larvae, house fly maggots, mealworms, silkworms and locusts-grasshoppers-crickets.

Mechanization and equipment: All the agricultural processes are supported with mechanization in Narok County. Estimates from the private sector shows about 200 tractors are in the county at the peak season during land preparation. The tractors and the other machineries are mainly for land preparation and planting processes for major cereals such as wheat, barley, oats, Irish potatoes and maize. There are few or no machineries for forage crops production.

In regard to harvest and post-harvest management, disk mowers, rakes and balers are required. There are 4 feeds processing factories in Narok County and owned by the private sector players. The factories raw materials are cereal from major crops as well as sugarcane that is used to make molasses. The county has placed lots of efforts to introduce inclusive mechanization by supporting small community groups with small machineries such as brush cutters, dry and wet feed millers, packaging materials for livestock feeds and silage choppers. The problem is that these machines keep breaking down due to lack of skills and knowledge as well as tools and spare parts for repair, maintenance and utilization.

Several technologies have been adopted in increasing production and productivity in grazed grasslands in Narok. The techniques include use of holistic grazing management solar powered herd-controller, mobile bomas, reseeding of bare lands ,use of stovers from legumes and cereal crops. The introduced livestock feeding innovations/practices/strategies are gaining popularity due to increased demand for feeding the exotic breeds, forage for sale.

Challenges

- Inadequate data and information in the innovations including; feeds yield, financial analysis, stakeholders and effect on meat and milk.
- Low access to improved seeds since they are expensive and often unavailable in the markets.
- Low capacity for vegetation yields assessment and monitoring for feeds resources inventory and analysis.
- Drought that often eliminate even the perennial crops.
- Inadequate support to extension services.

Conservation, Preservation and commercialization

Hay Enterprises

Most of the farmers have adopted pasture conservation, about 4.5% of the farmers have hay storage facilities, and the rest of the farmers grow pasture and sell directly for income and due to lack of storage facilities. Institutions including Narok Regional Pastoral Training Centre (RPTC), Sheep and Goat's Conservation Station are involved in commercial hay production and each can store 10,000 bales. 80 % of hay stores in Narok are owned by individuals while 20 % are owned by institutions. Hay is produced from lucerne, bracharia, Rhodes grass, wheat/barley and oats stovers. Still, stovers of cereal crops are mainly grazed and serve as sources of hay during times of drought. On average a bale of hay cost Kes 15 to 28 per kg depending on quality, crop and scarcity of feeds. There is lack of information on volume of hay produced in the county. Strategy technical team, 2022

Silage Enterprises

Silage and green chop are made of forage grasses and few farmers add legumes, molasses and other feed additives that are found at the mixed farming zones. The extensive producers only use silage and green chops during times of drought but commercial farmers utilize silage/green chop regularly. There are few commercial silage producers who sells up to 0.5 million kilograms per year to markets outside Narok. The data on silage enterprises is scanty and unvalidated making it challenging to develop feasible business models. Still, the adoption of the business is hampered by lack of appropriate mechanization that favours small holders and people living on sloppy lands.

Table 8: Estimated silage production in Narok County

Sub County	Area	Avg. unit biomass per Ha	Avg. total biomass	Avg. Unit price	Total
	Ha	Kgs	Kgs	Kes	Kes
N. North/Central	213	10,000	2,130,000	15	31,950,000
N. East	133	7,000	931,000	14	13,034,000
N. South	100	9,000	900,000	20	18,000,000
N. West	20	7,000	140,000	18	5,520,000
TM West/South	50	9,000	450,000	20	9,000,000
TM. East	70	10,000	700,000	22	15,400,000
County	**586**	**52,000**	**5,251,000**		**92,904,000**
Remarks	*Leased land and intensively cultivated*	*Below optimal of 30,000/Ha*	*90% exported*	*Range is 10 to 22 depending on supply*	*90% exported*

Source: Strategy team, 2024

Augmented Feeds Enterprises

Augmented livestock feeds are moderately in use in Narok county. The main brands include those for beef, dairy, poultry and small ruminants. To a smaller scale, few farmers use augmented feeds for commercial fish farming. Comparatively use of forage-based rations is much higher than that of compound feeds in the county.

Most agro-dealers do stock and sell augmented livestock feeds in the major towns in the county. The prices of major brands vary depending on the location of the shop. The highest demand of augmented feeds is during the dry spells when forage is inadequate but in the mixed farming livelihood zones-where dairy production is common, the demand is constant throughout the year.

Table 9: Main brands of augmented feeds in 2022 in Narok County

No.	1	2	3	4	5	6	7	8	9	10	11	12	13
Commodity	Dairy Meal	Dairy Meal	Cattle Fattener	Mineral Lick	Calf Grower	Sheep & Goat	Kienyeji Mash	Layers Mash	Growers Mash	Wheat Bran	High Phosphorous	Plain Molasses	Feed Grade Molasses
Unit	Kg	Kg	Kg	Kg	Kg	Kg	Kg	Kg	Kg	Kg	Kg	L	L
Unit Price	50	50	48	90	52	50	47	60	58	36.25	400	45	50
No.	14	15	16	17	18	19	20	21	22	23	24	25	
Commodity	Growers Mash	Chick Mash	Njenga	Pig Finisher	Sow & Weaner	Wheat Pollard	Maize Germ	Soya Beans	Sunflower	Fish Meal	Fish Ochongáa	Canola Cake	
Unit	Kg	Kg	Kg	Kg	Kg	Kg	Kg	Kg	Kg	Kg	Kg	Kg	
Unit Price	60	76.25	90	58	60	47.5	46	160	50	160	300	70	

Source: Livestock Feed Strategy Development Team, 2024

The actors in the feeds industry in the county import augmented feeds from other counties and outside the country.

Feeds Conservation

There are 345 hay barns for storage of cultivated grass, crop stovers or wild-grass hay, 20 farms that conserve mainly maize silage and 5 community wildlife conservancies that conserve standing hay for use during the dry season. Most of the hay barns are owned and managed by individual farmers, several are under the community groups such as SHG, cooperative and CBOs. Three institutions including the RPTC, Narok Sheep and Goat Conservation Station and KALRO institutes have storage facilities.

Table 10: Feed Conservation in 2022 in Narok County

Feeds commodity	Nr. of stores/ stockists	Capacity of stores	Volume reserved	Comments/notes
Cereal crop Stover	No data	No data	No data	90% owned by GoK, 10% by private sector.
Nr. of baled hay	345	640,000	34,500	70% by CFPs, 20% owned by farmers, 10% owned by GoK
Fermented silage	No data	No data	520,000	70% by CFPs, 20% owned by farmers, 10% owned by GoK
Grazed hay/grass	No data	No data	No data	80% by family, 20% community wildlife conservancies &, 10% government
Augmented feeds	No data	No data	No data	90% owned by stockists, 20% by feed millers, 10% by farmers

Source: The Livestock Feed Strategy Development Team, 2024.

Standards and quality

Quality assurance is the maintenance of a desired level of excellence in a service or product, especially by means of attention to every stage of the process of delivery or production and it ensures feeds safety. Several stakeholders are involved in feeds quality and standards. In Narok, farmers and pastoralists use feeds without much consideration of the feed quality and safety due to lack of awareness of importance of nutrition and health risks. In commercial farms/ranches, do rudimentary feed formulation for especially TMRs. There is no feed testing laboratory in the county. There are outlined standards for feeds including hay but the specifications are slowly adapted in Narok County.

Challenges

- Inadequate knowledge and information on economic gains from feeds
- Inadequate skills in feeds business plans/models and industrialization
- Inaccessibility to feed testing facilities/services
- Poor enforcement of feeds safety standards and regulations.
- Inadequate and seasonality in markets for commercial feeds and raw materials.

Feeds Resource Balances

Estimated dry matter, energy and protein for livestock balance

Annually, Narok produces 1.2 billion kg of roughages, 63.4 million kgs of concentrates, 30.2 million kg of cultivated fodder and 937.7 million kgs of grazed biomass (Source: Narok LFS Team, 2022). The volumes of feeds required per livestock species in Narok county is as shown in table.

Table 11: Total feed requirement per livestock species in Narok

Species	Number	TLU = 250 kg of animal live weight	Feeds per year (tons)
Cattle	1,479,151	1,035,406	2,362,019
Sheep	1,249,517	124,952	285,046
Goat	866,404	86,640	197,648
Horses	10	9	21
Fish	1,000,000	1,000	54,750
Donkey	73,188	36,594	83480
Camel	13	13	30
	TOTAL	1,283,614	2,928,244

Source Table 1-3: ASAL Counties Feed inventory report 2018

Attributed to the numerous challenges, the county experiences negative feeds balance. The actual volume of dry matter (DM), crude protein (CP) and Metabolizable energy(ME) is lower than the feed required by all the livestock species (table 11).

Table 12: Annual feeds balance (bal.) in millions in Year 2022 in Narok County

Potential availability	Actual availability	Requir ed	bal. based on potential	bal. based on actual	bal. based on potential	Bal, based on actual
Dry Matter (DM)						
Tonnes	Tonnes	Tonnes	Tonnes	Tonnes	Percent	Percent
2.0	1.3	2.9	(0.7)	(1.6)	Deficit 24	Deficit 55
Crude Protein (CP)						
Kg	Kg	Kg	Kg	Kg	Percent	Percent
201.0	101.0	327.0	(126.0)	(226.0)	Deficit 39	Deficit 69
Metabolizable energy (ME)						
MJ	MJ	MJ	MJ	MJ	Percent	Percent
16,616	9,739	34,992	(18,375)	(25,252)	Deficit 53	Deficit 72

Source: Strategic Plan Team 2022 NB: figures in brackets means negative deviation (deficits)

Estimated livestock water balance

The Strategy adopts a statistical model to estimate the water available, required and deficits for livestock animals in Narok county based on a landscape approach and on best case scenario or the non-drought period. The analysis results are shown in Table 12 below.

First, based on NDMA -DEWS data for year 2019, 2020 and 2021, it calculates the contribution of each water source and generates the total volume of water available 8,078,786 M3. It then calculates the total annual human demand as 13 liters required by human x total population = 5,494,107 M3. Thence the model assumes that after human consumption, the water that remains and hence available for livestock is 2,172,412 M3. Lastly, the model considers the population of all livestock species, demand by game animals, crops irrigation and ecological processes and realizes a water deficit of about 23,677,500 M3.

Table 13: Annual average livestock water deficits across 3 years period in Narok County

Water source	Tot. available (normal/ drought Yr.)	Tot. available in (normal Yr.)	Tot. available in (drought Yr.)	Available for Livestock (normal Yr.)	Requirement for Livestock (normal Yr.)	Requirement for livestock (drought Yr.)
	Cubic meters	Cubic meters	Cubic meters	Cubic meters	Cubic meters	Cubic meters
Drilled boreholes.	606,234	726,228	513,131	195,285	2,067,993	2,584,991
Pans & dams	1,922,606	2,002,866	1,870,445	538,577	6,720,977	6,979,476
Piped Systems	683,224	742,016	579,341	199,531	2,326,492	2,584,991
Rivers	1,363,481	1,406,972	1,326,156	378,339	4,652,984	4,911,483
Shallow Wells	868,270	899,892	827,630	241,984	3,101,989	63,101,989
Springs	309,399	413,815	198,631	111,276	1,033,996	1,550,995
Trucking system	472,630	496,578	457,840	133,532	1,550,995	1,809,494
Rock catchment	483,665	496,578	457,840	133,532	1,550,995	1,809,494
Other sources	299,894	364,157	221,026	97,923	1,033,996	1,292,496
Tradition River Wells	505,481	529,683	473,627	142,434	1,809,494	1,809,494
Sum	7,514,885	8,078,786	6,925,667	2,172,412	25,849,912	28,434,903
Min	299,894	364,157	198,631	97,923	1,033,996	1,292,496
Max	1,922,606	2,002,866	1,870,445	538,577	6,720,977	6,979,476
Average	751,488	807,879	692,567	217,241	2,584,991	2,843,490
Annual deficits					23,677,500	26,262,491

Source: Livestock Feed Strategy Development Team, 2022

The water balance analysis results lead to recommendation for increased investment in water sector development to increase the volumes available for livestock from the current baseline of 2 Million to 28 M3. This increase in water availability is hampered by many issues including inadequate developed infrastructure, unsustainable management of water sources as well as water conservation in the soils and in the reservoirs. There are also a weak water governance structures since most WRUAs are partially operational.

The state of access to water in Narok is usually fair to good in the mixed farming and agro-pastoral livelihood zones due to fairer to good rains received in these areas. Thence access to water in these zones is relatively high. The access to water for livestock in pastoral areas is low or absent due to lack of developed water sources and rainwater harvesting systems. The variability across climatic zones provides opportunities for integrated management of water across livelihood zones.

The water quality is poor across all the zones due to siltation and other pollutions of closed water sources. Further in some areas boreholes yield salty water which is not fit for human and livestock consumption. This state calls for increased awareness on water sources protection as well as sustainable management of salt-licks that are common along water springs or rivers.

Fish enterprise in Narok County

At the household level, fish contributes to food and nutritional security and generates income. Fish cultured in the county is estimated at 17.000MT in 2022 and projected to 25.421MT in 2027 and 36.100,611MT in 2032, with fish consumption per capita of 7 kilograms per household. Fish farming industry in Narok county is one of the fastest growing in the food industry and promotes social inclusion since women and youth can easily get involved in the fisheries value chain. Most farmers in Narok culture Nile Tilapia (Oreochromis niloticus), Catfish (Clarias gariepinus) and gold fish, across the County in the water pans and semi-intensive management systems in earthen ponds, liner ponds and water tanks. There are fish hatcheries in the County that produce fish seeds, mainly for the African catfish and Nile Tilapia. The most notable hatchery is the Cavarino fish farm, located at Eor Enkitok, Oloropil ward, which has an installed capacity to produce 5,000,000 fingerlings and 50MT of table fish annually.

Common feed resources for fish production are: maize, sorghum, cassava, sunflower cake, soya bean meal, ground nuts, cotton seed cake, minerals and premixes, with omena, fresh water shrimps and Black solider fly Larvae constituting protein requirement. The total current feed requirement is estimated 31.044MT per annum. The total feed requirements are projected to increase by 22% to 57.992MT by 2027 when the fish production is expected to grow to 36,100.611 Kgs. The feed requirement is further projected to increase up to 100 MT by the year 2032.

Table 14: Required raw materials for the production of fish feeds

Feed resources	Current 2022 (MT)	Calculated 2027 (MT)	Targets 2032(MT)
Energy sources			
Maize	19,633.2	21,491.85	29,721.32
Sorghum	1,992.01	3,471.5	5,651.8
Cassava	2,982.1	2,664.3	3,345.1
Protein – Plant sources			
Sunflower	5,534.22	6,712.9	9,263.47
Soya bean meal	11,342.81	13,241.01	22,341.5
Ground nut	1,348.8	1,799.0	2,517.0
Cotton	1,219.0	1,693.4	1,904.6
Protein source – Animal sources			
Black Soldier Fly	3,743.66	5,251.08	8,538.71
***Omena* meal**	3,742.0	4,321.04	6,001.72
Fresh water shrimps	2,109.1	2,8349.887	3,764.79
Minerals and vitamins sources			
Minerals	800.87	941.23	1,259.00
Premix	302.23	401.5	571.1
Total	**54,750.00**	**64,838.697**	**94,880.11**

Source: Livestock Feed Strategy Development Team, 2022

The SWOT and PESTLE Analysis

Strengths, weaknesses, opportunities and threats analysis (SWOT):

Livestock feeds contribute immensely towards the transformation of the livestock sector. The achievement of the livestock industry objectives depends on the exploitation of existing strengths and available opportunities as well as analysis of the current and emerging weaknesses and threats in the feeds sub-sector. Some of the key strengths are derived from the sectors contribution to the national GDP in terms of livelihoods and income from livestock and livestock products. The available opportunities include the increased demand for livestock products due to urbanization leading to increased feed demand. Weaknesses relate to the seasonal feeds deficits while threats emanate from competition from cheap imports as well as trans-boundary pests and diseases as shown in the SWOT analysis as shown in the SWOT analysis Table 14.

Table 13: A SWOT analysis of livestock feeds industry

Strengths	**Weakness**
- Existence of functional producer organizations: companies, cooperatives, community groups and individuals. - Entrepreneurship support organizations AKEFEMA, FPAK, STAK, stockists and distributors. - Existing public and private services and goods providers. - Minimal initial capital of starting up feeds' enterprise. - Availability of valuable feed resources at farm and local levels. - Functional research and training institutions- RPTC, MTC, MMU, Wildlife Research Organization, MMVTI, KALRO. - Wide range of policies, strategies, and technical manuals. - Existence of feeder roads and government-owned cereal reserves	- Weakly coordinated/organized input markets and delivery systems. - Weak linkage between research and extension on improved livestock feeds. - Ineffective communication materials and tools - inadequate financing model for the livestock feeds industry investors. - Existence of unregistered and dormant feed processors/millers - Lack of centralized feed reserves and markets - Inadequate traceability system of actors and activities in the livestock feed industry - High losses at post-harvest, transportation, and processing. - Weak livestock feed industry-focused policy, legal and regulatory framework for quality monitoring. - Unsustainable management of natural resources. - Negative feed balance.
Opportunities	**Threats**
- Availability of high-yielding and adapted feeds industry outputs from the NARS. - Availability of land for commercialization. - Rising demand for quality basic and supplementary livestock and game feeds. - Availability of valuable plants diversity of adapted forage plants for grazing. - Underutilized nutrients from yellow maize, insects, seaweeds, and hydroponics. - Integration of animal by-products such as chicken waste, eggshells, blood, and bones. - Training systems to integrate livestock feed education and extension. - Established formal and cottage feed industries/factories. - Availability of willing business community/partners. - Existence of cascadable policies and institutions	- Stiff competition for livestock feeds ingredients with human food and game animal feeds - Rising inflation -the high cost of inputs that adversely affects the livestock feeds industry. - Proliferation of invasive weeds, pests, and diseases. - Competition from feeds (finished and inputs) from neighboring counties/countries. - Weather variability adversely affects the production and productivity of feed ingredients. - Changing feed market requirements, tariff, and non-tariff barriers. - High degradation of land in the forage growing fields due to over-exploitation of natural resources.

The PESTLE Analysis

The PESTLE analysis outlined the key factors from the external environment that could impact the planning and implementation of the Strategy. The factors likely to occur in Narok County are: -

Political Factors

- Global, regional, national & county policies that anchors the feeds strategies.
- Increased focus on food security and agro-processing policy in the county (BETA Model)
- There is an opportunity under devolved governance to bring about smooth planning and implementation processes.
- Political stability in the county which will bring about ease of implementation.
- Inadequate county budgetary provisions and resource mobilization framework.
- Weak co-ordination amongst governments hindering co-operation and implementation
- Weak system for governance of multi-groups grazing and herd mobility agreements
- Inadequate subsidies for agricultural inputs and commodities.

Economic Analysis

- High cost of investments in machinery & equipment to support production & storage of animal feeds.
- High cost of business premises
- Low volumes in the feed business means low returns on investment
- Availability of value addition tools, skills and equipment
- Low incomes amongst producers could impede investment
- High cost of financial services e.g. high interest rates on loans and inadequate collaterals that puts investors away
- Limited funding of agro-industrial businesses and research.
- Competition for feed resources by food millers, game animals

Social cultural factors

- An increasing number of the population that is ready to take up feed production as a business
- High youth population that may venture in feed business
- Increased gender and social inclusion and access to government support.
- Urbanization and land sub-division hindering fodder and animal production.
- Modernization and rural-urban migration causing abandoning of farming
- Limited knowledge and low literacy levels in feed production
- Unstructured grazing management, incompliance to herd mobility plans and agreements
- Change of mindset from traditional to planned grazing management practices
- Change in mindset about crop stovers grazing verses harvesting and inhouse storage.

Technological factors

- Availability of livestock feeds information and technology from the internet.
- Availability of technological advancements in fodder/ feed production, conservation and processing.
- Integration of ICT in the feed's subsector
- Increased research on feeds in the research institutions and availability of high yielding and climate smart technologies.
- The technology for value addition is available but expensive
- Versatile jua kali technology that can develop feed production equipment
- Weak research - extension liaison that needs to be strengthened.
- Education syllabus does not adequately cover feed production
- Weak linkages affecting technological resources transfers.
- Adaptive varieties integrated with environment
- Few technical experts i.e., Agri-extension services providers

Legal factors

- Too many legal requirements to operate the feeds industry e.g., processing plants.
- Inadequate legal and regulatory framework to guide the industry e.g., standards and specifications.
- Livestock feed and laws need to be harmonized in line with the constitution.
- Gap in the legal sector pertaining to sale of animal feeds
- Existence of Institutions that regulate environmental issues e.g., NEMA, public health and local authorities.
- Inadequate implementation of existing feeds regulations and standards.

Environmental factors

- Minimum environmental damage as compared to the other livestock enterprises
- Feed enterprise is a better option that can thrive under the present climate change effects
- Emerging alternative feed resources
- Integrated pest management strategies, inter-cropping (forages and legumes), zero tillage, bio-gas to manage manure which help in boosting soil fertility and help to boost production of fodder.
- Invasive plant species which encroach on the pasture land.
- Sustainable farming practices like diversification.
- Competition for feed resources from other counties


KALRO
ICSIAPL Project
SNV
Camello (Brachiaria hybrid)
Forage type: Grass
Propagation: Seeds
Spacing: Rows 40 x 50cmapart
Crude protein: 14 - 16%
Dry matter yiel 27 - 30 t/ha
Ministry of Foreign Affairs of the Netherlands

CHAPTER 3

STRATEGY'S FRAMEWORK

This Chapter presents the framework of the intentions to reduce deficits in feeds for livestock in Narok county during a five-year period. It stipulates the vision, mission, goal, objectives and the how each output/outcome will be attained through sets of intertwined action plans. The response will focus on seven strategic pillars for feeds sector namely: ***Integrated Landscape Management, Institutional Coordination & Governance at County level, Production and Productivity, Conservation and Commercialization, Resource mobilization and financing services and, Communication and Knowledge Management.*** *The scope of this strategy doesn't address feed issues for non-ruminants' livestock and game animals.*

Vision

To be the leading County in sustainable feed production, productivity and profitability.

Mission

To promote a profitable livestock feed industry through sustainable production, technologies development, joint investments and participatory progress and bio-ecological monitoring and planning.

Goal

To produce a systematic and guided plan for sustainable solutions to animal feed challenges, improved food security and income generation in line with the Narok County CIDP 2023-2027.

Strategic Approach

The Strategy employs an inclusive system approach that leverages on the existing structures, policies and resources to bring to scale business innovations, conservation management practices, seeds and mechanization technologies in the feed industry.

Strategic Framework

The strategy is anchored on a new paradigm shift of developing strategies based on data from community practices as well as marketable innovations and products. It is built on 7 strategic pillars which define the focus of all interventions. These pillars include:

1. Integrated landscapes management
2. County level institutional collaboration and governance
3. Production & productivity in feeds,
4. Conservation and commercialization
5. Resource mobilization and financing services, and
6. Knowledge Management and Communication

Strategic Objectives

1.0: To improve coordination capacity in the management of feed resources-plus water at the landscape level,
2.0: To enhance institutional collaboration and governance for livestock feeds,
3.0: To improve the availability of adequate and quality livestock feeds,
4.0: To increase access to affordable livestock feeds of sufficient quantity and quality,
5.0: To develop a sustainable resource mobilization and financing framework and,
6.0: To enhance the effectiveness of livestock feed communication and knowledge management framework.

Objective 1.0: To improve coordination capacity in the management of feed resources plus water at the landscape level.

Guiding Principle: Sustainable and cohesive sharing of grasslands, mineral licks and water resources for a resilient community.

Specific objective 1.1. Sub-county landscape management plans aligned to CSPs developed.

The Narok County spatial plans was recently launched and it addresses land use issue at macro landscape level. This objective intends to cascade the spatial planning up to farm/ranch landscapes by supporting the communities to establish structures for governance, meso and micro-land use maps, mapping of all agreed upon herd movement-routes and timelines and mapping of soils and vegetation at each landscape. The work is mainly research-based and the county will reach out and work with National Agricultural Research Systems. The strategy will also seek support from development partners involved in agriculture.

- Establishment and capacity building of grazing committees and multi-stakeholder platforms (MSP).
- Development of digital grazed landscape management plans-including GIS mapping
- Review and implement the Sub-Catchment Management Plans (SCMPs)
- Develop a County livestock movement surveillance plan - inter and intra-county routes, and active monitoring,
- Develop intra-county protocols/agreement for sharing feeds resources-leveraging on the traditional governance systems,
- Undertake mapping of carbon, soils and vegetation in the county
- Strengthen mechanisms for monitoring, sharing and distribution of grazing resources and water.

Specific objective 1.2. Animal feeds resources-plus water inventory and balances evaluated.

The agro-ecological zones in Narok allows for all year-round production of feeds. The yields however vary depending on time and season. The strategy intends to actively monitor feeds balances, publicise the results and advise users on better feeds and feeding planning including provision of feeds assistance.

- Development and publication of feeds resources-plus water, assessment tools for all animals,
- Development and implementation of ecological monitoring plans,
- Capacity build livestock feeds service providers and farmers on FCI, VCI & NDVI and undertake monitoring of vegetation biomass using FCI, VCI or NDVI,
- Organize quarterly feeds security review and report validation meetings,
- Domesticate National policy for revegetation and control of invasive plants.
- Conduct livestock water demand analysis

Objective 2.0: To enhance institutional collaboration and governance for livestock feeds,

Guiding principle: Coordinated, inclusive and effective decision-making processes.

Specific objective 2.1. Coordination capacity in monitoring & implementation of feeds projects improved.

Inclusive strategies will be employed to ensure coordination of stakeholders in the feed's subsector at the project design, implementation and monitoring stages. A coordination framework that leverages on the existing mechanisms while ensuring feeds matters are mainstreamed amongst all the institutions is envisaged. Where absent, creation of platform will be supported on establishment and legislation and capacitated with tools required to deliver the coordination mandate.

- Enact relevant institutions and bills e.g., CASSCOM, Narok County Animal Health and Production bill
- Adopt national policies governing feeds-sector; domesticate the Livestock Policy 2019 – focusing on inputs
- Domesticate the livestock feeds standards and to actively monitor quality.
- Developed policies and strategies for management of plant genetic materials transfer aimed in controlling invasive plants.

Objective 3.0: To improve availability of adequate and quality livestock feeds.

Specific objective 3.1. To increase availability and access to adaptable inputs for forage production at all levels.

Guiding Principle: Employment of environmentally sustainable livestock feeds production processes.

All indications point at reducing forage yields from the natural grasslands in Narok county. The county aims to revegetate and rewild more areas for enhanced forage yields, soil conservation, soil water retention, land restoration and maintenance of plants diversity for better and continuous feeds and food yields.

To realize this pillar, the Strategy will employ climate smart technologies, for land preparation such as mechanization and zero tillage, soil management such as fertility and moisture monitoring, crop management| planting systems, integrated pest management.

In addition, the Strategy will foster increased availability and access to high-yielding and adapted inputs by working closely with suppliers of feeds resources.

- Develop and implement landscape rehabilitation/ management plans
- Foster use of affordable, safe and fertile soil and soilless forage growing medium,
- Removal and management of invasive plants
- Support soil-water conservation practices,
- Faster access to affordable and quality inputs eg fertilizers and seeds,
- Strengthen existing/establish seeds/seedlings multiplication centers for pasture/forage,
- Foster research-extension liaison,
- Training on soil and crop management practices.
- Strengthen the feeds inputs assistance and financing system,
- Strengthen input access models through new and existing producer organizations and common interest groups
- Promote affirmative action that preposition higher participation by women and youth,

Specific objective 3.2. To enhance capacity of private sector to conduct economically sustainable business.

Guiding principle: Private sector-led, gender equality and social inclusion in feed-focused and socio-economic enterprises.,

- Support Feed-focus MSMEs to conduct feeds businessPromote feeds processing at cottage and industrial in households, groups and county levels.
- Promote appropriate mechanization/ via provision of subsidized goods and services, supply of light and heavy machineries and linkage to financing institutions for grants, loans, credits.
- Embracing regenerative grazing and IPM concepts for fields and stored feeds pests and diseases e.g., aflatoxin and African army worms etc., management
- Profitability improvement
    1. Develop feeds aggregation centers, promote concepts for collective marketing and support in development of the producer and consumer protection guidelines.
    2. Linkage to markets for inputs and commodities for collective bargaining power towards profitable engagements.
    3. Promote gender sensitive innovations
    4. Support branding and marketing of value added livestock feeds inputs and commodities

Objective 4.0: To increase access to affordable livestock feeds of sufficient quantity and quality,

Guiding Principle: Maintain a balance in development and conservation

Specific Objective 4.1. Rapid/emergency seeds and feeds insecurity response plans developed.

- Strengthen existing /Establishand enhance the capacity of savings and credit system for dairy and beef cooperative societies,
- Foster development of affordable and sustainable input and extension access models for the farmers/producer organizations.
- Foster cohesive use of feed resources at forest-cropped-grasslands as feeds reserves,

- Support establishment of sub-county level Strategic Feed Reserves,
- Work with development partners on supply of feeds assistance to drought affected areas.

Specific Objective 4.2. Pre- and post-harvest nutrients yield losses reduced at farm level

- Promote safe and affordable innovations for feeds conservation; cocoons, silage bags, hay bags,
- Provide incentives to innovators of pasture/fodder storage,
- Support investments for Industrial/commercial rations production,
- Promote appropriate forage harvesting and processing mechanization services
- Support formulation of home-based rations e.g., TMR

Specific Objective 4.3. High and consistent feed standards and quality is sustained

- Establishment of feeds quality testing and monitoring services/facilities
- Promote active monitoring of feeds quality and standards
- Support innovations on pasture/fodder storage
- Support innovative technologies for home based rations
- Support investments for Industrial/commercial rations production

Objective 5.0: To develop a sustainable resource mobilization and financing framework

Guiding principle: Promote legally recognized public private partnership amongst livestock feeds stakeholders. The Strategy has detailed a financing framework that should enable the county government, the private sector and the development partners as well as the strategic partners to work more efficiently and effectively. The office of the chief officer Livestock Development will take the overall responsibility of resource mobilization to implement this strategy. In doing so, the chief officer may work with other relevant stakeholders and government entities.

Specific objective 5.1: To develop legislative and technical mechanisms for public-private partnership.

Inclusive partnerships for resource mobilization would provide a platform to have various organizations in partnership to pool resources to one kitty to complement the efforts of the government in the strategies outlined. The strategy would address limiting legislative/legal frameworks for resources allocation and mobilization in livestock feed venturing, Poor Coordination models in resource mobilization and poor synergy in resource mobilization. The key action points are; -

- Support development and implementation of livestock feeds resource mobilization plan
- Organize bi-annual public-private partnerships forums for resource mobilization
- Support development of public-private partnership instruments of collaboration
- Support development of concepts/proposals for public-private partnerships on resource mobilization

Specific objective 5.2: To build the capacity in counties and communities in development and implementation of feasible and sustainable livestock feeds business financing and operationalization models.

Enhanced Livestock feeds in the county has been lacking adequate financial support to enable business workflow in the production of livestock feeds from farmers to consumers. Financial support currently from the county is directly related to livestock department (work plan) which has never

been directly attached to a policy or strategy that is stand alone to address the challenges related to livestock feed production, processing, conservation, management, transportation, marketing communication, gender related considerations, marketing, livestock feeds losses due to climate variability, value addition and consumer needs among others. Narok county being one of the ASAL counties, this strategy's main purpose is to offer solutions to issues of limited start up and continuity, capital, limited financial and business skills, limited waiver facilities by most financial institutions, high interest rates on financial support services, pending litigation, persistent losses, declining gross margins due to market dynamics. Key action points are; -

- Support development of feeds financing modelling through trainings and development of viable livestock feeds business plans
- Organize annualB2B linkage meetings between financial service providers and actors in the livestock feeds industry

Specific objective 5.3: To promote an effective agro-insurance scheme for livestock feeds financiers and entrepreneurs.

Just like the livestock and crop insurance, the insurance services would help avert losses that are not limited to climatic, theft and fire accidents to producers, marketers, distributers, processors and consumers. This strategy provides alternative sources of funding to the concerned livestock feed enterprises. The strategic issues to be addressed include low risk knowledge and management, unstructured insurance payout, unscrupulous insurance brokers, bankruptcy of insurance companies, dynamism in insurance brokerage market and varied premiums to the insurers. Key action points are;

- Promote adoption of loan-tied and/or government subsidized, conventional livestock feed insurance, traditional social insurance and index-based livestock feed insurance (VCI/FCI model) as various insurance schemes
- Establish linkage with insurance service providers – lobby for the development of insurance products suitable for the livestock feeds industry actors.

Objective 6.0: To enhance effectiveness of livestock feeds communication and knowledge management framework

Guiding Principle: In accordance with both the Nairobi and Dakar declarations that countries form national chapters to institutionalize knowledge management, the Knowledge Management Africa Kenya Chapter (KMA Kenya Chapter) was formed in 2009. In Narok, it is operationalized under the leadership of the department of Information Technology and E-government. The KMA-Kenya Chapter mandate is to build the capacity of individuals, teams, organizations and inter-organizations to identify, capture, analyze, store, retrieve, protect, share and apply available knowledge.

With KMA-Kenya Chapter we will establish county Steering Committee (CSC); develop KMA-county Strategic Plan; capacity development of knowledge management champions from various MDACs. The Strategy will endeavor to work with partners in developing and maintaining a comprehensive Livestock Feeds database at the National Drought Management Authority in Narok

Specific Objective 6.1 - To create visibility and enhance awareness of forage innovative technologies and ILM practices leading to an increase in adoption and use by farmers in at least 75% of the 8 sub-counties in Narok County by 2027

This specific objective aims to ensure that there is an awareness of the forage innovation technologies and ILM practices within Narok County among the target stakeholders in all the sub-counties. An outcome will be an increase in adoption of the forage innovative technologies and application of integrated landscape management practices. By end of 2027, the strategy intends to get more people especially pastoralists to be aware of the existing adaptive mechanisms and ILM practices and further increase their knowledge.

Specific Objective 6.2 - To strengthen capacity and coordination of actors in the forage sector to mobilize resources for sustainable implementation of the forage innovative technologies and ILM practices across the sub-counties in Narok County

This specific objective aims at building and strengthening capacity of actors to be able to implement the adaptive mechanisms and intervention in the forage sector in Narok County. This strategy will increase the number of pastoralists who would adopt forage innovative technologies and integrated landscape management practices. Further, it aims to ensure there is knowledge among farmers and sector players to enable them share and learn from each other.

Target Audiences

The target audiences for this strategy have been grouped into two categories: Primary and Secondary.

They include:

- **Primary Audiences:** Farmers (Crop, Fish, and Livestock farmers), Conservancies, Ranches, Development partners, Milk co-operatives, Staff, Management and board, County government of Narok, Pastoralists, Extension workers, and Department of Livestock
- **Secondary Audiences:** Media, Partner organizations, Private sector, Dairy Processors, Policy makers, Agro-dealers, Women groups, Community-Based Organizations, Youth groups, Consumers, and Relevant government parastatals

Key Messages

The communication strategy will be operationalized via a number of communication and knowledge products. All the communication and knowledge products will be developed to carry one or a number of key messages. These key messages are as follows:

- Adoption and use of innovative forage technologies guarantees pastoralists fodder for their animals under any conditions.
- Everyone has a stake in ensuring that our environment is maintained and able to withstand the effects of emerging climate change impacts.
- Investment in forage and integrated landscape management practices is for everyone not only those with livestock; and
- Let us open space for all people in the society to be part and parcel of players in the forage and ILM sectors.

Communication Channels / Tools

In executing the communication objectives for the strategy, the following channels and tools (Table 16) will be used:

Table 16: Communication channels/tools

Channel	Content	Audience
Website	• Information on forage innovations and ILM practices • Success stories • News items • Profiles of participating organizations • Instructions to farmers for registration Application to Tenders • Standards and Guidelines • FAQs • Links to other communication channels e.g., Twitter, Facebook and LinkedIn • Uploaded Documents • Photos and Video Clips	All stakeholders
Social Media – Facebook and Twitter	• Notifications – (new tenders, any changes, research outputs, announcements) • News and Findings • Instructions to stakeholders	Social Media Users
Video documentaries	• Information about the innovations • Success stories	All
Radio – Talk shows, mentions, announcements	• Guide on implementing innovations • Success stories • Case Studies	Radio Listening Groups
Feature stories	• Success stories • Case studies	ALL
Farmer Field Schools and demonstration plots	• Information on the innovations • Lessons learnt and experiences	Farmers
Face to face e.g. round table meetings, one on one interactions	• Project updates • Lessons learnt • Success stories	Technical persons
Learning Exchange Visits	• Experiences • Case studies	ALL
Conferences and workshops	• Case Studies • Guides on innovations	Workshop participants
Media Round Tables	• Project updates	The media
Emails	• Updates • Projects Status, • Upcoming Research Outputs • Question and Answer	Staff and partners

Activities and interventions

Activities to achieve Specific Objective 1

To operationalize this specific objective, a number of interventions and activities will be implemented in Narok County. These activities will be implemented by various stakeholders and partners. They are as listed below:

1. Development of visibility materials including brochures, fliers, case studies and media products (news stories, radio talk shows, feature stories and press releases) and documentaries.
2. Translation of publicity materials into languages that are best understood by the target communities in all the sub-counties in Narok County
3. Organize and hold farmer field days for farmers to share and learn from each other as well as for dissemination of publicity materials
4. Organize community radio talk-shows to stimulate exchange of information and ideas
5. Use of road-shows during market days to pass information using local languages
6. Partner with mobile service providers to innovate call-back tunes which can pass information relating to forage innovative technologies and ILM practices
7. Conceptualize and implement an annual exchange visit for farmers as a learning event
8. Identify and partner with journalists and media houses in production and dissemination of information and messaging to reach a wider audience
9. Identify and prioritize the use of available and accessible digital platforms (media) to pass information e.g. Facebook, Instagram, LinkedIn, WhatsApp, and community channels.
10. Identify and partner with community radio stations and digital platforms to produce talk shows, radio mentions, announcements and other content on forage innovations and ILM practices to increase reach with messaging.
11. Conceptualize and implement an annual award scheme targeting various sets of stakeholders to reward including farmers with best demos, most upcoming youth farmers, progressive women among other categories. Coming up with an award scheme for best farmers at county level
12. Use of churches, mosques and chief Baraza's platforms for visibility and awareness creation. Target attendees by disseminating publicity materials and hosting debates in these places.

Activities to achieve Specific Objective 2

This specific objective will be operationalized by implementing a number of activities and interventions as listed below.

1. Identify resource gaps through holding a resource brain storming session with key actors in the forage sector across all the sub-counties of Narok County
2. Develop fund raising concept notes/proposals targeting public and private players in the county including the Narok county government
3. Develop and disseminate a policy brief supporting the need for the county government to fund advocacy on forage innovative technologies and ILM practices
4. Prioritize and plan annual meetings with County Government department of Finance and other budget committees to provide resource gaps and present funding proposals for inclusion in County Integrated Development Plans (CIDP) and Annual Work Plans

5. Create an annual learning event for actors show casing the work in the sector using photos, documentation, demos, case studies among other products
6. Annual training and continuous mentorship programs for youth and women engaged in the forage innovation technology implementation and application of ILM practices
7. Deliberate showcasing youth and women in the sector by engaging them to be messengers and spokesperson in most of the platforms including owning demo farms
8. Identifying and strengthening capacity of extension workers to be engaged in capacity building of farmers in every ward
9. Engaging influencers and celebrities as ambassadors of information on forage technologies and ILM practices.
10. Establishment of a technical structure such as a technical working groups to oversee the implementation of the strategy and report to the CECM-DOALF an annual basis.

CHAPTER 4

STRATEGY IMPLEMENTATION, MONITORING & EVALUATION

This chapter presents the implementation plan for the Strategy. This Strategy takes the actions, elaborated in detail under the six (6) strategic pillars and prioritizes them by according to those that need to be implemented in the short-term (1-2 years), medium-term (3-5 years) and long-term (6-10 years). The implementation plan also identifies the institutions that will take the lead role in the implementation of individual actions, the key partners that will be involved, as well as key milestones for each action.

To ensure that Strategy implementation is well coordinated, a Strategy implementation structure bringing together all the stakeholders in the Feeds Industry, is proposed. The roles and responsibilities of critical actors in the implementation of the strategy are also provided. The implementation, communication and financial arrangements are described in the following sections.

Implementation Arrangements

The Department responsible for Livestock will coordinate the Livestock feed agenda. Institutions that will play leading roles in the implementation of this strategy include County departments and Agencies responsible for livestock, Fisheries (Crop, Livestock and Fisheries) and parastatals. The department responsible for livestock, crops and fisheries will implement the activities for each objective. The Chief officer (CO) for Livestock shall convene a county steering committee to approve decisions of technical committees for animal feeds. The CO in consultation with the technical directorate's will appoint technical members of respective technical committees. The Chief officer will approve implementation programmes, projects, proposals and plans prepared by the technical directorates.

The Strategy will be operational upon approval by the CECM responsible for matters of livestock feeds. The county will disseminate the approved document to organized actors who will directly benefit from the proposals and will implement some of the provision of the livestock feed strategy. A commitment from all these stakeholders will allow for the simultaneously achievement of set targets and for more resources to be generated. The county governments may propose review of the livestock feed strategy during mid-term and when there is a compelling reason to do so.

Table 17 : The Strategy results-based implementation plan, 2024-2034

Specific Objective	Activity	Resources Needed	Yearly / Quarterly Implementation																																Budget (Ksh)	Responsible person / institution
			2024/2025				2025/2026				2026/2027				2027/2028				2028/2029				2029/2030				2030/2031				2031/2032				2032/2033				2033/2034					
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
Strategic Objective 1.0: To improve coordination capacity in management of feeds resources-plus water at landscape level.																																											
1.1: Sub-county landscape management plans aligned to CSPs developed	Establishment and capacity building of grazing committees and Multi-Stakeholder Platforms (MSP)	Stakeholders Training venues Transport facilitation Lunches Accommodation																																							14,000,000	County Govt Stakeholders
	Development of digital grazing landscape management plans-including GIS mapping	Consultant GIS software Stakeholders Training venues Transport facilitation Lunches Accommodation																																							11,400,000	County Govt Stakeholders
	Review and implement the Sub-Catchment Management Plans (SCMPs)	Farmers stakeholders Activity venues Transport facilitation Lunches Accommodation Trainers/ Consultant																																							10,800,000	County Govt WRA SCMPs Committees Stakeholders
	Develop a County livestock movement surveillance plan - inter and intra-county routes, and active monitoring	Field visits Transport Lunches County Officers Stakeholders																																							8,000,000	County Govts Farmers Stakeholders
	Develop intra-county protocols/agreement for sharing feed resources-leveraging on the traditional governance systems	Activity venues Transport facilitation Lunches Accommodation																																							7,800,000	County Govts Farmers Stakeholders
	Undertake mapping of carbon, soils and vegetation in the county	Field visits Researchers Farmers Soil & vegetation samples Lab charges Accommodation																																							5,600,000	County Government Farmers Researchers

Specific Objective	Activity	Resources Needed	Yearly / Quarterly Implementation																																Budget (Ksh)	Responsible person / institution
			2024/2025				2025/2026				2026/2027				2027/2028				2028/2029				2029/2030				2030/2031				2031/2032				2032/2033				2033/2034					
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
	Strengthen mechanisms for monitoring, sharing and distribution of grazing resources and water.	Grazing committees Signed protocols Meeting Venues Lunches Transport facilitation stakeholders																																					4,000,000	County Govt Stakeholders
1.2: Animal feeds resources-plus water inventory and balances evaluated	Development and publication of feeds resources-plus water, assessment tools for all animals	Field Assessment visits Reports Transport facilitation Accommodation Farmers County Officers Stakeholders Publication materials																																					6,200,000	County Govt Farmers Stakeholders
	Development and implementation of ecological monitoring plans	Field Assessment visits Reports Transport facilitation Accommodation Farmers County Officers Stakeholders																																					5,000,000	County Govt Farmers Stakeholders
	Capacity build livestock feeds service providers and farmers on FCI, VCI & NDVI and undertake monitoring of vegetation biomass using FCI, VCI or NDVI	Software GIS Experts Publication materials Facilitation fees Lunches Transport																																					12,000,000	County Govt Stakeholders
	Organize quarterly feeds security review and report validation meeting	Meeting venue Transport Lunch Accommodation Stakeholders																																					11,000,000	County Govt Stakeholders
	Conduct livestock water demand analysis	Field Assessment visitsReports Transport facilitation Accommodation Farmers County Officers Stakeholders																																					16,000,000	County Govt Stakeholders

Specific Objective	Activity	Resources Needed	Yearly / Quarterly Implementation																																Budget (Ksh)	Responsible person / institution
			2024/2025				2025/2026				2026/2027				2027/2028				2028/2029				2029/2030				2030/2031				2031/2032				2032/2033				2033/2034					
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
Strategic Objective 2.0: Framework for institutional collaboration and governance for livestock feeds enabled																																											
2.1: Coordination capacity in monitoring and implementation of feeds projects improved	Enact/ domesticate relevant bills, policies and strategies e.g., CASSCOM, Narok County Animal Health and Production bill	Draft document Stakeholder engagement Public participation Validation facilitation Conferencing Transport facilitation Stakeholders facilitator																																					15,000,000	County Govt Partners
	Adopt national policies governing feeds-sector; domesticate the Livestock Policy 2019 – focusing on inputs	Draft document Stakeholder engagement Public participation Validation facilitation for approval																																					15,000,000	County Govt Partners
	Enforce the existing livestock feeds standards and actively monitor quality	Draft document Stakeholder engagement Public participation Validation facilitation for approval																																					14,500,000	County Govt Partners
	Develop policies and strategies for management of plant genetic materials transfer aimed in controlling invasive plants.	Draft document Stakeholder engagement Public participation Validation facilitation for approval Conferencing, Transport facilitator																																					15,000,000	County Govt Partners
Strategic Objective 3.0: To improve availability of adequate and quality livestock feeds.																																										
3.1	Develop and implement landscape rehabilitation plans	Field visits Consultancy GIS mapping Write shop reporting Meetings Final Reports Sharing of report Implementation follow ups																																					28,035,600	County Govt CFSSC SNV

Specific Objective	Activity	Resources Needed	Yearly / Quarterly Implementation																																Budget (Ksh)	Responsible person / institution
			2024/2025				2025/2026				2026/2027				2027/2028				2028/2029				2029/2030				2030/2031				2031/2032				2032/2033				2033/2034					
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
3. 1: To increase availability and access for adaptable inputs for forage production at all levels	Foster use of affordable, safe and fertile soil and soilless forage growing medium	Field visits Baseline studies (consultant or county team) Development of Maps Implementation follow ups																																									25,062,00	County Govt CFSSC SNV
	Removal and management of invasive plants	Field visits Baseline studies (consultant or county team) Development of Maps Implementation (removal) follow ups Seeds for reseeding Transport and facilitation of county teams Lunches for community																																									25,062,00	County Govt CFSSC SNV
	Support soil-water conservation practices	Field visits, Awareness and sensitization Implementation follow ups Lunches, facilitators, transport,																																									27,096,000	County Govt CFSSC SNV
	Access to affordable and quality fertilizers and seeds	Sensitization of Farmers Transport, county official's facilitation, stakeholders, input suppliers																																									18,300,000	County Govt CFSSC SNV
	Seeds/seedlings multiplication centers for pasture/forage	Field visits to collect forage seeds /seedling in collaboration with KARLO Demos and field days Reseeding rangelands																																									27,096,000	County Govt CFSSC SNV
	Foster research-extension liaison	Collaboration with research institution Universities, KALRO and NGO Transport facilitation, research costs- trials, training costs, conferencing costs																																									12,000,000	County Govt CFSSC, Research Institutions SNV

Specific Objective	Activity	Resources Needed	Yearly / Quarterly Implementation																																Budget (Ksh)	Responsible person / institution
			2024/2025				2025/2026				2026/2027				2027/2028				2028/2029				2029/2030				2030/2031				2031/2032				2032/2033				2033/2034					
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
3.1	Training on soil and crop management practices	Trainings and Monitoring, Evaluation, learning and Accountability Transport costs Lunches Trainers/ facilitators costs																																									30,300,000	County Government SNV
	Strengthen the feeds inputs assistance and financing system	Linkages through trainings Facilitation of meetings – lunches, transport, facilitators, county staff costs, training costs																																									30,300,000	County Government SNV
	Promote affirmative action that preposition higher participation by women and youth,	Awareness and sensitization																																									18,300,000	County Government SNV
3.2: To enhance capacity of private sector to conduct economically sustainable feed business	Support Feed-focus MSMEs to conduct feeds business	Awareness and sensitization Training costs, linkages costs, coaching & mentorship costs																																									18,300,000	County Government SNV
	Promote feeds processing at cottage and industrial in households, groups and county levels	Trainings costs,																																									12,000,000	County Government SNV
	Promote appropriate mechanization/ via provision of subsidized goods and services, supply of light and heavy machineries and linkage to financing institutions for grants, loans, credits	Awareness and sensitization																																									18,300,000	County Government SNV
	Embracing regenerative grazing and IPM concepts for fields and stored feeds pests and diseases e.g., aflatoxin and African army worms etc., management	Trainings Field Visits																																									30,300,000	County Govt CFSSC SNV
	Develop feeds aggregation centers to promote concepts for collective marketing and support in development of the producer and consumer protection guidelines	Field Visits Baseline Coaching of entrepreneurs Awareness and sensitization on gender sensitive innovations																																									46,698,000	County Government SNV

Specific Objective	Activity	Resources Needed	2024/2025				2025/2026				2026/2027				2027/2028				2028/2029				2029/2030				2030/2031				2031/2032				2032/2033				2033/2034				Budget (Ksh)	Responsible person / institution
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
Strategic Objective 4.0: Access to affordable livestock feeds of sufficient quantity and quality increased																																											
4.1: To Develop Rapid/emergency seeds and feeds insecurity response plans.	Strengthen existing /Establish and enhance the capacity of savings and credit system for dairy and beef cooperative societies,	Consultant, Digital savings and crit system, Revolving fund, Training costs, linkages costs																																								169,290,000	County Government, Development Partners, Financial Institutions,
	Foster development of affordable and sustainable input and extension access models for the farmers / producer organizations	Training costs, coaching & mentorship costs, Linkages costs																																									
	Foster cohesive use of feed resources at forest-cropped-grasslands as feeds reserves,	Farmers, transport reimbursements, transport																																								1,500,000	County Government, KFS, CFA.
	Support establishment of sub-county level Strategic Feed Reserves,	Infrastructure, funds, Training costs, coaching and mentorship costs, county staff costs																																								120,000,000	County Government, Cereals Board, Development Partners, Investors.
	Work with development partners on supply of feeds assistance to drought affected areas.	Field visits, Transport, funds																																								520,000,000	County Government, National Government, NDMA, Development partners, NGO's
4.2	Promote safe and affordable innovations for feeds conservation; cocoons, silage bags, hay bags,	Training hall, accommodation, transport reimbursement																																								13,200,000	Research Organizations, Innovators, County Government, Training Institutions
	Provide incentives to innovators of pasture/fodder storage,	Exhibition venue, farmers, innovation fund to trigger upscaling																																								1,000,000	County Government, National Government, Innovators

Specific Objective	Activity	Resources Needed	Yearly / Quarterly Implementation																																Budget (Ksh)	Responsible person / institution
			2024/2025				2025/2026				2026/2027				2027/2028				2028/2029				2029/2030				2030/2031				2031/2032				2032/2033				2033/2034					
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
4.2: To reduce Pre- and post-harvest nutrients yield losses at farm level	Support investments for Industrial/commercial rations production,	Industrial parks, incubation centers incentives,																																									43,000,000	County Government, National Government, Development partners, Training and research Institutions, Entrepreneurs
	Promote appropriate forage harvesting and processing mechanization services	Mechanization equipment, farmer transport and training materials, linkages to suppliers costs																																									61,550,000	County Government, Development partners
	Support formulation of home-based rations e.g., TMR	Farmers, transport, Stationery, computer hardware and software, fare reimbursement, training hall and refreshments																																									5,300,000	County Government, Research and Training Institutions
4.3: To sustain recommended and consistent feed standards and quality	Establishment of feeds quality testing and monitoring services/facilities	Infrastructure, equipment,																																									1,000,000	County Government, Investors, Development Partners
	Promote active monitoring of feeds quality and standards	Field visits,																																									2,000,000	County Government, National Government, Regulatory bodies
	Support innovations on pasture/fodder storage	Meeting hall, transport, accommodation																																									1,000,000	County Government, Research institutions, Development Partners
	Support innovative technologies for home-based rations	Demonstration material, transport and meals																																									3,300,000	County Government, Development partners
	Support investments for Industrial/commercial rations production	Meeting hall, transport, accommodation, meals																																									1,000,000	County Government, National Government,

Specific Objective	Activity	Resources Needed	Yearly / Quarterly Implementation																																Budget (Ksh)	Responsible person / institution
			2024/2025				2025/2026				2026/2027				2027/2028				2028/2029				2029/2030				2030/2031				2031/2032				2032/2033				2033/2034					
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
Strategic Objective 5.0: A quality and sustainable resource mobilization and financing framework developed																																											
5.1: To develop legislative and technical mechanisms for public-private partnership.	Support development and implementation of livestock feeds resource mobilization plan	Consultant Facilitation fee, stakeholder meeting & validation costs, training on implementation costs																																									4,170,000	County Govt-DOALF, Development partners, Feeds Value chain actors
	Organize bi-annual public-private partnerships forums for resource mobilization	List of PPPs Facilitation fee Conference facilities, transport costs, documentation costs and visibility costs																																									2,770,000	County Govt-DOALF, Development partners, Feeds Value chain actors
	Support development of public-private partnership instruments of collaboration	Consultant Facilitation fee, meeting costs, transport costs																																									3,890,000	County Govt-DOALF, Development partners, Feeds Value chain actors
	Support development of concepts/proposals for public-private partnerships on resource mobilization	Consultant Facilitation fee, meeting costs																																									3,890,000	County Govt-DOALF, Development partners, Feeds Value chain actors
5.2: To build the capacity in counties and communities in development and implementation of feasible and sustainable livestock feeds business financing and operationalization models	Support development of feeds financing modelling through trainings and development of viable livestock feeds business plans	Consultant Facilitation fee Training modules List of financial products Training, transport and facilitation of county staff																																									3,890,000	County Govt-DOALF, Development partners, Feeds Value chain actors
	Organize Annual linkage meetings between financial service providers and actors in the livestock feeds industry	List of financial SPs List of feed industry actors venue costs, visibility, transport																																									1,650,000	County Govt-DOALF, Development partners, Feeds Value chain actors

Specific Objective	Activity	Resources Needed	Yearly / Quarterly Implementation																																Budget (Ksh)	Responsible person / institution
			2024/2025				2025/2026				2026/2027				2027/2028				2028/2029				2029/2030				2030/2031				2031/2032				2032/2033				2033/2034					
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
5.3: To promote an effective agro-insurance scheme for livestock feeds financiers and entrepreneurs.	Sensitize/Promote/enhance adoption of loan-tied and/or government subsidized, conventional livestock feed insurance, traditional social insurance and index-based livestock feed insurance (VCI/FCI model) as various insurance schemes	List of insurance products Facilitation fee Insurance start premiums Meeting costs, transport costs																																					1,650,000	County Govt-DOALF, Development partners, Feeds Value chain actors
	Establish linkage with insurance service providers – lobby for the development of insurance products suitable for the livestock feeds industry actors.	List of insurance SPs List of feed industry actors Facilitation fee County staff costs, meeting costs, transport costs																																					3,890,000	County Govt-DOALF, Development partners, Feeds Value chain actors
Strategic Objective 6.0: Effectiveness of livestock feeds communication and knowledge management framework enhanced.																																											
6.1	Development of visibility materials including brochures, fliers, case studies and media products (news stories, radio talk shows, feature stories and press releases) and documentaries by December 2023	Field visits Project reports Consultant Visibility materials development and printing costs, dissemination costs																																					5,600,000	County Govt SNV
	Translation of publicity materials into languages that are best understood by the target communities in the 8 sub-counties of Narok County	Consultant costs, dissemination costs																																					3,600,000	County Govt SNV
	Identify and partner with community radio stations and digital platforms to produce talk shows, radio mentions, announcements and other content on forage innovations and ILM practices such as Osotua FM and Sidai FM to increase reach with messaging	List of community media Contact list for each media Content ideas																																					10,000,000	County Govt SNV

Specific Objective	Activity	Resources Needed	Yearly / Quarterly Implementation																																Budget (Ksh)	Responsible person / institution
			2024/2025				2025/2026				2026/2027				2027/2028				2028/2029				2029/2030				2030/2031				2031/2032				2032/2033				2033/2034					
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
6.1: To create visibility and enhance awareness of forage innovative technologies and ILM practices leading to an increase in adoption and use by farmers in at least 75% of the 8 sub-counties in Narok County by 2027	Document and package a case study every year featuring the best demonstration site and capturing success stories from beneficiary farmers	documenting costs																																					9,400,000	County Govt SNV
	Identify and prioritize the use of available and accessible digital platforms (media) to pass information eg. Facebook, Instagram, LinkedIn, WhatsApp & community channels such as Olakira Tv and Enduat Tv,	List of available digital media Content ideas																																					4,240,000	SNV County Government
	Engaging influencers and celebrities as ambassadors of information on forage technologies and ILM practices eg. Elijah Manang'oi, David Rudisha, Zakayo Punyua, Samuel Nkoitoki (Sangida Tv)	List of celebrities TORs for engaging the influencers Facilitation fees																																					8,600,000	SNV County Government
	Conceptualize and implement an annual award scheme targeting various sets of stakeholders to reward including farmers with best demos, most upcoming youth farmers, progressive women among other categories. Coming up with an award scheme for best farmers at county level	Award concept note Award categories Potential judges																																					6,400,000	SNV County Government
	Partner with Safaricom to innovate skiza tunes which can pass information relating to forage innovative technologies and ILM practices	Concept notes of possible skiza tunes Skiza tune script Producer																																					2,250,000	County Government SNV
	Use of churches, mosques and chief baraza's platforms for visibility and awareness creation. Target attendees by disseminating publicity materials and hosting debates in these places	Identified churches, mosques, barazas Publicity Materials Transport Lunch																																					3,640,000	SNV County Government

Specific Objective	Activity	Resources Needed	Yearly / Quarterly Implementation																																Budget (Ksh)	Responsible person / institution
			2024/2025				2025/2026				2026/2027				2027/2028				2028/2029				2029/2030				2030/2031				2031/2032				2032/2033				2033/2034					
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
6.2: To strengthen capacity and coordination of actors in the forage sector to mobilize resources for sustainable implementation of the forage innovative technologies and integrated landscape management practices in Narok County	Organize and hold quarterly farmer field days for farmers to share and learn from each other as well as for dissemination of publicity materials	Farmers Demo sites Transport facilitation Lunches																																					3,750,000	KALRO County Government SNV
	Develop fund raising concept notes/proposals targeting public and private players in the county including the county government	Meeting venue Transport Lunch																																					4,420,000	County Govt SNV
	Develop and disseminate a policy brief supporting the need for the county government to fund advocacy on forage innovative technologies and ILM practices	Policy brief concepts Consultants																																					3,800,000	SNV County Government
	Conceptualize and implement an annual exchange visit for farmers as a learning event	Farmers Transport reimbursements Lunch Accommodation																																					5,800,000	County Government SNV
																																						Total Cost	**1,585,590,000**	

Financing Arrangements

There are different categories of activities to be funded as part of the implementation of the Strategy. These are:

- Committees' meetings, joint monitoring, communication, resource mobilization and collaboration activities. The committees' activities will be funded by the institutions represented in the committees. Each institution will facilitate its representatives in the committees to participate in the committees' meetings and other coordination activities.
- Implementation of activity plans. The Strategy will be implemented through annual work plans that will be drawn by the DoALF, in consultation with key implementing agencies, and approved by the County. Stakeholders will implement the plans.

To fully implement the Strategy over the 10-year period, the County will require approximately Kshs. 1,585,590,000 million as shown in table 16. The County Chief Officer Livestock shall develop a resource mobilisation plan to mobilize resources for the implementation of the strategy. This will also include mapping of stakeholder implementing livestock feeds and ILM related activities in county for coordination and reporting. The financial plans will be developed and used to secure and apply for the required financing including preparation of the medium-term expenditure framework for the livestock feeds.

Table 18: Strategy financial plan in millions, Ksh per Fiscal year

Years	Coordination capacity in the management of feed resources at the landscape level.	Framework for institutional collaboration and governance for livestock feeds.	Availability of adequate and quality livestock feeds	Access to affordable livestock feeds of sufficient quantity and quality.	Quality and sustainable resource mobilization and financing framework.	Effectiveness of livestock feeds communication and knowledge management framework.	TOTAL
2024/25	21.78	5.34	95.12	53.00	5.40	4.18	**184.82**
2025/26	10.18	7.54	95.11	113.45	5.30	9.15	**240.73**
2026/27	9.68	8.88	63.41	135.40	4.90	8.23	**230.5**
2027/28	11.28	6.44	15.85	104.96	4.50	7.21	**150.24**
2028/29	11.28	4.00	10.58	99.12	4.10	8.74	**137.82**
2029/30	8.88	7.56	10.57	99.12	4.14	7.76	**138.03**
2030/31	11.38	8.22	10.57	99.12	4.12	8.90	**142.31**
2031/32	7.98	6.00	10.67	99.12	4.28	6.94	**134.99**
2032/33	11.28	7.96	2.64	98.84	3.35	5.41	**129.48**
2033/34	8.08	1.50	2.64	76.27	3.20	4.98	96.67
Total	**111.8**	**63.44**	**317.16**	**978.4**	**43.29**	71.5	**1585.59**

Source: The Strategy team 2024

Operation performance Monitoring and Evaluation Arrangements

It is essential to undertake monitoring and evaluation in order to measure and assess progress in plan implementation, learn from findings and experiences, and decide on what actions to take to achieve better outcomes. Monitoring and Evaluation (M&E) will be a useful mechanism to assist implementation team to track and determine the progress they are collectively making through their individual efforts, and the Department of Agriculture, Livestock and Fisheries to provide overall oversight on plan implementation in a structured manner.

The overall responsibilities for M&E are defined under table 15 which outlines the roles and responsibilities for various aspects of plan implementation. The primary responsibility for plan monitoring lies with the implementing organizations. The Plan Implementation Committee (PIC) coordinates plan monitoring and provides technical oversight to ensure that all implementing agencies have requisite capacity to report on progress in the provided format. The Plan Implementation Coordinator, working under the guidance of the PIC, will be responsible for developing a detailed monitoring plan in collaboration with the implementing agencies.

On the other hand, the primary responsibility for plan evaluation lies with PIC. The PIC will conduct the mid-term evaluation after 5 years and final evaluation at the end of the 10-year plan duration. The PIC will procure services of M&E experts to conduct the evaluations.

Conflict Management

During the implementation of this strategy conflict among the stakeholders might arise such as grazing plans and land leasing issues. The MSPs formed under this strategy will establish a subcommittee on conflict management and resolutions as guided by relevant laws.

Review of Narok County Livestock feed strategy

This document will be reviewed after five years of implementation or when there is a compelling need.

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ANNEXES

Annex 1. Strategy Development Process

The Strategy development process involved a wide range of stakeholders including, representatives of community groups, private sector, national and county governments, NGOs and development and strategic partners. These stakeholders participated in the process through 8 key steps

1. Information gathering from users at sub-county levels
2. Livestock feeds resources inventory and balances; tools, modelling and analysis
3. Planning and launch meetings by SNV, NCG and SDL
4. Larger stakeholder participation meetings
5. Drafting- technical experts' workshop
6. Technical experts' validation
7. Integration into the 3rd generation CIDP write shop
8. Approval and endorsement meetings by county agricultural technical committee
9. Printing, signing and official launch event

Annex 2. Implementation Plan and Resource Flow Matrix

Annex 3 Generic implementation monitoring tool

Annex 2: Summary of implementation activities by pillar from Year 1 to Year 5

Guiding Principle	Specific objective	Strategic intervention	Responsibility	Timeliness
1. Improve coordination capacity in the management of feed resources at the landscape level.				
Sustainable and cohesive sharing of grasslands, mineral licks, and water resources for a resilient community	Sub-county landscape management plans aligned to CSPs developed.	• Establishment and capacity building of grazing committees and MSP • Development of digital grazed landscape management plans-including GIS mapping • Working with WRA to review and implement the SCMPs • Conduct livestock movement surveillance - inter and intra-county routes, and active monitoring. • Develop intra-county protocols/agreements for sharing feed resources on the traditional governance systems. • Work with researchers to map soils and vegetation in the county-including carbon. • Ineffective mechanisms for monitoring, sharing and distribution of grazing resources including water	Department of agriculture, livestock, fisheries and irrigation, Department of Environment, county assembly Value Chain Actors; Development Partners	Y1 to Year 5
	Animal feeds resources-plus water inventory and balances evaluated	• Development and publication of feeds resources-plus water, assessment tools for all animals • Development and implementation of ecological monitoring plans • Monitoring yields variability in all vegetation types using VCI or NDVI, • Organize quarterly feeds security review and report validation meetings. • Develop a policy for revegetation and control of invasive plants. • Conduct analysis of rainfall amounts and distribution and water available for		Y1 to Year 5
2. Enable framework for institutional collaboration and governance for livestock feeds.				
Coordinated, inclusive and effective decision-making processes	Improve coordination capacity in monitoring & implementation of feeds projects	• Enact relevant institutions and bills e.g., CASSCOM, Narok County Health and Production bill • Finance and implement the livestock feeds and other relevant strategies • Adopt national policies governing feeds-sector; domesticate the Livestock Policy 2019 – focusing on inputs • Domesticate the livestock feeds standards and establish laboratories to actively monitor quality • Developed policies and strategies for management of plant genetic materials transfer aimed in controlling of invasive plants	Department of agriculture, livestock, fisheries and irrigation, Department of Environment, county assembly Value Chain Actors; Development Partners	Y1 to Year 5

Guiding Principle	Specific objective	Strategic intervention	Responsibility	Timeliness
3. Improve availability of adequate and quality livestock feeds				
Employment of environmentally sustainable livestock feeds production processes.	Increase availability of and access to adapted inputs for forages production	• Develop and implement grasslands rehabilitation plan. • Foster use of affordable, safe, and fertile soil and soilless forage growing medium • Support soil-water conservation practices. • Access to affordable and quality fertilizers and seeds • Seeds/seedlings multiplication centers for pasture/forage • Foster research-extension liaison • Training on soil and crop management practices • Strengthen the feeds inputs assistance and financing system. • Promote affirmative action that preposition higher participation by women and youth	Department of agriculture, livestock, fisheries and irrigation, Department of Environment, county assembly Value Chain Actors; Development Partners	Y1 to Year 5
Gender equality and social inclusion in feed-focused and socio-economic enterprises	Enhance capacity in private sector to conduct economically sustainable feeds business	• Support Feed-focus MSMEs to conduct feeds business. • Promote feeds processing at cottage and industrial in households, groups, and county levels. • Promote appropriate mechanization/ via provision of subsidized goods and services. • Embracing regenerative grazing and IPM concepts for fields and stored feeds pests and diseases • Profitability improvement		
4. Increase access to affordable livestock feeds of sufficient quantity and quality.				
Maintain a balance in development and conservation	Develop rapid/emergency seeds and feeds insecurity response plans	• Establish a savings and credit system for dairy and beef cooperative societies, • Foster cohesive use of feed resources at forest-cropped-grasslands as feeds reserves. • Work with Cereal Board in establishment of sub-county level Strategic Feed Reserves • Work with CGA, development partners-UNWFP and COG on supply of feeds assistance to drought affected counties	Department of agriculture, livestock, fisheries and irrigation, Department of Environment, county assembly Value Chain Actors; Development Partners	Y1 to Year 5
	Reduce pre- and post-harvest nutrients yield losses at farm level	• Promote safe and affordable innovations for feeds conservation, cocoons, silage bags, hay bags. • Provide incentives to innovators of pasture/fodder storage. • Support investments for Industrial/commercial rations production.		

Guiding Principle	Specific objective	Strategic intervention	Responsibility	Timeliness
		• Promote appropriate forage harvesting and processing mechanization services. • Support formulation of home-based rations		
	Sustain high and consistent feed standards and quality.	• Establishment of feeds quality testing and monitoring services/facilities • Promote active monitoring of feeds quality and standards. • Support innovations on pasture/fodder storage- • Support innovative technologies for home-based rations. • Support investments for Industrial/commercial rations production		
5. Develop a quality and sustainable resource mobilization and financing framework.				
Promote legally recognized public-private partnership amongst livestock feeds stakeholders	develop legislative and technical mechanisms for public-private partnership.	• provide a platform to have various organizations in partnership to pool resources	Department of agriculture, livestock, fisheries and irrigation, Department of Environment, county assembly Value Chain Actors; Development Partners	Y1 to Year 5
	build the capacity in counties and communities in development and implementation of feasible and sustainable livestock feeds business financing and operationalization models.	• offer solutions to issues of Limited start up and continuity capital, Limited financial and business skills, Limited waiver facilities by most financial institutions		
	promote an effective agro-insurance scheme for livestock feeds financiers and entrepreneurs.	• provide alternative sources of funding to the concerned livestock feed enterprise		

Guiding Principle	Specific objective	Strategic intervention	Responsibility	Timeliness
6. Enhance the effectiveness of livestock feeds communication and knowledge management framework.				
to build the capacity of individuals, teams, organizations, and inter-organizations to identify, capture, analyze, store, retrieve, protect, share, and apply available knowledge	create visibility and enhance awareness of forage innovative technologies and ILM practices leading to an increase in adoption and use by farmers in at least 75% of the 8 sub-counties in Narok County by 2027	• increase adoption of the forage innovative technologies and application of integrated landscape management practices	Department of agriculture, livestock, fisheries and irrigation, Department of Environment, county assembly Value Chain Actors; Development Partners	Y1 to year 5
strengthen capacity and coordination of actors in the forage sector to mobilize resources for sustainable implementation of the forage innovative technologies and ILM practices across the 8 sub-counties of Narok County	build and strengthen capacity of actors to be able to implement the adaptive mechanisms and intervention in the forage sector in Narok County	• training of actors on implementing the adaption mechanisms and intervention in the forage sector in Narok County		

Annex 1: Monitoring and Evaluation reporting tool

Monitoring and evaluation reporting tool

Strategic Objective No: ….....

Outcome:……

Activity	Output	Indicator	Baseline	Target	Achievements	Variance	Comments
Activity 1	Output 1						
	Output 2						
	Output 3						
Activity 2	Output 1						
	Output 2						
	Output 3						
Activity 3	Output 1						
	Output 2						
	Output 3						
Activity 4	Output 1						
	Output 2						
	Output 3						
Activity 5	Output 1						
	Output 2						
	Output 3						
Activity 6	Output 1						
	Output 2						
	Output 3						
Activity 7	Output 1						
	Output 2						
	Output 3						
Activity 8	Output 1						
	Output 2						
	Output 3						

Table 18: Monitoring and Evaluation Plan 2024-2034

Specific Objective	Outcome	Output	Activity	Indicators	Target		Mean of verification/ Data Source	Frequency of Measurement
					2024	2024 - 2034		
Strategic Objective 1.0: To improve coordination capacity in management of feeds resources-plus water at landscape level.								
To improve coordination capacity in management of feeds resources-plus water at landscape level.	Enhanced coordination in management of feeds resources-plus water at landscape level.	Multi-Stakeholder Platforms (MSP) established and Grazing committee's capacity built	Establishment and capacity building of grazing committees and Multi-Stakeholder Platforms (MSPs)	MSP established and Number of grazing committee members trained			Reports Participants lists	Quarterly
		Digital grazed landscape management plans developed	Development of digital grazing landscape management plans-including GIS mapping	Number of Digital grazing landscape management plans developed			Management plans	Quarterly
		Sub-Catchment Management Plans (SCMPs) developed/ reviewed and implemented	Support review and implementation of the Sub-Catchment Management Plans (SCMPs)	Number of Sub-Catchment Management Plans (SCMPs) developed/ reviewed and implemented			Reports Participants lists	Quarterly
		Inter and intra-county Livestock movement surveillance undertaken	Conduct livestock movement surveillance - inter and intra-county routes, and active monitoring -Mapping of livestock routes	Number of livestock movement surveillance visits conducted Number of livestock routes mapped & monitored			Reports Participants lists Maps	Quarterly
		Intra-county protocols/agreements for sharing feed resources developed	Develop intra-county protocols/agreements for sharing feed resources-leveraging on the traditional governance systems	Number of intra-county protocols/agreements for sharing feed resources developed and signed			Signed MOUs	Quarterly
		Soils and vegetation maps developed	Map soils and vegetation in the county-including carbon -Develop soil and vegetation maps	Number of Soils and vegetation maps developed			Soil & vegetation Maps	Bi-Annually

Specific Objective	Outcome	Output	Activity	Indicators	Target		Mean of verification/ Data Source	Frequency of Measurement
					2024	2024 - 2034		
		Mechanisms for monitoring, sharing and distribution of grazing resources including water strengthened	Strengthen/ develop mechanisms for monitoring, sharing and distribution of grazing resources including water.	Number of mechanisms for monitoring, sharing and distribution of grazing resources strengthened			Reports	Bi-Annually
		Feed resources assessment tools developed and published	Development and publication of feeds resources-plus water, assessment tools for all animals	Number of feed resources assessment tools developed and published			Assessment tools publication	Annually
		Ecological monitoring plans developed and implemented	Development and implementation of ecological monitoring plans	Number of Ecological monitoring plans implemented			Reports	Bi-Annually
		Vegetation yields monitored using VCI, FCI or NDVI	Monitoring yields variability in all vegetation types using VCI, FCI or NDVI	Number of monitoring reports			Reports	Quarterly
		Feeds security review and validation meetings conducted	Organize quarterly feeds security review and report validation meetings	Number of feeds security reviews and validation meetings held			Participant lists Meeting minutes/reports	Quarterly
		Revegetation and control of invasive plants policy developed	Develop a policy for revegetation and control of invasive plants	Revegetation and control of invasive plants policy developed			Policy approved	One-off
		Rainfall amounts and distribution and water available for livestock analysed	Conduct analysis of rainfall amounts and distribution and water available for livestock	Rainfall analysis reports developed and disseminated			Reports	Quarterly
Strategic Objective 2.0: Framework for institutional collaboration and governance for livestock feeds enabled								
To enhance institutional collaboration and governance	Enhanced institutional, collaboration and governance	Relevant institutions and bills in place	Enact relevant bills e.g., CASSCOM, Narok County Animal Health and Production bill	Number of institutions and bills enacted	Mid-year	Annually	Institutions and bills in place	Annually

Specific Objective	Outcome	Output	Activity	Indicators	Target		Mean of verification/ Data Source	Frequency of Measurement
					2024	2024 - 2034		
for livestock feeds	for livestock feeds	National policies governing feeds-sector adopted and domesticated- the Livestock Policy 2019 – focusing on inputs	Adopt national policies governing feeds-sector; domesticate the Livestock Policy 2019 – focusing on inputs	Number of National policies governing feeds-sector adopted and domesticated- the Livestock Policy 2019 – focusing on inputs	Mid-year	Annually	Policies in place	Annually
		Livestock feeds standards domesticated and laboratories which are actively monitoring quality established	Domesticate the livestock feeds standards and establish laboratories to actively monitor quality	Number of livestock feeds standards domesticated, and number of functional laboratories established	Mid-year	Annually	Standards in place and established Laboratory	Annually
		Policies and strategies for management of plant genetic materials transfer aimed in controlling invasive plants developed	Develop policies and strategies for management of plant genetic materials transfer aimed in controlling invasive plants.	Number of Policies and strategies for management of plant genetic materials transfer aimed in controlling invasive plants developed and implemented	Mid-year	Annually	Policies and strategies in place	Annually
Strategic Objective 3.0: To improve availability of adequate and quality livestock feeds.								
To increase availability and access for adaptable inputs for forage production at all levels	Improve availability of adequate and quality livestock feeds.	Baseline conducted	Develop and implement landscape rehabilitation plans, Removal of invasive species,	baselines conducted, Acreage rehabilitated	Mid-year	Quarters	Reports	Quarterly
		Soilless technologies implemented	Foster use of affordable, safe and fertile soil and soilless forage growing medium	Number of Villages implementing soilless technologies	Mid-year	Quarters	Reports	Quarterly
		sensitization forums organized	Support soil-water conservation practices, promote affirmative action that preposition higher participation by women and youth, Access to affordable and quality fertilizers and seeds	Number of forums and sensitization conducted	Mid-year	Quarters	Reports	Quarterly

Specific Objective	Outcome	Output	Activity	Indicators	Target		Mean of verification/ Data Source	Frequency of Measurement
					2024	2024 - 2034		
		Training conducted	Training on soil and crop management practices	Number of farmers trained in soil and crop management practices	Mid-year	Quarters	Training reports	Quarterly
		Linkages to Research, financial and input organizations	Develop/Strengthen the feeds inputs assistance and financing system, and Seeds/seedlings multiplication centres for pasture/forage	Number of research and linkages conducted Number of feeds input, and financing models strengthened or developed Number of functional seeds multiplication centres for forage and pasture established/ strengthened	Mid-year	Quarters	Reports	Quarterly
To enhance capacity of private sector to conduct economically sustainable feed business		MSMSMEs in feed sector supported in business development and linked to financial service providers	Support Feed-focus MSMEs to conduct feeds business, promote appropriate mechanization/ via provision of subsidized goods and services, supply of light and heavy machineries and linkage to financing institutions for (financial services access (grants, loans, credits)	Number of MSMEs supported in feed business. No of financial institutions working with MSMEs to access financial services forums and sensitization conducted	Mid-year	Quarters	Reports	Quarterly
		Training conducted	Embracing regenerative grazing and IPM concepts for fields and stored feeds pests and diseases e.g., aflatoxin and African army worms etc., management, promote feeds processing at cottage and industrial in households, groups and county levels	Number of concepts notes developed	Mid-year	Quarters	Training reports	Quarterly

Specific Objective	Outcome	Output	Activity	Indicators	Target		Mean of verification/ Data Source	Frequency of Measurement
					2024	2024 - 2034		
		Functional feed aggregation centres developed and promoting collective marketing	– Develop/ strengthen feeds aggregation centres, promote concepts for collective marketing and support in development of the producer and consumer protection guidelines	Number of functional feed aggregation centres developed / strengthened -consumer and producer protection guidelines developed	Mid-year	Quarters	Adoption of concept reports	Quarterly
		Gender sensitive innovations adopted	Promote gender sensitive innovations, Support branding and marketing of value-added livestock feeds inputs and commodities.	Number of gender sensitive innovations developed and adopted Number of forums and sensitization conducted	Mid-year	Quarters	Reports	Quarterly
Strategic Objective 4.0: Access to affordable livestock feeds of sufficient quantity and quality increased								
To Develop Rapid/emergency seeds and feeds insecurity response plans.	Enhanced response to feeds insecurity	Rapid/emergency seeds and feeds insecurity response plans developed	Establish and enhance the capacity of savings and credit system for dairy and beef cooperative societies,	Number of savings and credit systems established		33	Reports	Quarterly
			Establish revolving credit fund for feed resources for 33 cooperatives	Amount of credit fund set aside, and savings mobilized from farmers		2E+08	Reports, budgets	Annually
			Sensitize cooperatives for credit and savings on feed resources during their open days.	No of farmers reached through sensitization meetings held		33	Reports	Quarterly
			Foster cohesive use of feed resources at forest-cropped-grasslands as feeds reserves,	Number of trainings/meetings held			reports, participants list	Monthly
			Work with Cereal Board in establishment of sub-county level Strategic Feed Reserves,	Number of functional feed stores established; Amount of feed stored			Reports	Quarterly

Specific Objective	Outcome	Output	Activity	Indicators	Target		Mean of verification/ Data Source	Frequency of Measurement
					2024	2024 - 2034		
			Work with development partners on supply of feeds assistance to drought affected areas	tonnage of relief livestock feed supplied, Emergency funds budgeted and set aside			Reports, budgets	Quarterly
To reduce pre- and post-harvest nutrients yield losses at farm level	Improved pre- and post-harvest nutrients yields at farm level	Reduced pre-and post-harvest nutrients yield losses at farm level	Promote safe and affordable innovations for feeds conservation; cocoons, silage bags, hay bags,	Number of trainings held/ No of farmers reached/ No of farmers adopting			reports, participants list	Quarterly
			Provide incentives to innovators of pasture/fodder storage,	Number of exhibitions held; Number of innovations showcased			Reports, participation lists	Annually
			Support investments for Industrial/commercial rations production,	Number of industrial parks established, Number of industries dealing with rations production.			Reports	Quarterly
			Promote appropriate forage harvesting and processing mechanization services	Number of farmers trained, no of farmers reached, no of farmers/groups assisted with equipment and are in use, no of farmers adopting equipment.			Reports, Participation lists	Monthly
			Support formulation of home-based rations e.g., TMR	Number of farmers trained no of farmers with home-based rations			Reports, participation lists	Quarterly
To sustain recommended feed quality standards	Sustained feed quality standards	Recommended feed quality standards sustained	Establishment of feeds quality testing and monitoring services/facilities	Number functional of labs established			reports	Annually
			Promote active monitoring of feeds quality and standards	Number of surveys, Number of samples tested, Proportion of samples meeting standards			Reports	Quarterly

Specific Objective	Outcome	Output	Activity	Indicators	Target		Mean of verification/ Data Source	Frequency of Measurement
					2024	2024 - 2034		
			Support innovations on pasture/fodder storage	Number of storage innovations supported			Reports	Biannually
			Support innovative technologies for home-based rations	Number of forums held, List and number of technologies supported			Reports, participation lists,	Quarterly
			Support investments for Industrial/commercial rations production	Number of laws supported; Number of regulations supported			Reports, County assembly proceedings	Quarterly
Strategic Objective 5.0: A quality and sustainable resource mobilization and financing framework developed								
To develop legislative and technical mechanisms for public-private partnership.	Increased livestock feeds industry investment opportunities for PPPs	Livestock feeds resource mobilization plan developed	Support development and implementation of livestock feeds resource mobilization plans	Resource mobilization and implementation plan developed			Plans in place	Quarterly
		Bi-annual PPPs meeting organized	Organize bi-annual public-private partnerships forums for resource mobilization	Number of PPPs held			Reports	Bi-annual
		PPPs Instruments of collaboration developed	Support development of public-private partnership instruments of collaboration	Number of instruments for collaboration developed			MoUs, Agreements, Contracts Developed	Quarterly
		Concepts/proposals for public-private partnerships on resource mobilization developed	Support development of concepts/proposals for public-private partnerships on resource mobilization	Number of concepts/proposals developed and funded			Concepts/proposals developed	Quarterly
To build the capacity in counties and communities in development and implementation of feasible and sustainable livestock feeds	Enhanced access to financial services by the livestock feeds industry actors	Feeds Financing model developed	Support development of feeds financing modelling through training and development of viable livestock feeds business plans	Number of feeds financing models developed/No of actors accessing finance			Financing models developed	Quarterly
		Linkage meetings organized	Organize Annual B2B linkage meetings between financial service providers and actors in the livestock feeds industry	Number of linkage meetings held			Reports	Quarterly

Specific Objective	Outcome	Output	Activity	Indicators	Target		Mean of verification/ Data Source	Frequency of Measurement
					2024	2024 - 2034		
business financing and operationalization models.				Number of actors attending the meetings Number of working agreements developed				
To promote an effective agro-insurance scheme for livestock feeds financiers and entrepreneurs.	Increased access to insurance services by the livestock feeds industry actors/players	Insurance sensitization meetings conducted	Sensitize/Promote/enhance adoption of loan-tied and/or government subsidized, conventional livestock feed insurance, traditional social insurance and index-based livestock feed insurance (VCI/FCI model) as various insurance schemes	Number of actors accessing insurance services and type of insurance promoted/accessed			Insurance products promoted/accessed	Quarterly
		Linkage meetings organized	Establish linkage with insurance service providers – lobby for development insurance products suitable for the livestock feeds industry actors.	Number of linkage meetings held Number of insurance products developed			Reports	Quarterly
Strategic Objective 6.0: Effectiveness of livestock feeds communication and knowledge management framework enhanced.								
To create visibility and enhance awareness of fodder innovative technologies and ILM practices leading to an increase in adoption and use by farmers	Increased visibility and awareness on innovative fodder technologies and ILM practices	Visibility materials developed	Development of visibility materials including brochures, fliers, case studies and media products (news stories, radio talk shows, feature stories and press releases)	Number of materials developed			Reports	Quarterly
		Publicity materials translated into local languages	Translation of publicity materials into languages that are best understood by the target communities in the 8 sub-counties of Narok County	Number of materials translated and disseminated. Number of farmers reached by the visibility materials			Translation database	Quarterly

Specific Objective	Outcome	Output	Activity	Indicators	Target		Mean of verification/ Data Source	Frequency of Measurement
					2024	2024 - 2034		
in at least 75% of the 8 sub-counties in Narok County by 2027		Radio talk shows, mentions and announcements produced	Identify and partner with community radio stations and digital platforms to produce talk shows, radio mentions, announcements and other content on forage innovations and ILM practices such as Osotua FM and Sidai FM to increase reach with messaging	Number of talk shows and announcements produced			Database of episodes	Quarterly
		case study documented and shared	Document and package a case study every year featuring the best demonstration site and capturing success stories from beneficiary farmers	Number of case studies developed			Case study reports	Bi - annually
		Awareness created through digital channels	Identify and prioritize the use of available and accessible digital platforms (media) to pass information e.g. Facebook, Instagram, LinkedIn, WhatsApp, and community channels such as Olakira Tv and Enduat Tv. This also included influential journalists	Number of digital channels identified, and number of messages disseminated			Distribution list	Monthly
		Awareness created through ambassadors	Engaging influencers and celebrities as ambassadors of information on forage technologies and ILM practices E.g. Elijah Manang'oi, David Rudisha, Zakayo Punyua, Samuel Nkoitoki (Sangida Tv)	Number of influencers engaged, and number of messages disseminated			Influencers engagement contracts Campaign concept notes	Monthly
		Visibility created through showcase of success stories	Conceptualize and implement an annual award scheme targeting various sets of stakeholders to reward including farmers with best demos, most upcoming youth farmers, progressive women	Number of successful persons identified and awarded			Database of success stories	Bi-Annually

Specific Objective	Outcome	Output	Activity	Indicators	Target		Mean of verification/ Data Source	Frequency of Measurement
					2024	2024 - 2034		
			among other categories. Coming up with an award scheme for best farmers at county level					
		Informative Skiza tunes developed	Partner with Safaricom to innovate Skiza tunes which can pass information relating to forage innovative technologies and ILM practices	Number of Skiza tunes developed and subscriptions			Skiza tune database	Quarterly
		Awareness created through chief's barazas and religious institutions	Use of churches, mosques and chief baraza's platforms for visibility and awareness creation. Target attendees by disseminating publicity materials and hosting debates in these places	Number of dissemination sessions held Number of farmers reached			Document distribution check list Participants records	Quarterly
				Number of documents / products distributed			Participant lists	Quarterly
To strengthen capacity and coordination of actors in the fodder value chain to mobilize resources for adoption of innovative technologies and implementation of integrated landscape management	Improved capacity and coordination of actors within the fodder value chain	Field days held to disseminate publicity materials	Organize and hold quarterly farmer field days for farmers to share and learn from each other as well as for dissemination of publicity materials	Number of farmer field days held			Participant lists	Quarterly
				Number of farmers reached through field days				
		Fundraising concept note developed	Develop fund raising concept notes/proposals targeting public and private players in the county including the county government	Number of concepts notes developed			Concept note development report	Bi-Annually
				Number of concept notes approved / funded				
		Policy brief developed	Develop and disseminate a policy brief supporting the need for the county government to fund advocacy on forage innovative	Number of policy briefs developed			Policy brief report	Annually

Specific Objective	Outcome	Output	Activity	Indicators	Target		Mean of verification/ Data Source	Frequency of Measurement
					2024	2024 - 2034		
practices in Narok County			technologies and ILM practices					
		Exchange visit organized	Conceptualize and implement an annual exchange visit for farmers as a learning event	Number of exchange visits held			Exchange visits reports	Bi-Annually
				Number of participants in the exchange visits			Participant lists	


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TECHNICAL WORKING GROUP ON THE DEVELOPMENT OF LIVESTOCK FEED STRATEGY

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NAROK COUNTY LIVESTOCK FEED STRATEGY