AFRICAN DEVELOPMENT BANK GROUP

GREEN CLIMATE FUND

BUILDING CLIMATE RESILIENCE FOR FOOD AND LIVELIHOODS IN THE HORN OF AFRICA (BREFOL)

Djibouti, Ethiopia, Kenya, Somalia, and South Sudan

Annex 2.5. Feasibility Study for Kenya

ACRONYMS AND ABBREVIATIONS

ADR	Alternative Dispute Resolution
AEZs	Agro-ecological Zones
AfDB	African Development Bank
AVCs	Agricultural Value Chains
ASAL	Arid and Semi-Arid Land
ASTGS	Agricultural Sector Transformation and Growth Strategy
ASF	ASAL Stakeholder Forum
CBNRM	Community-Based Natural Resource Management
CCA	Climate Change Adaptation
CCCF	County Climate Change Fund
CIDPs	County Integrated Development Plans
CPF	Common Programme Framework
CPP	Country Program Paper
CSA	Climate Smart Agriculture
CSGs	County Steering Groups
DCF	Drought Contingency Fund
DRM	Drought Risk Management
DRR	Drought Risk Reduction
DRSLP	Drought Resilience and Sustainable Livelihoods Programme
ECDE	Early Childhood Development Education
EDE	Ending Drought Emergencies
EMIS	Education Management Information System
EU	European Union
HFA	Hyogo Framework for Action
HSNP	Hunger Safety Net Programme
ICT	Information and Communications Technology
IDDRSI	Intergovernmental Authority on Development Drought Disaster Resilience and Sustainability Initiative
IGAD	Intergovernmental Authority on Development
IMAM	Integrated Management of Acute Malnutrition
IPC	Integrated phase classification maps
KCPE	Kenya Certificate of Primary Education

KCSE	Kenya Certificate of Secondary Education
KFSSG	Kenya Food Security Steering Group
KMD	Kenya Meteorological Department
KM&IS	Knowledge Management and Information Sharing
M & E	Monitoring and Evaluation
MTP	Medium Term Plan
NAP	National Adaptation Plan
NCCAP	National Climate Change Action Plan
NCCRS	National Climate Change Response Strategy
NDEF	National Drought Emergency Fund
NDMA	National Drought Management Authority
NPR	National Police Reserve
NSC	National Steering Committee
PDRR	Platform for Disaster Risk Reduction
PLS	Pastoralists Leadership Summit
PPG	Pastoralists Parliamentary Group
PREG	Partnership for Resilience and Economic Growth
SP	Social Protection
USAID	United States Agency for International Development
UN	United Nations
WASH	Water, Sanitation and Hygiene

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1 INTRODUCTION

1.1 General Context and Generalities

Kenya is one of the eight members of the Intergovernmental Authority on Drought (IGAD). The other IGAD member countries are, Djibouti, Eritrea, Ethiopia, Somalia, South Sudan, Sudan and Uganda. Kenya, like its sister IGAD states, has most of its landmass in arid and semi-arid zones and covers an area of 5.2 million km^2 with a population of over 250 million people (Figure 1). It is endowed with a tremendous range of natural resources and an enormous potential for a variety of opportunities to generate wealth and development. The IGAD member countries are struggling to cope with the increased frequency of droughts, and increasing phenomena of desertification, land degradation, global warming and climate change.

Figure 1-1: Map of Kenya's ASAL Counties (source: http://www.asalforum.or.ke)

Based on the September 8 and 9 of 2011 State Summit in Nairobi IGAD members agreed to develop the regional strategic framework for disaster resilience and sustainability in the Horn of Africa. Together with the financial support of the African Development Bank (AfDB) decided to finance a

number of countries within the framework of the Multinational Drought Resilience and Sustainable Livelihoods Program (DRSLP). So far, the countries covered by the DRSLP are Ethiopia, Eritrea, Somalia, Djibouti, Sudan and Kenya. The agro-ecological conditions and the challenges related to the management of natural resources are quite similar in all countries of the Horn of Africa and provide a good basis for making the development of resilience-enhancing interventions.

1.2 Description of the Project

The HOA Program has a multinational character with an ambition of regional integration through consultation and cooperation between the member states of IGAD. Its implementation will be based on the participatory approach and on decentralization through the close involvement of the actors concerned, and more particularly the beneficiary populations, based on the definition of the needs and priorities of the country components. Pertaining to institutional arrangements, the implementation agency of the regional program is the IGAD Executive Secretariat and its specialized institutions, i.e. the IGAD Climate Prediction and Applications Centre (ICPAC) and the IGAD Centre for Pastoral and Livestock Development (ICPALD). ICPAC will coordinate implementation of activities of the Climate Services component i.e. the 3rd (regional) component of the Program, in liaison with other professional institutions and actors in the region i.e. ClAT, ILRI, IFRAH and ICPALD and Member States' respective line ministries.

1.3 Objectives of HOA Program

1.3.1 Overall Objective

The overall objective of the HOA program as defined by the AfDB project identification mission of June 2019 is to contribute to improving the living conditions of the populations and food and nutritional security in the Horn of Africa.

1.3.2 Specific objectives

Specifically, the HoA program aims to:

i) Increase, on a sustainable and resilient basis, the productivity and agro-sylvo-pastoral production in Kenya as part of the Horn of Africa program

ii) Increase income from agro-sylvo-pastoral value chains, and;

iii) Strengthen the capacity of populations to better adapt to the risks of climate change.

1.4 Rationale for the Study

During the HOA Program identification mission carried out by the AfDB in June 2019, IGAD and its main partners stressed the importance of ensuring better synergy with the strategies and actions underway at the regional and national levels; as well as the need to build on the lessons and impacts of ongoing AfDB-supported programs. Some of these initiatives include; IGAD Drought Resilience

and Sustainability Initiative (IDDRSI) and the Multinational Drought Resilience and Sustainable Livelihoods Program (DRSLP) in the Horn of Africa.

The general objective of the currently envisaged assignment was to assess the viability of the HoA Program through feasibility studies; institutional, social and environmental analysis across the entire value chain; programming of investments and presentation of projects; constraints and opportunities for implementing program components; proposal for improvements, including recommendations on the roles of regional, national and subnational government agencies and prepare a sector investment program to address constraints.

1.5 Feasibility Study Phases

The main tasks, divided into 4 successive phases to be accomplished were carried out as follows:

PHASE I: Documentary study and making contact with stakeholders

PHASE II: Visits to component sites and meetings with local beneficiaries

PHASE III: Preparation of reports and annexes for the country components and the regional component

PHASE IV Regional validation workshop for the various reports

1.5.1 Phase I: Documentary Research and Exploitation

A. Data Collection Methods

Data collection was carried out by the team of key national experts supported by regional / international consultants on the basis of a methodological guide for data collection, and inputs by stakeholders at the start-up mission at IGAD headquarters, the Inception Workshop and AfDB Mission. The collection will be done at two levels: (i) the regional level; at the IGAD Executive Secretariat in Djibouti, through teleconference with AfDB Abidjan, (ii) the national level. Data collection at IGAD headquarters and transboundary landscape was carried out by key regional / international experts and at country level by the national consultants under the supervision of their corresponding regional/international experts. All data collection at national level were coordinated by the National IDDRSI Coordinator (NIC) in intimate collaboration with the responsible implementing line government ministerial department (IGD), the Ministry of Agriculture, Water, Fisheries and Livestock and Marine Resources in the HOA Program.

Activities for collecting information started with consultations with the National Drought Management Authority (NDMA) national meeting convened by the National IDDRSI Coordinator (NIC) alongside the lead government implementing unit and county government CEC's. The meetings were conved with the support of the NIC in consultation with the NDMA. The agenda included among others: (a) determination of the type of infrastructures to be supported by the HoA Program, with preference for multi-purpose infrastructures, i.e. small dams likely to support irrigation for livestock husbandry, agroforestry, water supply, sanitation and other activities; (b) determination of the criteria for the selection of infrastructures and sites, such as (i) preference for DRSLP sites, (ii) sites in poorest communities, (iii) sites with no land tenure issues, (iv) sites captured in current local and national programs etc.

Information gathered included: (i) collecting relevant data from technical services, (ii) organizing a stakeholder consultation meeting (summarily described in the preceding paragraph); (iii) undertaking

visits to the project intervention areas including engagements with beneficiaries; and (iv) field surveys. The technical and socio-economic data collection by the experts with the support of DRSLP and NDMA officers at the project areas, overseen by the NIC and IGAD, with the planning support of the regional/international consultants.

B. Collection of secondary data and stakeholder profiling

During this preliminary period, the team conducted a comprehensive review of project documents, including national laws and strategies for similar projects, as well as other documents collected from the AfDB, including existing project documents, IGAD Action Plans and program baseline study reports. Key and relevant lessons learnt from some of such reports have been collated and presented in the report. These lessons should guide the selection of project ideas including in relation to their locations, probable challenges and adapted solutions. In addition, special attention was paid to the Kenya National Adaptation Action Plan (NAPA) and the Poverty Reduction Plans to provide insights for integrating the project into regional, national and local priorities:

In the available NAPA, several key sectors of their economies have been identified as most vulnerable to climate change. Sectors most at risk include; agriculture, water resources, livestock, forestry and fishing.

Based on the preceding assessment, consultants paid particular attention to these sectors by assessing for adapted strategies, including strategies for the mitigation of climate change effects, fight against land degradation and measures for sustainable forest management.

Other AfDB regional strategies for IGAD countries was taken into account, thus:

1. The Bank's Ten-Year Strategy (2013-2022), which aims to ensure more inclusive and sustainable growth with a particular focus on fragile states, agriculture and food security, and gender. The Bank's Gender Strategy (2014-2018) which reinforces the Bank's emphasis on gender equality in its Ten-Year Strategy.
2. The Bank's Strategic Documents for IGAD member countries and the Bank's Regional Integration Strategy and Policy (2014-2023), emphasizing regional development strategies.

At the end of this step, the team identified key stakeholders likely to be involved in the implementation of the project, in consultation with IGAD (regional level) and at the national level with the relevant IGDs. A stakeholder analysis was conducted to identify the role of local governments, beneficiaries and pastoralists' organizations (including special groups such as women and youth groups), civil society organizations, traditional authorities and the private sector.

1.5.2 Phase 2: Site visits and consultations with stakeholders

The objectives of the site visits were to:

1. Collect additional data on communities and regions with a view to further discussions with stakeholders, validate potential target areas / populations;
2. Discuss activities generating income in countries (what were done, what worked, what did not work and why, etc.).

More specifically, during site visits, interviews will be conducted with all stakeholders / beneficiaries to solicit their views on:

i. Their most preferred infrastructures and their related package of activities and why;
ii. Lessons and challenges from past project infrastructures and their related package of sub-projects and activities including their impacts on stakeholders / beneficiaries and their social infrastructures, on lands/soils and ecosystems;
iii. How stakeholders / beneficiaries may be impacted in the case of new infrastructures and their related package of sub-projects and activities;
iv. Capacity needs / gaps in terms of knowledge, skills, technological ability, technical and financial management capacity to implement preferred infrastructures and their related sub-projects and activities including in the face of climate change (droughts, floods…), degraded soils and ecosystems, desert locusts, major livestock and crop diseases, pandemics on human health i.e. Covid – 19, local land tenure and social conflicts, differential statutory and customary policy challenges, and other risks;
v. Feasibility of collaborations, partnerships and networks in the development and eventual implementation of the different infrastructures and their package of sub-projects and activities including the feasibility of such collaborations, networks and partnerships for the eventual development of markets for envisaged products;
vi. Availability of social infrastructure to ensure sustainability of infrastructures and the outcomes of their sub-projects and activities such as; producer cooperatives, local financial institutions such as credit unions and marketing boards, sufficient local labour, storage facilities, facility for communication including internet facilities etc. Or the ease of establishing such social infrastructures.

The overarching goal was to assess the infrastructures and their related package of sub-projects and activities already selected at national level, in terms of their technical, technological, environmental, social, and financial feasibility. The consultations involved central, regional and local institutions and communities, parastatal entities, project beneficiaries including women and youths, and people who were positively or negatively affected by the infrastructures and their related package of activities.

Stakeholder consultation meetings were planned in 4 counties to discuss the feasibility of the HoA Program and most especially the feasibility of the selected infrastructures and their package of activities. In each county, stakeholder consultation meetings brought together representatives of government technical services (agriculture, livestock, fisheries, water and sanitation, rural engineering, infrastructure, environment, forests, pedology, health etc.). The list of concerned government ministerial departments to be considered can be consulted under Annex 16.2 of this Report. The complete list to include; specific partners, specific NGOs, specific private sector operatives, etc.…will be developed during the preliminary national consultation meetings to be organized by the National

IDDRSI Coordinators in consultation with the responsible line government ministerial department and the lead national consultant of this feasibility assignment.

In addition to local site consultation visits with stakeholders and communities narrated further above, visits to potential infrastructure and activity sites allowed the national consultants of this study (in the company of representatives of the concerned government ministerial departments and their statisticians if possible) to: (a) collect landscape level data from local meteorological and statistical services on climate change projections from general circulation models and regional models; (b) use their technological capacities to obtain information on the level of degradation and need for soil and water conservation / protection and restoration of soils of the concerned watershed ecosystems; (c) determine soil fertility status of the landscape and feasibility for improvement; (d) through observation and expert judgment, obtain information on local technologies currently applied on the concerned landscapes; (e) determine production systems and patterns on the concerned landscapes etc. One of the goals of this operation is to triangulate information received during consultations and from secondary sources, in order to effectively determine the feasibility of infrastructures and their related package of activities and consequently the potential capacity needs of communities and government institutions. Collected data will complement information from the stakeholder analysis carried out in phase A.

As summarily described further above, the consultation with stakeholders involved key agencies in the identification of infrastructures and their related package of activities whose feasibility were assessed.

1.5.3 Phase 3: Definition of activities and preparation of draft project documents

The plan that guided activities and eventual preparation of the country report are summarised in table 1.1 below.

Table 1.1: Schedule of Study Outputs

Report	Details
Inception Report Presented in a regional workshop (week 5).	To be submitted within 4 weeks of TA commencement, with the work plan and schedule for the TA. The report will identify the gaps in data and information, and present a detailed work plan, and implementation schedule for the TA. The report will contain an outline of the required reports for approval by IGAD. The approved report will be presented at a regional workshop organized by IGAD
Interim report (week 12)	Progress made and including details of the project area, links with existing institutions, lessons from donor-supported projects, an assessment of constraints and opportunities (using a problem tree), and alternative project designs. The report will provide a description of the project design with a detailed log frame, component descriptions, and implementation arrangements, and identify key issues requiring resolution.

Report	Details
Draft Final Report techno-economic report. (week 18)	Covering all aspects of the project described in the tasks above. The reporting from these subprojects will be used to set the standard and form templates for the appraisal of the remaining subprojects. The AfDB and IGAD will have 2 Weeks to review the report and submit comments.
Country reports presented at Country validation workshops (week 20)	Capturing the findings (relevant data and information) and recommendations, a report prepared for each country will be presented at the country validation workshop and a copy submitted to IGAD
Final techno-economic report (Week 22)	To be submitted at the conclusion of the TA, the report will reflect the comments and incorporate amendments required by Government agencies, ADB, and other relevant stakeholders. Final report should not exceed 100 pages using font sizes of 10 - 11. The Consultant can provide as much information as possible using Annexes. The Consultant is encouraged to provide lists of stakeholders, reference materials, persons contacted, offices visited, TOR, and related as part of the Annexes.
Datasets at the end of the assignment	Datasets from all analyses undertaken in each country during the assignment (technical, financial, economic and SESA) will be submitted to IGAD in electronic form at the end of the assignment

1.5.4 Phase 4: Presentation workshop and validation of project documents

An online workshop to validate the study reports was done from 3rd May to 19th May 2021. Project documents prepared by the team were presented at the online stakeholder workshop, attended by government authorities, and AfDB who reviewed these documents and submitted their comments to the consultant team. As mentioned in the terms of reference, the validation workshop of the project preparation report was organized and supported by IGAD. The Consultant prepared the working documents, their presentation and the revision of the various documents to take into account the comments made during this workshop. The team will include these comments in the revision of the three project documents, in order to submit the final version of the reports.

2 ANCHORING WITH EXISTING POLICIES AND STRATEGIES

2.1 National strategies for social development and gender

National strategies for social Development are guided by the provisions of the Constitution of Kenya. Article 19 (1) holds that the Bill of Rights is the framework for social, economic and cultural policies; and that under article 19 (2) it commits for the preservation of the dignity of individuals and communities and to promote social justice and the realisation of the potential of all human beings. To actualise these national social development strategies are also aligned to Kenya's Vision 2030 whose aim is to transform Kenya into a newly industrializing, "middle-income country providing a high-quality life to all its citizens by the year 2030. The social seeks to develop a cohesive society wherein there is equitable social development. This calls for investment in the human and social welfare sectors of education and training; health environment; housing and urbanisation; gender, children and social development; and youth and sports.

Under education and training, Kenya's education policy commits to ensuring that no child is left behind in terms of access to education, and seeks to actualise Articles 43(f) and 53(1) (b) of the Kenyan Constitution provide for the right to education and the right to free and compulsory basic education, and be in line with the Basic Education Act (2013) that guarantees the right of every child to free and compulsory basic education. The National Education Sector Strategic Plan (NESSP) 2018-2022 aims at achieving four important strategic objectives for education, training and research, which are: to enhance access and equity; to provide quality and competency-based education, training and research; to strengthen management, governance and accountability; and enhance relevance and capacities for Science, Technology and Innovation (ST&I) in education, training, and research for labour markets (GoK, 2018).

Kenya's National Social Protection Policy This Policy developed in 2011 underscores efforts by the Government to reduce poverty and the vulnerability of the population to economic, social, and natural shocks and stresses (GoK, 2011). The policy aims to ensure that all people have the requisite financial cushion to enable them to maintain a decent living standard including access to healthcare during and after their active productive ages, income security provided through household and child benefits that facilitate access to nutrition, education, and healthcare, income security through social assistance for older persons, people with disabilities, and those in active age groups who are unable to earn sufficient incomes in the labour market.

In the ASAL regions, drought remains a major threat to the well-being of people and especially given that poverty and vulnerability to climate shocks are. Under the National Drought Management Authority, a Drought Contingency Fund is being put in place to ensure that communities in drought prone areas are more resilient to drought and other effects of climate change through provision of financing for both drought preparedness and mitigation (NDMA**).**

2.2 Country Programming Paper

In its response to the IGAD Drought Resilience Summit declaration of September 2011, Kenya has developed a 10-year Strategy paper for Ending Drought Emergencies (EDE) framework to guide the process. Though not the same as the IDDRSI framework, the EDE framework reflects two key priorities.

i. To strengthen the 'foundations' for development, especially security, infrastructure and human capital, which are particularly weak in drought-prone areas. Without these foundations, people are less well equipped to manage risk and development projects are less likely to have impact. It is not feasible to think of building 'resilience' to drought when people lack the basic means to protect and provide for their families.
ii. To strengthen the institutions and financing mechanisms which will ensure sustained and effective response.

The Ending Drought Emergencies (EDE) initiative has many actors working in a wide range of sectors and at multiple levels, from the community and county to the national, regional and global levels. Structures have been established at various levels to ensure effective coordination of relevant departments of the national government, the county governments, development partners, NGOs and many other players. This ensures stronger alignment and coordination of investment, and where possible harmonization of programming, in-line with the objectives of the Kenya External Resources Policy of October 2013.

Among the coordination structures entail the working group for each Pillar with membership drawn from various state and none-state actors with a relevant senior Government official being the chair while a development partner is a co-chair. The six pillars of EDE are Peace and Security; Climate–proofed Infrastructure; Human Capital Development (Health and Education); Sustainable Livelihoods; Drought Risk Management, and Institutional Development and Knowledge Management.

The Kenya Country Programming Paper (CPP) has been translated into the EDE Medium Term Plans (MTP) and entrenched as a foundation for national transformation in the Kenya Vision 2030. These are further mainstreamed into the five-year County Integrated Development Plans (CIDPs) by county Governments.

The National Drought Management Authority (NDMA) provides leadership in coordinating all issues relating to ending drought emergencies, both at national and sub-national level. The reporting on progress of EDE is done by a multi-sectoral team of monitoring and evaluation officers under the coordination of NDMA. This has enhanced efficiency of drought response mechanisms

Improving drought response mechanisms has reduced response time by 82% from 45 days in 2014 to 8 days 2018 due to improved efficiency following development of standard operating procedures (SOPs) by the livestock sector. This time excludes procuring goods and services. In the financial year 2018/2019, Government of Kenya and partners invested Ksh 217,957,460 in responding to drought (Table 1). Drought risk remain high in the ASAL Counties, hence the necessity of phase 2 but with a different operational paradigm to maximise value for investment.

Table 2.1: Investments in Arid Counties for the 2018/2019 financial year (Ksh)

County	Agriculture	Coordination	Health & Nutrition	Livestock	Security	Water	Total
Baringo	-	1,733,900	1,615,200	14,093,450	1,068,000	7,219,600	25,730,150
Garissa	-	4,990,800	-	27,605,600	843,500	7,034,000	40,473,900
Isiolo	-	686,650	-	2,876,650	807,800	5,219,200	9,590,300
Laikipia	-	678,800	-	-	-	1,286,100	1,964,900
Mandera	867,700	1,471,600	634,500	23,514,350	-	15,777,100	42,265,250
Marsabit	-	982,000	-	1,011,600	1,456,200	5,373,800	8,823,600
Samburu	-	659,250	1,050,900	963,600	-	1,671,800	4,345,550
Tana River	-	756,100	713,650	-	470,000	3,359,700	5,299,450
Turkana	-	3,576,200	1,380,000	23,504,000	4,103,500	9,144,250	41,707,950
Wajir	-	1,184,000	207,200	21,392,800	3,788,560	6,836,400	33,408,960
West Pokot	-	851,600	-	-	2,530,950	964,900	4,347,450
Total	**867,700**	**17,570,900**	**5,601,450**	**114,962,050**	**15,068,510**	**63,886,850**	**217,957,460**

2.3 National Adaptation Plan/ National CC Action Plan

This national adaptation plan (NAP) builds on the foundation laid by the NCCRS and the NCCAP. Additionally, the NAP is the basis for the adaptation component of Kenya's Intended Nationally Determined Contribution (INDC) that was submitted to the United Nations Framework Convention on Climate Change (UNFCCC) Secretariat. The aim of this NAP is to consolidate the country's vision on adaptation supported by macro-level adaptation actions that relate with the economic sectors and county level vulnerabilities to enhance long term resilience and adaptive capacity. This NAP presents adaptation actions that cover the time frame 2015-2030.

The NAP is anchored in the Constitution of Kenya and Vision 2030 – Kenya's blueprint for development. It also aligns itself with the Medium-Term Plan (MTP) and Medium-Term Expenditure Framework (MTEF) planning processes. The NAP is also aligned with the Climate Change Act that was enacted into law in May 2016. In the MTP II sectors, climate change adaptation is represented in the drought risk management and ending drought emergencies, environment, water, energy, agriculture, livestock, and fisheries sectors. Several programmes under these sectors aim to enhance resilience and reduce vulnerabilities of communities and systems affected by climate hazards.

This NAP proposes macro-level adaptation actions and sub-actions in 20 planning sectors, categorising them into short-, medium- and long-term time frames. For each sector, the NAP

identifies gaps, estimates costs of the macro-level actions projected to 2030, and identifies key institutions required for their implementation. Prioritised actions that have not yet been mainstreamed into Kenya's development plans are expected to be integrated in the third MTP (2017-2022). Thereafter the actions will need to be revised in each MTP to ensure that Kenya's development will be resilient to climate shocks. The NAP proposes adaptation indicators at county, sectoral and national levels for monitoring and evaluation (M&E). These indicators will guide the collection of data and information on adaptation outcomes, which will be aggregated at the national level. These indicators are derived from an adaptation theory of change that is based on the macro-level adaptation actions and the adaptation vision. Adaptation data will feed into the national Monitoring, Reporting and Verification plus (MRV+) system – a framework for adaptation and mitigation reporting recommended in the NCCAP.

The vision of this NAP is enhanced climate resilience towards the attainment of Vision 2030. Enhanced climate resilience includes strong economic growth, resilient ecosystems, and sustainable livelihoods for Kenyans. It will also result in reduced climate-induced loss and damage, mainstreamed disaster risk reduction approaches in various sectors, reduced costs of humanitarian aid, and improved knowledge and learning for adaptation and the future protection of the country. The objectives of the NAP are to:

1. Highlight the importance of adaptation and resilience building actions in development
2. Integrate climate change adaptation into national and county level development planning and budgeting processes
3. Enhance the resilience of public and private sector investment in the national transformation, economic and social and pillars of Vision 2030 to climate shocks
4. Enhance synergies between adaptation and mitigation actions in order to attain a low carbon climate resilient economy;
5. Enhance resilience of vulnerable populations to climate shocks through adaptation and disaster risk reduction strategies.

However, existing national strategies and interventions such as the National Climate Change Action Plan (2013-2017) and the Agriculture Sector Development Strategy (2010-2020) have not adequately mainstreamed adaptation, building resilience and mitigation of GHG into the agricultural sector. Consequently, the sector needs a sound and enabling CSA strategy that will simultaneously guarantee productivity and food security while addressing climate change adaptation and mitigation.

Four broad strategic areas have been identified for KCSAS: (i) Adaptation and building resilience by addressing vulnerability due to changes in rainfall and temperature, extreme weather events and unsustainable land/water management and utilization; (ii) Mitigation of GHG's emissions from key and minor sources in the agriculture sector; (iii) Establishment of an enabling policy, legal and institutional framework for effective implementation of CSA; and (iv) Minimizing effects of underlying cross-cutting issues such as human resource capacity and finance which would potentially constrain realization of CSA objectives.

The coordination framework and implementation mechanism for KCSAS will be harmonized with the inter-governmental coordination structure under development and near completion. This will ensure clarity in flow of information, policy direction and funds. The implementation of this strategy will be mainly by the County Governments. The KCSAS is a tool to implement Kenya's NDC contribution for the agriculture sector and will require domestic and international support. The implementation of KCSA strategy will require a total of Ksh. 500 billion (US$ 5.0 billion) for adaptation and mitigation actions for agriculture sector up to 2026. This will contribute to building

resilience and adaptive capacity in the sector as well as reducing sectoral emissions to 30 MtCO2e relative to the business as usual trajectory projection of 37 MtCO2e in 2026. Investment resources to implement the KCSAS will be mobilized from diverse sources and appropriate mechanisms established for access, disbursement and utilization. The strategy provides a detailed implementation framework with clear stakeholder roles and responsibilities. The implementation framework also forms a basis for the establishment of a monitoring and evaluation (M&E) framework.

2.4 Poverty Reduction Strategy

2.4.1 National Outlook

Poverty Reduction Strategy Papers (PRSP, 2000-2003). This approach places explicit emphasis on the issue of participation because it provides room for interaction and encourages partnerships and shared efforts vital for alleviating poverty in Kenya. The society inputs are required in the formulation and implementation of these documents (World Bank, 2004).

Agriculture is not only impacted upon by climate change but also contributes to the problem. The country's agriculture is predominantly rain-fed and therefore vulnerable to climate change particularly changes in temperature regimes and precipitation patterns, and extreme weather events. This leads to, among others, unsustainable land and agricultural water management. Kenya's greenhouse gas (GHG) emissions were estimated to be 73 million tons of carbon dioxide equivalent (MtCO2e) in 2010 and are expected to rise to 143 MtCO2e in 2030 unless appropriate mitigation actions are taken. Agriculture is the largest source of GHG emissions; it was responsible for one-third of Kenya's total emissions in 2010. Agricultural emissions are likely to increase from 20 MtCO2e in 2010 to 27 MtCO2e by 2030, largely driven by livestock methane emissions and land use change, which account for 90% of agriculture emissions and 30% of overall national emissions.

The Agricultural Sector Transformation and Growth Strategy (ASTGS) prioritizes three anchors to drive the 10-year transformation, with specific targets set for the first five years, namely;

1. Increase small-scale farmer, pastoralist and fisherfolk incomes: − Raise average annual small-scale farmer incomes by ~40% from KES 465/day to 625/day (~35% increase). Directly benefit ~3.3 million Kenyan farming households.

2. Increase agricultural output and value add: − Expand agricultural GDP from KES 2.9 trillion to KES ~3.9 trillion (~6% CAGR) − Grow contribution of agro-processing to GDP by KES ~130 billion over 5 years (~50% from KES 261 billion today).

3. Increase household food resilience: − Reduce the number of food-insecure Kenyans in the ASAL regions from 2.7 million on average to zero, while reducing the cost of food and improving nutrition

2.4.2 Social Empowerment

Communities living in ASAL regions lack the resources and capacity necessary to adequately respond to drought related challenges. Women, men, boys and girls, tend to have systematically different experiences in relation to drought based on the inequalities associated with socially constructed gender roles.

Asymmetrical power relations tend to put women at a disadvantage, because it is men who make decisions at community level. Less power and less economic muscle often combine to ensure that women have less influence over policy, projects and decision-making processes, including those

related to project implementation, adaptation and mitigation. Gender mainstreaming should be done from the project design, planning, implementation, monitoring and evaluation process. Only then, it can be ensured that gendered needs and concerns are addressed, and that the projects or practice does not further the existing gender inequalities.

Poverty reduction and building effective resilience frameworks for the future must be backed by anticipatory (prediction of disruptive events), absorptive (drawing mainly on the available resources), adaptive (improvements of existing systems), and transformative (creation of new systems) capacities to deal with the gender issues faced by communities. Gender responsive projects will strengthen prevention mechanisms, increase mitigation solutions, and offer opportunities for men and women, boys and girls to bounce back. This task group will deal with gender and socio-cultural component, and will employ Gender Equality and Social Inclusion (GESI) theory of change to engender the existing projects, those to be up-scaled as well as the new ones that will be initiated. Gender analysis in every project is key because men and women experience and are impacted by similar situations differently. They have varying needs and differentiated ability to benefit resulting from gender division of labour, access to entitlements, assets, and decision-making. Recent studies suggest that if such efforts are to be effective and the benefits equitably distributed, practitioners cannot lose focus on the gender implications of any project interventions.

Despite growing recognition of the differential vulnerabilities as well as the unique experiences and skills women and men bring to development and environmental sustainability efforts, women still register low access to and control over means of production including benefits and underrepresentation in decision making positions. Gender blind project leave women with increased workload, little or no economic returns for their labour, unaddressed gender needs and their position and conditions not improved. Therefore, an anthropological and gender situation analysis should be conducted to understand gender roles, structural and socio-cultural barrier that may inhibit women, men, girls and boys from participating and benefiting equitably in projects meant to uplift their livelihood.

Empowering women and the growing number of unemployed youth to enhance their well-being through climate-smart livelihood projects at the farm level, while maintaining the integrity of their land and water resources is essential and is in-line with both local and international development agenda as envisaged in the sustainable development goals. Women underrepresented in policy-making roles. Given that women can bring to the table new ideas, new approaches and strategies for protecting people and natural resources, women should be involved in sustainable development issues.

Despite progress, women continue to be under-represented in decision-making processes on the climate smart interventions at all levels – international, national and local. Obstacles to their participation include the lack of secure access to land, adverse financial conditions, women's time constraints, public policy traditionally focused on the male population as head of household and gender division of labour along socio-cultural norms. High illiteracy rates, lack of information and training, stereotypical attitudes regarding their roles as well as insufficient research on gender equality, lack of sex-disaggregated data and political commitment also contribute to women's underrepresentation in decision making. In ASAL regions of Kenya, women's traditional roles and knowledge in natural resource management and food security are crucial. Yet, women often face specific constraints as they care for their families and attempt to ensure sustainable use of the land, including limited access to productive assets, inability to participate in decision-making and exclusion from agricultural extension services

Weak policies, legislations, enforcement, and overlap of mandates among institutions involved in regulation coupled with poor coordination and collaboration among institutions and stakeholders in climate smart agriculture (CSA) have contributed to the country's inability to effectively address vulnerability and GHG emissions. Further, cross cutting issues such as inadequate financing of CSA activities; limited capacity of Women, Youth, and Vulnerable Groups (WY&VG) to participate in CSA activities; unsustainable natural resource management (NRM) and utilization; limited human resource capacity to undertake CSA; limited CSA research technology development and innovations; and inadequate data and information on CSA have also led to poor implementation of CSA activities. The country requires transformation of its agricultural systems to make them more productive and resilient while minimizing GHG emissions under a changing climate. CSA provides an excellent opportunity for the transformation by uniting agriculture, development and climate change under a common agenda through integrating the three dimensions of sustainable development (economic, social and environmental) by jointly addressing food security and climate challenges. CSA therefore sustainably increase agricultural production and incomes, builds resilience of agricultural systems to climate change and minimizes GHGs emissions.

2.5 Agricultural Sector Development Strategies

2.5.1 National Strategies

The ASALs in Kenya face unique development challenges that are inter-related and entrenched. Some of these have their roots in legal inequalities, social exclusion and economic marginalization that resulted from colonial rule. For example, Sessional Paper No. 10 of 1965 on 'African Socialism and its Application to Planning in Kenya', reinforced a pattern of public investment where resources were channelled to areas deemed to be of highest potential returns. This favoured the former White Highlands while perpetuating the marginalization of arid areas. Other factors that contributed to underdevelopment of the region include: insecurity and long-standing inter-communal tensions; competition over resources; poor road network and communications infrastructure, limited access to electricity leading to restricted scope for investment, especially off-farm activities; poor infrastructure for livestock and crop marketing; lack of water for irrigation, domestic and livestock use; poor delivery of agricultural services; high prevalence of livestock diseases; limited and poor education facilities.

The Agricultural Sector Development Strategy 2010–2020 calls for a different approach to their development. The Government employs three strategies to develop the arid and semiarid lands. First, targeting selected flagship projects and programmes that have been identified by the beneficiaries as having potential for creating impact in the region. Second, working on the policy, legal, cultural or institutional issues that impede or that could facilitate development in northern Kenya. And last, providing effective institutional framework for coordinating development activities at all levels of Government and beyond. While the arid lands are mainly suitable for livestock production, the survival of the communities living in these areas will largely depend on their capacity to manage the difficult environment and diversify into other opportunities, particularly those that support the population that is now increasingly becoming sedentary. This requires change in attitude among all people involved in developing the region. Woodland rehabilitation and afforestation projects introducing high-value commercial tree species, and irrigation schemes are needed to support the communities. To realize the full potential of ASALs, the following interventions were to be implemented: • Formulating and implementing appropriate policy and legal framework • Investing in targeted ASAL development programmes • Increasing area under cultivation • Diversifying income

sources for pastoral communities • Implementing the Vision 2030 ASAL development flagship projects.

2.5.2 Highlights on Land Management Legislation and Policies

Literature review indicates that Kenya has a wealth of legislative and policy frameworks for sustainable land management. A few examples of prevailing land policy and legislative instruments are outlined below:

1. National Constitution 2010, chapter five part I is devoted to land while part II is devoted to the environmental in a broader context. Here-in provided include the principles of sustainable land use and establishment of requisite policies and institutions like the national land commission.
2. The National Land Use Policy as captured in Sessional Paper No. 1, 2017, which provides legal, administrative, institutional and technological framework for optimal *utilization* and productivity of *land* related resources in a sustainable and desirable manner at *national*, county and community levels.
3. The Land Act 2012, provides guidelines for the management of public land, conservation of ecologically sensitive public land, and conservation of land based natural resources.
4. The Land Registration Act 2012, which deals with land tenure aspects
5. Community Land Act 2016, which has much relevance on land tenure in ASAL areas because much land is still largely community owned
6. Environmental Management and Coordination Act 1999 that spells out requirements for environmental stewardship, where in agricultural land and water are key environmental resources
7. The Physical Planning Act also plays a key role when it comes to land use planning so that every parcel of land is put to the most suitable land use in pursuit of economic, social and environmental benefits.
8. The Forest Conservation and Management Act 2016. The main features of this Act are: the inclusion of County governments in forest management and conservation; the introduction of benefit sharing arrangements and incentives to increase forest and tree cover, a national strategy to increase and maintain forest and tree cover to at least 10% of the total land area

Other policies and strategies related to land/soil as a resource for increased agricultural production in the country include:

1. Strategy for Revitalizing Agriculture (SRA) 2004
2. National Climate Change Response Strategy (NCCRS), 2010 draws perspective from the United Nations Forum for Combating Climate Change (UNFCCC) and seeks to create mechanisms for combating climate change, which is one of the significant drivers of land degradation in Kenya
3. National Food and Nutrition Security Policy 2011 provides an overarching framework Covering the multiple dimensions of food security and nutrition improvement.

4. National Agricultural Sector Extension Policy (NASEP) 2012 sets policy for agricultural extension, and promotion and diffusion of technologies for land management
5. National Environment Policy 2013 that sets out important provisions relating to the management of ecosystems, ecosystem services and sustainable use of natural resources
6. National Forest Management Policy 2014 focusses on forest and tree cover expansion and sustainable management
7. Agriculture Sector Development Strategy 2010-2020. Is broad-based and sure to also impact the ASAL counties.
8. Sessional Paper No 1 of 2017 on National Land Use Policy, which emphasises strategies and approaches of sustainable use of land
9. National Irrigation Policy 2017 seeks to increase land under irrigation from the current irrigated area of 161,840 ha to 1,341,900 ha by 2030.
10. Agricultural Sector Transformation and Growth Strategy 2019 – 2029
11. Kenya Climate Smart Agriculture Strategy 2017-2026 seeks to adapt to climate change, build resilience of agricultural systems while minimizing emissions for enhanced food and nutritional security and improved livelihoods

2.5.3 Highlights on Livestock Sub-sector strategies

Kenya will face unprecedented growth in the demand for food in the next 30-40 years. In 2050 the population of the country will reach about 96 million, up from 46 million today; 41 million people will live in urban areas vis-a-vis 12 million today; and consumers will be better off, with GDP per-capita projected to be USD 6 500 in 2050, over five times its current level. This growth will lead to new and different interactions between people and natural resources locally, regionally and globally, resulting in both predictable and unpredictable changes in all sectors of society.

The growing, increasingly affluent and urbanized Kenyan population will consume more high value food products, in particular animal source foods such as meat, milk and eggs. Figure 3 shows that higher earning Kenyans spent more on dairy, meat and eggs which can be attributed to both high grade expensive products and high quantities. We can expect this preference to continue to be adopted as income increases across the population in the long term. In aggregate, consumption of beef and milk will increase by over 170% between 2010 and 2050 – by 0.81 and 8.5 million tonnes respectively. Currently per capita consumption of meat is low, averaging no more than 10 kg for any type of meat. The expected increase in consumption will improve nutrition, without any envisaged negative impact on human health due to over consumption.

2.5.4 Unprecedented pressures on livestock systems

Main livestock species in Kenya include cattle (18 million), sheep (18 million), goats (28 million), camels (3 million) pigs (334,689) and poultry (31 million)5. Currently, about 60% of total households keep livestock, or about 7 million households, mostly keeping few livestock (figure 3)6. The majority (75%) of livestock keepers are rural and among the less-well off in the population (poorer, poor and middle wealth quintiles, Figure 3)6. As a response to the growing demand for animal source foods, livestock keeping households as well as private commercial livestock enterprises, will expand their livestock assets and adopt productivity-enhancing practices. For some, livestock will represent a vehicle out of poverty.

The following are key policy documents that are relevant to the livestock sub-sector in Kenya:

1. Range Management and Pastoralism Strategy 2021-2031
2. Kenya National Dairy Master Plan 2010-2030
3. National Rabbit Development Strategy 2012
4. Kenya Climate Smart Agriculture Strategy 2017-2026
5. National Poultry Policy 2010
6. East African Community Livestock Policy 2016
7. The East African Community Food and Nutrition Security Action Plan 2019-2023
8. Sessional paper 7. Of 2013 on National Beekeeping Policy
9. National strategy and action plan on animal genetic resources 2018
11. ASTGS - Agriculture Sector Transformation and Growth Strategy 2019 - 2029
12. The National Agribusiness Strategy, 2012
14. Youth in Agribusiness strategy 2017-2021
15. National Agricultural Research System Policy 2021

3 MAIN LESSONS FROM PREVIOUS PROJECTS

3.1 Drought Resilience and Sustainable Livelihoods Programme Phase I

Funded jointly by the African Development Bank (AfDB) and GoK, the project started in July 2013 and was to end in June 2018 but has been extended to 30th June 2022 due to delayed start and other implementation challenges. The project's objective is to enhance drought resilience and improve sustainable livelihoods for target communities in the arid and semi-arid lands of Kenya. The expected impacts include poverty reduction and improved food and nutrition security. The project was targeted to benefit 168,000 households (968,787 persons). The GoK provides 10.5% of the total budget of the project which is Kshs 575.5 Million while the AfDB funds 89.5% (Kshs 4.905 Billion) through a loan. The Total Budget for the Project is Kshs 5.48 Billion. As at 1st March 2021, 87% of the loan budget had been provided. The total expenditure as at 1st March 2021 was US$ 32.14 million and the absorption rate of available funds was 67%. Annex 3 of this report presents the funded projects under DRSLP Phase 1.

Highlighted results include 20 earth dams/water pans out of the targeted 28 constructed with a capacity of over 600,000 m^3, seven irrigation schemes were to be constructed by the Project, Four have been completed and currently under crop production (600 Ha). One Irrigation scheme in West Pokot is currently under construction though farmers are already in production (own initiatives) while another two schemes in Turkana and Marsabit will be re-advertised after the original contractors were dismissed as a result of contract non-performance. Once completed, all the schemes will service 2,500 acres.

The project has also completed the drilling and equipping of 42 Boreholes while another 58 Boreholes are at various stages of completion. The Project has also completed 7 shallow wells out of the targeted 12 in the counties while another 5 sub-surface dams have also been constructed. Furthermore, the project has completed the construction 20 livestock sale yards out of the targeted 28. The sale yards are operational handling an average of 200 cattle, 1,000 shoats, 200 chicken per market day. About 1,460 acres of improved pasture has been established in 14 commercial pasture plots. Establishment of a further 225 acres is on-going. The Project has equipped 6 county diagnostic veterinary laboratories in the 6 project counties while a quarantine station in Isiolo is 90% completed. The Project also re-allocated US$5 million to support the control of the desert locust in the country. The Project purchased over 20,000 litres of assorted control chemicals which is currently being used by the plant protection unit within the Ministry for the aerial and ground spraying of the locusts. So far the project has reached 61,796 HHs (36.58%) broken down as Water Structures- 35,018 HHs, Irrigation Schemes- 3,131 HHs and Livestock Structures- 23,647 HHs.

The summary of total beneficiaries reached so far is presented in Table 3.1

Table 3.1: DRSLP Phase I Beneficiary Baseline and Outputs

Beneficiary Baseline/Output	Results
Target Households	168,900 HHs
Reached so Far:	
Water Structures	38,855 HHs
Irrigation Schemes	3,350HHs
Livestock Sale Yards	26,790 HHs
Commercial Pasture Demo Plots	4,896 HHs
Farmer Trainings	7,068 HHs
Total Reached	**80,959 HHs (47.93%)**

The GoK provided 10.5% of the total budget of the project which is Kshs 575.5 Million while the AfDB funded 89.5% (Kshs 4.905 Billion) through a loan. The Total Budget for the Project was Kshs 5.48 Billion. As at 30th June 2021, 87% of the loan budget had been provided. The total expenditure as at 30th June 2021 was US$ 35.316 million and the absorption rate of available funds was 72%.

- **Natural Resources Management**

<u>Sub Component I - Water Supply Development and Management</u>

A summary of the Achievements from Component 1: Natural Resources Management are listed in Table 3.2.

Table 3.2: Achievement on Component 1: Natural Resources Management

Output Indicators (as specified in the RLF)	**Most recent value**	**Annual Target** (expected value at project completion)	**End Target** (expected cumulative value at completion)	**Progress towards annual target** (% realized)	**Progress towards end target** (% realized)	**Assessment** (on whether output indicator is on track to reach annual and end targets.)
Component 1: Natural Resources Management						
Subcomponent 1: Water Supply development and Management						
Output 1: Number of water pans constructed/rehabilitated by June 2022	20	8	28	0%-(0 achieved out of 8).	**71.42% (**20 completed out of 28 achieved**)**	On track
Output 2: No of boreholes constructed/rehabilitated by June 2022	42	52	100	19.2% (10 completed out of the 52)	**42%** (42 completed out of 100)	To be fast-tracked
Output 3: No of shallow wells constructed/ rehabilitated by June 2022	7	8	12	37.5% (3 completed out of 8)	**58.33% (**7 completed out of 12)	To be fast-tracked
Output 4: No of sub-surface dams constructed/ rehabilitated by June 2022	5	-	5	-	**100%** (5 completed out of 5)	On track
Output 5: No of Water Users Association formed/strengthened by June 2022	128	28	140	57.14% (16 achieved out of the 28)	**91.42%** (128 achieved out of the 140)	On track

Output Indicators (as specified in the RLF)	**Most recent value**	**Annual Target** (expected value at project completion)	**End Target** (expected cumulative value at completion)	**Progress towards annual target** (% realized)	**Progress towards end target** (% realized)	**Assessment** (on whether output indicator is on track to reach annual and end targets.)
Output 6: No of Water Users Association (WUAs) trained by June 2022	128	28	140	57.14% (16 achieved out of the 28)	**91.42%** (128 achieved out of the 140)	On track
Subcomponent 2: Irrigation infrastructure development						
Output 7: Area of the 7 irrigation schemes rehabilitated and expanded (Ha) by June 2022	500Ha	480 ha	1350Ha	12.5% (60 Ha achieved-Kilimani scheme out of 480 Ha)	**37.0%** (500 Ha achieved out of the 1350 Ha) - Kalacha-80Ha, Kiboi-180Ha and Simailele-180Ha completed. – Kilimani scheme-60 Ha achieved (Konoo I & Konoo II to be advertised afresh, Songa to be Re-advertised and Kinene)	To be fast-tracked
Output 8: No of Irrigation water Users Association (IWUAs) Office blocks and Grading sheds constructed by June 2022	7	4	10	0% (nil out of 4)	70.00% (Construction of grading sheds currently on-going in Simailele,Konoo, Kiboi and Kilimani)	To be fast-tracked

Output Indicators (as specified in the RLF)	**Most recent value**	**Annual Target** (expected value at project completion)	**End Target** (expected cumulative value at completion)	**Progress towards annual target** (% realized)	**Progress towards end target** (% realized)	**Assessment** (on whether output indicator is on track to reach annual and end targets.)
Output 9: No of IWUAs formed/strengthened by June 2022	8	4	10	50% (2 out of 4)	80.00%	To be fast-tracked
Output 10: No of Feasibility and assessment reports produced by June 2022	8	3	10	33.33% (1 out of 3 achieved-for Konoo II scheme)	**80%-**8 reports produced, 2 more for Garfasa & Kinene in Baringo	To be fast-tracked.

- **Improvement of Livestock Infrastructure and Management**

Sub Component I: Infrastructure for Market Access

The project aimed at providing support to rehabilitate/construct 24 livestock sale yards/markets, 4 in each of the six counties viz; Baringo (Marigat, Kollowa and Emining), Isiolo (Isiolo, Ngare Mara, Kipsing, Merti), Marsabit (Ilaut, Jirime, Dukana, Jaldesa), Samburu (Maralal, Lekuru, Kisima), Turkana (Kerio, Kalemnyang, Kangarisae), and West Pokot (Chepararia, Ortum, Kaminia). The activities encompassed improvement of access, fencing, crush, weighbridge, watering facilities, holding pens/bomas, auction ring, loading ramp, stalls to sell food stuffs, clerical office, and toilets for both men and women. Disease surveillance activities were incorporated at each of the rehabilitated/constructed markets. The beneficiaries would operate and maintain the hay sheds. To improve market access, the project rehabilitated/improve a target of 100 km of access rural roads in the six counties.

Income generating activities: The project was to facilitate formation and training of groups, mainly women groups, to venture into income generating activities (IGAs) within the project area. At least 200 IGA groups, focusing on different agro-based commodities and livestock products, would be formed using appropriate participatory appraisal tools. The groups were also encouraged to venture into small scale individual investments out of the initial material, inputs and equipment injection which would be provided by the project. The groups were responsible for provision of working capital and maintenance of the equipment similar to the approach used in SHDP. Through improved income, the women IGA groups were able to hire labour and access productive resources to invest in other activities.

Sub Component 2: Improved Rangeland Management

Interventions were to include pasture rehabilitation and hay storage.

Pasture rehabilitation: Pasture was noted as the main livelihood for the communities living in the ASALs and is still the main livelihood to date. With the degradation that had taken place, it was estimated that 40% of these areas had been badly depleted palatable pasture species to an extent that it could no longer sustain the number of livestock it used to. To mitigate this, the project would support a pilot programme covering 600ha for pasture rehabilitation in the six counties through KALRO.

Hay storage: The communities in the ASAL have generally been preserving hay in form of standing hay and given the recent experience, these practices were not feasible. During drought periods pastoralist/farmers were known to buy hay at exorbitant prices just to maintain the critical herd. On average the price of 15kg bale of hay is Kshs 200 as opposed to Kshs 120 in the high to medium rainfall areas. The project will support construction of 18 hay storage sheds in the six counties.

Sub Component 3: Improved Livestock Health

The project equipped six vet labs with diagnostic equipment for disease testing. *Holding grounds and quarantine stations:* Holding grounds for livestock were to be improved and would incorporate quarantine facilities. The improvements were to include fencing, paddocking, staff quarters, offices, laboratories, toilets, watering troughs, boreholes, pasture development, reseeding and harvesting of pastures disease diagnostic equipment. The specific sites were Chemongoch in Baringo County, Burat II in Isiolo County, Jaldesa in Marsabit County, Wamba in Samburu County and Kacheliba in West

Pokot County. The site for Turkana County would be identified at project start up. Most of the Holding grounds were changed during implementation because of county preferences and needs.

A summary of the Achievements from Component 2: Improvement of Livestock Infrastructure and Management is presented in Table 3.3.

Table 3.3: Achievement on Component 2: Improvement of Livestock Infrastructure and Management

Output Indicators (as specified in the RLF)	**Most recent value**	**Annual Target** (expected value at project completion)	**End Target** (expected cumulative value at completion)	**Progress towards annual target** (% realized)	**Progress towards end target** (% realized)	**Assessment** (on whether output indicator is on track to reach annual and end targets.)
Component 2: Improvement of Livestock Infrastructure and Management						
Sub-component 1: Infrastructure for Market Access						
Output 11: No of livestock markets constructed by June 2022	20	8	28	0% (nil out of 8) (Construction of 4 Markets on-going. Another 4 to be advertised in the 3rd quarter)	**71.4%(20** completed out of 28)	To be fast tracked
Output 12: Length of access road constructed or rehabilitated (Km) by June 2022	55	100km	120km	20% (20 out of 100-works on-going and so far, 20 Km done in total)	**45.83% (55 Km out of 120Km)**	On track
Sub-component 2: Improved Rangeland Management						

Output Indicators (as specified in the RLF)	**Most recent value**	**Annual Target** (expected value at project completion)	**End Target** (expected cumulative value at completion)	**Progress towards annual target** (% realized)	**Progress towards end target** (% realized)	**Assessment** (on whether output indicator is on track to reach annual and end targets.)
Output 13: No of hay sheds/fodder banks constructed by 20% in June 2022	18	7	22	42.85% (3 completed out of 7 targeted).	**81.81% (**18 out of 22) 18 hay sheds completed; 4 contracts running. (Turkana county, Oropoi, Nasukuta & Koiket	To be fast-tracked
Output 14: Area of the 14 demonstration plots of communal pastures rehabilitated (800Ha) by June 2022	589Ha	225ha	800ha	8.8% (20 Ha achieved of the 225-ha targeted) -Simailele 20 ha achieved. Katilu-20 ha, Konoo- 20ha, Koiket & Nasukuta each 50-ha ongoing	**73.62% (589 Ha of the total 800 Ha achieved)**	To be fast-tracked.
Sub-component 3: Improved livestock health						
Output 15: No of holding grounds and quarantine stations	Nil	1	1	(1 Marsabit county (Segel) at 85% construction works)	**85% (works at 85% out of 100%)**	Needs to be fast-tracked.

Output Indicators (as specified in the RLF)	**Most recent value**	**Annual Target** (expected value at project completion)	**End Target** (expected cumulative value at completion)	**Progress towards annual target** (% realized)	**Progress towards end target** (% realized)	**Assessment** (on whether output indicator is on track to reach annual and end targets.)
rehabilitated by June 2022						
Output 16: No of diagnostic veterinary laboratories equipped by June 2022	6	0	6 county labs	-(All 6 county labs equipped (Baringo, West Pokot, Samburu, Isiolo, Marsabit and Turkana) Re-equipping of Turkana Lab to be done in the 4th Qrt of 20/21FY	**100%**	End target

- **Project Management and Capacity Building**

This component aimed at providing human and institutional capacity building to strengthen capabilities in the region within communities and contribute to peace building and mitigation and adaptation to climate change. This would be though;

- Sub-component 1: National Project Management and Capacity Building
- Sub-component 2: Support to IGAD Secretariat-Enhanced regional cooperation and coordination on trans-boundary water resources

A summary of the Achievements from Component 3: Project Management and Capacity Building are listed in Table 3.4.

Table 3.4: Achievement on Component 3 : Project Management and Capacity Building

Output Indicators (as specified in the RLF)	**Most recent value**	**Annual Target** (expected value at project completion)	**End Target** (expected cumulative value at completion)	**Progress towards annual target** (% realized)	**Progress towards end target** (% realized)	**Assessment** (on whether output indicator is on track to reach annual and end targets.)
Component 3 : Project Management and Capacity Building						
Sub-component 1: National Project Management and Capacity Building						
Output 17: No of personnel of which at least 30% are women trained and developed in areas of livestock production, animal health	1,278	500	1300	68.4% (-342 personnel trained out of the 500 achieved was by the trainings conducted by the counties)	**98.30%** Total 1278out of 1300 (724M;554F)	On track
Output 18: No of personnel of which at least 30% are women trained in peace building and conflict resolution	529	150	481	60.67% (91 personnel out of 150 trained on peace building and conflict resolution by the county teams.)	**109.97%** 529(313M, 216F)	On track
Output 19: No of new technologies introduced to communities and adoption rates measured and enhanced	4	2	4	100% (2 Multi-storey gardens in West Pokot by county staff; improved grass pasture in Marsabit	**100% (4 out of 4)** 1 – moist beds in Baringo, Solar drying for vegetables in	On track

Output Indicators (as specified in the RLF)	**Most recent value**	**Annual Target** (expected value at project completion)	**End Target** (expected cumulative value at completion)	**Progress towards annual target** (% realized)	**Progress towards end target** (% realized)	**Assessment** (on whether output indicator is on track to reach annual and end targets.)
				by KALRO Kiboko),	Baringo- cumulative= 4	
Output 20: Project website developed by June 2022	1	1	1	100%. (1 website for the project developed and is currently being updated. Already in use	100%	On track
Output 21: Project M&E System developed by June 2022	Nil	N/A	1	To adopt the regional di Monitoring system developed through IGAD secretariat	-	On track
Output 22: ESMP developed	172	54	203	66.67% (36 achieved out of 54 targeted)	**84.72%** [172 out 203 Total 172 EIAs done: (111 water structures; 9 irrigation schemes; 20 sale yards; 18 hay sheds; 12 pasture sites; 2 dams	To be fast-tracked

Output Indicators (as specified in the RLF)	**Most recent value**	**Annual Target** (expected value at project completion)	**End Target** (expected cumulative value at completion)	**Progress towards annual target** (% realized)	**Progress towards end target** (% realized)	**Assessment** (on whether output indicator is on track to reach annual and end targets.)
Sub-component 2: Support to IGAD Secretariat-Enhanced regional cooperation and coordination on trans-boundary water resources						
Output 23: No of harmonized and effective trans boundary water bodies policies and strategies being implemented	Nil	N/A	N/A			-

- **DRSLP Phase I Program Implementation Experiences**
  - **Challenges**

Some of the key challenges encountered during the project implementation include;

i. Delay of project implementation owing to factors outside the project plan. For example, some projects such as construction of dams required acquisition of land. At times, owners of target parcels of land were not willing to relinquish their land delaying project implementation. In other cases, land owners did not have land ownership documents. This made compensation for the land acquired by government difficult.

ii. Evaluating causal-effect relationships and attributing results to project activities was difficult in public projects given the many interactions with externalities to the projects and their non-controllable nature. This mainly jeopardized the efforts to report outcomes as opposed to outputs.

iii. PCU salaries and extraneous allowances are covered by GoK. Although salaries are paid on time, the counterpart funds for extraneous allowances are irregular and more often lack funding. There is need for a clear guide on the compensation as is proposed that the officers are paid a top on their salaries from the loan as opposed to extraneous allowance.

iv. High illiteracy levels in the ASAL counties still remains a key impediment to resilience building in drought prone areas.

v. In adequate funding is a major bottleneck in achieving project results. PCU salaries and extraneous allowances are covered by GoK. Although salaries are paid on time, the counterpart funds for extraneous allowances are irregular and more often lack funding. There is need for a clear guide on the compensation as is proposed that the officers are paid a top on their salaries from the loan as opposed to extraneous allowance.

  - **Major Outcomes and Impacts**

The following are some of the Outcome of DRSLP Interventions on Water & Irrigation infrastructure development:

- Increased Household Food security and incomes especially in Kiboi and Kaminia schemes. Kaminia farmers have taken own initiatives to produce under irrigation after benefiting from various trainings supported by the project. Farmers are mainly producing onions, tomatoes and green maize for commercial purposes.
- Increased water availability and accessibility in the ASALs- reduced distances from an average of 10-15km to 1.5- 2.0 Km.
- 55Km of rural feeder roads improved and opened to improve and support market accessibility by the farmers through the project contracts. (Kaminia- 16Km and Kiboi –18 Kms, Kilimani-12 Km, simailele-9 Km).
- Increased school enrolment and retention of the girl child in schools- 650 girls in West Pokot County (St. Elizabeth Morpus girls secondary school and Chepropogh Primary School).

Outcome/Impact from livestock infrastructure development interventions:

- Increased forage quality and availability in the ASALs. The pasture plots have increased pastures and forage availability in the ASAL areas in general.
    - 591 Hectares put under commercial pastures by the communities in the 6 Counties have produced over 35,000 bales and over 3,200 Kgs of harvested seed.
    - The groups have made over Kshs 4,600,000.00 and over 2,500 cattle have been saved from the drought. Some farmers are also learning form the commercial pasture plots and are also setting up individual commercial pasture plots to supplement what the project has done because there is a huge demand for the pastures during the dry periods in the ASAL Counties. A good example is Samburu County where 4 Agri-preneurs are setting up 6,500 Hectares commercial pasture sites to supply pastures as hay and seeds to farmers for profit.
- Reduced Livestock deaths and losses during the dry seasons
- Sale price increased from an average of ksh 3,000 to kshs 6,500 for shoats and ksh 20,000 to ksh 35,000 for cattle due to organized marketing in the project areas.
- Livestock Markets have improved Livestock offtakes and Improved revenue collection by the counties and the committees.
- Reduced inter-communal conflicts because of the concept of sharing of resources and mutual benefits to communities from an average of the 5 rustling cases to 1 along the Kerio valley belt bordering Turkana, West Pokot and Baringo counties.
- Increased participation by women in household decision making and participation in productive activities- 6780 women are in productive activities.
- Improved Livestock weights due to improved forage availability and quality.
- Increased developments in and around the livestock market centres owing to regular trade and availability of customers
- Various Businesses coming up within the market centers e.g Vet stockist, sale of food stuffs, eateries and hotels, bars, Grocery shops, Mpesa Shops and Agents, shops selling school uniforms and various shoes, increased sales of mobile phone accessories etc. An average of 12 different business shops opened during market days within the vicinity of the market centers.
- Increased goat milk availability at the household level attributed to the improved forage conditions.
- Improved Household food and nutrition security of over 28,000 Households in the project areas.
- Reduced cost of drugs as a result of the County Vet labs as well as easier disease surveillance and intervention.

- **Lessons Learnt**

The key lessons learnt during DRSLP Phase I implementation were as follows;

i. The success of knowledge management is determined by a clear understanding of its role in programming and adequate buy-in by decision makers.

ii. Stakeholder engagement and buy-in is a key factor in ensuring successful implementation of projects. Once stakeholders are aware of a given project and the ultimate benefits, there is a likelihood that they would support the project minimizing conflicts.

iii. Early warning systems are key to building resilience of communities. This is because they help in precision planning and timely response.

iv. Local Peace Committees (LPCs) have proven to be valuable interface structures between the government, community leaders when responding to conflict and insecurity situations.

v. Communities have strong attachment to resources especially ancestral land. As such, such resources should be acquired through dialogue.

vi. Having project activities within a manageable area makes management and supervision easy and the benefits are not thinly spread – demonstrating impacts.

vii. Designs and tender documents for the major structures need to be ready before commencement of the project to speed up implementation and start up.

viii. Framework of implementation of national projects between the NG and CG ought to be put in place in the current constitutional dispensation, given certain agriculture functions are devolved.

ix. Non- performing contractors need to be dismissed in accordance with relevant contracts clauses without undue delay.

- **Conclusions and Recommendations**

i. Bilateral and multilateral cooperation is essential in building resilience and sustainability of pastoralism in Kenya as well as developing innovative approaches that mitigate effects of drought while completing the already existing initiatives.

ii. Cross-border cooperation that focus on long-term planning, preparation and implementation of interventions serving long-term needs of border areas should be adopted since successful drought risk management requires regional approaches than focal area interventions.

iii. Build the capacity of top management on knowledge management.

iv. Having project activities within a manageable area makes management and supervision easy and the benefits are not thinly spread – demonstrating impacts.

v. Designs and tender documents for the major structures need to be ready before commencement of the project to speed up implementation and start up.

vi. Framework of implementation of national projects between the NG and CG ought to be put in place in the current constitutional dispensation, given certain agriculture functions are devolved.

vii. Non- performing contractors need to be dismissed in accordance with relevant contracts clauses without undue delay.

viii. Build capacity of monitoring and evaluation officers on the best way to evaluate public projects.

ix. Strengthen resource mobilization strategies.

3.2 NDMA Projects

In 2018-2019, the NDMA achieved the following with regard to support to **livelihood value chains**;

1. Kakuma slaughterhouse was operationalised and handed over to the County Government. The slaughterhouse is a category B facility supporting realisation of meat hygiene in Kakuma and surrounding areas. It serves 60,000 (30,720 females, 29,280 male) residents of Kakuma town as well as 147,365 (67,668 female, 79,697 male) refugee population.
2. Construction of vaccine cold chain and storage in Marsabit at Ksh 6 million. The project is ongoing and is expected to improve storage and cold chain management of vaccines, leading to effective and efficient prepositioning of vaccines. The facility has the potential to support the neighbouring counties of Isiolo, Wajir and Mandera counties.
3. Construction of milk cooling plant in Samburu at Ksh 46,708,000. The project is a collaboration between Samburu Dairy Cooperative Society, NDMA, Regional Pastoral Livelihoods Resilience Project (RPLRP) and the County government of Samburu. NDMA is contributing Ksh12 million towards the construction of the building. The other partners are supporting different project components.
4. Construction of sale yard at Lolmolog in Samburu at Ksh. 8,938,245 to improve livestock offtake and incomes for producers and other actors along the value chain. The community provided land and the facility is managed through a co-management arrangement, which will allow for sustainable management of the livestock sale yard.
5. Procurement of additional oven and drier for Meru sweet potato processing plant at Ksh 6.5 million and 40KVA diesel power generator to improve efficiency in operation, maintenance and production.

3.3 Climate Information and Services

Climate information is particularly important for all decision-makers from household, to local, regional and national level. Practitioners in various sectors and policy-makers, need effective climate information services (CIS) to better inform their decisions for planned activities for coming months, seasons and years ahead. The information is of particular importance for those communities in ASAL regions that do not receive regular weather and climate forecasts to make climate-smart decisions (CARE International, 2017). In 2011, a community-based adaptation approach to CIS, known as Participatory Scenario Planning (PSP), was introduced in Garissa County, Kenya, by CARE International's Adaptation Learning Programme (ALP). This was a partnership project with the Kenya Meteorological Department (KMD), the Agriculture Sector Development Support Programme (ASDSP) and ALP. In 2014, the PSP process was extended to all 47 Kenyan counties. The KMD and ASDSP of the Ministry of Agriculture Livestock and Fisheries have been designated to lead the PSPs in Kenya.

All Kenya counties are covered by at least five CIS providers. Kajiado, Narok, Nandi, and Turkana counties are covered by a maximum of 10 CIS providers. Six CIS providers cover Bomet, Bungoma, Busia, Kakamega, Kericho, Kirinyaga, Nyandarua, and Nyeri counties. Some seven to nine CIS providers cover the remaining counties. Only two CIS providers (KMD and RCMRD) cover all the counties. Note, however, that the presence of CIS providers in a county does not automatically imply

that all farmers who are in need of services are reached or are able to access them. Also, presence does not imply that relevant services of appropriate quality are delivered to users. Most of the CIS providers do not have an effective mechanism with which to track their users. Under this condition,

The Kenya Climate Smart Agriculture Strategy 2017 - 2026, recognises the impact of changes in climate and weather patterns on the rain-fed farming systems, especially the arid and semi-arid lands. The impacts may increase vulnerabilities and predispose farming communities to food insecurity and poverty through loss of the productive assets and the weakening of coping strategies and resilience. Nonetheless, the agriculture sector contributes to the climate change problem through emissions arising from inefficiencies in crop, livestock, fisheries and forestry production systems. These inefficiencies lead to greater levels of enteric fermentation in livestock, poor manure and agro-based waste management systems, improper land preparation systems, inefficient input and resource use in crop management systems as well as inefficiencies that raise emissions from agro-based machinery.

Since the agriculture sector is a major contributor to the economy of Kenya in terms of food security, employment creation, supply of agro based industry raw materials and foreign exchange earnings. About 98% of Kenya's agricultural systems are rain-fed and highly susceptible to climate change and variability. This susceptibility is likely to jeopardize attainment of the sector contribution to the national economy. Arid and semi-arid lands account for almost 80 percent of Kenya's land area, and climate change is threatening this fragile ecosystem. In a country where sub-optimal agricultural practices already result in poor crop growth, low vegetative cover, low crop yields and serious land degradation, weather conditions resulting from climate change and variability have made drought and water scarcity common. Therefore, the use of nuclear techniques to validate water and nutrient management technologies is essential for Kenya to realize its vision of developing a modern and productive farm and livestock sector. This technique is already being used by the Kenya Agricultural and Livestock Research Organization[1] The role of CIS in supporting farmers and empowering them to use sustainable land management practices cannot be overemphasised.

The National Drought Early Warning System (EWS) is web-based and integrates remote sensing (satellite monitoring) and primary and secondary socio-economic data. The data is categorised into biophysical and socio-economic indicators. Biophysical indicators look at rainfall patterns and hydrological data. The socio-economic data is collected monthly from 30 households in each of the 154 sentinel sites using mobile devices to ensure timeliness and cost-effectiveness. The data is broadly classified into three categories;

- Drought effects on both crop and livestock production.
- Access to markets, food, and water.
- Nutrition and coping strategies.

The EWS supports analysis and synchronisation of data collected from all the ASAL counties in real-time. This provides timely information in advance of, or during, the early onset of drought to prompt action and reduce potential negative impacts. The recommended interventions are categorized into immediate, medium-term and long-term. The following was achieved during the period 2018-2019;

[1] IAEA projects in Kenya

- Produced and disseminated 23 monthly county drought early warning bulletins, totalling 276.
- Produced and disseminated 12 consolidated monthly national drought early warning bulletins.
- Monthly provision of remote sensing information up to Ward level.
- Upgraded remote-sensing to incorporate an on-demand process that enables the NDMA to share weekly information.
- Migration of datasets to a cloud server - Earth Observation Data Centre.
- Produced 24 remote-sensed vegetation condition index reports (one at mid-month and the other at end month) for the 23 ASAL counties. The reports provided objective evidence-based information on the drought status.
- Improved the accuracy and reliability of biophysical indicators, such as rainfall data, cumulative amounts, and distribution by combining and triangulating data from various sources and sectors, including Kenya Meteorological Department (KMD), Famine Early Warning Systems Network (FEWS NET) and World Food Programme (WFP).
- Collected field data at the county level and developed models to produce land cover maps.

3.4 Environment, Gender and Social Development

A review of literature from NDMA, DRM and EDE MTP III, Big4 Agenda, Vision 2030, Kenya Constitution 2010, ASAL Policy-Sessional Paper No. 8 of 2012 on national policy for sustainable development in ASAL regions of Kenya and County Annual Development Plan of the IGAD selected counties in Kenya shows that the interventions proposed are not gender responsive. There is no mention of which woman or which man the projects target nor gender differentiated benefits. IGAD acknowledge that women constitute a majority of the world's poor. The Beijing Platform for Action notes the linkages among poverty, natural disasters, health problems, unsustainable development and gender inequalities. It notes the importance of a holistic and multidisciplinary approach in dealing with land management, agriculture and environmental issues. The Platform for Action sets out three strategic objectives, which also stresses the need for women to participate in decision-making at all levels, thus:

1. Involve women actively in environmental decision-making at all levels.
2. Integrate gender concerns and perspectives in policies and programs for sustainable development.
3. Strengthen or establish mechanisms at the national, regional or international levels to assess the impact of development and environmental policies on women.

The World Summit on Sustainable Development held in Johannesburg in 2002, confirmed the need for gender analysis, gender specific data and gender mainstreaming in all sustainable development efforts, and the recognition of women's land rights. Observably, majority of intervention projects implemented in the six counties of Kenya, have ended up increasing women's workload beside their expected gender roles of providing fuel wood, water and food. Where pasture is introduced, women are seen to offer labour and to feed the animals, besides having to milk cows continually an activity which was done seasonally. Women additional workload should be taken note of and strategies for redress developed. For instant, introduction of accessible alternative fuel to reduce time spent and distance walked to fetch fuel wood in the project areas. Several countries have carried out technical assistance activities for women, including the promotion of alternatives to firewood, such as solar energy and biogas. Example is a project in Egypt, which trained women to use biogas in cooking,

minimising time wasted searching for wood fuel as well as reduced pollution. Similar reports were achieved in Mauritania where introduction of biogas reduced indoor air pollution and the amount of time women and children spend collecting firewood. In Malawi, the Miranda Nkhuni Biomass Briquette Programming trained women's groups to produce briquettes from waste materials as alternative fuel source. Such programs if introduced in the ASAL regions, they will have direct and indirect benefits. Direct being reduction of environmental degradation through cutting vegetation, minimize soil erosion which is rampant especially in west Pokot and Baringo counties. Additionally, it will reduce air pollution and at the same time save women and girls from walking long distances in search of wood fuel. Indirect benefits are women security and more time for self-improvement and improved quality time on girls' education.

3.5 Water Related Infrastructural Developments

In Kenya's arid and semi-arid lands (ASALs), the total demand for water often exceeds the water available to people and livestock. This problem is compounded by weak support from government and competition for resources amongst water users, which creates the potential for armed conflict. Most water-related interventions are short term and target a single problem, rather than the whole complex of problems that communities face. The benefits are therefore often short lived and dwarfed by the remaining problems. Although Kenyans experience periods of severe water scarcity, annual rainfall is actually sufficient to support their livelihoods. The gap arises because a large portion of the water disappears unused through surface runoff, flooding and evaporation. A new approach is needed to unlock the potential of water sources, and use and manage them in a strategic and sustainable way.

A 2013 UNDP report on combating desertification, Arid and semi-arid lands (ASALs) are characterized by high temperatures and with a large diurnal range. In most counties that are classified as either arid or semi-arid areas, the evapotranspiration rates are more than two times the annual rainfall. They receive low erratic rainfall that are usually highly variable in both time and space. The average rainfall ranges between 155-455mm. The soils are highly variable with texture being light to medium texture. The soils are of very low fertility and are subject to capping, erosion and compaction. (UNDP 2013). The Joint Monitoring Program in Kenya in 2018 ranked Kenya as among the countries that have inadequate sanitation facilities in rural areas where the practice of open-air defecation is widely practiced. This therefore poses a huge risk to the spread of waterborne disease to these areas especially when they use unimproved water sources. The water sources mainly used in these areas include but not limited to: unprotected wells, seasonal rivers, unprotected springs, dams and water pans.

3.5.1 Key Orientations and Lessons from Past Sustainable Land Management

As already stated in preceding sections, literature review points to past sustainable land management (SLM) studies emphasising the need to prevent physical land degradation through an integrated approach (erosion prevention, fertility maintenance and soil moisture conservation). However actual projects on the ground are scanty and generally non-existent. However, in the context of this IGAD program, the following observations and hence key orientations have great potential going forward:

1. Livestock industry is still popular and stands out as the natural entry point towards ending droughts, risks and emergencies. Projects that guarantee pasture throughout the year, cushion communities during drought periods, restore herds after drought periods, add value across the livestock value chain and prevent rangeland degradation through overstocking are critical.

Creation of large-scale hay production would protect such land from erosion agents, while guaranteeing fodder for livestock

2. Crop farming is yet to be fully embraced in the ASALs as a complementary livelihood practice that spreads risks and enhances food and nutrition security. Projects that would increase their awareness and popularization and eventual adoption are key. Production of drought tolerant crops like millet, sorghum, dates etc. under dynamic management that fits in natural seasons OR through small-scale irrigation projects have good potential.
3. It is also very likely that communities have not appreciated land degradation through erosion of top fertile soil because of its intrinsic nature. Capacity building within communities on erosion hazard surveys that allow for timely intervention in protecting and conserving land is critical.
4. Alternative livelihood activities that exert less pressure on land are also marginalized as a result of the livestock culture. The potential in apiculture and other off-farm micro-enterprises including eco-tourism is huge.
5. While tree planting is mentioned in some CIDP, where to plant and what kinds of species for maximum and prolonged impact is silent. Projects that specifically address this aspect are critical. Early maturing, multi-benefit trees planted around water pans and settled areas would enhance land integrity, animal welfare and people's livelihoods.
6. That priority areas based on the NDMA strategic plan 2013-2017 are scanty on SLM but rich in channelling money to communities raises the question of sustainability of short-term fixes that major on commodities rather than the resource upon which the commodities like livestock are sustained. It is worth noting that the 2018-2022 implementation matrix on strategic framework is equally silent on specific SLM projects.
7. While an integrated approach is implied across various initiatives their link to ending drought emergencies and to community felt-needs may need to be amplified.
8. Therefore, based on County priorities for IDDRSI phase 2 of 2021 it is clear that sustainable land management projects are generally a neglected aspect especially in pastoral dominated ASAL counties in Kenya. While a lot that can be done has been documented by the ministry of agriculture, specific success stories are not available.

3.6.4 Role of IGAD and other Regional Bodies on SLM in the Country

1. The role of IGAD in SLM in the country is mainstreamed in the mandate and functions of the National Drought Management Authority (NDMA). A review of NDMA documents however points to an indirect role of the authority in SLM. Emphasis has been on projects that touch on livestock development. For SLM to gain prominence, cropping systems should also be prioritised.
2. The New Partnership for Africa's Development (NEPAD) is a vision and strategic framework for Africa's renewal with focus on poverty eradication [2]

[2] https://nepadkenya.org/documents/What%20is%20NEPAD.pdf

3. Internationally UNDP and other international NGOs have been instrumental in a myriad of projects addressing poverty alleviation, environmental conservation and overall rural development

3.6 Social Infrastructure

3.6.1 Cooperatives, Banks and Credit Unions

The six DRLSP counties have their social life organised around livestock, mainly nomadic pastoralism. Their pastoralist way of life also dictates their social organisation. Social organising takes the form of co-operatives as well as social groups, especially women groups. It is important to point out that different counties are at different levels of social organising.

In terms of social infrastructure, Samburu County has a total of 64 registered cooperative societies out of which 34 are active while 30 are dormant. The total membership in these societies is 3,213 and a turnover of Ksh. 186 million. The cooperatives are largely involved in marketing of agricultural and livestock products. The county also has 37 registered group ranches, which operate on co-operative basis, and largely doing cattle keeping. With regard to social organization, the county has a total of 600 registered women groups, 900 youth groups and 130 Community Based Organizations operating within the county. All these organisations play a key role of promoting economic empowerment in communities as well as also enhancing the welfare of especially disadvantaged groups in the society.

On the other hand, Baringo County has 3,322 registered community based organization, which are focused mainly on community health, small and micro enterprises, human rights, advocacy and small-scale farming. With regard to cooperatives, Baringo has 186 registered copoperatives, 113 which are active while 34 are dormant. The county also has crop based cooperatives which include functioning two coffee cooperatives; one in Kituro and another in Kapkawa; Macadamia cooperative in Kabarnet and Maize cooperative in Marigat which are involved in seed maize production and rice production, and a rather inactive cotton cooperative.

Marsabit County has three types of cooperative societies, namely, livestock, multi-purpose societies, and savings and credit cooperative societies (Saccos). Of the 87 registered cooperative societies, 55 are active. Except for the SACCOs, the cooperatives are largely involved in marketing livestock products. In terms of the other forms of social organising, Marsabit has 480 self-help groups (active 60%), 310 women groups (active 40%) and 504 youth groups (active 55%. The groups are involved in in such socio-economic activities as goat-keeping, beekeeping, poultry-rearing and small micro enterprises.

Isiolo County has diverse social organisation that includes, five registered Juakali Associations, mainly operating as SACCO, 65 registered co-operatives societies, 60 active women self-help groups, 345 community based organizations and 280 youth groups.

In West Pokot County there are 83 registered cooperative societies, however only 36 are active. With regard to social groups, West Pokot has 4,297 groups that are registered. Of these, self-help groups constitute 2204, women group are 992, while youth groups are 935. There are also 5 men groups, 35 groups of people living with disabilities (PLWD), and 6 groups of older persons. The county also has 117 registered community projects and six (6) registered community based organisations. All these registered groups serve as vehicles for accessing empowerment funds, such as youth and women enterprise funds.

The main forms of cooperatives available in Turkana County are mainly Savings and Credit Cooperative Organizations (SACCOs), which have a total registered membership of over 11,358, a turnover of over KSH 6,300,833.85, and a total share capital of KSH 5,627,599 (Directorate of Cooperatives, Turkana County). The main ones are Elimu SACCO, Eco Pillar SACCO, Turkana Teachers SACCO, Jua Kali Artisan SACCO and Mwalimu SACCO. The cooperatives mainly provide loans for their members at lower interest rates than the commercial banks.

3.6.2 Financial Institutions

The counties under DRLSP have some rather modest access to financial institutions. Besides the cooperatives that have been discussed in the previous section, the counties are served by financial institutions as below:

A. Access to Financial Services

Table 3.5 : Access to Financial Services

County	Banks	Micro-Finance Institutions	Insurance	Forex Bureaus
Isiolo	9	5	10	4
Samburu	3	2	-	-
Marsabit	6	3	2	-
West Pokot	3	4	-	-
Baringo	14	32	-	-
Turkana	3	2	-	-

From the table it is evident that Isiolo County, which is much close to Nairobi and have a more established and accessible tourist infrastructure has more asccess to financial services. These of necessity are accessible to farmers and livestock markets. Given the expansiveness of the counties, it is evident also that the counties are rather underserved in terms of financial services infrastructure

B. Markets

A review of CIDPs of the counties participating in DRLSP indicate that marketing of both agricultural produce and livestock remain a challenge. This is because of distance to major established markets as well as poor infrastructure across the counties. Invariably all counties have in their plans (2018-2022 as key actions development of one stop markets for agricultural produce in established trading centres as well as enhancing of market infrastructure for livestock, that is by developing especially holding grounds and markets for livestock.

C. Access to Internet

To enhance access to internet counties are working towards linking their headquarters as well as the major towns with the national fibre optic cable. Nevertheless, where there is mobile telephone network in the counties there is largely internet available.

D. Access to Electricity

Access to electricity remains low. It is only in Isiolo where the figures are slightly higher where electricity is accessed by close to 8% per cent of the population compared to a national average of 22%. With regard to percentage of households using electricity for lighting, the figures are equally low except for Isiolo County which has more established urban centres. Turkana, despite being a generator of electricity the percentage coverage of electricity supply is at a low of 2%. This low coverage has implications with regard to access to electricity to food security investments.

E. Access to Electricity by County

County	% with access to electricity	%of Households using electricity for lighting
Isiolo	7.98	29
Samburu	6.2	10
Marsabit	7.5	3.6
West Pokot	2	10
Baringo	6	10.6
Turkana	2	10

3.7 Capacity Building Actors

3.7.1 Government Extension Services, Research and Development

Each of the DRLSP counties have elaborate extension systems with extension personnel who have the capacity to bring scientific knowledge to farm families in the farms and homes with the ultimate aim of enhancing the efficiency of agriculture. The role of the county extension services systems include assisting farm people through educational procedures so as to help them identify and analyse their production problems and become aware of the opportunities for improvement; improving farming methods and techniques, increasing production efficiency and income, bettering their standard of living and lifting social and educational standards.

Baringo County has an Agricultural Training Collage at Eldama Ravine that offers opportunity for application of scientific research and new knowledge to agricultural practices through farmer education. Equally, there is an agricultural and machinery services agency based in Marigat provides

new farming technologies to the farmers and provides subsidized equipment as part of farm input strategy. The veterinary sub sector also benefits from the presence of Kenya Agricultural, Livestock Research Organization (KALRO) and Egerton University who are based in the county and often offer assistance in research and development.

In Turkana County, agricultural extension services are largely offered by the county government. However, their partners such as, Furrows in the Desert (FID), which train farmers in dry-land agriculture for a period of six months.

West Pokot County has prioritised strengthening its agricultural extension system in the coming years to 2022 by embarking on recruitment of technical extension staff as well as enhancing their welfare. In the period 2018-2022, the county seeks to, among others, strengthen extension services through field demonstrations, farmer s trainings and agricultural shows, as well as livestock breed improvement, beekeeping promotion, establishment of livestock strategic feed reserves, range development (reseeding, enclosures, water harvesting), exposure tours, establishing disease free zones, improving access to artificial insemination, livestock marketing and value addition, establishment of fish hatchery, restocking Turkwel dam, expand fingerlings distribution and develop sub-sector policies and legislations.

The County Government of Marsibit provides agriculture extension services and receives support from research and training institutions, as well as civil society organizations – who include non-governmental organizations, faith based organizations and community-based organizations. The extension services are provided through i) demand driven and beneficiary led approach, ii) indigenous knowledge and technologies sharing, iii) cost sharing with beneficiaries and iv) networking/collaborations. The extension approaches used include trainings, on farm demonstrations, field days, trade fairs/exhibitions, exchange visits/ tours and training of livestock keepers in grazing areas. The county extension system also works with Kenya Agricultural and Livestock Research Organization (KARLO) to generate and apply knowledge.

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Samburu County runs its extension services through county staff as well as through the support of such agencies as Civil society organizations and FBOs who include world vision, ACTED, PGDP, CODES, Child fund, farm Africa, SIDEP, Kenya red cross and even WFP and FAO. The main areas of focus include farmers training and drought emergency interventions. The Livestock health assistants also are engaged to take care of the health needs of animals.

Isiolo County government offers extension services to support agricultural production services and thereby improve income of small scale food producers, particularly women, indigenous peoples, family farmers and pastoralists. Priority areas of focus in extension include modernizing of livestock keeping through appropriate animal husbandry; disease control; training on appropriate rangelands management practices; and crop development in the existing irrigations schemes around Isiolo town and Kina sub-county.

Research and development is largely supported by KARLO, which in some counties has an established presence. For instance, in Baringo due to established irrigated agriculture taking place as well a bee research centre.

3.7.2 Conflict Management

Conflict is a hidden social challenge in the DRSLP project counties. The cultural imperative of cattle as wealth and therefore the socialisation that life rotates around the wellbeing of livestock, "Wealth = "mali" as the pastoralist communities refer to their livestock creates very strong ethnic identities and affiliations which lead to tensions especially when pasture and water are scarce and hence livestock are threatened. Moranism and the cultural imperative associated with the rite of passage also compels the neophites to build their own stock of livestock out of which they also use as bride wealth to get themselves brides. This equally fuels ethnic tensions as the resultant effect are livestock raids across communities.

In light of the foregoing, counties have come up with measures to ensure peace is build and any conflict emerging is effectively managed. Peace committees are the modus operandi for managing conflict. The National Government Administrative Officials in liaison with county government actively participate in monitoring and managing conflict situation whenever they occur.

3.7.3 Non-Governmental Organizations

There are many NGOs working in the DRLSP counties. The table below gives a snapshot of the NGOs operating in each county. The main areas of focus is community empowerment and especially focusing of value chains and economic empowerment initiatives as well as addressing the social welfare issues.

Table 3.6:NGOs Operating in the Six DRLSP Counties

County	NGOs
Isiolo	Action Aid, Northern Rangelands Trust (NRT), Mid-P, Refugee Assistance Program (RAP), Action against Hunger (ACF), Kabarole Research Centre (KRCs), African Muslim Agency, Alfalah, Catholic Development Office, Food for the Hungry (FH), Mercy Corps, BOMA, Resilience and Economic Growth in the Arid Lands –Accelerated Growth (REGAL-AG), World Vision, International Institute for Environment and Development (IIED), IUCN, VSF, Ewaso Lions, Livestock Market Systems (LMS), Church World Service Kenya (CWSK), Pastoralist Women for Health and Education (PWHE), Peace Link, RTI, Save the Elephants (STE), International Livestock Research Institute (ILRI), United Nations Development program (UNDP) and Anglican Development Services (ADS). Main focus- community empowerment, protection of human rights awareness creation and civic education.
Samburu	Vision, Red Cross, Child Fund, Samburu Aid in Africa (SAIDIA), AMREF, IMC. APHIA-Plus-NAL, RAMATI Main focus - health, education, water, housing, social protection recreation and culture as well as environmental protection.
Marsabit	Over - 20 NGOs - Catholic Church,

County	NGOs
	Main focus - water and sanitation, agriculture and food security, pastoral livelihoods, health and nutrition, HIV/AIDS, conflict mitigation and peace building, advocacy and, more importantly, drought mitigation and emergency relief.
West Pokot	AMREF, World Vision, DSW, Palladium and AMPATH Plus. Others are UNICEF, ACF, USAID, Kenya Red Cross, Fred Hollows Foundation, NEPHAK and Impact Research & Development Organization, Yangat, SIKOM, Maendeleo Ya Wanawake Main focus - supporting rural communities in the areas of agriculture, nutrition, water, disaster relief, health and education.
Baringo	World vision, Fred Hollows Foundation, Red Cross Main focus – community empowerment including advocacy in agriculture issues
Turkana	Trocaire, Save the Children, World Vision, KRCS, and catholic Diocese of Lodwar, Focus – economic empowerment as well as social protection

4 CONTEXT AND GENERALITIES

4.1 Location(s) of the infrastructure sites / project areas / intervention zones

This feasibility study covers 6 ASAL counties in Kenya as listed in the table below. All are classified as arid except west Pokot, which is classified as semi-arid. Rainfall (R) as a percentage of potential evaporation (E_o) i.e. R/E_o is given as 15-25 and 25-40 respectively (Republic of Kenya, 2016[3])

Table 4.1: Summary of Sites Biophysical Conditions

County	GPS coordinates	Population[4]	Climate	Topography
Baringo	Longitudes 35 30' and 36 30' east and between latitudes 0 10' south and 1^0 40'	666,763	1,000-1500mm in the highlands to 600 mm/yr in the lowlands.	varied
Isiolo	Longitudes 36° 50' and 39° 50' east and latitude 0° 05' south and 20 north.	268,002	150 to 450 mm per year	varied
Marsabit	Latitude 02° 45o north and 04° 27o north and longitude 37° 57o east and 39o 21o east.	459,785	wide range from sub-humid to very arid	extensive plain lying between 300m and 900m above sea level
Samburu	Latitudes 0°30' and 2° 45' north of the equator between longitudes 36°15' and 38° 10' east	310,327	low land zone with rainfall below 700mm/yr. soil are varied	varied.
Turkana	Longitudes 34^0 30' and 36^0 40'east and between latitudes 1^0 30' and 5^0 30' north.	926,976	semi-arid to very arid aez, with dominant being arid at 42%. mean annual rainfall is 200mm	varied. 360 – 914 m asl
West Pokot	Longitudes 34° 47'and 35° 49'east and latitude 1° and 2° north	777,180	aez 5-7 varied	varied

[33] Soil and water conservation hand book for Kenya, 2016.

[4] 2019 Kenya Population and Housing Census. Kenya National Bureau of Statistics. www.knbs.or.ke

4.2 Gender Issues in Climate and Vegetation

Men and women experience Climate and vegetation change differently. Such changes result to gender differentiated vulnerability which is attributed to gender related norms, roles, responsibilities, behaviour and socialization. For instance, during drought, gender differentiated expected roles influence gendered action taken by men and women. In that while men shift with the animals in search of pastures and water to neighbouring counties, women bear the burdens of travelling further to fetch firewood, water and collect food to feed the family. Because men and women use and interact with climate and vegetation differently, they also differ in their roles, behaviours and attitudes regarding actions that could help to mitigate climate change. Therefore, men and women voices, opinions should be heard and put into consideration in intervention programs and projects. Gender should be mainstreamed at all levels of project cycle to ensure women inclusion for gender equality outcomes.

Drought is rampant in arid and semi-arid regions of Kenya. In these regions with scarcity of rainfall, food, pasture and water for animals and domestic use are equally scarce. Over the years, communities living in ASAL regions had their traditional way of adapting to the harsh climate. However, with the ever climate and vegetation change as well as increase in population and change of land tenure, the traditional methods are no longer effective. Therefore, poverty, hunger, death of livestock has become common in the region leaving the communities vulnerable and needing assistance to resilience.

The Kenyan government through the Ministry of Agriculture and IGAD are among bodies that have initiated different projects to ease the pangs of climate change in the six ASAL counties, namely West Pokot, Marsabit, Baringo, Isiolo, Wajir and Turkan. These projects are aimed at proving water, food and livelihood for the communities living in the six marked counties. Although they practice crop farming, the communities living in ASAL regions are mainly pastoralist, keeping animal such as cattle, goats, sheep, camels, donkeys and chicken. It is important to note that ownership, control and activities surrounding these animals are gendered. Therefore, gender equality and social inclusion (GESI) should be mainstreamed if any project is to benefit men and women equitably. That means, any project should take into consideration cultural norms and gender dynamics of the targeted population in the project area. This is because any implemented project affects and impact on the lives of men and women differently. Sometimes even resulting to unintended outcomes regarding gender social change, gender power relationship at the household and community level as well as increase women's workload.

4.3 Water Resources and available / Potential Infrastructures

4.3.1 Innovative Approaches

The Kenya Arid Lands Disaster Risk Reduction – Water, Sanitation, and Hygiene (KALDRR-WASH), a two-year programme supported by USAID and The Netherlands, aimed at building resilience against drought in arid and semi-arid lands. It focused on an innovative approach developed and tested in the programme: using local, participatory water planning to match water resources with water demand. The integrated planning then informs strategies for recharging, retaining and reusing (3R) shallow groundwater to create stronger water buffers for bridging droughts.

Promising findings and initial successes from the pilots were that

- Only a relatively small amount of rainfall needs to be stored to meet demand in rural areas, even in the driest years.

- Local, participatory water master planning is a strong tool for guiding interventions and building resilience to drought.
- The methodology can be replicated and scaled up to other areas, to estimate what resources and infrastructure are needed to meet future demand.
- In Wajir, the participatory planning meeting addressed and defused conflicts over water and land. The mapping of the water gaps informed discussions on options for grazing land strategy in both wet and dry seasons. Participants agreed to create new water sources near homesteads to avoid conflicts with neighbouring clans with migrating herds.
- In Marsabit, county planners were very positive about using new tools and insights to set priorities.
- In Moyale, stakeholders said that the tools provided an excellent opportunity to integrate traditional water management practices, which are neglected in most other planning processes.
- In Marsabit, Wajir and Turkana, government representatives recognised the link with Kenyan planning mechanisms, and said the new tools would help them translate county plans into actions.

The results of the pilot program

- Guided policy makers, funding organisations and coordinating entities in determining appropriate interventions to match local water supply with multiple demands.
- Helped implementing organisations consider options for water supply interventions when applying for funding.
- Supported local stakeholders to identify and agree on innovative solutions for managing drought and securing livelihoods.

4.3.2 Sustainable Irrigation Water Harvesting and Storage

With a national average rainfall of 400 mm, Kenya needs to harvest and store adequate water for agriculture and other uses through investment in water management infrastructure across the country. Notably, the arid counties are characterized by a network of ephemeral streams that only flow during the rainy seasons. Through construction of inline water harvesting and storage structures, these streams can provide a unique opportunity of increasing access to water for communities in these regions. Additionally, in areas where there are no streams, water harvesting using small ponds or what has come to be known as household water pans has increased access to water for farming communities.

The National Irrigation Authority is implementing large water pans for use by communities and household water pans across the country. The community water pans have a capacity of 30,000 to 250,000m^3 where neighbouring farmers using portable pumps abstract water for irrigation. The focus has been desilting the existing large water pans and small dams as well as construct new one in the arid areas.

The household water pan concept entails providing water harvesting reservoirs at household level whose capacity is 1000-3000m^3. The Authority excavates the water pans while farmers are required to fence and utilize the stored water for irrigation. Learning from the Operation Mwolyo Out (OMO)

initiative in Yatta, it has been demonstrated that using a combination of a localised reservoir and efficient irrigation system households can sustain their livelihoods in arid areas.

4.4 Socio-Demographic Characteristics of DRLSP Project Target Counties

Various documents reviewed for the six IGAD selected counties were interrogated for their gender responsiveness including gender disaggregated information. Projects enlisted as implemented by NDMA, Ministry of agriculture and livestock development, County government and IGAD, related to climate smart intervention strategies to ensure food security and economic resilience of the population living in ASAL regions were reviewed, gender gaps identified and recommendations made for each county as follows:-

4.4.1 Turkana County

Turkana is one of the driest counties of Kenya which experience very high temperatures during the day and moderate temperatures during the night all year round. The rainfall pattern is unpredictable and at times Turkana receives no rain in a whole year. As a result, the residents are faced with a persistent threat of starvation due to drought. The nature of climate necessitate government, and other stakeholders including IGAD to initiate supportive climate smart programs to ensure food security and coping interventions aimed at transforming community's livelihood to resilience.

Literature reviewed from NDMA, DRM and EDE MTPIII, BIG4 AGENDA, VISION 2030, KENYA CONSITUTION 2010, ASAL POLICY-SESSIONAL PAPER NO 8 OF 2012 on national policy for sustainable development in ASAL regions of Kenya and county annual development plan, indicated climate smart implemented projects. The county government has Water provision projects which is done through Construction of 3 Water dams and 1 Borehole Drilling in Kadokorinyang and Rock water harvest. Critical analysis of the projects through gender lenses shows the report on water provision as gender blind because there was no mention of the role given to men and women in the management of water for sustainability. Other project implemented in the county include;

- Livestock diversification and breed improvement
- Sheep, goat, camel and cattle
- Enhance poultry production for food and nutrition improvement at house level
- Enhance rabbit production; Enhanced bee production for income and nutrition.

The Turkana are nomadic pastoralists who mainly keep cattle, donkeys, camels and goats. The livestock keeping is the main source of food and wealth. Content analysis of the Gender and Anthropology report of Turkana County by Ministry of agriculture and livestock development carried out in 2015, showed existing gender differentials in utilization, activities, access and control in production chain of each set of animals. Men graze the cows while women are responsible for watering and milking. When water pan, dam or bore hole are constructed to provide water for domestic use and irrigating fodder crops, men will not have a reason to migrate. This translate to men adapting sedentary lifestyle year-round with no need to shift to other regions. Notably, such actions by men increases women's workload, whose expected gender role is to water and feed these animals as well as milk the cows year-round, which is an otherwise seasonal activity. The presence of men all year round means that women have to take into account of their husbands' presence as their activities are closely

monitored, in addition to feeding and taking care of their other needs. Men's presence all year round in the homes disrupts women equilibrium to function, bringing social change and gender power relationship that has escalated gender-based violence cases in the county. Yet, according to county annual development plan, funds meant for establishing a one stop SGBV centres was redirected to another program. Meaning that the county government does not see addressing GBV issues as a priority. It is therefore, important to capacity train members of county assembly on the importance of having gender violence recovery centre in every hospital as well as a gender responsive budget and its proper implementation.

Turkana County also is home for the El-Molo people who are Kenya's minority group living on the southern shores of Lake Turkana. The El-Molos are about 300 people who purely rely on fish a source of their livelihood. They have shrines and make basket, jewelleries and other ornament from fish bones, hippo teeth and reeds. The Kenyan constitution Article 30, states that every member of the community has the right to equal socio- economic benefit. The county annual development plan targeted projects shows a gap because there is no mention of improving fish value chain or tourist activities targeting the El-Molo (a minority group) group to tap their skills knowledge and talents in order to improve their livelihood to full potential. The county government should embark on constructing a museum, preserving the shrines and organizing cultural events in the county to increase tourist attraction in the region.

The county government has funds meant for enhance rabbit production among the Turkana communities. However, there was no mention if the project picked up successfully and whom it targeted. In an informal interview, it was established that rabbit keeping is a boys' only activity, hence uptake of rabbit projects by general public and especially men would be viewed as demeaning male adults making its uptake and success difficult. Rabbit projects should be introduced gradually after the community has been re-socialised to accept rabbits as part of their food description and also link rabbit farmers to local and external markets.

Turkana has irrigation schemes among them Konoo Irrigation Scheme. Here are an Agro-pastoralist community that keeps cattle, sheep, goats and camels and also engage in some limited crop farming. Planting is done mainly by men. Although Harvesting is done by both men and women, processing and ferrying produce home from the farm and for sale is done by women who trek long distances to store or markets with heavy load on their backs. Burden of carrying heavy load for long distance impact on women's health and well-being. Thus, the need to explore alternative mode of transporting farm produce home and to the market. The county could explore on introducing donkeys as a women project to assist in carrying farm produce home and to the market.

A review of gender and anthropology report (2015), indicate that although the sale of cattle, goats and sheep are done by men and male youth, they must do so in consultation with their wives. Observably, women participate in driving the animal to the market, but are not allowed to negotiate prices. They are only allowed to sell chicken, on squeezed spaces at the market entrance. These gender inequality in the type of animals sold by men and women cannot go unnoticed. There is substantial difference in prices between big animals sold by men and chicken sold by women. The question is how the benefits from the sales distributed in the household? It is not clear how money gotten from the sales is divided, but it is clear that women get less cash from the sale of chicken, eggs and milk than men do from selling the big animals.

Additionally, the fact that both women and men are found in the market space, men selling big animals and women selling chicken, milk and eggs is a clear indication that market space should be gender responsive to carter for the needs and concerns of men and women. Women continue with their

gender role into the market space. This include tending to their young children and babies whom lay in the sun beside tray of eggs and chicken. From literature review and informal data collection, it was established that market space is not gender responsive. Since both men and women are in the Market space, the space should be gender responsive. There should be enough and clean gendered toilets with water. The market space should have crèches managed by county government where children are taken care off to enable their mothers participate and benefit fully in marketing activities.

4.4.2 Marsabit County

Marsabit is another of the six ASAL Counties with a population of about 459,785 persons (2019 census). It is situated in the northern part of Kenya. It neighbours Turkana County to the west, Samburu County to the south, Wajir County to the east and Ethiopia to the north. The county is home to a number of ethnic communities that include the Borana, Burji, Gabra, Rendille, Samburu, Turkana, Dassanetch and El-Molo. The scheme was largely inhabited by the Gabra

Document review of NDMA, DRM and EDE MTPIII, BIG4 Agenda, Vision 2030, Kenya Consitution 2010, ASAL Policy-Sessional Paper NO 8 oF 2012 on national policy for sustainable development in ASAL regions of Kenya and Annual development plan, shows that several projects have been initiated to mitigate the effect of drought, climate and vegetation change. This has included irrigation schemes such as Kalacha where they plant garlic, spinach and onions. However, the scheme's main activity is fodder crops for hay bailing.

The main livestock reared are camel, goats and cattle. Camels are preferred for their resilience to drought challenges. The study established that men's main responsibility is camel herding and milking while other members of the household undertake herding the other animals. Harvesting and selling of hay is done by women using sickles, who transport it in sacks carried either on their heads / backs or on donkeys. While most of the routine livestock production activities are carried out by men and women, girls and women are mainly the ones responsible for watering and milking of goats and cattle. The men dominate in the sale of livestock while women only sell milk and manure. The income from sale of milk and manure is used to meet household needs. Just like in Turkana County, there is need for gender analysis on HH distribution and utilization of benefits from sale of livestock. The finding will be used to develop gender transformative capacity training tool kit that will enhance gender equity.

The ministry of Agriculture and Livestock Development and Fisheries has established demo plots to produce more sweet potato. Also there has been introduction and purchase of drought tolerant seeds in Saku, Moyale, Hurri hills and Gatab, that has resulted to improved fodder/pasture production & grazing management as well as construction of hay shed for collecting and marketing hay. There has been Improvement of apiculture and chicken farming countywide. Bee keepers supported with modern hives and harvesting equipment targeting all the gender.

A critical analysis of gender activity profile of men, women, girls and boys, on these implemented projects, there is increase of women's workload without economic compensation of their input. This is because women are the ones charged with drawing hay, milking and only selling of milk and manure which fetch low prices. Women's drudgery gender roles and production workload should be highlighted to ensure equitable benefit and women economic empowerment. To address women increased workload, introduction of new technology such as, farm mechanization to cut and bail hay and milking machines should be paramount to reduce hours used on such errands leaving more time for women and girls to engage in other productive activities such as education. Women groups should be financed and motivated to purchase big animals where they can own and sell as a group and monies

deposited in the group account. Indigenous knowledge should be explored to give insight on how different men and women cope with climate and vegetation change. Knowledge can be used as a stepping stone towards a greater gender participatory approach. Awareness training for gender transformation is key so that women can own and participate in selling of large animals. Additionally, market space should be gender responsive with fully furnished Crèche's to take care of women gender roles to enable them participate fully in the selling process. Improvement of apiculture Countywide Bee keepers supported with modern hives and harvesting equipment. Alternative fuels such as Charcoal briquette should be introduced to reduce cutting down of trees and land degradation.

4.4.3 Baringo County

Baringo is another of ASAL counties in the country and one of the 14 Counties in the Rift Valley region. It borders West Pokot to the North West, Turkana County to the north, Samburu to the N.E, Laikipia to the East, Nakuru to the south, Kericho and Uasin Gishu to the S.E, Elegeyo. Just like other ASAL counties the communities living in the region are nomadic pastoralists. Review of the 2017-2018 Annual Development plan shows agricultural improvement of coffee trees hectares coverage, planting seedlings, food security intervention, increase of hay bales and ATC infrastructure improvement. However, the report does not show how the acreages were distributed between men, women and youth farmers. Similarly, the modern guest houses build in the ATI does not specify gender of beneficiaries. Observably, men benefit the most because they form majority of the development committee members. Therefore, there is need to engage the stakeholders in both agriculture and livestock productivity. Men, women and youths' opinion should be sought in deciding what new crops and animal breeds should be introduced in the family for project sustainability. If new breeds are imposed on women, yet, they add little value to their lives, they might be construed as additional burden with likelihood of project failure. There is need for capacity building for the county officials so that the county government through the relevant ministries allow equal gender inclusivity in the Agricultural and livestock development within the selected sub-counties and wards. This would be preceded by gender sensitization awareness campaign to explain the importance of gender equity and inclusivity in the proposed projects.

In addition, there should be sensitization meetings prepared along gender lines to create understanding on the importance of tourist attraction project within the region. Women, men, boys and girls should be educated to know their social and economic roles and benefits especially those around lakes Baringo and Bongoria. Men and women should be motivated to utilize their cultural knowledge and talents in creative art to prepare items to sell to tourists such as beadwork for women, dances for both genders. This will enable men and women to benefit equitably and appreciate tourist visit their county.

4.4.4 Samburu County

The county is mainly inhabited by Samburu community, but also have other groups such as Turkana, Somali and Rendille whose main economic activity is keeping livestock. They practise a seasonal migratory lifestyle in continuous search of pasture and water for their livestock, which provide them with milk, meat and blood for food as well as serving other socio-economic functions such as paying bride wealth.

Review of Samburu County documents such as NDMA, DRM and EDE MTPIII, BIG4 Agenda,Vision 2030,Kenya Consitution 2010,ASAL Policy-Sessional Paper NO 8 OF 2012 on national policy for sustainable development in, ASAL regions of Kenya, indicate various implemented

projects meant to mitigate impact of harsh climatic condition of the people. For instance, Ushanga Kenya Initiative Project was initiated, where women undergo training on bead making at Ltungai and malaso star beaders. The project trains only women with the aim of improving the Quality of Ushanga products. It is important that the usanga programs include empowerment topics to give women voice and agency to improve their livelihood and freedom of movement. E.g. does the program offered empower women's freedom to travel and be away to market their produce? What mitigation are put in place against COVID 19 and other calamities to buffer these women traders? Gender dynamics and analysis should be conducted and gaps addressed so that the women are able to participate and benefit in economic activities optimally.

4.4.5 Isiolo County

Isiolo County is located in the Upper Eastern region covering approximately 25,700 square kilometres. The county borders Marsabit County to the north, Wajir and Garissa counties to the east, Tana River and Meru counties to the south, and Samburu and Laikipia counties to the west. The county has three ecological zones, namely: semi-arid, arid and the very arid. The semi-arid zone covers part of Wabera, Bulla Pesa and some parts of Burat wards in Isiolo North Constituency and some southern parts of Kinna Ward in Isiolo South Constituency. Isiolo receives rainfall ranging between 400 and 650mm annually. This makes important to have climate smart interventions programs to better the livelihood of the people of Isiolo County.

Review of NDMA, DRM and EDE MTPIII, BIG4 Agenda,Vision 2030,Kenya Consitution 2010,ASAL Policy-Sessional Paper No 8 OF 2012 on national policy for sustainable development in ASAL regions of Kenya, as well as county annual development plan documents indicates various climate smart intervention initiatives projects. These projects include Livestock development, Irrigation, tourism, Solar and wind power. This according to EDE for IGAD Drought Disaster Resistance Sustainable Initiative (IDDRSI) MTPIII, vision 2030 is intended to ensure livestock take-offs and food relief, reduce hunger for livestock export zone, to have drought resistant crops, upscale livestock insurance to all ASAL counties, reduce over reliance on rain-fed production, introduce drought resistant crops as well as have fodder storage to reduce overreliance on rangeland during drought. However, it is important that these projects are gender responsive for gender equality and sustainable development. For instance, insurance should not only be for male dominated animals such as cows and camels but also to include all animals including goats, sheep, donkeys and chicken owned by women.

There are irrigation schemes such as Gafarsa Irrigation Scheme in Garba Tulla Sub-county. Communities in the irrigation scheme engage in rearing of livestock and crop farming. Livestock kept included cattle, goats, sheep, camels, donkeys and chicken. Gender division of labour in the region is such that men engage in daily herding of all animals except for the donkey which are completely under the care of the women. There are gender differentials in ownership and control of means of production. According to ministry of agriculture anthropology report of Isiolo County (2015), livestock resources are owned by men, women own and control donkeys and chicken which fetch low prices in the market, noteworthy is that women could also sell goats. Utilization of natural resource is gendered for instance, while trees are controlled by men who derived timber from it, women use trees as source of firewood. Therefore, any vegetation change will result to gender differentiated impact, with women mostly affected because they have to travel longer distances in search of water and firewood for family survival. As such, it is important to ensure gender mainstreaming in Land management programs where men and women's need, views and opinion are considered, as well as social inclusion of both gender at all levels of the project. Taking that into consideration will ensure

gender differentiated land use, needs and concern are address in the project that will result to equitable benefits for both men and women.

4.4.6 West Pokot County

West Pokot County is one of the 14 Counties in the Rift Valley region. It is situated in the North Rift along Kenya's Western boundary with Uganda border.

Review of NDMA, DRM and EDE MTPIII, BIG4 Agenda, Vision 2030, Kenya Consitution 2010, ASAL Policy-Sessional Paper No 8 oF 2012 on national policy for sustainable development in ASAL regions of Kenya as well as county annual development plan indicate various interventions to uplift living standard of the people in the region especially the dry lower zone. These projects relate to Agricultural, livestock productivity and fisheries development. There is Kaminia Irrigation Scheme where they grow maize, beans, sorghum and millet during long rains from March to May while onions, tomatoes, beans, green maize, kale, cabbages, black nightshade, cassava, bananas and cow peas are grown during short rains from August to October. Women and children provide the bulk of labour required for cultivating food crops while the men participated in cultivating high value crops, particularly onions. Although Men and women participate in production activities, marketing of the produce is male dominated.

Livestock kept are cattle, goats, sheep and poultry (chicken). Most of the routine livestock production activities are carried out by women and children. Women mainly undertook watering, herding, milking and selling of the milk. The income from sale of milk and manure are used to meet household needs. It is women who fetch firewood and water; cleaning the compound, laundry, preparing food, taking care of children and constructing/repairing household shelter. Observably, women are workload is overbearing with very low returns for the labour offered. It is women and girls who perform tedious and drudgery domestic chores and caring roles, yet still engaging productive activities. One can say that women are overwhelmed with gender expected roles and differentiated workloads that require redress. Projects should be gender responsive so that the planers use gender lenses to interrogate both intended and unintended outcome right from project planning phase throughout the project cycle. Doing so will guide in coming up with gender responsive strategies that addresses unintended outcomes like women's increased workload.

Review of the 2017-2018 Annual Development plan shows a cash crop establishment of 17 acreages for planting of sisal in Pokot North, Pokot Central, Chapareria and Riwo Ward but lacks gender disaggregated data to show how the acreages were distributed between men, women and the youth farmers. Similarly, the Dairy cattle breeds supplied to Chapareria Ward, there is no disaggregated data indicating the beneficiaries among men and women as well as how the youth would benefit. The Sahiwal breeds and Galla goats distributed farmers in Pokot North, Pokot Central, Pokot West and part of Pokot South sub-county lack sex disaggregate and marketability of newly non-traditional introduced animals should be facilitated to the farmers, men women, boys and girls for uptake and sustainability. Similar awareness programs should be done for the proposed development in indigenous crops and cash crops and their distribution to farmers in selected wards.

The need to engage the stakeholders in both agriculture and livestock productivity, men, women and youth in deciding what the new crops and animal breeds to be introduced in their contexts hence involve them in the distribution of the seeds and the breeds. The need for capacity building for the stakeholders in their gender dynamics on how to implement the new crops and new breeds in their livelihoods. The county government through the relevant ministries to allow for equal gender inclusivity in the Agricultural and livestock development within the selected sub-counties and wards.

This would be preceded by a gender sensitization campaign to explain the importance of gender equity and inclusivity in the proposed projects.

The proposed capacity building and training of 500 traders requires a breakdown in terms of sex disaggregated data and gender analytical information. The ADP has proposals for the construction of cultural centres and curio shops to benefit the county communities; music recording programs as well as programs for the support of the elderly. All these programs require gender analysis tabulated on how they will benefit men, women, youth, boys and girls respectively.

The need to develop education programmes for men women, boys and girls of all ages and stakeholder groups within small scale trading, boda boda riding, making of beads, so that they could have equal chances of benefitting from the constructed structures for the same. There is need for to develop capacity building for youth and women in entrepreneurial skills for setting up business and also to help them access devolved funds development of entrepreneurial skills for setting up businesses but also to access development funds (UWEZO, Youth and Women.

There is need for the county governments, through the relevant departments to apply the participatory approach on the stakeholders inclusive of men, women, youth, boys and girls to encourage them to show case their culture through talents in traditional art forms, music and any other activities that would enable them make use of the cultural

4.4.7 Gender Equality and Social Inclusion for the Six ASAL County Projects.

For success of any intervention projects in ASAL regions, there should be a stakeholder's engagement plan and gender analysis of the targeted community should be carried out during planning and implementation phase. A detailed analysis of gender division of labour, access and control profile, gender power relationship, gender and cultural norms is important to ensure gender equality and social inclusion of both men and women as beneficiaries of the intervention project. These analyses should include what entails food and diet description in targeted community. For example, Boranas do not eat certain kinds of food such as fish, birds, reptiles or insects. Most communities don't eat rabbits, it is seen a boys' activity and if it is eaten then, it should be prepared and eaten far from home. As such, projects will only succeed if the targeted groups, identify with them and can own the process offering their knowledge and skills as well as availability of market demand of the produce.

Need for a holistic socio-economic analysis that addresses gender relations to fully understand the situation and ensure that the projects promote gender equality. This might involve understanding the perceptions of women and men of the environment, a sex-disaggregated account of activities performed and their effect on the environment, and the uses men and women make of natural resources, such as land, forest, vegetation, animals, and water. The lack of a gender analysis in economic policies can result in women's perspectives and priorities being left out of strategies for development. This means understating gender differentiated indigenous knowledge and use of resources is key gender inclusivity and automate gender equality for sustainable development.

4.4.7 Recommendation for Market

Women and men trek long distance to sell animals to the market. Because of gender roles, norms and values, men and women encounter different experiences, needs and wants in the whole activity. While men negotiate and sell big animals. Women sell chicken, eggs and milk and purpose with their children on the back or kept nearby.

To ensure both men and women participate in market activities and market space equitably, there is need for crèches to be constructed at every market outlet. This will ensure that children have safe and secure environment and enable mothers to participate maximum in the selling process. Gender transformation awareness programs to be facilitated so that women can also own and control big animals as well as sell them so that they can achieve economic empowerment. This is because unlike chicken, cows, camel, goats and sheep fetch good prices in the market.

4.4.8 Recommendation to Reduced Women's Workload

These is a clear indication that women beside reproductive roles which are drudgery and time consuming, women are also expected to participate in productive and community roles. Therefore, introduction and implementation of climate smart intervention projects require parallel women specific programs to address women work load as well as other socio-cultural impacts that result from change in lifestyle and activities. The workload suggests that labour and time saving interventions should target crop farming, herding and fetching firewood. Possible interventions include mechanization, and alternative sources of fuel to firewood

4.4.9 Recommendation Gender Violence Recovery Centers

Gender Based Violence: This basically took the form of wife beating which was traditionally accepted as a disciplinary measure and an expression of gender power relations in the household. But the community knew that statutory law does not allow it. Men caned their wives on the legs using a special stick cured by being placed in cow dung to make it strong and durable. Sedentary lifestyle for a pastoral community resulting from introduction of fodder and pasture projects, increase workload for women, change social interaction dynamics and affect gender power relationship within the household.

4.4.10 Population disaggregated by Gender and by educational level

Education equips people with the capacities to make informed choices about their lives and a positive contribution to society. It facilitates the realisation of other rights, provides an exit out of poverty, and reinforces social cohesion and integration. Educated women challenge social norms and invest in the health and welfare of their families and in the education of the next generation. And in pastoral areas in particular, where the productivity of the livelihood system requires an appropriate balance between people and ecology, education is an important route out of pastoralism. For all these reasons, education is fundamental to development in Northern Kenya and other arid lands.

The status of formal education in Northern Kenya is generally poor. Learning facilities are inadequate: there is no university, only one teacher training college, one technical training institute, and very few Technical, Industrial, Vocational and Entrepreneurship Training institutes. The number of teachers is insufficient, with very few recruited locally, and there is little attention paid to Early Childhood Development. As a result, the region achieves very low rates of enrolment, transition, completion and literacy, and performs poorly in the national exams.

The situation is generally worse for girls than boys, given the subordinate status of girls and women in most pastoral societies. In addition to their domestic responsibilities, certain cultural practices such as female genital mutilation and early marriage curtail girls' education. However, the ratio of women to men with no educational attainment is actually lower in pastoral areas than at the national level, suggesting that a lack of educational opportunities in the areas where they live may be as important a constraint on girls' education as social or cultural barriers. According to the 2003 Demographic and

Household Survey the ratio in North Eastern Province was 100 men to 132 women, against a national ratio of 100:145.

The educational participation of pastoral children in particular is low, in part because families must weigh up the relative costs and benefits of a child being separated from the informal learning that takes place within their community for a formal education that is not yet delivering. The region's low transition rates to secondary and university levels should be understood in this light. Eight years of school-based learning in the primary system give students insufficient qualifications to compete satisfactorily in the job market, but leave them without the skills they need to return to a pastoral way of life. They end up being caught between two worlds, lacking the capacity to flourish in either. There have been some important positive steps to accommodate mobility, such as the mobile schools supported by the Ministry of Education, but the quality and utility of these is limited; they provide an education only up to Standard 3, and their teachers have had inadequate training. Moreover, the uniform curriculum does not reflect the day-to-day diversity of learners' lives across the country.

5 POLITICAL AND INSTITUTIONAL FRAMEWORKS FOR NATURAL RESOURCE MANAGEMENT

5.1 Environmental protection and sustainable development

5.1.1 National policy shift

Over the years, there has been a paradigm shift in conservation and natural resource management in Kenya, from the central government to Community-Based Natural Resource Management (CBNRM) approaches. CBNRM as a form of decentralisation, is expected to be more effective and efficient in attaining sustainable utilization of natural resources and promoting environmental justice when compared to state-centric approaches.

Under devolution, communities in Kenya have more control and right of participation in decision-making as well as governance matters. CBNRM has not always been effective in achieving equitable and sustainable natural resource management. This is because there are other factors, relating to its implementation and especially the reconciliation of social and environmental goals, which are to be considered. These factors include equity, empowerment, conflict resolution, knowledge and awareness, biodiversity protection, and sustainable resource utilization. The success of CBNRM can also greatly benefit from tenure security, clear ownership, congruence between biophysical and socioeconomic boundaries of the resources, effective enforcement of rules and regulations, monitoring, sanctioning, strong leadership with capable local organization, expectation of benefits, common interests among community members, and local authority. As such, these factors should be adequately addressed if there is to be any tangible positive change in the way natural resources are managed within the devolution framework.

At the heart of the objectives of devolution, is the promotion of environmental justice in exploitation of natural resources. Devolution gives powers of self-governance to the people and enhances public participation in the exercise of the powers of the State and in making decisions affecting them; recognises the right of communities to manage their own affairs and to further their development; protects and promotes the interests and rights of minorities and marginalised communities; promotes social and economic development and the provision of proximate, easily accessible services throughout Kenya; ensures equitable sharing of national and local resources throughout Kenya; and facilitates the decentralisation of State organs, their functions and services, from the capital of Kenya. Devolution was thus expected to address the main challenges facing the struggle for environmental justice in Kenya especially in relation to natural resources management.

5.1.2 Environment protection

The Kenya Strategic Investment Framework on SLM (2017-2027) addresses the rainfall in Kenya, which has become highly variable with increased climate variability and occurrence of extreme events. The climate is also influenced by El Nino events, becoming wetter in October to December in ENSO events and drier than average in La Nina years. For instance, the long rains in central and eastern Kenya have declined more than 100 millimetres since the mid-1970s86. A warming of more than 1° Celsius may exacerbate drying impacts, especially in lowland areas. The drying trends could particularly impact on critical crop growing areas in eastern and central Kenya where prime arable land could diminish substantially. For the ASALs, climate change could reduce the growing seasons for pastures and cause drying up of water sources, particularly in the longer term i.e. 20-50 years. Moreover, the number of rain-days has reduced meaning more intensive storms are experienced, especially in the ASALs, where seasonal rainfall has also declined87. As a result, climate change affects land degradation

in many ways, including escalating wind erosion due to drying of land and loss of natural vegetation. These phenomena continue to impact other sectors including agriculture, health and water resources.

5.1.3 ASAL Counties highlights on Traditional Land Management

With nomadic pastoralism being the typical land use in the ASAL Counties[5]Traditional land management in these areas is characterised by open grazing, livestock mobility in search of water and pasture. It is this mobility that allows for natural rangeland regeneration. Regulating stocking rates is not common. This explains why many animals die during severe drought events. Mwakubo (2002)[6] observed that traditional land management devoid of secure land tenure is likely to undermine investments in SLM in ASAL areas. Today this practice is supposed to be guided and regulated by the community land Act 2016. Traditional land management is also built upon proven tacit knowledge (indigenous knowledge systems) that any current intervention in such ecosystems cannot afford to ignore. Other traditional land management practices that could be observed across agro-ecological zones include:

1. Subsistence farming based on seasonality
2. Mixed farming (crops and animals) and benefiting from the symbiotic relationship inherent in this natural production system, including spreading of risks
3. Limited investment in sustainable land management measures as evidenced by much denuded land (complete loss of topsoil and presence of gullies).

Although sustainable land management practices can potentially improve yields (livestock and crop products) their adoption is dependent on the benefit return period and the cost implications. Work by greengrowthknowledge.org[7] indicated that manuring and intercropping quickly deliver universal benefits and can be implemented within a short period. On the other hand, terraces and agroforestry take longer to provide benefits, and the yield effects are smaller. In ASAL areas, manuring will be more applicable in crop farming while prevention of physical rangeland degradation still requires attention. As mentioned in preceding sections above, the aspect of formulating and enacting policies, laws and strategies on sustainable land management has been largely a success. Reviews of such land governance frameworks is the norm. However, it would seem that the challenge of persistent land degradation is not lack of legislation, policies and strategies, but rather the lack of political will to implement them, monitor and evaluate their performance and make necessary adjustments as may be necessary. Devolution of agriculture from the national to county function has resulted in the weakening of the extension service which was previously very instrumental in SLM programmes and in particular soil and water conservation/management to county

[5] Jaetzold, R., Schmidt, H., Hornetz, B and Shisanya C. 2007. Farm Management HandBook of Kenya. Natural conditions and farm management information (2nd Edition)

[6] Mwakubo S M, 2002. Paper prepared for the International Association of Common Property Resources, Common Property Resources and Globalization, Victoria Falls, Zimbabwe. https://land.igad.int/index.php/documents-1/countries/kenya/rural-development-3/803-land-tenure-and-farm-level-soil-conservation-in-semi-arid-areas-kenya/file

7 Policy Brief - Sustainable land management in Kenya: practices to enhance yields. https://www.greengrowthknowledge.org/sites/default/files/downloads/best-practices/pb_2016-08_kenya_03_web.pdf (accessed 10th March 2021)

According to the Soil and Water Conservation Handbook of Kenya, 2016, a "no approach" to SWC was adopted from 2009 to date based on the assumption that SWC activities would be mainstreamed into all national agricultural programmes and projects. This has rarely been done, with the net effect of relegating SWC to the periphery of the national development agenda leading to widespread degradation of soil and water resources. A key outstanding challenge is thus the need to revive SWC activities within a synergistic partnership between the national and county governments, now that agriculture is a devolved function.

In terms of institutional capacity for sustainable land management, Kenya is supported by a variety of functional institutional frameworks (i.e. A multi-agency/multi-sector approach) including but not limited to:

1. National government and its line ministries such as**:** Ministry of Agriculture, Livestock and Fisheries; Ministry of Land, Housing and Urban Development, Ministry of Environment, Water and Natural Resource, and Ministry of Devolution and Planning[8]. Policy documents developed by the national government are being domesticated to the county level.
2. National Irrigation Board as lead agency in irrigation upscaling
3. National land commission advises on all matters land use on behalf of government
4. County government ministries in charge of land, agriculture and environment[9]
5. Various government lead agencies like NEMA, Kenya Forest Service[10]
6. Community-based institutions for land management especially in the ASAL counties are the focus of this feasibility study.
7. The Kenya Land Alliance[11] is another key stakeholder in the SLM agenda in Kenya

5.2 Agricultural development and valuation of natural resources

5.2.1 The national agenda

The human right to food in Kenya is provided for in Article 43 of our Constitution, which anchors the policy, legal and regulatory frameworks of the ASTGS i.e., "Every person has the right to be free from hunger, and to have adequate food of acceptable quality." – Article 43, Constitution of Kenya (2010)

[8] https://www.president.go.ke/the-presidency-2/the-executive-cabinet/, https://www.kenyaembassyaddis.org/about-kenya/government-and-political-system/government-ministries/

[9] http://www.parliament.go.ke/sites/default/files/2017-05/CountyGovernmentsAct_No17of2012_1.pdf

[10] https://www.landcommission.go.ke/, http://landcommission.go.ke/media/erp/upload/nationallandcommission5of2012.pdf

[11] http://www.kenyalandalliance.or.ke/

The Constitution further embraces sustainable exploitation, utilization, management and conservation of the environment and natural resources, and identifies sustainable development as an important value and principle of governance.

This strategy supports policies that address food and nutrition security with alignment to county-level CIDPs, the NAIP and MTPIII, while maintaining coherence to overarching development blueprints including the CAADP Malabo declaration, the SDGs, the AU 2063 agenda and various regional and continental trade arrangements that affect agriculture, including the recently signed Africa CFTA.

5.2.2 Contribution to Sustainable Development Goals

As governments in the Horn of Africa take on board the 2030 Agenda, the SDGs – including SDG16 (includes targets that address drivers of conflict such as injustice, corruption and political exclusion) – are being reflected in new development plans. Kenya has 'mainstreamed the SDGs into its third Medium Term Plan (2018-2022)', and has launched a national roadmap for SDG implementation.

5.2.3 Linkages with IGAD Regional Strategy (2016–2020) and Regional Programming paper (2019–2024)

The Strategy for Agricultural Transformation in Africa 2016-2025 (AfDB, 2016) identifies the strengthening a broad range of value chains as a long-term enabler for attaining its goal. However, in the near term, AfDB proposes resources be focused on selected priority agricultural value chains (AVCs) and related agro-ecological zones (AEZs). This in ASALs can Leverage the potential of un- / under-tapped opportunities in order to close the gap between what they produce today and what they can sustainably produce. The Bank targeted to catalyze land tenure reform and scale up climate-adaptive agricultural practices. In the current project the focus priority value chains in livestock and complementary subsistence crops can be addressed.

It is worth noting that Value Chain Approach works up from untapped market opportunity at the grassroots level and uses the enabling environment as a catalyst to develop long-term market growth, inclusive development, and food security.

Realisation of these regional strategies need to address "True Development Corridors" which allow for clustering of investments and interventions ("densification") and incorporate all sectors including agriculture, as envisage in the IGAD IDDRSI Strategy (2019 – 2024). With the accompanying enabling environment issues addressed, much progress can be made.

5.3 Sustainable Land Management

5.3.1 Status of Physical Land Degradation / Reclamation/ Land-use Pattern and Tenure

The status of land degradation in Kenya is well documented. The importance of responding to the challenges of land degradation as attested to by Kenya being a signatory to the Land Degradation Neutrality (LDN) framework. LDN has been defined as a state whereby the amount and quality of land resources, necessary to support ecosystem functions and services and enhance food security,

remains stable or increases within specified temporal and spatial scales and ecosystems[12]. LDN is therefore assessed and monitored based on three key indicators:

1. State of land cover
2. Land productivity (metric: net primary productivity);
3. Carbon stocks above and below ground (metric: soil organic carbon (SOC) stock).

Negative changes in the above indicators communicate the risk of failure to achieve LDN. As a signatory to the UNCCD, LDN concept in Kenya has been addressed through various environmental initiatives spearheaded by the government (Minister for Environment and Forestry), development partners, NGOs and research institutions. Already a land degradation assessment has been conducted in several parts of the country and degradation hotspots identified as a way of providing remedial entry points. Nationally LDN is to be achieved by 2030. Specific targets to avoid, minimize and reverse land degradation[13] include:

1. Increase forest cover through Afforestation/Agroforestry in existing forests; areas of shrubs/grassland; wetlands; croplands by 5.1 M Ha
2. Increase by 16% net land productivity in forest, shrub land/grassland and cropland showing declining productivity; achieved through SLM practices
3. Increase soil organic carbon by 319626 total tonnes in cropland land use achieved through SLM practices
4. Halt the conversion of forests to other land cover classes by 2030
5. Rehabilitation of all abandoned mining and quarrying areas through enforcement of by-laws

Sustainable land management practices have been initiated in different parts of the country to control land degradation, but the trend is still worsening especially in ASALs (GoK, 2016)[14]. By 2010 about 10.8 million people in the rural areas were living on degrading agricultural land. The annual cost of land degradation in Kenya is estimated at 1,5 billion USD. Pressure on agricultural land through intensive use, extractive industry and conversion to non-agricultural uses remain key threats to the realization of LDN.

5.3.2 Overview of Land Management Projects Over the last Ten Years

A review of literature[15] of the IGAD selected counties in Kenya shows that a few interventions have been proposed, partially implemented and others fully implemented to end the worst of sufferings caused by droughts. However, it is worth noting that actual projects that directly address SLM are scanty and generally non-existent. This is indicative of SLM interventions documented in policy and

[12] https://www.unccd.int/actions/achieving-land-degradation-neutrality#:~:text=Land%20Degradation%20Neutrality%20(LDN)%20has,and%20spatial%20scales%20and%20ecosystems.

[13] Republic of Kenya (2017). Land Degradation Neutrality Target Setting Final Report

[14] GoK, 2016 (a). Land Degradation Assessment for Sustainable Land Management in Kenya. Government of Kenya

[15] CIDP (ADP) 2019-2020. http://www.baringo.go.ke/ (Accessed on 23rd January 2021); http://www.westpokot.go.ke/ (accessed on 23rd Jan 2021); https://www.turkana.go.ke/wp-content/uploads/2016/10/Turkana-CIDP-Final-1.pdf; CDP Samburu, https://www.samburu.go.ke/; County Annual Development Plan (CADP) 2018/19. https://isiolo.go.ke/

strategy guidelines not finding their place at implementation phases. This can be attributed to land degradation being an insidious process and thus not easy to detect. It thus becomes marginalised. Hitherto, priority interventions in these ASAL counties appears to emphasis the following areas at the expense of the resource base upon which their future is hinged (Quality Land):

1. Investment in rural physical infrastructure with emphasis on irrigation, water harvesting and storage technologies like dams, water pans and boreholes
2. Livestock industry being the most popular livelihood activity in ASAL counties
3. Investment in physical infrastructure like roads and County Buildings
4. Human resources development and administration.
5. Rehabilitation and reclamation of more land for irrigation agriculture.
6. Community health
7. Operationalization of drought emergency funds
8. Environmental recovery and conservation through tree planting and management of invasive species like *prosopis juliflora*

The matrix below summarises initiatives that have been proposed, attempted, are on-going and what in the opinion of the consultant has potential to add value in reducing drought emergencies in the 6 ASAL counties from a sustainable land management perspective (i.e. use, care and improvement of the land resource)

Resilience and Food Security Activities in the context of Sustainable Land Management
1. Baringo County. Source: *CIDP (ADP) 2019-2020. http://www.baringo.go.ke/ (Accessed on 23rd January 2021)* Projects initiated and at different levels of completion: 1. Commercializing agriculture and livestock sectors towards economic empowerment for communities including dryland farming and irrigated agriculture 2. Construction of dams and establishment of irrigation schemes. 3. Recruit more agricultural extension officers to guide farmers. 4. Establishment of pasture farms and hay sheds to provide fodder during dry seasons 5. Invest in apiculture given the availability of Acacia tree 6. School greening programs where thousands of fruit trees (mango) have been planted. 7. Developed a model tree nursery at Mogotio that aims at propagating seedlings of rare indigenous tree species to boost county's indigenous forest cover. 8. Feasibility study on the status of soil erosion in the county revealed massive soil degradation which would cost a minimum KES 250 million to restore. Other potential projects that impact SLM include: 1. Livestock industry through group ranches 2. Horticulture (fruits and vegetable farming) 3. Medicinal and Aromatic Plants including Bulb onion, Spring onion, Chilies and Aloe. 4. Cereal crop farming with emphasis on drought tolerant indigenous varieties

Resilience and Food Security Activities in the context of Sustainable Land Management
5. Apiculture 6. Mining and extraction activities (ballast and stones, sand harvesting, murram)
2. West Pokot County. Source: *http://www.westpokot.go.ke/ (accessed on 23rd Jan 2021)* Sub-sector strategic priorities, programmes and projects for the fiscal year 2019/2020 in the context of SLM are: 1. Crop yield maximization, hence investment in soil fertility and water supply and prevention of land degradation. Conservation agriculture is mentioned 2. Greening Urban Centres by planting trees and flowers 3. Improving community resilience through irrigation schemes 4. Land afforestation (Agroforestry initiatives can add value) 5. Nutrition sensitive programming, diet diversification, kitchen garden expansion 6. Pasture & fodder development, which by implications touches on rangeland management including water supply 7. Protection of 4 conservancies in the county 8. Rain water harvesting through construction of water pans 9. Raising and selling of fruit tree seedlings such as mangoes, citrus and pawpaws (KVDA)
3. Turkana County. Source: *http://www.turkana.go.ke/ (accessed on 23rd Jan 2021); https://www.turkana.go.ke/wp-content/uploads/2016/10/Turkana-CIDP-Final-1.pdf* Specifically, flagship projects within SLM framework include: 1. To irrigate 15,000 Ha of land annually under the —Going Massive Programme to feed more than 1m people in Turkana County and this includes fencing 2. Recruitment of an extension officer with motorbikes per ward [with capacity to meet current SLM and agricultural productivity demands] 3. Promotion of 1000 greenhouse technology, multi storey gardens and kitchen gardens in institutions and suitable farming sites county wide 4. Soil and water conservation (riverbank protection agroforestry, tree nursery) per sub county
4. Marsabit County The summary of Capital Projects for 2018/19 FY does not have specifics on SLM, except purchase of certified seeds to support crop diversification. The County strategic priorities in the said financial year are novel and touch on the wider environment. As an example the county wishes to modernizing agriculture, through reduced reliance on rainfed agriculture. Hence rehabilitation and expansion of existing irrigations schemes and establishment of new irrigation schemes in areas with irrigation potential. Key areas of intervention where-in SLM will play a role include: 1. Management of prosopis juliflora 2. Ecosystem greening programme (Tree planting) 3. Gully erosion control via check dams. 4. Increased acreages under traditional drought tolerant and emerging crops such as teff, cassava, sweet potatoes, jatropha, sorghum, millet etc.

Resilience and Food Security Activities in the context of Sustainable Land Management
5. Diversification of food sources 6. Increased productivity per unit areas implies investment in fertiliser and water use efficiency
5. Samburu County. Source: CDP Samburu, *https://www.samburu.go.ke/* SLM issues must revolve around rangeland management, production of drought tolerant crops and overall environmental conservation. Specifically: 1. Rangeland management covered under the ministry of environment and natural resources. 2. Livestock industry is typical and takes precedence. Water supply through water pans. 3. The department in partnership with Food and Agricultural Organization (FAO) also carried out capacity building on Holistic Rangeland Management at Seyia Area (Kirimon Group Ranch). This involved training and practical demonstrations of Group Ranch, Community Conservancies and Grazing Management committees on the concept of holistic management for planned grazing. 4. Water supply is a core area for development. RWH, underground water abstraction, storm water management, etc. Waste [water treatment] 5. Need to open up more land for crop production is mentioned. Micro-irrigation systems would be good entry points to boost popular area crops like Certified maize, beans, Irish potatoes and traditional high value crops seeds, sorghum, fruit trees etc. 6. Protect, conserve and manage the environment sustainably is indicated in priorities with focus on land rehabilitation through clearing of invasive species 7. Establishment of woodlots and hence tree nursery projects 8. Catchment conservation and gully erosion control. (An erosion hazard survey would establish current status, and lay out appropriate intervention measures) 9. Need to strengthen extension service.
6. Isiolo County. Source: *https://isiolo.go.ke/; County Annual Development Plan (CADP) 2018/19* 1. The first key strategic priority based on CIDP is how to enhance food security, sustainability of livestock based livelihoods and commercializing of livestock and crop production. 2. Training farmers in land management & soil fertility improvement including soil testing has been critical and on-going. A weak extension service has been a major challenge. 3. Having well planned and organized spaces with clearly defined land uses and boundaries is key to overall county development across sectors. Investment in land use planning at constituency levels will be key for real development in this county. 4. Promotion of urban and peri-urban agriculture in all Wards. Most populations are likely to gravitate in town centres and increasingly adopt sedentary life styles. 5. Rainwater harvesting and storage are very critical investment areas. Water supply to support multiple sectors: Livestock, kitchen gardening, health, education 6. Livestock industry is key for enhanced livelihoods. Hence holistic rangeland management, including erosion control and enhancing soil moisture 7. Alternative income generation, including value-addition projects 8. Inherent in the strategic priority of "Energy Environment, Natural Resources & Climate Change" is overall protection and conservation of the environment/ecosystem/catchments/watershed including riparian areas.

Although aspects of SLM are captured in such themes like sustainable livelihoods, natural resources management and environmental management in the integrated county development plans, specific projects that address problems/challenges of soil erosion, soil fertility maintenance and soil moisture conservation, rehabilitation of derelict land like gullies are scanty or silent. Nevertheless, based on document[16] analysis, the following SLM activities (projects) have potential to significantly contribute to efforts for ending drought emergencies in the ASAL counties and should be included in Phase 2 planning and funding, thus:

1. County land use planning all the way to sub-county and catchment levels. This would zone land to various most suitable uses and protect unique ecosystems while optimizing livestock industry and emerging crop farming. Inappropriate land losses to physical infrastructure would also be checked.
2. Land degradation / soil erosion hazard surveys in order to plan for appropriate and timely soil and water conservation measures for both cropland and rangeland. Specific interventions to stop gully erosion and rehabilitate gullied areas is highly recommended.
3. Farmland and rangeland conservation through appropriate soil and water conservation strategies and approaches
4. Insisting on ecological carrying capacities in the livestock production and value-addition industry.
5. Investment in ecologically suitable crops under planed irrigation systems.
6. Planning and implementing SWC measures in fields earmarked for irrigation agriculture before commencement of actual irrigation
7. Investment in a series of dams on the seasonal rivers to check flush floods and make this water available for other purposes like watering animals, micro-irrigation, establishment of wooded settlements in proximity of water points.
8. Investment in wooded settlements around water points through strategic agroforestry projects
9. Investment in micro-catchments rainwater harvesting systems for rangeland conservation
10. Integrated soil fertility management with emphasis on a symbiotic relationship between the dominant livestock industry and emerging crop farming. The use of readily available manure for farm application and commercialization for income generation are open options.
11. Deliberate enhancement of apiculture value-chains as a way to reduce pressure on land and water, while boosting household incomes
12. Open up these areas as community driven eco-tourism destinations with focus on scenic beauty and culture. This will reduce pressure imposed on land through crop and livestock production systems.

[16] CIDP (ADP) 2019-2020. http://www.baringo.go.ke/ (Accessed on 23rd January 2021); http://www.westpokot.go.ke/ (accessed on 23rd Jan 2021); https://www.turkana.go.ke/wp-content/uploads/2016/10/Turkana-CIDP-Final-1.pdf; County Annual Development Plan (CADP) 2018/19. https://isiolo.go.ke/

13. All County capitals to invest in urban waste water treatment to tertiary purification, which would allow this reclaimed water to be used all year round for urban and peri-urban irrigation agriculture.
14. Early warning systems towards land management decision-making. This calls for integrating climate service advisories in the devolved extension service
15. Re-invigorating public extension service that seems to have been marginalised after the devolution of agriculture.

6 EXPLOITATION OF NATURAL RESOURCES (NATIONAL LEVEL)

6.1 The potential of water resources

Based on current water demand and future national development plans, it is estimated that Kenya could face a 31 percent gap between water demand and practically available water supply by 2030 (see Figure 2 below).1 This assumes that investments in increased water supply will follow a business-as-usual pathway, while demand for water will grow as required to achieve Vision 2030 development targets. If supply side investments also match development plans, the gap can be closed at a national level, although catchment and sub-catchment gaps will remain.

6.2 Soil suitability for cultivation

As expected the soil types are varied based on geographic location and topography. Most grazing land are hilly with rocky terrain while land close to streams is dominated with friable sandy loams and clay loams. The low lands are suitable for cultivation of a variety of crops like maize, beans, vegetables, mangoes, water melons, onions among others. Availability of water that satisfies crop water requirements is the main limiting factor.

6.3 Diagnosis of crop production

The production of food crops in Kenya plays an important role in Kenya's economic development as a major source of food, income, employment creation, and saving on foreign exchange expenditures through import substitution. Food Crops subsector contributes approximately 33% of the total agricultural GDP. This sub-sector is a major occupation of the rural population and accounts for a large share of the total agricultural output. The food crops sub-sector provides national food and nutritional security and income generation through the local markets. This sub-sector plays a significant role in the delivery on the Sustainable Development Goals of reducing poverty and hunger, as well as meeting the aspirations encapsulated in various Kenya Government policy documents such as Vision 2030 and the Agriculture Sector Transformation and Growth Strategy (2019-2029).

The total annual Food Crop production for 2019 was 10.5 million tons supporting millions of households. Crop diseases, pests, and weeds greatly reduce the potential of these crops both in quality and quantity. Currently, losses due to these constraints are estimated at over 30%. Efforts to increase production and reduce these losses should take cognizance of the need to conserve the environment. The food crops sub-sector does not currently meet the country's demand for food commodities. Kenya continues to import large quantities of food products to meet the high demand for local consumption.

The main food crops in Kenya are maize, wheat, rice, potatoes, Green grams, and beans. Maize is the principal staple food of Kenya and it is grown in 90 percent of all Kenyan farms while the common bean and the Irish potato are the most important legume and tuber crop respectively.

As a strategy to reduce pressure from reliance on maize, the Government of Kenya embarked on diversification and floor blending of maize and wheat by sorghum, millet, cassava and sweet potatoes. Flour Blending Initiative is part of Kenya's "Big 4" Plan aimed at contributing towards food security, improve nutrition and increase employment opportunities in Kenya. These blends improve consumers' nutritional value by enhancing dietary diversity. For each agro-ecological zone in Kenya, ecologically suitable crops have been provided for planning purposes. However, with technology, farmers can venture into many other crops based on market dynamics and other factors.

6.4 Livestock and animal production sectors

Kenya is in the midst of unprecedented demographic, socio-economic, policy and technological transformations. In the next three decades, the country population is expected to double (96 million) and nearly 50 percent of the people to live in urban areas vis-à-vis 27 percent today. GDP per capita is projected to increase by over 140 percent by 2050. As a consequence, the demand for animal source foods will exponentially increase. In response to this demand, the livestock sector will deeply transform. Available projections suggest that, between 2015 and 2050, not only the cattle and chicken population will increase by 94 and 375 percent, respectively, but there will also be major productivity gains. By 2050 the livestock sector will supply an additional 7.8 million tonnes of milk, beef and chicken meat to the population, an increase of about 150 percent with respect to today (FAO GPS, 2018). Presently, there are several policies and strategies guiding the development of the country and its livestock sector, such as the Kenya Vision 2030, the Medium Term Plans for its implementation, the Big Four Agenda, the Agriculture Sector Transformation and Growth Strategy and the National Livestock Policy. Apart from the Kenya Vision 2030, these plans, policies and strategies are short to medium term and attempt to mainly address current issues and constraints.

The transformation of the livestock sector, however, is expected to be so rapid that existing policies and strategies might become inadequate in few years' time to steer a sustainable growth of livestock. The Government of Kenya – represented by the Ministries of Agriculture, Livestock, Fisheries and Irrigation, Environment and Forestry, and Health – and the Africa Sustainable Livestock 2050 of the Food and Agriculture Organization of the United Nations (FAO) have thus engaged stakeholders to articulate long-term livestock scenarios for 2050, that is to explore emerging long-term opportunities and challenges and inform the policy debate. These scenarios are four plausible stories about the future: they build on information on past Executive summary trends and long-term projections on societal and livestock dynamics to describe alternative possible structures of the cattle and poultry sectors and their likely impacts on public health, the environment and livelihoods. Livestock production systems in the different futures show marked variation. For example, not only the cattle population can either moderately or significantly increase in the different scenarios, but the share of cattle may increase from 10 to 45 percent in intensive systems and decline from 48 to 7 percent in extensive systems. In two scenarios, production levels increase tremendously, but with different level of intensification. Conversely, in two other scenarios, production levels remain low, with extensive production systems continuing dominating the livestock production landscape.

6.5 Exploitation of fisheries resources

Kenya's fisheries and aquaculture sector contributes approximately 0.54 percent to the country's GDP (2013). Fish consumption has been declining from a modest 6.0 kg/caput in 2000 to 4.5 kg/caput in 2011. The value of fish exports was about USD 62.9 million in 2012, or about 5 times greater than the USD 12.3 million in fish imports. In 2013, around 129 300 people derived their livelihood from fishing and fish farming activities (including 48 300 in inland waters, 13 100 in coastal waters fishing and around 67 900 in fish farming).

Total fishery and aquaculture production in 2013 amounted to 186 700 tonnes, with 83 percent coming from inland capture fisheries (of which Lake Victoria contributed about 90 percent). Catches of Nile perch - the most sought and mainly exported fish species – seriously declined due to overfishing after the 2000 peak at 110 000 tonnes but since 2007 stabilized around an average of 45 000 tonnes per

year. Marine capture fisheries produce less than 9 000 tonnes per year, comparatively much less than neighbouring countries.

Freshwater aquaculture development in Kenya in the new millennium is remarkable, especially in 2009¬2010, making Kenya one of the fast-growing major producers in Sub-Saharan Africa. From the annual production of about 1 000 tonnes in 2001–2006, the harvest of farmed fish leaped to over 4 000 tonnes in 2007–2009. In a nationwide fish farming mass campaign launched by government in 2009, the total area of fish ponds was increased from 220 ha to 468 ha by building 7 760 new fish ponds. Together with the improved seed supply and supports covering other aspects, it led to a hike in farmed fish production reaching 23 501 tonnes in 2013, more than four times of the production in 2009. The main species produced in 2013 was Nile tilapia (75 percent), followed by African catfish, common carp and rainbow trout. Mariculture is not yet practiced commercially, despite its potential demonstrated by trials.

6.6 Forest resources and Biodiversity

As expected in the ASALs ecosystems, annual rainfall total is generally low, distribution is erratic in nature, and sometimes extreme rainfall events occur, which cause severe flooding, erosion and other damages. Consequent to this, the sites are characterised with:

1. Scattered woody perennials dominated by Acacia species
2. Invasive species like *prosopis juliflora* becoming a challenge in isolated places.
3. The counties are rich in ASAL flora like cactus, aloe vera and many species of indigenous trees.
4. The hills and river valleys have good tree/forest cover, which are however threatened by poverty-driven charcoal burning.

6.7 Potentials and constraints of Natural Resource Management in the Country

Topography and soils vary across the counties. Due to low annual rainfall totals, which is also erratic, vegetative cover is poor, which causes inherent low soil organic matter content. The vegetation is the typical ASAL type of scanty woody perennials dominated with acacia species. Rivers are generally seasonal, though some counties are traversed by the perennial River Tana. As expected without deliberate investment in rainwater harvesting and storage technologies, water scarcity can be a real challenge. The hot climate makes investment in solar energy a plausible option for the future. The movement of livestock makes it difficult bulk manure and hence to invest in biogas. This could change should more sedentary livestock production be adopted. Emerging natural resources include petroleum like is the case in Turkana County. The sustainable management is however constraint by competing needs between communities and national government. Increasing population pressure coupled with changing community needs, and management of political power are the main constraints to natural resources management.

7 DETAILED DESCRIPTION OF PROJECT COMPONENTS

7.1 Activities to be carried out

7.1.1 Strengthening the resilience of drought prone areas and Pastoral and Agro-Sylvo-Pastoral Production systems to Climate Change

7.1.1.1 Support for Sustainable Management of Agro-pastoral land

A. sustainable agricultural land management

1. Sustainable agricultural land management,
2. Soil and water conservation
3. Studies to inform the carrying capacity of the environment
4. Landscape management in cross border areas
5. sustainable management of pastoral lands
6. Strengthening pastoral livelihoods-based monitoring and information systems
7. Improved surveillance and monitoring of transhumant herds
8. Restoration of degraded pastoral areas and lands

7.1.1.2 Development of Climate Resilient Infrastructure

B. Agricultural Infrastructure - adapting farming systems to climate change

1. Rehabilitation/construction of hydraulic infrastructure (water harvesting) small holder irrigation schemes
2. Rehabilitation /construction of rural feeder roads
3. Investments in irrigation - promotion of large scale PPPs
4. Development of improved seed production centres (agriculture/pasture and agro-forestry)
5. Technical and supervision study.

C. Pastoral infrastructure

1. Improving access to cross-border natural resources - pastoral water infrastructure, rangeland and transhumance routes,
2. Development of pastoral perimeters - rangeland development and rehabilitation,
3. Construction of livestock markets and vaccination parks and
4. Technical and supervision study.
5. Economic Diversification
6. Improved fishing, fish handling and fish processing infrastructure,
7. Support to PPPs to enhance investment and governance of fisheries
8. Support for development of diversified values chains – Honey processing and poultry farming
9. Technical and supervision study

7.1.1.3 Promotion of Climate-smart innovations and technologies.

D. Promotion and diffusion / vulgarization of CSA technologies

1. ICT-based agricultural management
2. Index based livestock insurance programme
3. Remote -sensing technologies
4. Integrated soil fertility management technologies
5. Breeding of stress tolerant crops
6. Knowledge management and technology transfer
7. Integration of ICT with climate forecasting, early warning and mitigation,
8. Facilitation of access to quality inputs

9. Access to risk-management tools, drought-resistant seeds, high-quality fertilizer, irrigation techniques, livestock-related assistance in hotspots,
10. Strengthening vaccination against major Epizootics
11. Agro-meteorological services for farmers and agro-breeders
12. Promotion of forage production.
13. Improved nutritional status of households
14. Improved social infrastructure- pertinent to health, nutrition, and education
15. Improved dietary diversity of targeted households
16. Landscaping of vegetable perimeters /nutritious gardens for women
17. Dissemination of good nutrition practices and
18. IEC campaigns on improving the living environment and population health.

7.1.2 Supporting Agribusiness Development,

7.1.2.1 Access to advisory services, financing and markets;

1. Establishment and operationalization of integrated agricultural services centres,
2. Setting up and equipping youth advisory service groups for support – advice to value chain stakeholders
3. Establishment of suitable inclusive financing mechanisms for famers and SMEs
4. Strengthening market access and trade
5. Supporting on the promotion of competitive, environmentally-friendly, regional and international driven chains of agri-food values.

7.1.2.2 Supporting Development of Entrepreneurship

1. Support the professionalization of agro-pastoral value chains actors and development of partnerships to facilitate access to regional and international markets,
2. Strengthening institutional capacities to encourage entrepreneurial approach to improve pastoral livestock production (e.g., cooperatives development, commodity-interest groups
3. Assistance in the design and implementation of sub-projects for the development of agro-sylvo-pastoral and fisheries value chains, (iv) support to establishment of youth SMEs,
4. Construction and equipping of small processing and marketing units for agricultural products and dairy products
5. Study and assembly of industrial processing units (animal products, cereals and fruits) and marketing of materials through PPP.

7.1.2.3 Promoting Domestic Bio-digesters and Solar Energy.

1. Support for the setting up of regulatory, institutional and policy arrangements at national level
2. Elaboration of a catalog of sustainable rural energies for agricultural transformation,
3. Information, education and communication on bio-digesters and solar energy and use of sub products - compost and effluent
4. Development of financing mechanisms for renewable energy sub-projects
5. Support for the establishment of a network of bio-digester manufacturers
6. Training of the youth and women in the development (manufacture), and application and maintenance of bio-digesters and solar energy systems
7. Development of a system of reliable information on the baseline and future status of sustainable energy access, and
8. Support for carbon certification.

7.1.3 Strengthening Adaptive capacity to Climate Change

7.1.3.1 Development of Climate Services

A. Improving the quality of climate data

1. Implementation and operationalization of an optimum network for observing and collecting hydro-climatic data in the region
2. Generation of hydro-climatic data at high resolution (databases, Geoportals, Geospatial applications, blending of data with satellite observations to improve spatial representativeness) and improved access for CCR products and services. They also include
3. Assisting NHMS in the development and implementation of national climate services (iv) Development and use of RS data products as spatial applications to drought risk monitoring and early warning towards disaster risk reduction in the Greater Horn of Africa region.
4. Updating of regional hydro-climatic networks database building on IGAD HYCOS
5. Strengthening the use of Doppler radars to improve rainfall monitoring and use of MODIS Vegetation Index Products from NOAA satellites in the GHA and
6. Development of livestock and crops index-based insurance data for use by small holder farmers/pastoralists.

B. Generation/dissemination of climate information and services

1. Development of hydro-climatic products and information
2. Development of a regional communication strategy for hydro-climatic information
3. Develop and strengthen integrated drought and fires, Armyworms, EWS at regional/national levels.
4. Development and dissemination of the five-year scientific reports on the State of climate in the Horn of Africa - IPCC Horn of Africa
5. Promotion of business models (PPP) for the production of hydro-climatic information services
6. Develop a different agro-climatic seasonal forecast services linking met agency with farmers through climate smart village (CSV).

7.1.3.2 Building capacity of stakeholders for mainstreaming and monitoring Climate Change

A. Knowledge development and dissemination

1. Strengthen regional climate monitoring and reporting systems,
2. Setting up and operationalizing a climate science group for the Greater Horn of Africa (GHA) region
3. Organisation of the scientific Fora on climate in the GHA region. They also include
4. Development of Climate Risk Mapping capability for the GHOA
5. Development of catalogues and digitalized platforms for good practices and technologies
6. Organisation of annual fairs of climate-smart agriculture practices and technologies for the GHOA.

B. Monitoring-resilience assessment

1. Training of NMHS focal points in use of ICPAC's prediction outputs and increased access and training on outputs from modelling centres
2. Strengthening of national monitoring systems-evaluation and dissemination of information
3. Development and dissemination of reports on the State of resilience in the Horn of Africa and
4. Support for coordination and monitoring IDDRSI.
5. support for the establishment of livestock and crops insurance
6. Feasibility study for regional and local climate insurance products and social safety nets to mitigate financial, agricultural, and health risks
7. Promotion of access to risk-management tools (incl. livestock and crops index-based insurance) by small holder farmers/pastoralists
8. Development of PPPs for establishment of insurance (regional national) in crop and livestock sectors.

7.1.3.3 Strengthening the Operational Capacity for resilience.

A. Development of tools and dissemination

1. Development of mapping of resilience actions in GHOA
2. Develop and expand payment for environmental services
3. Support for establishment of regional climate fund for the GHOA region.
4. support for IWRM in Selected Shared Small River Basins and Aquifers
5. Strengthening dialogue and technical capacity to establish cross-basin authorities in selected 3-shared river basins and 1 shared aquifer
6. Institutional capacities of BOs enhanced to support negotiations
7. Mapping surface and groundwater and assessing their potential for sustainable agricultural development using remote sensing. They also include strengthening Climate Risk Management in shared surface water basins and selected ground water aquifers; developing reports on water accounting water resource maps
8. Integration, deployment and use of improved IWRM tools.

B. Support for operationalization of countries Nationally Determined Contributions (NDCs)

1. Development of NDC implementation action plans
2. Feasibility studies for identified pipeline of investments
3. Support to the organisation of annual climate investment forums in the Horn of Africa.

7.1.4 Recommended Projects for Phase 2 Funding

7.1.4.1 Recommended SLM Projects for Phase 2 Funding

A. Summary of Recommended Sustainable Land Management Interventions for Phase 2 Funding

Strengthening the resilience of drought prone areas and Pastoral and Agro-Sylvo-Pastoral Production systems to Climate Change,

Sustainable agricultural land management

Sustainable agricultural land management,

- Land use planning in order to use different land parcels for their most suitable uses.
- The fertile lowlands lands to support crop farming through rain-fed agriculture supplemented by irrigation from rural infrastructure projects proposed
- Gentle slopping land above the lower lands to support livestock production (cows and browsers)
- The very steep and expansive hills be left undisturbed as community protected catchment areas (micro-water towers)
- Community capacity building on watershed management be a routine activity
- Land degradation risk survey including monitoring and evaluation of interventions be routinely done
- Focus on less intensive land use systems like apiculture value chains
- The county SLM policies if any be aligned to national legal and policy frameworks on land management

Soil and water conservation

- Structural conservation measures be layout along the contours as appropriate. Cut Off Drains, bench terraces, progressive terraces to be constructed
- Biological and vegetative measures to be integrated in the conservation framework focussing on selected multi-purpose agroforestry species as strips
- Napier class on terrace embankments will provide additional source of fodder for their livestock
- Cultural and agronomic measure to focus on crop selection based on ecological suitability, appropriate tillage practices and use of manure for fertility management
- Micro-catchment rainwater harvesting be integrated in soil and water conservation planning focusing on water pans, rock catchments, zai and semi-circular pits as appropriate
- Special attention be put of gully erosion control: stabilization of already developed gullies and prevention of forming of new ones
- Regulate the harvesting of the huge deposits of sand in river and gully beds for the benefit of the local community.
- Prevent deforestation and charcoal burning in order to maintain ground cover against erosion agents
- The regions have plenty of stones to be used as barriers to facilitate development of progressive terraces
- Local labour to be utilized as the communities' contribution in the project goals
- Soil and water conservation advisory is readily available from the agricultural extension service that is now devolved

Studies to inform the carrying capacity of the environment

- This would be most appropriate in commercial ranching, which does not exist in the 6 ASAL counties under this project. However, households could be encouraged to use tacit knowledge and environmental monitoring to qualitatively assess the carrying capacity of the environment.
- A key study would be: Ecological and economic carrying capacity from the lens of pastoral communities.
- Studies on carrying capacity that focus on specific animal types: Cattle, goats, sheep, camels etc whose relative importance varies across counties.

Landscape management in cross border areas

- The same principles and practices like in 1.1.1 above apply.
- Cross border interventions bring on board negotiated partnerships for the common good between and across different communities and cultures. This would apply mostly when it comes to livestock mobility and water demand for livestock and catchment/watershed management to control the effects of runoff.
- Partnerships for river management to prevent pollution and guarantee equitable sharing of the water in the event of irrigation agriculture become critical.

Sustainable Management of Pastoral Land

Strengthening pastoral livelihoods based monitoring and information systems

- Routine rangeland monitoring to assess quantity and quality of pastures, emergence of rills and gullies and taking appropriate intervention measures.
- Monitoring the performance of livestock (health and quality) – grazers, browsers
- Insisting on communities operating with ecological carrying capacity. Culture will be the main hindrance

Improved surveillance and monitoring of transhumant herds

This livestock mobility is a cultural issue that may not be done in the short to medium term without injuring community feelings and hence propensity to partner towards sustainable livestock production.

Restoration of degraded pastoral areas and lands

- Rangeland pitting to maximise on depression storage for pasture production
- Insist on communities working within ecological carrying capacities
- Monitor and prevent random bush fires that destroy valuable pastures for livestock
- Cut Off Drains at foot of steep hills to prevent gully expansion downstream
- Fencing off designated fields to encourage auto-recovery and practice some form of rotational grazing. Herd sizes would be the main challenge
- Management of woody bushes and invasive weeds like Prosopis juliflora in order to maintain adequate grazing land
- Appropriate stock mix (i.e grazers and browsers)
- Designate some community land for hay production to be used during drought seasons

Integrated soil fertility management technologies

- This would be most appropriate on lands designated for crop farming and kitchen gardens
- The most readily available material for fertility management is livestock manure from their goats, sheep, cattle and chicken. These manure requires bulking. Capacity building on bulking and ensuring complete decomposition before use on farms is key.
- The opportunity for establishing commercial manure agric-business targeting urban farmers can also be explored.
- Rangelands are automatically fertilized during free range grazing.
- Planting selected leguminous-based agro-forestry species within grazing fields and crop land can be explored.
- Integrated fertility management would also benefit from crop selection based on their ecological suitability.
- Use of chemical fertilisers would be constrained by limited by finances at households
- Fertility without water supply will be of little benefit. Hence the need to enhance water supply as proposed in the rural infrastructure components: irrigation, boreholes, water pans

Organisation of annual fairs of climate-smart agriculture practices and technologies for the GHOA.

- This requires planning from the national and county government levels, including NDMA, IGAD and AfDB as key partners
- However, the same can be devolved per county in order for communities to showcase their emerging best practices following interventions proposed in this project.
- Both on site/farm fairs and centralised fairs in designated places like county headquarters should be planned for.
- Fairs provide an excellent opportunity to monitor intervention performances and value for investment funds.

7.1.4.2 Recommended Pasture and Livestock Projects for Phase 2 Funding

The proposed pasture and livestock projects for DRSLP phase II are intended to continue with the spirit of building the resilience of the communities in the ASAL counties for food and nutrition security in the face of recurring climate change and variability, more so in the light of recurring droughts.

A. Sustainable Pasture Production and Conservation

- Reseeding of rangelands
- Special pasture production sites/areas and for demonstrations/plots
- Pasture conservation trainings to communities
- Pasture conservation infrastructure – hay sheds

Figure 7-2 Constructed hay shed from DRSLP I

Figure 7-1 Pasture Seeds provided under DRSLP

B. Sustainable Livestock Production and Marketing

- Livestock marketing infrastructure – sale yards, loading ramps
- Livestock parasite control infrastructure – cattle dips
- Disease control infrastructure – cattle handling crushes, diagnostic laboratories, support for consumables in the laboratories
- Livestock slaughter houses – abattoirs and slaughter slabs

Figure 7-3 Small ruminant loading ramp 1

C. Support for other livestock value chains

- Support to the poultry value chain – production and marketing
- Support for the goat and sheep value chains – sale yards and slaughter facilities
- Bee and honey value chain – honey processing facilities and equipment, bee products (e.g. beeswax) processing facilities and equipment.
- Fish value chain development support – marketing facilities including cold storage facilities, eateries and processing facilities.
- Camel value chain facilities – for milk sold storage and processing including value addition, meat facilities.

7.1.4.3 Gender field report for phase 1 and Recommended Gender Projects for Phase 2 Funding

A. Overarching policy documents on gender

Table 7.1: Gender inclusion policies in Agriculture

Policies	Relevance
The Constitution of Kenya, 2010: Article 39 which requires activities and policies to ensure they secure equal rights for men and women to adequate means of livelihood.	The projects should gender responsive to ensure that they curter needs of men and women to accord them means of livelihood
The Big Four Agenda (GOK, 2017): The areas of focus set out are -food security, affordable housing, manufacturing and universal healthcare.	DRSLP projects contribute to the food security and manufacturing agenda
National policy for prevention and response to gender based violence This policy emphasises the need to ensure that both genders are not subjected to GBV and gender discrimination.	The project will have effective strategies to response to GBV such as gender violence recovery centres in dispensaries
The Kenya National Policy on Gender and Development, 2000 States that policy and projects be gender mainstreamed for women empowerment and ensure the rights of women, men, girls and boys to participate in and benefit equitably from the development process	The projects take cognises of the KNPG ,2000 policy to include men, women, boys and girls in the activities and decision making
The Constitution of Kenya, 2010: article 27 and 30 Promote gender equality and describes the equal rights for men and women to equal treatment and opportunities in political, cultural, and social spheres. Article 30: states that every member of the community has the right to equal benefit from community land	The projects ensure gender inclusivity in all programs and reinforce on communities the need to accord men and women equitable access to and control over means of production
The National Gender and Equality Act, 2011 NGEC derives its mandate from Articles 27, 43, and Chapter Fifteen of the Constitution; and section 8 of NGEC Act (Cap. 15) of 2011, with the objectives of promoting gender equality and freedom from discrimination.	The projects adopt need social inclusion and gender equality principles in all activities.

B. Socio-economic analysis, gender analysis of DRSLP 2 projects

The study engaged various stakeholders to respond to KII, questionnaire and FGD. DRSLP Desk officers from the 4 counties responded to key informant interviews. In west Pokot County, 6 value chain development officers, 5 extension officers responded to questionnaires. FGDs 2, one with west pokot agriculture director's county staff (6 men and 1 woman) and the other with county livestock staff (5 men and 2 women). 3 FGDs were held with the projects beneficiaries (one in Adurkiot, in Orwa and in Chesta). In Barigo County, one FGD was held with county ministry of agriculture personal which comprised of 3 women and 4 men. One Agri-nutritionist responded to KII and three extension workers filled in the questionnaires. Two FGDs were held with project beneficiaries (one in Kampi Samaki in Marigat and the other in Sitek where borehole had dried).

Respondents were asked to mention various projects implemented in the county including those implemented in DRSLP phase 1, the intended key beneficiaries, achievements made by men and women and gender challenges. A summary of which is tabulated below:

Table 7.2 : Gender Analysis report For DRSLP 1

No.	Projects	Key beneficiaries	Men achievements	Achievements By women	gender challenges	Recommendations
WEST POKOT AND BARINGO COUNTY						
1.	3 Main project county wide Improved meat goat They have 4 Galla goat breeding centers one has not taken off and hope to increase to 10 -One goat is ksh 7000 -they goat the Galla goats from Laikipia	- Men own the goats and are therefore key beneficiaries -Women and children take care of them and drive to the market	-every HH has goats -can easily be sold for school fees and personal use - Galla takes take a shorter time (6 to 8 months) and cost more money 15,000. indigenous goats Take long to achieved the right Weight(12-18 months) -so more money in a short time	- Now women too can keep their own goats. however, they cannot sell without permission from their male partners	-Women and children take care of the goats and drive to the market but can't sell - even their goats without permission from men - women must account for or surrender the sale money to their male partners which can result to GBV -since land is communally owned , women have to ask for permission to keep goats from men who are major decision makers on land maters which is sometimes denied - increased workload to water the goats when the men have shifted are cattle to Uganda	-land should be sub-divided and also allocated to women/ although the county subdividing land, notably, very few women are being allocated and getting title deeds - women to form groups with intention of rearing and selling Galla goats - women to be capacity trained on goat trading skills and technique -women to be encouraged to open a bank account or Empesa saving apps.
2.	-Improved Indigenous chickens <u>Value addition</u> -Co-operative (Pokot portly co-operative) That buy, slaughter and sell as capons -introduced incubators with capacity of 4240 chicks to curter for increasing demand	-Women own and sell chicken. -Chicken are purely for selling not for HH consumption because the community does not eat chicken	-selling of Chicken and eggs is the main basic source of income for the HH. - Men don't sell goats unless it is very necessary. -Noteworthy, cattle are sold as a last result - Pokot people don't consume chicken at home it is purely for sell outside the county(exit market)which means more income for the women	-high uptake in most homesteads - women have source of income -it is the only item women have control over and access to - resource fund used to buy food and other commodities for family use and survival	-market is not organized /open air market -markets have not taken care of chicken stalls -transportation of the chicken is done on top of matatus or hanging on bodaboda—with no cages -new castle disease and no one cares for disease control -Use of herbs to treat diseases that may lead to deaths -Improved indigenous chicken are not standard size - broilers are cheap and bring competition	- have chicken stalls in the market , with shelves where to place food and water ; build- in baby bed sets to lay their babies on -supply cages to transport chicken in or alternative humane mode of transportation - train women on diseases control by extension officers and supply of medicine or vaccines - chicken to be sold per kilogram and not per piece
3.	Honey production/ Apiculture -Introduction of modern bee hives which are easy for women to harvest	-Both men and women are beneficiaries but it is women's work to process, pack and	Men are reluctant to take up the modern beehives , but have benefited in selling honey to the processing centers	-women now own modern bee hives which is easy for them to harvest honey without help	-Kodichi processing is lying idol - cutting down trees for charcoal burning and firewood selling by men has	-Coming up with honey collecting centers at intervals so that women don't have to walk long distances to market honey.

No.	Projects	Key beneficiaries	Men achievements	Achievements By women	gender challenges	Recommendations
	honey than from tradition hives -introduction Kodichi honey processing center - Kitale Papile by DANIDA	ferry the honey market sites. -Men only harvest honey especially from traditional bee hives		– increased income from selling their own honey -Able to purchase food and other HH requirements for family survival	reduced tree cover and flowers for bees to feed on -cutting of tress has affects women collection of food, herbs, medicine for the HH - deforestation has resulted to ugly derelict land which cannot be agriculturally productive unless rehabilitated	solution for cutting trees – have alternative means of livelihood, provide technology to enhance charcoal burning like charcoal gild - come up with alternative source of wood fuel and income generating activities for men - include women in decision making in management and conservation committees and reseeding of forests -Have a platform where men and women dialogue on gender differentiated ways in utilization of trees and how cutting affect their activities and need to preserve forest
4	Fodder production and marketing	Men but it is women who cut , bail and ferry fodder to the selling site	-Additional income -men don't have to migrate with cattle to Uganda during dry season -able to provide security for family year round - their presence result to family bonding	- Enough milk for the family all year round -Since women are the ones who take care of goats and cows , they have fodder to feed the animals -extra milk to sell and increased income	- Fodder selling sites are yet to start operating because they are afraid of paying taxes - Additional and increased workload because women have to take care and milk the cows year round - being monitored as well as having to take care of their men year round - presence of their male partner year round reduced women's autonomy	- have stockholders engagement meeting and disclosure to address community fears of selling fodder in the build fodder market areas. - women whose men migriate with cows to Uganda insearch of water and pasture to be supplied with goat milk to to ensure steady milk supply for their children.

7.1.4.4 Recommended Socio-economic Projects for Phase 2 Funding

Development is a function of transformation of socio-economic lives of communities. Consultations with county agricultural officials, community leaders, farmers and pastoralists in the districts under focus revealed that livestock keeping was the main livelihood with agriculture being practiced as a fall back option. Engagement with stakeholders also indicated that there are opportunities for enhancing resilience and addressing food security in the focus counties. While various interventions had been undertaken with varying levels of success during Phase One, there was clarity on the part on the stakeholders on what needed to be done going forward into DRLSP Phase II. A fact that was underscored was that any proposed interventions should be tailored towards enhancing pastoralists' livelihoods as well as making agriculture a profitable engagement. In all the counties, there was consensus that **availability of water** was the main intervention that can anchor social economic development and improve the social welfare of communities.

Stakeholders consultations indicated that there are various projects that if implemented would transform socio-economic opportunities. Some of the proposed interventions which were deemed by stakeholders to have high potential to transform socio-economic lives of communities are as cited in the table 8.3

Table 7.3. Proposed Interventions with high potential for socio-economic transformation

Component	Intervention
Sustainable agriculture and livestock keeping	- Enhanced access to water through - prioritising 1. Dams and water pans – but these must be large mega dams- as the best option 2. Boreholes - subject to water quality being acceptable. - Enhance irrigation systems – rehabilitate existing ones and or extent them
Sustainable livelihoods	- Enhance access to water as the basis for undertaking economic activities - Enhance value chains so as to diversify sources of incomes - Entrench agri-business - Enhance access and use of livestock markets
Strengthen resilience and adaptive capacity of communities	- Enhancing extension services - Engaging with communities to enhance buy in into adaptive technologies and interventions - Tailor interventions to be compliant with indigenous knowledge
Co-design and co-production of projects	- Community participation sessions in design and implementation of projects so as to tap indigenous knowledge and community goodwill

Implementation of all the proposed projects across the project components will of necessity lead to socio-economic development. However, consultations with especially community leaders cautioned that

even as efforts are made to diversify livelihood options there should be structured consultations and engagement with community leaders who have vast wealth of indigenous technical knowledge. Consequently, for sustainability purposes, tailored co-design and production sessions should be factored in the project so that at all times community input in captured and benefits the design and implementation of the projects. A community leader in Parakishon, Marsabit cautioned, *"if you technical people do not listen to us – go ahead, implement your projects – but you will still come back to us when the projects fail".*

Figure 7-4 Consultations with the Chief and Elders at Parakishon, Marsabit County

7.1.4.5 Recommended Rural Infrastructure Projects for Phase 2 Funding

The following infrastructure is recommended for each county as outlined in Table 8.4.

COUNTY	PROPOSED INFRASTRUCTURE PROJECTS
Isiolo	New irrigation projects, rehabilitation and improvement of irrigation projects, construction of access roads, drilling of boreholes, water harvesting, hay shed construction, rehabilitation and construction of livestock markets, construction of vaccination crushes and cattle dips, Establishment of Fish farming units (concrete Holding ponds, Fish Kiosk Cold chain systems-) and construction of fish processing and fish feed processing plants and access roads
Turkana	Construction of crop storage and seed bulking facilities, spate irrigation projects, livestock infrastructure (abattoirs, slaughter houses, markets, vaccination crushes, dips), fish processing plants, honey processing plan, boreholes water pans and shallow wells
Baringo	Soil and water conservation and catchment protection structures, Irrigation projects, water supply structures such as water pans, boreholes and weirs; animal feed processing plant, fish farming and processing infrastructure
West pokot	Irrigation projects, livestock markets, water supply through boreholes and water pans. Pasture development
Marsabit	Livestock management structures and pasture management, water projects (water pans, mega dams, rock catchment dams, sub surface dams, shallow wells, underground tanks, boreholes), irrigation projects, pasture development, Bee keeping and honey processing plant, fish processing plants, and soil and water conservation structures.
Samburu	Livestock infrastructure (Crushes, feed lots, hay baling facilities, sale yards, dips, vet labs), water supply structures (sand dams, weir dams, water pans, boreholes), post-harvest management structures and access roads

A. Isiolo County

Isiolo town has become a large metropolis with a large population, has many tourist hotels in the suburbs and is a distribution point for food to the expansive northern Kenya. The county has several rivers running through it with water all year round. For this reason irrigation for crop production is very profitable and should be encouraged. It is therefore proposed to have more irrigation projects in th county and to rehabilitate existing ones to improve productivity. The irrigation projects are mostly supplied by gravity water intake works which makes them have minimal operation cost and are therefore quite sustainable.

Livestock is a big industry in this county and investment in infrastructure that supports livestock development is beneficial. However, on the advice of the county officials, it is not necessary to invest in abattoirs or slaughter houses since there is a large one that has been constructed by the national government to serve Isiolo and neighbouring counties. The county is keen to encourage the development of fish farming.

B. Turkana County

The establishment of irrigation projects, fish and honey processing plants is good for resilience in the county since they diversify the economy and reduce dependence on livestock. Fish processing can be considered a low hanging fruit since the expansive Lake Turkana has good fish stocks that can be harvested. However support for livestock is very important and the proposed investment matches the need. This includes provision of water for livestock and irrigation through the drilling of boreholes, construction of water pans and shallow wells. The proposal for spate / flood irrigation will take advantage of the flash floods from rains in the mountains surrounding the county. These together with sub surface dams will help store water in the numerous lagas.

C. Baringo

The landscape in many places in Baringo is denuded and the proposal to invest in soil and water conservation measures for catchment protection and healing is supported. Irrigation is good to promote diversity of economic activity which can lead to greater resilience. Water supply projects will give water security for human, livestock and irrigation.

D. West Pokot

Water supply is very important for West Pokot as they need to support irrigation and livestock and so many water projects are proposed. To support the livestock industry, livestock markets and pasture development projects will be implemented. Soil and water conservation especially gully healing is important for sustainability of projects.

E. Marsabit

Marsabit is the largest county in Kenya with very variable climates across the county with some very cool and wet areas around Marsabit town on one hand and the Chalbi Desert in on the other hand. The county is also home to several communities with different cultural backgrounds. It is for this reason that the proposed project portfolio has to be broad to accommodate the different climatic typologies and cultural variability. However broadly speaking, there will be livestock infrastructure to address the needs of the livestock rearing communities and irrigation to cater for crop farmers. Water is a cross cutting need and the type of infrastructure to supply it depends on the most viable source on site. For instance, there are many places where the only water source may be boreholes.

F. Samburu

The proposed infrastructure is almost entirely related to livestock development. This is because livestock husbandry is the single most important activity in this county. Even the water project proposed are for livestock support and so are the feeder roads which improve acess to livestock markets.

7.1.4.6 Recommended Value-addition Enterprise Projects for Phase 2 Funding

A. Introduction

The consultant team visited the counties and held discussions with county governments staff, Local Leaders (Chiefs and Administrators) and local community members. As part of the stakeholders' consultations the team visited the staff in the Departments of Agriculture implementing the Agriculture Sector Development Support Programme, to learn and appreciate the constrains identified in the various target value chains and to appreciate their contributions in alleviating the identified challenges. The value chain maps developed borrow information from the extensive work done by the Agriculture Departments in the 6 county governments.

B. Priority Value Chains Selected for the target Counties

Table 7.4: The table below shows the priority value chains selected by the consultant team for the six counties.

County	Selected Priority Value Chains
West Pokot	Meat Goats, Indigenous Chicken, Honey, Aloe Vera Extraction
Baringo	Meat Goat, Honey, Indigenous Chicken, Dairy Goat, Fish Processing
Turkana	Meat goat dairy goat, fish production, camel milk production
Marsabit	Camel milk production, Goat meat, dairy goat, fish production
Isiolo	Camel milk, fish production, dairy goat production, goat meat, Honey
Samburu	Camel milk, Honey, Indigenous chicken, meat goat

Plate 7.1: Wild aloe vera plant growing in Adurkoit

Plate 7.2: Woman selling herbs and tradition medicine in Sigor market

C. Value Chain Situational Analysis

Table 7.5: Table showing constraints and their interventions

Item	Constrain	Intervention
Meat Goats	The communities are rearing indigenous / traditional goats breeds, with poor breeding practices that there are inbreeding which results to generally poor breeds	Communities / farmers should be educated on the modern breeding techniques and also encouraged to rear improved breeds like Galla that are resistant to harsh climatic conditions. This will improve on the productivity hence income generation improved
	There is constant outbreak of pests and diseases that infects the goats	Introduction of land ownership, which will assist the farmers on paddocking of their grazing land, to reduce the goats' movements hence increase productivity
	The farmers / communities' experiences communication barriers i.e., poor communication networks that makes it difficult to access information	Provide free flow of information from the farmers to other stake holders Introduction of fodder feeding and storage, which in turn increases the access to feeds and this will also improve on the productivity of the goats.
	Inadequate financial and insurance services	Regular and timely vaccination schedule to ovoid diseases and pests' outbreak in the counties and also readily accessible vet services to the farmers and community
	While transporting the goats, there is mishandling of the goats	Improve on the rads, and transporting facilities to reduce damages
	Lack of adequate processing skills and technical teams in the counties, for example for processing meet and leather, which forces them to sell unprocessed products	Improved communication that will enable flow of information timely, and proper access to cooperatives and bankers loan facilities for capital and investments in the business
	Poor feeding practices and scarcity of feeds and water for the chickens	Educate the farmers on the improvement of housing, feeding, disease control and other routine management practices
Indigenous Chicken	Constant diseases and pests' outbreak to the chickens	Improve disease monitoring services and support county wide regular and timely mass vaccination and Promotion of semi-intensive and intensive production systems

Item	Constrain	Intervention
	Poor breeds and inbreeding breeds that are venerable to diseases and pests	Educate and encourage the farmers on good feeding practices and encourage them to provide the water drinking points in the farm. Encourage the farmers on acquiring the improved f indigenous chicken breeds from breeders such as KARLO and other locally available breeders. .
	Inadequate skills and lack of technical team on the processing of chicken products	Train the farmers on the chicken processing skills and access on skilled technicians locally
	Use of traditional beehives in the honey production	Use of modern beehives and encourage the set-up of modern hive and accessories making workshops within the counties
Honey production	Outdated beekeeping techniques and skills employed in bee keeping	Train and encourage the farmers to use modern techniques in beekeeping
	Lack of adequate financial aids for the honey production	Train and encourage beekeepers to use cooperative credit services anther loan services for the honey production
	Frequent attack honey pests in the beekeeping areas	Identify and promote preventive mechanisms against predators (installation of badger and rodent guards)
	Frequent destruction of forage due to drought and fire outbreak	Develop capacity on environmental conservation and develop the firebreaks to minimise fire outbreaks that destroys the forage.
	Lack of adequate skills and manpower for honey processing	Train the farmers on honey processing skills and encourage the development or reviving the collapsed honey processing plants
	Inadequate conservation measures and access to commercial seedlings.	Identification and propagation of drought tolerant plants
Aloe Vera Extraction	Poor markets for the processed products.	Promote the both local and international marketing through advertisements etc
	Frequent droughts and constant fire outbreak	Digging of water pans and sub-surface dams to provide water during the dry season by irrigation Design and construct fire breaks to reduce fire breakouts
	Investment finance limitations and lack of credit	Promote tailor-made credit products and change of mind-set towards credit through training

Item	Constrain	Intervention
	Lack of adequate training to the aloe vera producers and lack of technical support for the processing	Developing Sustainability protocols, Operational manual should be designed in the local languages, as well as in English, and graphical material highlighting 'good' and 'bad' practice for collection, processing and other factors along the supply chain.
	The production is extremely expensive, starting from packaging to transport, its expensive to handle	Preferably endorsed through external certification (providing cash incentives through better market advantage and higher price returns) Training and extension provided by interested commercial partners, NGOs and associations on the methodology of sustainable wild harvest, Organizational development of producer groups
	Inbreeding is very rampant.	Training producers on the need for selection and maintenance of breeding bucks
The Dairy Goat	Shortage of veterinary equipment and Drug supply in animal health posts and clinics	Allocating more funds for procurement of vet equipment in all locations since the drug revolving funds are not used for procurement of Provision of necessary drugs and equipment to health posts clinical equipment
	Non-functional animal health posts and poorly equipped	Introduction of community-based breeding programs in strengthening traditional breeding practices in pastoral areas
	Shortage of skilled technicians and skill gap among the available technicians to address animal health problems	Training of some enlightened farmers as community-health workers and equipping them with necessary drugs and equipment
	Problem in maintaining cold chain for vaccines and provision of dead vaccines (low efficacy of vaccines)	Provision of better cold chain facilities for transportation and storage of vaccines including alternative energy sources Introduction of high yielding improved forage crops adaptable to the area.
	Lack of flexibility in the credit system, inconvenience of having group collateral and insufficient amount of credit	Improving farmers' access to credit by improving linkages between the community and the credit institutions and facilitate a flexible and individual based credit service Development
	Lack of adequate, quality and timely availability of desired breed.	The development of fish farming is highly dependent on adequate, quality and timely availability of the desired seed.

Item	Constrain	Intervention
Fish production	The high price of inputs was perceived as the third major problem by all the surveyed	Provision of fish inputs at a cheaper price and readily available when needed
	Pond related problems such as seepage, excess weeds,	Improve on the fish pond constructions to avoid seepages and clean the ponds by removing weeds
	Exploitation of the middle men restricts the farmer in obtaining a fair price for the fish produce.	Avoid the involvement of middlemen is often considered as a factor which restricts the farmer in obtaining a fair price for the fish produce.
	Lack of enough storage facilities such as cold stores in the counties	Construct enough cold stores to avoid loss of fish by rotting.
	Infrastructure facilities like pond's connectivity to road, cold storage, transportation facilities.	Improve on the infrastructures such as roads
	Theft and poaching are also considered as major inhibiting factors.	Improve on the security measures to avoid loss of fish through theft
	Farmers not involving cooperatives in there farming practices.	make use of the cooperatives, particularly for marketing purposes because of the non-existence or inactive fisheries cooperative societies in the region.
	Insecurity: - Socio-economic activities in the named counties are severely affected by insecurity due to mainly conflicts over natural resources (e.g., fighting for pasture, water and land); and intertribal and clan clashes because of the fragile cohabitation of different groups living in the province	Improving on the security by increasing the numbers of security camps in the region by the government Educating the community for peaceful coexistence.
Camel milk production	Low livestock productivity the counties suffers from low livestock productivity due to limitations of feed resources and low access to technology.	Increasing the water points by drilling more boreholes in the region to reduce the water resource conflict.
	The livestock sector in the province is also constrained by several livestock diseases affecting animal health and livestock productivity. The major diseases include Rift Valley fever;	Improving on the vet procurement process to reduce the occurrences of the diseases.

Item	Constrain	Intervention
	rinderpest Brucellosis; and camel diseases such as laaba and lahaw-gaal (camel fever)	Employing the agricultural extensions officers that will advise the farmers on the best livestock production practises.
	The infestation of tsetse flies that causes diseases like trypanosomiasis; helminthiasis etc	To provide tsetse fly traps, that will reduce the number of tsetse flies that causes the disease
	Poor infrastructure: -Road networks and infrastructure in counties are underdeveloped which has hindered the movement of camel products (milk from the source to the market	Improve on the roads network by repairing ng or tarmrcing the existing roads

7.2 Implementation Strategy

7.2.1 Role of IGAD in the Regional Level

The overall coordination of the HOA programme will be carried out at the regional level by IGAD as the Executing Agency but working in close liaison with the various governments of the HOA. The programme activities will be implemented at the national level with the individual country institutions being responsible for the implementation of activities. IGAD will be responsible for implementing the regional activities financed under the grant given to it.

The IGAD Secretariat (ES), acting through the Platform Coordinating Unit (PCU), will be responsible for coordinating the programme. The Regional Programme Coordination Unit (RPCU), set up by the IGAD Secretariat as a functional part of the PCU, will be dedicated to coordinating the program, overseen by a Regional Program Steering Committee that provides guidance and ensures that the objectives assigned to the regional project are achieved. The tasks of the Regional Program Steering Committee include approval of the budgets, activity reports and annual accounts related to the implementation of the program. It is chaired by the IGAD Executive Secretary in accordance with the instrument in force, and its secretariat is provided by the Regional IDDRSI Coordinator. When undertaking some regional activities under the program, ICPAC and ICPALD will each act as an implementing agency, within the framework and terms of a Memorandum of Understanding with the IGAD Secretariat coordinated by the IDDRSI PCU. The Regional Program Steering n Committee (RPSC) which will include representatives from RPCU and the National program coordination unit (NPCU) to ensure the synergy and harmonization in the implementation of the program in the countries and at the regional level.

7.2.2 Role of the Executing Agency

The Executing Agency of the HOA-Kenya Project will be the Ministry of Agriculture, Livestock, Fisheries and Cooperatives (MOALF&C) will ensure that the current a Project Coordination Team (PCT) implementing the DRSLP Phase I project at the national level continues the day-to-day coordination and monitoring of implementation of the project activities. The PCT will ensure that project activities are initiated and are adequately budgeted for, consolidate project records, submit all disbursement applications and quarterly progress reports, and undertake annual audits of all project accounts and submit the audit reports to the Bank. It will comprise of a core team made up of a Project Coordinator, an Accountant, a Procurement Specialist and a Monitoring and Evaluation Specialist. Sector specialists (Livestock, Irrigation, Environment, Horticulturalist, Agribusiness) and cross cutting (gender, environment) will also be assigned to the PCT. The staff of the PCT will be provided by the GOK.. The MOA is currently the executing agency for the Small Scale Irrigation and Value Addition Project and the Multi-National Rural Livelihoods Adaptation to Climate Change project (RLACC).

A Project Steering Committee (PSC) will also be established to provide policy and implementation oversight. The PSC will be chaired by the Permanent Secretary, MOA, comprising representatives from the Ministry of Finance, Ministry of Livestock Development, Ministry of Gender, Children, and Social Services, Ministry of Lands, Ministry of Public Works, Ministry of Water, Director-General of National Environment Management Authority (NEMA)and the NDMA. The Project Coordinator

will be the Secretary to the PSC and also the focal point for all coordination with the IGAD programme coordination team. The PSC would meet at least twice a year.

The National Program Steering Committee provides guidance and ensures that the project's assigned objectives in each country are achieved. Its tasks include approval of the budgets, activity reports and annual accounts. It will be chaired by the Permanent Secretary or any other person designated by the MOALF&C. The National IDDRSI Platform Steering Committee is chaired by NDMA; and its membership includes all relevant actors or sector representatives at the central and states or district level (dealing with drought resilience or other related matter), in accordance with the instruments in force. Its secretariat is provided by the National IDDRSI Platform Coordination Unit assisted by the National IDDRSI Coordinator. The National IDDRSI Coordination mechanism in place ensures that all resilience-enhancing interventions being implemented in the country have the necessary technical guidance and supervision.

The Ministry of Agriculture, Livestock, Fisheries and Cooperatives (MOALF&C) will be responsible for the procurement of all goods, works and consulting/training services.

7.2.3 Role of Devolved Units (County Governments)

Agriculture, including crop and animal husbandry, livestock sale yards, county abattoirs (slaughterhouses), plant and animal disease control, and fisheries are listed in the Fourth Schedule of the Constitution information on the devolved services in Kenya. It stipulates the division of functions between the national and the county governments in Kenya.

The implementation of project activities at the county level would be carried out through the existing County Sectoral Technical **Working Groups** under the guidance of the Council of Governors. The team will be responsible for facilitation and coordination of all technical matters pertaining to project implementation.

7.2.4 Project Logframe

A comprehensive project log frame will be developed after the project appraisal.

7.2.5 Building on DRSLP phase 1.

The EOI by IGAD expects the next phase of DRSLP projects to build on the progress that has so far been achieved, leverage the lessons learnt, cover more areas, sectors and investments; and consolidate the benefits thus far made in the implementation of DRSLP. Consequently, while IGAD wished to constitute the institutional anchor of the HoA program, the program's operational anchor of the DRSLP.

Some of the issues identified in the implementation of DRSLP in Kenya are addressed for inclusion in the design for the new program.

1. The Kenya ASAL has a large spatial expanse and has impacted on the speed and impact of the program.

2. Delays in fund disbursements from treasury – Financial year delays through IFMIS delays realisation of critical milestones.

3. The project staff are deployed from the MOALF, and have been subjected to the normal transfer of staff mid-way in project cycle, disrupting the continuity of the activities.

4. Challenges procurement under the MOAL&F

7.2.6 Governance

The Ministry's core functions include:

1. Formulation, implementation and monitoring of agricultural legislations, regulations and policies
2. Supporting agricultural research and promoting technology delivery
3. Facilitating and representing agricultural state corporations in the government
4. Development, implementation and coordination of programmes in the agricultural sector
5. Regulating and quality control of inputs, produce and products from the agricultural sector
6. Management and control of pests and diseases
7. Collecting, maintaining and managing information on agricultural sector

At national level the MOAL&F hosts the DRSLP program alongside others such as the RLACC, SIVAP. The national government departments/agencies offer guidance on policies for implementing projects at county level. According to the ministry, delivery of the ASGTS builds on the institutions established by the NFSC, with the addition of a multi-sector Advisory Sub-Committee (Figure 3).

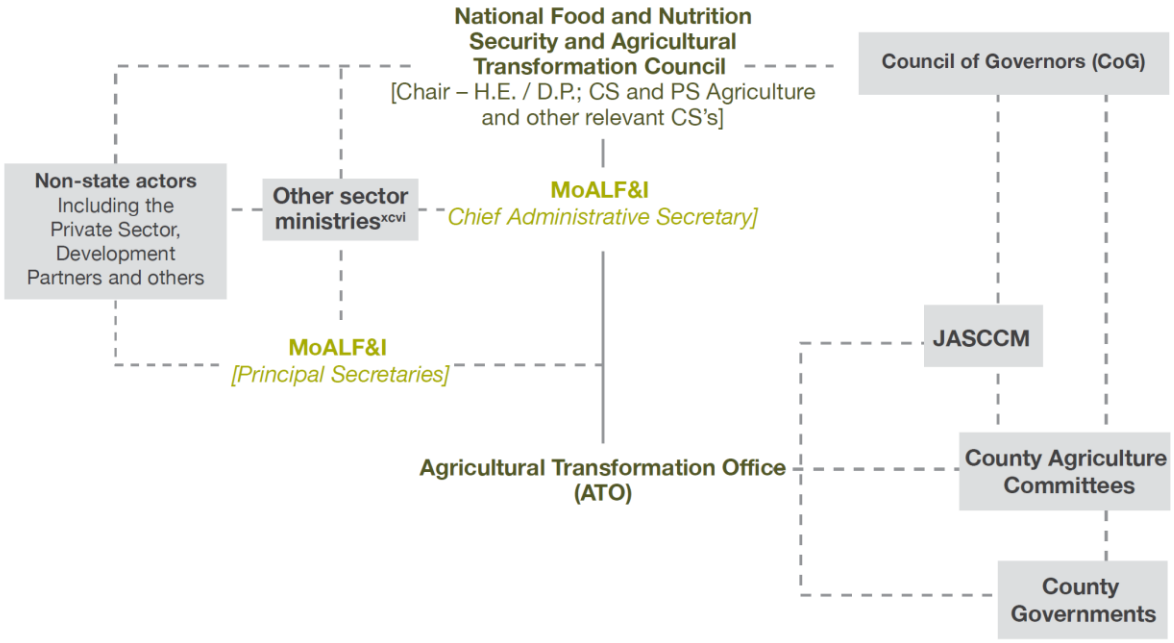

Figure 7-5 . The Ministry ASTGS Implementation management Structure

The National Drought Management Authority was established by NDMA Act, 2016.

The functions of the Authority as per the NDMA Act, 2016 are as follows: a) Exercise overall coordination over all matters relating to drought management including implementation of policies and programmes relating to drought management. b) Coordinate drought response initiatives being undertaken by other bodies, institutions, and agencies. c) Promote the integration of drought response efforts into development policies, plans, programmes and projects in order to ensure the proper management of drought. d) Develop, in consultation with stakeholders, an efficient drought early warning system and operate the system. e) Facilitate national and county level drought contingency processes and the preparation of national and county level drought contingency plans. f) Establish and review, in consultation with stakeholders and relevant institutions and agencies, drought preparedness strategies. g) Identify, design, and implement projects and programmes that shall strengthen resilience to drought and climate change. h) Publish and disseminate manuals, codes or guidelines relating to drought management and prevention or abatement of the extreme effects of drought on human, plant, and animal life. i) Conduct research on drought management and generate, consolidate, and disseminate drought management information. j) Render advice and technical support to persons, bodies or institutions engaged in drought management to enable them to carry out their responsibilities effectively. k) Coordinate with the national government where a drought situation requires the declaration of a national or international disaster. l) Coordinate the design and implementation of the country's regional and international commitments pertaining to drought management. m) Prepare and issue an annual report on the state of drought management in Kenya. n) Perform such other functions as are incidental or conducive to the exercise, by the Authority, of any or all the functions provided for under this Act.

The Act gives the NDMA the mandate to exercise overall **coordination over** all matters relating to drought risk management and to establish mechanisms, either on its own or with stakeholders, which will end drought emergencies in Kenya. This series of short-term, project-based interventions were being carried out at a time when drought periods were becoming increasingly frequent and intense, directly affecting the household food security and livelihoods of more than ten million people. The government therefore recognised the need to strengthen the sustainability and quality of drought management in Kenya by establishing the National Drought Management Authority (NDMA). The NDMA provides a platform for long-term planning and action, as well as a mechanism for solid coordination across Government and with all other stakeholders. NDMA has established offices in 23 ASAL counties are considered vulnerable to drought.

NDMA runs several programmes and projects that enable it to deliver on its vision, mandate and strategic objectives. The programmes are further informed by the flagship projects and result areas under the Kenya Vision 2030 and the Sector Plan for Drought Risk Management and Ending Drought Emergencies (EDE MTP III 2018-2022). The EDE strategy, which is aimed at ending drought emergencies by 2022, is implemented through a Common Programme Framework (CPF) across various sectors within National and County Governments and coordinated by the Authority. The key programmes and projects implemented during the reporting period were:

1. Kenya Drought Early Warning Project funded by GoK
2. EDE - Drought Risk Management and Coordination Project funded by the Government of Kenya (GoK)and the European Union.
3. Hunger Safety Net Programme II (HSNP II) funded by GoK and DFID.

4. Protracted Relief and Rehabilitation Operation (Asset Creation Programme) funded by GoK and WFP.
5. Drought Response and Resilience in the Arid and Semi-Arid Regions project funded by UNDP.

NDMA has also collaborated on the following key programs:

1. USAID funded, Partnership for Resilience and Economic Growth (PREG) in Kenya, that brings together humanitarian and development partners to build resilience in the vulnerable pastoralist communities in northern Kenya. USAID defines resilience as "*the ability of people, households, communities, countries, and systems to mitigate, adapt to, and recover from shocks and stresses in a manner that reduces chronic vulnerability and facilitates inclusive growth*."
2. Program A - A survey by USAID in mid-2015 provides compelling evidence of results achieved through PREG's collective efforts in two and a half years, including a 12% reduction in the depth of poverty and a 28% increase in women's dietary diversity in the nine counties. Additionally, the survey results indicate positive trends in children's dietary diversity, reduced household hunger and access to improved water sources.

7.2.7 Proposed Implementation Arrangements

Drought Resilience is a multidimensional concept that is becoming increasingly utilized in development programming. It can be understood to encompass a broad-based multi-sectoral development that includes the many ways in which individuals and livelihood systems mitigate, adapt, recover, and learn from shocks and stresses, the longer-term goal being to reduce vulnerability and increase well-being.

The consultant, thus presents a proposal of continued implementation by the PMU with the NIC, IDDRSI supporting at program management close collaboration with other relevant Ministries. To address the capacity deficit cited by the DRSLP desk officers, the DRSLP II project should work closely with NDMA county offices, in consultation with qualified County Government appointees (Livestock specialist, Agronomist, soil and water conservation specialist, Forestry/Environment specialist, Agricultural extension specialist, Gender/Social expert and Accountant and Cashier). Technical assistance and supervision support for all the infrastructure and capacity building activities will be provided under the project to ensure successful implementation. The Project Steering Committee (PSC) established under DRSLP-II will also provide policy and implementation oversight, including the review and approval of the project annual work plans and budgets. The PSC will be chaired by the Minister of Agriculture -MOA or his representative. The PMUs will report to the CEO of the National Drought Management Authority.

Some measures be put in place to ensure fast implementation of the project. These may include: (i) project implementation team which is already in place as the project will be implemented by the same team implementing DRSLP I; (ii) infrastructure designed under preparation with resources financing DRSLP I; (iii) loan and grant negotiations and project processing.

7.2.8 Procurement Arrangements

"Procurement of goods (including non-consultancy services), works and the acquisition of consulting services, for the project, will be carried out in accordance with the Kenya **Public Procurement and Asset Disposal Act Revised Edition 2016** and oversight guided by *"Procurement Policy and Methodology for AfD Bank Group Funded Operations"*, October 2015 (as may be amended from time to time).

7.2.9 Monitoring

The monitoring and evaluation system will include, at the community level, a Participatory Monitoring and Evaluation system which will be used to generate and manage/consolidate gender-disaggregated data. A baseline study will be carried out in PYI to determine the current status of the project beneficiaries. A gender sensitive baseline study will be part of the study which would be followed up with annual gender sensitive surveys to assess implementation progress and overall project performance. An impact assessment of project activities will be conducted at the end of project implementation. The M&E of the project will be carried out by the PMU M&E specialist under the coordination of a consultant expert, and will be responsible for compiling the gender sensitive quarterly and annual progress reports. The specialist will also undertake periodic project evaluations as required in order to appropriately guide project management and implementation. In summary, the M&E specialist will be responsible for coordination of all monitoring and evaluation activities and ensure the production and publication of the necessary reports. In this connection, adequate budgetary provisions will be availed to assist in this important role.

The Consultant will also assist in the harmonization of a gender-sensitive M&E mechanism along with the preparation of an implementation manual to operationalize the collection, processing and reporting channels of the indicators of the logical framework at the national level. The National institutions in charge of statistics and/or specialized monitoring and evaluation, will be mobilised under the coordination of the Project Coordinator and the Steering Committee, to establish the baseline situation and assess the regional program outcomes and impacts. The use of the NDMA customised and adopted MIS tool from IGAD, may be extended to the program. This tool (DI – monitoring) tracks the progress of both the NDMA Strategic Plan and the EDE milestones. During the period, 20 NDMA officers were trained on the use of the tool, with the objective of ensuring provision of adequate support to existing monitoring and reporting tools in the institution.

8 INTERVENTION APPROACH

8.1 Adoption of ICT

Kenya has emerged as FinTech hotbed, using inexpensive, accessible tech to mobilize consumers in ways never seen before. Anchoring the DRSLP II on intensive use of ICT for ASAL development can set the program in an upward trajectory. In 2018 KARLO funded the creation of a total of 14 mobile apps, for target crops such as cassava, maize and potato were launched. The apps aim to ease agricultural processes and provide open data for farm use. Farmers acknowledged the apps contribution to reduced postharvest losses. An earlier launch of three apps in April 2017 that targeted indigenous chicken, range pasture and seed production and dryland crops.

The Program may adopt innovative approaches in various areas of interventions, some of which are described herein.

8.1.1 Existing Digital Technologies in the Kenyan Market

DigiCow.

- Targets smallholder farmers (dairy farming)
- Enabling the farmer to increase their profits through data driven decision making.
- The app is accessed and installed from google play store, with the farmer required to register and secure his information with a pin.
- The next thing is for the farmer to key in data to capture cow details, milk production, milk sales health breeding and feeding information. The app is designed to use data and feedback production, financial reports, breeding and health reports.

Nafis.

- NAFIS is an information Service developed by the National Agriculture and Livestock Extension Programme (NALEP)
- Farmers get extension information simply by calling the service or browsing the NAFIS website.
- NAFIS displays free market prices on their website
- Market prices of vegetables are usually very dodgy in Kenya especially when brokers are involved so these figures are usually there to guide you on what to expect.

AfriScout for ASALs

- Helps pastoralists manage their risk of herd loss in a variety of ways.
- The app:
    - Aids in the timing and destination of migration
    - Helps with collective and informed migration decision making
    - Improves pasture conservation and management
- Nearly 100 percent of users found the maps to be accurate or very accurate.
- Over 75 percent of users found using the maps saved time, reduced scouting, reduced livestock deaths, and improved livestock conditions.

FarmDrive.

- FarmDrive connects you to loans and financial management tools, all through your mobile phone.
- FarmDrive does this through a credit score, generated by an algorithm developed by the team, in-house.
- The algorithm relies on data-sets collected from the farmers through their mobile phones, alternative data and machine learning.

Budget Mkononi

- A web-based agricultural budgeting tool - young farmers to plan and budget for their farm. It is a joint initiative of Mercy Corps AgriFin Accelerate program and The Mediae Company.
- the budgeting tool, users can identify the basic costs and elements required to set up and run their farming enterprise, along with revenue flows and timelines.
- By entering their crop and acreage, the user receives detailed information stretching from seed prices, planting dates, best practice tips and a detailed timetable of crop growth. The tool is optimized for mobile phone

8.2 Adoption of ICT for Insurance

In 2014 Index-Based Insurance (IBLI) was launched as an initiative of the International Livestock Research Institute (ILRI), the Kenyan government, World Bank and other partners, whose aim is to protect pastoralists susceptible to climate change. It focuses on strengthening the drought management systems in the country such as the Kenya Livestock Insurance Programme (KLIP), which targets pastoralists whose livelihoods are entirely reliant on livestock.

KLIPs signature feature is the use of satellite data to generate an index for grazing conditions to ensure that payments are prompted early during the drought season when conditions fall below a certain critical level. These satellite images are accessed free of charge and used to assess conditions of pastures. The innovation has been lauded globally for its novel approach and is largely perceived as inclusive and seeking to better the lives of pastoralists.

Incorporating the views of communities that are often at the bottom of the pyramid, and whose voices are rarely heard in sustainability strategies is key to their success. One such inclusive technology in Kenya is the Index-Based Insurance (IBLI), an innovative tool against drought losses in Kenya that seeks to cushion pastoralist communities from the frequent spates of drought and has changed the lives of hundreds of thousands of pastoralists in the Arid and Semi-Arid Lands (ASALS) in the country. In 2018, the Government of Kenya collaborated with the World Bank and the International Livestock Research Institute to launch the Kenya Livestock Insurance Program. It was targeted to covers the vast arid and semi-arid counties of northern Kenya.

Insurance coverage targets.

- Accidental death due to lightening, internal and external injury on location or in transit, Fire, Windstorm, Snake bites, flooding.
- Diseases of terminal nature.
- Emergency slaughter on a Vets advice.
- Calving complications.
- Theft of Livestock.
- Epidemics• You get to have a greater access to livestock improvement loans.

In case of a calamity that results to a loss, neither you nor your financier suffer as we will compensate for the loss.

8.3 Development and dissemination of climate services to agro-breeders

The project will support the sustained delivery mechanisms of weather and climate-related advisories in each NMHS to national and local agricultural stakeholders and pastoralists. This will be achieved through a participatory process with end-users through dialogue and discussion, capacity building workshops and regular meetings. The project will also rely on the Participatory Integrated Climate Services for Agriculture (PICSA), which has been already successfully implemented in some countries in East Africa. The quality, availability, format and reliability of climate information are major constraints regularly highlighted to explain the inability of agro-breeders in the HoA region to better adapt to climate change. The aim is to provide agro-breeders with information on monitoring, forecasting, alerting, vigilance, weather and climate assistance for agriculture, food security, water management and disasters in the HoA region. The dissemination will employ ICT based services.

8.4 Semi-intensive breeding of livestock

This innovation will be based on the semi-intensification of pastoral activities. This approach will enable all players involved in the livestock sector to be linked in the same geographical platform. In addition, integration with the other Program components (agriculture and energy) will be promoted through manure recovery to increase agricultural production and productivity as well as energy (bio-digester).

8.5 Climate-Smart Villages (CSV)

A basic approach to scaling technologies and all good practices to contribute to sustainable, resilient, low-carbon agro-sylvo-pastoral production. The CSV approach is based on principles of participatory action to demonstrate to beneficiaries the climate-smart effectiveness of innovations, and technologies in a given locality, as well as to facilitate the joint development of mechanisms for its scaling. It aims to have a positive impact on agriculture-dependent communities, which requires efforts to ensure the participation of women and all social groups. CSV sites can be groups of villages, local governments or terroirs (including one or more villages).

8.6 Agroecology

It is defined as "the application of ecology to study, the design and management of sustainable agroecosystems." Agroecology ensures beyond the production lands, the application of the principles of ecology to the whole chain of food production and consumption. It explores a range of practices such as conservation agriculture, direct sowing under cover of vegetation, culture-breeding associations, integrated pest management and agroforestry. The application of agroecology in the restoration of degraded land has been proven in Ethiopia in the HoA.

8.7 Agroforestry Technologies

Some of the innovative agroforestry approaches relevant for land restoration in the drylands piloted in the region include i) Farmer Managed Natural Resource Management (FMNR) which is a quick, affordable and easy-to-replicate way of restoring and improving agricultural, forested and pasture lands. FMNR promotes regrowth of existing trees or from naturally occurring tree seeds; ii)

Conservation agriculture with trees (CAWT) that combines the practices of Conservation Agriculture (minimum tillage, adequate soil cover and rotations involving leguminous species) with those of agroforestry (FAO, 2009; FAO, 2010); and iii) Rural Resource Centres (RRCs) which are community-managed centres that offer farmers access to knowledge, interactive learning, and linkage to networks – among farmers and with private sector firms, NGOs, and government. In Ethiopia, the RRCs are becoming a source of income for young men and women engaging in raising quality germplasm (including that of most popular fruit trees).

8.8 Climate-smart technologies and practices

Innovative approaches developed in the region include i) Delineation of homogeneous production zones in the pastoral and agro-pastoral zones (ii) Pastoral livelihoods-based monitoring and information systems; Improved Nutritional Status of Households (iii) Disaster risk management through climate-smart agriculture to support government and private sector to coordinate, react to, and mitigate the negative impacts of shocks and stresses; iv) Climate-smart village (CSV) approach to scale up the successful CSV tools to disseminate information through participatory Integrated Climate Services (PICSA); (v) Geospatial analysis for potential livestock fodder production areas; (vi) Climate Smart Agriculture Investment Planning (CSAIP), (vii) Livestock Market Information System (LMIS) for inclusion of livestock market data from all regions and building capacity of key stakeholders and government experts to interpret results from the LMIS towards improving their decision-making; viii) Landscape restoration through climate-smart agriculture approach and (ix) Innovative Business Models for Linking Farmers to Markets by introducing LINK 2.0 Methodology, an approach to developing business models for linking farmers to markets.

8.9 Support for implementation of Innovative Approaches

The Program will build onto innovative approaches developed and packaged by the CGIAR centres like the International Livestock Research Institute (ILRI); International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), International Center for Tropical Agriculture (CIAT), International Water Management Institute (IWMI), International Institute of Tropical Agriculture, WorldFish Center World Agroforestry Center (ICRAF) as well as the Food and Agricultural Organisation (FAO). Partnerships will be developed between the CGIAR centres, national research agencies and IGAD Regional and National Institutions for scaling up the innovative approaches for improving agro-sylvo-pastoral production and productivity. The CGIAR centres will provide implementation support towards program design and preparation and implementation support for the climate-smart technologies. The TAAT Clearinghouse offers a wide range of technology brokerage services that are available to assist the IGAD Secretariat.

9 DETAILED COST OF THE PROGRAM

9.1 Component 1 Strengthening the resilience of drought prone areas and Pastoral and Agro-Sylvo-Pastoral Production systems to Climate Change,

Indicative budget, UA 15 million (US$ 21.6 M) (50% of the total project resources)

No.	Proposed activities	Kenya Budget (US$)	Kenya Budget (KShs)
9.1.1	**Support for Sustainable Management of Agro-Pastoral lands**	3,240,000.00	343,440,000.00
1)	Identify degraded and non-degraded rangelands	324,000.00	34,344,000.00
2)	Map degraded rangelands and prepare community participatory maps on rangelands of project areas	648,000.00	68,688,000.00
3)	Develop appropriate guidelines and plans for rangeland rehabilitation	324,000.00	34,344,000.00
4)	Train communities in pasture/rangeland rehabilitation techniques	810,000.00	85,860,000.00
5)	Support the acceleration of the process of organizing, formalizing and building the capacity of Community Land Management Committees and platforms	324,000.00	34,344,000.00
6)	Mapping, demarcating, adjudicating and registering the land rights of communities and, overtime and based on demand, the land rights and interests of the community members; and	486,000.00	51,516,000.00
7)	Land use planning to provide the spatial development and land management framework to ensure optimal, sustainable and equitable use of community lands.	324,000.00	34,344,000.00
9.1.2	**Development of Climate Resilient Infrastructures for Agro-Pastoral Production Systems**	15,120,000.00	1,602,720,000.00
1)	Rehabilitation /Construction of Rural feeder roads	756,000.00	80,136,000.00
2)	Investments in irrigation (promotion of large scale PPPs)	9,072,000.00	961,632,000.00
3)	Development of improved seed production centres (agriculture and agro-forestry)	756,000.00	80,136,000.00
4)	Construction of livestock markets and vaccination parks	2,268,000.00	240,408,000.00
5)	Construction of veterinary and zoo sanitary infrastructures (veterinary clinic, diagnostic laboratory, vaccination parks, quarantine area)	1,512,000.00	160,272,000.00
6)	Establishment of Fodder Banks	756,000.00	80,136,000.00
9.1.3	**Sub-Component 1.3: Promote smart climate technologies and innovations**	3,240,000.00	343,440,000.00
1)	ICT-based agricultural management - help farmers receive timely weather- related information and warning that enable them to protect their assets against damage	283,018.87	30,000,000.00
2)	Index based livestock insurance programme to reach smallholders through mobile technologies.	1,132,075.47	120,000,000.00
3)	Strengthening vaccination against major Epizootics (e.g. Small Ruminants Plague (PPR), CBPP, Newcastle Disease in poultry; tsetse control etc diseases)	566,037.74	60,000,000.00
4)	Agro-meteorological services for farmers and agro-breeders and (viii) Promotion of forage production (commercial fodder production, fodder briquettes) to avert conflict	113,207.55	12,000,000.00

5)	Access and uptake of new genetics and accompanying technologies for the fish sector, including producing quality low-cost fish feed and improved processing techniques	188,679.25	20,000,000.00
6)	Access and uptake of new genetics and accompanying technologies for small livestock by sustainably raising livestock productivity: technical assistance on specific themes (animal health, feeds, genetics) and increasing production of sorghum and millet for feed	207,547.17	22,000,000.00
7)	Accelerating crop campaigns to deploy sorghum and millet technologies to small scale farmers in partnership with the NARES	258,867.92	27,440,000.00
8)	Organize Outreach campaigns to train private sector partners and farmer organizations on small scale irrigation technologies water and soil conservation	283,018.87	30,000,000.00
9)	Deploy capacity building activities to NARES, extension workers and farmer organizations on TAAT technologies	113,207.55	12,000,000.00
10)	Promotion of digital mapping tools	94,339.62	10,000,000.00

9.2 Component 2: Supporting Agribusiness Development - Indicative budget, UA 9.0 million (30% of the total secured ADF resources)

No.	Proposed activities	Kenya Budget (US$)	Kenya Budget (KShs)
2.1 Supporting the Development of SMEs and Entrepreneurship (Estimate budget: UA 4.5 million)		6,480,000.00	686,880,000.00
	In coordination with the relevant ministry primarily Agriculture and Finance as well as a partnership with the participating financial institutions (PFIs) that are part of the Bank Enable Youth Risk Sharing Financial Mechanisms (RSFM) a funding mechanisms will be put in place to provide Agripreneurs' business start-ups with affordable loans of up to USD 30 000 from PFIs. A portion of the funding will be used as a risk guarantee to further incentivize PFIs to lend to the agripreneurs. In order to reduce the cost of setting up a new RSFM we will use the existing infrastructure of the Youth Enable program as well build on the lessons learned. However resources would be needed to develop the following element will	5,896,800.00	625,060,800.00
	- Develop detailed requirements and guidelines for youth agribusiness plans and loan applications in collaboration with PFIs, including a report metrics on assessing youth creditworthiness	162,000.00	17,172,000.00
	- Capacity building for PFIs loan officers (gender equality ensured) dealing with agricultural lending.	265,356.00	28,127,736.00
	Develop RSFM business plan and monitor investments	129,600.00	13,737,600.00
2.2 Facilitating access to advisory services and markets through digitalization (Estimate budget: UA 2.7 million)		3,888,000.00	412,128,000.00
	Enabling environment:	288,000.00	30,528,000.00
	Technical designs of digital interventions.		
	Middleware infrastructure:	2,880,000.00	305,280,000.00
	Onboarding of pastoralists and farmers onto existing national e-registry. This digital platform will be the fundamental infrastructure that will support the provision of a variety of services to farmers and pastoralists	288,000.00	30,528,000.00

No.	Proposed activities	Kenya Budget (US$)	Kenya Budget (KShs)
	(climate services, agronomic tips, dissemination of livestock alerts, inputs subsidies and insurance services, etc.)		
	Facilitation of additional digital innovators, financial service providers, value chain coordinators, implementation actors and other partners onto the digital platform.	576,000.00	61,056,000.00
	Provision of satellite imagery data and digital farmer profiles to support climate insurance claims and provide evidence of losses and predictions to help mitigate severe flooding/drought and pests.	576,000.00	61,056,000.00
	Delivery of visual climatic information, early warning risk analysis and monitoring of localized grazing maps for pastoralists.	288,000.00	30,528,000.00
	Update of smart maps and delivery of advisory on pastoralist grazing routes, produce transport routes, etc.	288,000.00	30,528,000.00
	Provision of advisory to pastoralists and farmers on climate smart SLM practices via mobile SMS, IVRS, radio, apps, etc.	288,000.00	30,528,000.00
	Facilitate access to e-commerce platforms and digital financial services.	288,000.00	30,528,000.00
	Update of digital land maps/ land use plans linked to registered farmers and pastoralists.	288,000.00	30,528,000.00
	Capacity building:	720,000.00	76,320,000.00
	Stakeholder training on the use of digital tools for agribusiness and livestock management.	288,000.00	30,528,000.00
	Enhance ecosystem of youth entrepreneur extension agents providing digital services to beneficiaries.	216,000.00	22,896,000.00
	Digital agribusiness upskilling for young farmers and pastoralists for improved management of their businesses.	216,000.00	22,896,000.00
2.3 Facilitating access to renewable (solar and bio) energy in rural areas (Estimate budget: UA 1.8 million)		2,592,000.00	274,752,000.00
	Support for regulatory, institutional and policy processes at the national level.	259,200.00	27,475,200.00
	• Elaboration of a catalogue of rural energies for agricultural transformation.	259,200.00	27,475,200.00
	• Installed Electric Capacity (IEC) on bio-digesters and solar energy and use of by-products (compost and effluent).	388,800.00	41,212,800.00
	• Development of financing mechanisms for renewable energy sub-projects.	259,200.00	27,475,200.00
	• Support for the establishment of a network of bio-digester manufacturers.	388,800.00	41,212,800.00
	• Training of the youth and women in the manufacture, application and maintenance of bio-digesters and solar energy systems	648,000.00	68,688,000.00
	• Development of a system of reliable information on the baseline and future status of sustainable energy access and	259,200.00	27,475,200.00
	• Support for carbon certification.	129,600.00	13,737,600.00

9.3 Component 3: Indicative budget, UA 3.0 million (10% of the total secured ADF resources)

Component 3: Indicative budget, UA 3.0 million (10% of the total secured ADF resources)

No.	Proposed activities	Kenya Budget (US$)	Kenya Budget (KShs)
3.1 Development and improvement of weather and climate services (Estimate budget: UA 1.2 million)		1,728,000.00	183,168,000.00
	Improving the climate and weather observation networks and infrastructure and data processing for enhanced provision of hydromet services	604,800.00	64,108,800.00
	Generation of climate information and services	604,800.00	64,108,800.00
	Dissemination of climate information and services	518,400.00	54,950,400.00
3.2 Mainstreaming Climate Risk Finance and Insurance (Estimate budget: UA 1.2 million)			
	Developing framework for partnership, financing, and cooperation on climate risk insurance between national and county governments	504,000.00	53,424,000.00
	Support process of integrating sovereign drought climate insurance and micro level IBLI into effectively layered process across social protection and commercial livestock protection component.	936,000.00	99,216,000.00
	Establish a livestock insurance electronic system for data management	288,000.00	30,528,000.00
3.3: Operational and Institutional Capacity for Climate Adaptation and Resilience ((Estimate budget: UA 0.6 million)		864,000.00	91,584,000.00
	Strengthening national climate monitoring and reporting systems	288,000.00	30,528,000.00
	Training and capacity building of government officials to cascade early warning systems and forecasting information to communities for pastoral livelihood security and farmer food security	144,000.00	15,264,000.00
	Development of NDC implementation action plans building on country commitments to implementation of the Paris Agreement	144,000.00	15,264,000.00
	Feasibility studies for identified investments that enhance resilience of rural populations and reduce vulnerability to drought.	288,000.00	30,528,000.00

10 ECONOMIC AND FINANCIAL ANALYSIS

Macroeconomic analysis

This feasibility study is being undertaken during a time of global pandemic that has among others slowed down economic performance across the globe. Globally, world real GDP recorded a decelerated growth of 2.9 per cent in 2019 compared to a growth of 3.5 per cent in 2018, while in Kenya real Gross Domestic Product (GDP) was estimated at 5.4 per cent in 2019 compared to 6.3 per cent in 2018. (GoK, 2020)17. Food security continues to be undermined by the fact that agriculture, forestry and fishing sector accounted for a sizeable proportion of the slowdown, from 6.0 per cent growth in 2018 to 3.6 per cent in 2019 under the period under review. Moreover, in 2019, Kenya experienced a mixed weather phenomenon which was characterized by drought during the first half of the year, followed by high rainfall in the second half of the year. Equally around the same time, there was an invasion of desert locusts, mostly in the arid and semi-arid areas and this impacted negatively on economic variables in those regions as pasture was impacted negatively. COVID-19 has also had negative impact on most sectors in the economy and this has in turn slowed down economic performance. The net effect was reduced production of not just selected crops and pasture for livestock and thus the agriculture sector performance decelerated from 6.1 per cent in 2018 to 3.6 per cent in 201918, but also almost all sectors. This has been compounded by the rising inflation rate that continues to deplete purchasing power. Estimates show that inflation rose from 4.7 per cent in 2018 to 5.2 per cent in 2019.

Government support to provision of social services is an important intervention for social protection and especially in ensuring access to basic needs including food security. In this regard the National Government expenditure for the social services in 2019/20 rose to KSh 71.4 billion and this mean t that for instance, social safety net funds such as Women Enterprise Fund (WEF), Uwezo Fund and Youth Enterprise Development Fund (YEDF) were expected to disburse loans worth KSh 3.5 billion, KSh 250 million and KSh 600.0 million, respectively, in 2019/20. Similarly the affirmative government procurement process – dubbed the "Access to Government Procurement Opportunities" (AGPO) is expected to rise from KSh 30.1 billion in 2018/19 to KSh 32.7 billion in 2019/20. Women, Youths and Persons with Disabilities entrepreneurs are expected to be awarded tenders worth KSh 17.3 billion, KSh 13.6 billion and KSh 1.9 billion, respectively, in 2019/2019. The net effect of this is to enhance economic empowerment of especially vulnerable and marginalized groups in communities.

The feasibility of the proposed projects will benefit from a more detailed economic and financial analysis

[17] GOK (2020) Kenya Economic Survey 2020. KNBS

[18] Ibid p 3

[19] Ibid p8

11 PROGRAM SUSTAINABILITY

The sustainability of the project will be pivoted on a combination of factors as outlined below:

1. The participatory demand-driven approach adopted in the identification, prioritisation and design of the project. This has also been factored in the implementation in order to promote a sense of ownership among the beneficiaries in the respective sub counties.
2. Through the strengthening of pastoral/farmers organisations (through ICT tools access, training and sensitization on value chain aspects), pastoralist/farmers will gain management skills and enhanced bargaining power.
3. The project encourages a focus on capacity building, including training the beneficiaries on efficient use and management of scarce water and feed resources. Suitable service providers, with experience in capacity building and training for transformation will be identified and contracted to institute the process of participation and empowerment among stakeholders during implementation. Secondly, beneficiaries will assume ownership and responsibility of the project infrastructure after construction, and will thus bear the responsibility for their operation and maintenance, to further sustain the flow of project benefits during and beyond the project lifetime.
4. The institutionalisation of a beneficiary contribution of efforts, the use of best service providers including synergy with reputable NGOs and faith based organisation at local levels can minimise failure and sustain flow of outputs.
5. A key issue to the project's sustainability will be the flow of additional incomes to the resource vulnerable communities of the fragile ASALs. The project has been designed in such a way that the commitments of the beneficiaries are obtained from the outset (at project formulation), thus fostering a sense of ownership.
6. Most importantly mechanisms to guarantee public observable value for money at all levels of decision-making
7. Sensitivity of the project design and implementation to potential inter-ethnic competition and conflict over control of resources and therefore need for stakeholder engagement in design and implementation of projects
8. The project should tap the deep indigenous knowledge inherent in the community elders and leadership

12 RISKS AND MITIGATION MEASURES

The Project Result Based Logical framework (RBLF) has identified certain risks and proposed some mitigation measures summarized in Table 12.1.

Table 12.1: Identified Risks and Mitigation Measures

Risk	Risk Rating	Mitigation	Risk Rating with mitigation
Strategic level			
Political stability	Moderate	Dialogue between the various political parties continues and peace is highly likely to be sustained	Moderate
Cattle rustling	Moderate	Dialogue between the various communities continues and peace is highly likely to be sustained. Improved livelihood interventions for social equity.	Moderate
Operational level			
Low capacity of the pastoral community to adopt and adapt.	Moderate	Communities will be strengthened, mobilised, trained and sensitized. Women Participation in decision making supported	Low
Inter-clan conflict in sharing of resources	Moderate	Engagement with community to appreciate need to share limited resources Design of projects to address potential inter-ethnic conflict in access and utilisation of resources	Moderate
Low human and institutional capacity to implement the project.	Moderate	The Project will benefit from the existing DRSLP-II and regional and National capacity building activities.	Low
Sustainability	Moderate	Co-design and co-produce projects with community	moderate

13 LIST OF PROGRAM GOODS AND SERVICES

Kenya's socio-economic performance has in the past been undermined by poor governance. Kenya ranks low, both in absolute terms and relative to the regional average, on key indicators of governance including control of corruption, rule of law, regulatory quality, and government effectiveness. Steadfast implementation, including enforcement, will be key to the success of the fight against corruption. In recent years, several initiatives have been undertaken by the Government to promote good governance through reforms in public financial management, civil service, privatization of public enterprises, and anticorruption. The Government has embarked on legislation in a range of areas including public officer ethics, anti-corruption and economic crimes, government financial management, public procurement and audit, privatization and statistics. Numerous other measures have followed, including a ministerial code of conduct, and reforms of the judiciary and the police force. To streamline procurement, one of the main sources of irregularities in Government, a Public Procurement Oversight Authority (PPOA) was established in 2005. The transparency of the budget formulation process has improved and it is generally acknowledged by the donor community that recent budgets have been more pro-poor and that there has been improvement in the delivery and quality of public services. In August 2011, Kenya promulgated the new constitution which contains a raft of measures to enhance leadership and integrity, maintain rule of rule while protecting the rights of its citizens. Among these measures include the establishment of the Ethics and Anti-Corruption Commission.

The Bank undertakes to jointly screen and verify the integrity of staff joining the PCT; ensure that all procurements of Bank-financed activities use the approved and agreed procedures; strengthen capacity of the PCT to handle project financial accounting and auditing requirements. Most of the disbursement will be through direct payment to contractors, thus limiting the amount passing through the special account. The Bank will organize a launching workshop during which PCT staff will be trained on Bank rules and procedures regarding financial management, audit, procurement and general project management; ensure the project is supervised twice a year, and the Bank's regional Office-EARC will also help in monitoring performance of the project.

Phase 2 projects are feasible and merit urgent funding. This phase 2 programme is expected to generate considerable knowledge attributes that will add value to the overall design and management of similar projects in future. Knowledge will be derived from the adopted project design which is informed by lessons from previous and ongoing projects. In addition, through this project and others implemented, institutional memory and knowledge acquired through the establishment of core groups and networks of skilled teams who have implemented similar interventions to build communities' drought resilience and improve livelihoods will be instituted. Thus, collaboration with other similar IGAD and AfDB interventions will be promoted.

To facilitate follow-up on emerging knowledge attributes, the project by design has included the additional baseline policies, as well as an impact study that will provide the Government and beneficiaries pertinent knowledge issues that can be put into practical use for better result-oriented achievements. Moreover, the systematic monitoring and evaluation modalities will inform project management, beneficiaries, the Government and other stakeholders on the status of project implementation and address constraints in a consistent and timely manner. Lessons learnt from the feedback process could then guide effective decision-making during implementation and also designing future projects.

After consulting with key informants and keenly listening to the intended beneficiaries across the visited counties the following aspects in the drought emergency interventions merit serious consideration by IGAD and both National and County governments:

1. Increase funding to projects that enhance climate resilience and livelihoods rather than recurrent expenditure
2. Need for independent, transparent and accountable evaluation and monitoring of funded projects to ascertain value for money
3. The apparent marginalization of rehabilitation of degraded and derelict land should be reversed.
4. Extension service needs to be re-invigorated and facilitated to be more visible and active within communities
5. Devolving intervention to communities, with county governments providing only logistic and administrative support has potential to deliver maximum intended benefits in a much shorter time and cost effective way.

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15 ANNEXES

15.1 Annex 1: Field Reports

15.2 OVERVIEW OF FIELD VISITS AND STAKEHOLDER ENGAGEMENTS

Due to financial and time constraints only four ASAL counties were visited. Detailed fieldwork findings are presented in Annex 1 of the report.

West Pokot County

SN	Proposed Project Name	Date visited
1	Adurkoit irrigation project	12th July 2021
2	Rehabilitation of Orwa irrigation scheme	13th July 2021
3	Proposed Chesta irrigation scheme	13th July 2021

Baringo County

SN	Proposed Project Name	Date visited
1	Proposed kipkaplop water pan	15th July 2021
2	Sitek water pan	15th July 2021
3	Proposed modern fish processing plant at Kampi Samaki, Marigat, Baringo	16th July 2021
4	Proposed Emsos irrigation project	16th July 2021
5	Rehabilitation of Maguyuni irrigation scheme	16th July 2021
6	Kinene growers irrigation scheme	16th July 2021

Marsabity County

SN	Proposed Project Name	Date visited
1	Arrogon	12th – 13th July 2021
3	Jaldesa Marsabit	
4	Laisamis subsurface dam	
5	Parkishon marsabit site for water pan	
6	Shallow wells site laisamis	
7	Sololo mega dam	
8	Uran pasture irrigation site	

Isiolo County

SN	Proposed Project Name	Date visited
1	Gubadida irrigation projects kina Isiolo	14th – 16th July 2021
2	Kinna Irrigation project	
4	Kiwanja isiolo earthdam	
5	Korre irrigation scheme water intake at Burat	
6	Ngare nait river proposed irrigation dam	
7	Ngaremara river proposed irrigation for chumberre attire ettor area isiolo	
8	Ngubadida shallow wells kinna isiolo	
9	Proposed rehabilitation of ngaremara livestock market	
10	Rapso irrigation projects kinna isiolo canal intake	

15.2.1 WEST POKOT COUNTY

A. ***Proposed Adurkoit Irrigation Project***

Baseline Information

Introduction

The proposed Adurkoit Irrigation Project is situated in Prinda Village, Atikomor Sub Location, Angarkwat Location, Riwo Ward, West Pokot Sub County of West Pokot County.

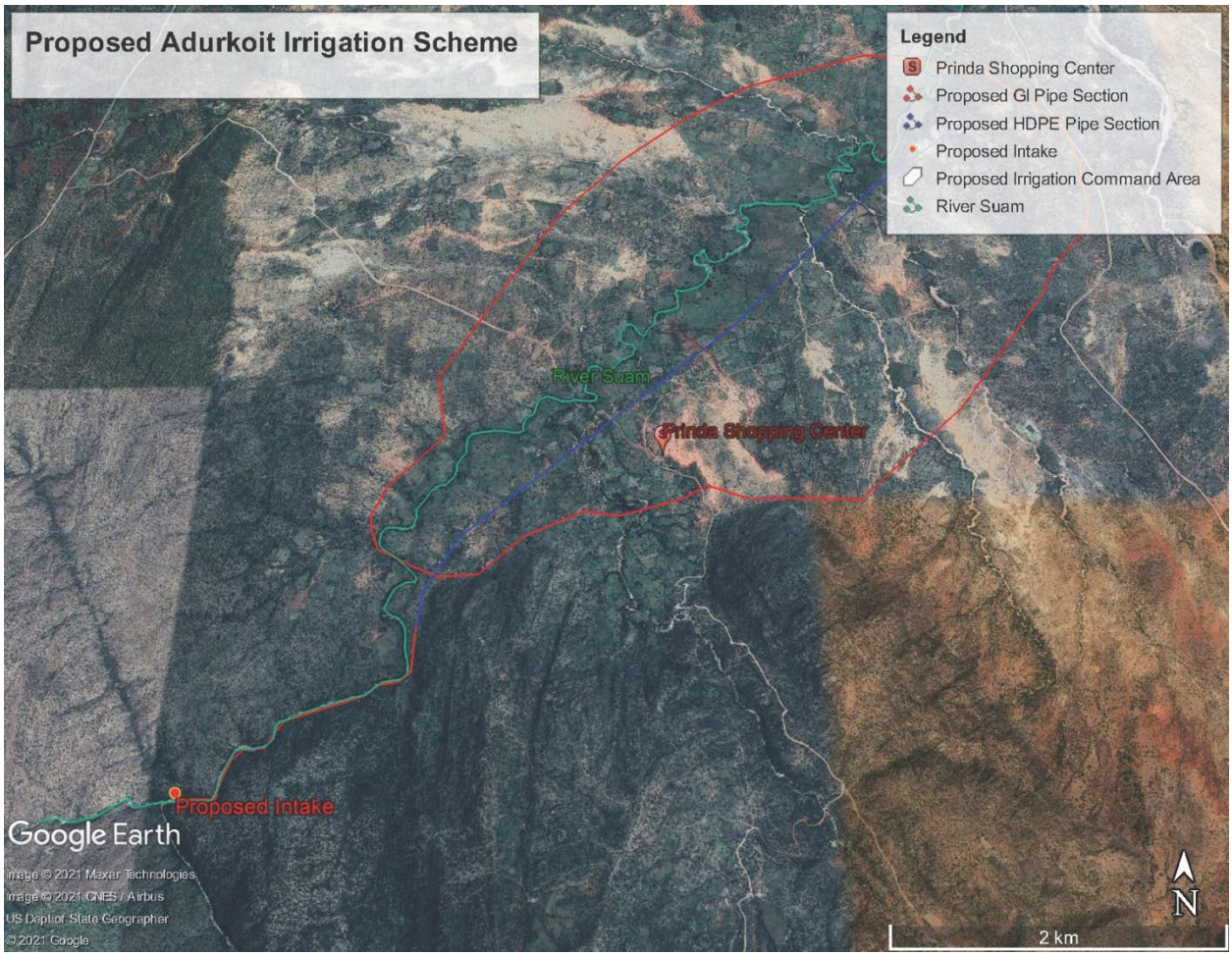

Figure 15-1 :Google Earth Satellite Image of the Proposed Adurkoit Irrigation Scheme

The irrigation Project is intended to serve a population of about 250households. The proposed system of irrigation is sprinkler given the topography of the project area. It is proposed that the project is carried out in phases with intake construction in first phase.

This will ensure optimum water distribution and coverage for all the targeted farmers at possible minimal cost. The system will also be farmer friendly and fairly easy for farmers to operate and maintain.

Currently residents rely majorly on rain fed agriculture while some employ basic water supply and distribution methods and thus is operating at very low efficiency. The project will ensure maximum efficiency in terms of water distribution and application.

The approximated project cost is **KShs. 250,000,000**.

Project Background

he proposed water source is Suam River with intake location within Akiriamet village at coordinates (X-707243, Y-146838, and Z-1391) at the bottom of a forested area and the ridges. Currently some of the local residents practice farming by relying on rain water. Farmers however lack proper skills on conveying, distribution and application of water to their farms leading to high water losses and poor performance of the crops.

Water Resource

Suam River will be the main source of irrigation water for this proposed project. The proposed intake is located at coordinates (N; 707243, E; 146838) where water is to gravitate through a 350mm conveyance pipeline to the system towards Sekoniyon Centre (N; 710255, E; 149254) 4.804 Km away. From the conveyance the water is distributed to farmers though a mainline and distribution lines ranging from diameters 90mm to 25mm HDPE pipelines. Some farmers are currently growing crops using very simple means and rain water and the project will improve on the crop production and also reduce over reliance on rain fed agriculture.

The Suam River has more than enough volume of water and therefore abstraction will have very little effect on the life downstream.

Plate 15.1:Proposed Intake Site on Suam river

Existing Institutions

Some of the learning institutions that exist in the project include; Prinda ECD and Primary School, Adurkoit secondary school both located within Prinda centre which is 4.804Km from the intake.

Roads

Access to the project area is through earth road which needs some grading for the easier accessibility. A path that need significant grading is needed to access the actual proposed intake. There are several other narrow earth roads connecting neighbouring villages and different blocks of the project area. Before the construction of the Intake works and laying of the main line it will be prudent to construct a road (approximately 4.5 kilometres) connecting the earth road at Prinda Market and proposed intake site.

Information, Communication and Technology (ICT)

ICT is important in general management of, health, education, women empowerment, youth empowerment and poverty reduction, because people get to access the knowledge and information with ease. The mobile telephone network in Adurkoit is well developed with four service providers in operation namely; Safaricom, Airtel and Telkom. Television network is estimated to be over 50%. Other services available include Internet services and radio waves.

Agriculture and Rural Development

The agriculture and in particular livestock production (cattle and goats) is the most important economic and livelihood sector in the Sub County. Minimum crop farming takes place. Both sectors have potential to ensures food and nutrition security, but are severely constraint by lack of guaranteed water supply. The potential for other crop value chains that could significantly support job and wealth creation and sustainable environmental management exist. Majority of farmers in the project area are small scale farmers with Maize as the main food crop, with surplus sold to generate household income. Other crops that can be grown in sufficient quantities subject to availability of water include; spinach, beans, kales, Irish potato, tomatoes and bananas. To boost farm output, farmers have engaged in irrigation at low levels, especially for maize, kales and other indigenous vegetables using rainwater. The growth of the agriculture sector in the area is faced with many challenges which include unreliable rainfall, crop diseases, post-harvest losses, low acreage due to low use of modern farming methods and unfavorable climatic condition.

Table 15.1 Major crops in the project area.

Table 15.1: Major Crops grown in the Project Area

No	Crops	Approximate %
1	Maize	70%
2	Beans	10%
3	Green grams	5%
4	Tomatoes	5%
5	Bananas	5%
6	vegetables like kales and cabbages	5%
Total		100%

Livestock rearing is also a major economic activity in the project area providing employment and income to a significant number of people. Main types of livestock in the Sub County include cattle, goats and poultry. From the socio-economic study, findings reveal that 81% of respondents in the project area keep livestock (mainly goats), which are grazed out in the open. The most common form of livestock are goats, sheep and cattle due to their adaptability to dry climate. Stall feeding is relatively expensive and due to scarcity and high cost of fodder, many farmers prefer open grazing.

Land and Vegetative Degradation

Although illegal, deforestation for charcoal burning is rampant in the area. Charcoal burning is unfortunately the fall-back activity for income generation, when seasonal droughts cause crop failure. Gully erosion is also severe. Land degradation in West Pokot and Baringo was estimated at 60% of the total land (Plates 16.5 and 16.6)

Plate 15.3: Charcoal Burning Near the Proposed Intake

Plate 15.2: Soil Erosion Gullies

Sand Harvesting

The river and gully beds receive huge deposits of sand from the rocky and hilly catchments. Sand harvesting is thus a major economic activity in the nearby villages, though benefiting mainly neighbouring towns including Makutano, Kapenguria, Kitale, Bungoma, Eldoret and Kakamega.

Access to Education

Education sector is critical in providing the skills that will be required to steer the county to the economic and social goals of vision 2030. Although the sector has faced serious challenges over the years relating to access, equity, quality, financing and relevance, significant achievements have been made over the years. There exist learning institutions within the project area and environs. Sustainable enrolment is however constrained by ill-health caused by poor feeding and drudgery occasioned by domestic chores like fetching water from as far as 10 km on the part of girls.

Justification for the Project and Proposed Developments

With establishment of Adurkoit Irrigation project, agriculture in the project area is set to undergo significant improvement. This will be manifested through:

- Increase in arable land some of which can be put under fodder production to improve dairy production, and beef production from cattle and goats;
- Increased farm output from irrigation farming targeting a wide variety of ecologically suitable crops
- Increased livestock products due to adequacy of animal feed, pastures and water;

- Increased livestock and crop diversity owing to availability of water;
- Enhanced trade resulting from increased farm output.

Estimated Project Development Cost

The summary of cost estimates are presented in table 16.2

Table 15.2: Summary of cost estimates

Bill No.	**Description**	**Total Amount (Kshs.)**
1	Preliminaries and Generals	10,000,000.00
2	Construction of the intake, sedimentation structures and concrete works to hold the GI pipeline	70,000,000.00
3	Pipe works	200,000,000.00
	Sub Total	200,000,000.00
	Contingencies @ 10%	20,000,000.00
	Grand Total	**300,000,000.00**

Proposed General Economic Empowerment Projects

- Investment on Irrigation Infrastructure
- Crop Production (Groundnuts, Green grams, Maize, Watermelon, Tomatoes, Beans, Vegetables, Citrus Fruits and Mangoes)
- Meat Goat

Proposed Women Specific Empowerment Projects

- Aloe vera Sap/gel extraction
- Improved Indigenous chicken
- Honey production, processing and marketing

Proposed Sustainable Land Management Interventions

i. Delineating land earmarked for irrigation and constructing soil and water conservation measures
ii. Rangeland rehabilitation through controlled stocking rates, re-seeding and auto-recovery through modified rotational grazing and fencing-off.
iii. Prevent river bank erosion by prohibiting cultivation on riparian lands.
iv. Participatory designation of steep forested hilly catchments as community protected land
v. Fencing community land to control sand

Proposed interventions on Specific Value Chains

Crop Farming

- Proposed crops for cultivation include: groundnuts, Green grams, Maize, Watermelon, Tomatoes, Beans, Vegetables, Citrus Fruits and Mangoes)

Meat Goat

- Supply Farmers with the superior Gala breed, which taken shorter time to attain a suitable weight

Aloe vera Sap/gel extraction

Aloe vera grow widely and wildly, dotting everywhere in the region. Women can do extraction in groups and package in jerricans for marketing. There exists a similar project in Baringo -Koriema area which can easily be replicated in the Adurkoit region. The Baringo project is funded by the county government of Baringo and the European Union. To undertake the project, it will be important to do following:

- Form women groups
- Training women on aloe vera production, processing and packaging
- Liaise with local authorities and communities to promote an economically and environmentally sustainable production and processing
- Develop commercially available Aloe Vera nurseries and seedlings;
- Providing the women with simple technologies for aloe vera value chain
- Develop a short-term and long term collaboration plan with other relevant existing Aloe Vera value chain actors;
- Link the women groups with traders and aloe vera markets in cosmetic industries
- Provide advanced training for marketing and other business aspects.

Improved Indigenous chicken

- Training women on production of the improved indigenous chicken
- Organize the women to groups for easy market of their produce
- Link the women to hotels and other consumers outlets

Honey production

Invest in improved bee hives like Kenya Top Bar and Langstroth, which are women friendly besides being higher yielding with guaranteed honey quality. Traditional bee hives are put on trees, which makes it hard for women to climb and harvest.

Pyramid Kitchen Gardening

Pyramid kitchen gardening which occupies a small space and is easy to manage.

There is need for training on the new technology which is economical on space and water

Probable Socio-Economic Impacts of Proposed Interventions

- Improved Food and nutrition Security
- Employment opportunities
- Increased income for farmers
- Wealth creation
- Population engaged in economic activities
- Poverty alleviation and improved livelihoods

The development of irrigation infrastructure and boreholes in Adurkoit and Prinda will make it possible for the local communities to draw economic benefits from the water resources of the Suam, it will result in improve food security in the area as more food will be produced. The project will also create direct and indirect employment opportunities to the communities within and outside the project area. Other non-irrigation uses include water supplies for livestock, stock watering, domestic uses and market gardens. Availability of water has social benefits, e.g it will increase overall health and household hygiene as well as reduce workload for women and girls who have to walking long distances in search of water.

Unintended outcome

- Once women are empowered there is likelihood of escalated gender-based violence. However, this can can be addressed through education and awareness geared towards attitude change that accommodates gender equity in decision-making for mutual gains.

B. Rehabilitation of Orwa Irrigation Scheme –Central Pokot Soita Sublocation

Existing Infrastructure

Orwa irrigation project is in Orwa sub location, Sekerr location, Sekerr ward of Pokot Central Sub County. It has a potential of 300ha and will benefit about 600 farmers after completion.

The following Infrastructure Exist:

Intake (Concrete Works)

The existing intake at GPS Location 36N 773542.00 m E, 183463.00 m N requires minor rehabilitation.

Pipeline

There exist a 300mm Galvanized Irion (GI) pipeline section and sections of PVC pipeline.

line (approximately 600m long). The line however requires rehabilitation; a section of the line crossing the river Orwa was washed away by floods in the past.

The Projects components include the following:

1. Rehabilitation of the Intake weir
2. Construction of a Sedimentation tank
3. Bush clearing and farm roads
4. Rehabilitation of the main pipeline (1500m)
5. Installation of Sub-main pipelines (5000m)
6. On-farm pipe distribution system (24000m) and hydrants to cover 300 ha

Proposed construction works is estimated to cost Kshs 135 million.

Proposed Engineering Interventions

The following are the proposed interventions

- Rehabilitation of the Intake Works
- Rehabilitation of the GI pipeline section
- Installation of HDPE main and distribution lines
- Delineating land earmarked for irrigation and putting soil and water conservation in place

General Economic Empowerment Projects

- There is existing irrigation structure which need to be rehabilitated and improved
- Irrigation is key to curb cattle rustling where they can grow fruits and vegetables, Cassava, beans, maize etc
- Boreholes and fodder crops

Proposed Women Specific Empowerment Projects

This area too could have women engage in the following economic activities

- Aloe vera Sap/gel extraction
- Improved Indigenous chicken
- Honey production
- Alternative means for transportation of good and services especially to Nearby Markets (Sigor and Ortum) for women who carry heavy loads. The challenge to this intervention is terrain of land and culture constraining women to ride bicycles or motorcycle

Unintended outcome

- Increased workload due to animals not migrating to Uganda resulting to milking cows year round.
- Men being sedentary and permanent at home could result to increased cases of GBV. This should be addressed
- Change in Gender power dynamics at the HH level
- Conflicts over water distribution, which will be solved through participatory scheduling

C. Proposed Chesta irrigation scheme

Baseline Information

Introduction

The proposed Chesta Irrigation Project is situated in Seito Sub Location, Lomut Location, Lomut Ward, Pokot Central sub county, West Pokot County.

The irrigation Project is intended to serve a population of about 500 farmers. The Proposed viable system of irrigation is sprinkler given the topography of the project area. This will be achieved through the installation of the infield system within each plot and delineation of irrigable area and formulation of an optimum irrigation development plan for Chesta Irrigation project on the basis of the available water. The proposed interventions include the construction of intake works, pipeline, masonry tank and water distribution network. The project will endeavour to cover a command area of 300ha.

Description of the Project Area

The proposed water source is the Parkino River. Currently some of the local residents practice irrigation by conveying water from the river through use of pipes and canals.

Crop Farming

Majority of farmers in the project area are small scale farmers. Many of the farmers in the area cultivate sorghum and maize. Other crops grown in the area include; oranges, mangoes, sweet potatoes, water melon, pawpaw and bananas. To boost farm output, farmers have engaged in irrigation at low levels especially for maize and sorghum farming. The growth of the agriculture sector in the area is faced with many challenges which include unreliable water supply, unfavorable land tenure system, crop diseases, post-harvest losses, low farm yields and unfavourable climatic conditions.

Plate 15.6: Sorghum plantation within the proposed project area

Plate 15.7: Green gram plantation within the proposed project area

Livestock Keeping

Livestock rearing is also a major economic activity in the project area providing employment and income to a significant number of the locals within the project area. Main types of livestock in the Sub County include cattle, goats and poultry. In general, value addition in livestock production such as meat, hides and skins is minimal. Indigenous cattle and goats are mainly kept for their milk, beef and hides. Livestock trading at Chepareria Market is a major activity in the area and some trade them for food item. Their solid wastes are also used as manure which has a great benefit to the crops since they are naturally made by the livestock. The locals also keep donkeys which are useful in transportation of water, charcoal and farm produce hence the farmers who keep donkeys do make more profits locally without having to use fuel for transport so as to get moving with their produce and this needs to be improved to generate more income to the farmers who really have great interests in the agricultural sector.

The main challenges faced in the agriculture sector include:

- Crop diseases
- Limited access to veterinary services
- Lack of Low literacy level especially on crop production where traditional production methods are still rampant in the area and markets which are so scarce within the project area and its neighbouring areas.
- Unreliable rainfall High risk of erosion due to flush floods

With completion of Chesta irrigation project, the overall situation of agriculture in the project area will be revolutionized. Increase in land under irrigation will lead to increase in crop output for both subsistent and commercial purposes. Crops that have great potential under irrigation are Onion, tomatoes, cassava, water melon and bananas. Sale of output to ready markets in Ortum, Sigor, Chepareria, Kapenguria, Kitale and as far as Kisumu, Nairobi, Uganda and Mombasa Towns will go a long way in alleviating the poverty situation that has ever existed within this region.

Water Resource

Parkino River is the main source of irrigation water for this proposed project. The proposed intake is located at coordinates (N; 781909, E; 155930).

Plate 15.8: Proposed intake site along the River Parkino

Some of the existing institutions in the area that will be direct beneficiaries of the scheme include:

Chesta, Catehineim and Parkino primary schools,

Chesta Girls secondary school,

Chesta Teachers Training College and PEFA Academy.

Justification for the Project and Proposed Developments

With establishment of Chesta Irrigation project, agriculture in the project area is set to undergo significant improvement. This will be manifested through:

- Increase arable land some of which can be put under fodder production to improve on dairy cattle rearing and beef cattle and goats and this means more milk production, beef and mutton;
- Increased farm output from irrigation farming targeting a wide range of crops
- Enhanced food and nutrition security within the project area;
- Increased livestock products due to adequacy of animal feed, pastures and water;
- Increased livestock and crop diversity owing to availability of water that will help in saving the costs that may be incurred bringing these other varieties from elsewhere;
- Enhanced trade resulting from increased farm output since people will be getting whatever they don't produce in some parts of South Pokot constituency hence people get to save a lot within their locality.

Estimated Project Development Cost

The estimated project cost is Kshs. 200,000,000. To cater for the construction of the following Intake Works, Sedimentation basin, Conveyance Line, Mainline, Distribution network and infield system

General Economic Empowerment Projects

- Farmers already have organized the field where they grow, watermelon, bananas, pawpaws etc

- There is perennial river that passes, there is need to construct a Water Intake
- Pipes to take water to irrigation fields

D. Proposed Women Specific Empowerment Projects

- Women can participate in forest preserving and reseeding activities because they collect herbs and medicine for sale in Sigor and other markets
- Improved indigenous chicken
- Soya beans growing and processing
- Honey production and processing
- Training on food processing and preservation

E. Probable and unintended Socio-Economic Impacts of Proposed Interventions

- Increased work load and gender power dynamics at HH level which requires gender transformative training for easy adaption to the unintended social change

15.2.2 Baringo county

A. ***Kipkaplop Water Pan***

The proposed site is located at GPS Location 36 N 803162.00 m E, 49466.00 m N. The water pan is intended to capture runoff for irrigation farming and livestock production

Recommended projects

- Goat meat,
- Spring rehabilitation
- Bee keeping
- Improved idiginious chicken

B. ***Sitek Water Pan***

There insidences of cattle rustling is not uncommon and men taking their livestoke especially cows to Neighbouring counties during the dry season

- Here women walk long distances to look for water (6 hours) on very rugged and rocky terriain
- The step slopes lack aquiver to sink boreholes
- Good vegetatin cover for bee, milk goat farming

Proposed Interventions

- Water reservior and borehole down stream which will use solar power to pump water to the HHs living along the slopes upstream.
- Water reserver as watering point for animals and bees as well as irrigating gentle sloping farmland down stream.

Proposed Women Specific Empowerment Projects

- Millet production
- Rear milk producing Goats such as saneni or colour back sheep which are supplied by cheptembo breeding center at a cost of ksh 14,000 each. Each household can be provided with a male and female of the milk goat or sheep
- Honey production
- Improved transportation of goods to the market in kabsabet

Probable and unintended Socio Economic Impacts of Proposed Interventions

- Increased work load and gender power dynamics at HH level which requires gender transformative training for easy adaption to the unintended social change

C. Proposed Modern Fish Processing Plant at Kampi Samaki, Marigat

Baringo county is endowed with three fresh water lakes namely; Baringo, Kapnarok and lake 94. The three fresh water lakes cover a surface area of approximately 200 km^2. Besides, Baringo County also has several man made dams and fish ponds where fish production takes place. The annual fish production from Baringo County oscillates between 180 and 240 tonnes with 90% of the landings coming from lake Baringo, 8% from fish farms and 2% from the man-made dams. Studies by Kenya Marine and Fisheries Research Institute estimate the production potential of L. Baringo to be 500 tonnes per year. Lake Baringo fishery thrives on five fish species

namely lungfish, catfish, tilapia, labeo and barbus with the dominant fish species being lungfish which is an invasive species introduced in 1970's.

There are 1350 households that depend on the fisheries sector mostly women and youth who are involved in fish farming and fish processing and marketing. Lake Baringo alone has 257 fishermen operating a total of 137 fishing vessels. The other indirect dependants include the fish traders, fish processors and the fishing input suppliers.

The county has established a total of 789 fish ponds which are owned by individual fish farmers or groups. The total surface area of the ponds is 240,000M^2 with an annual production potential of 200 tonnes. The two main fish species farmed within the County are tilapia and catfish. The current fish production from aquaculture is 48 tonnes which is less than 30% of her potential. The low production is attributed to several factors among them poor market access.

Despite the huge demand for fish, the fisherfolk from Baringo county are still faced with difficulties in selling their fish. This is mainly attributed to the nature of the existing fish markets which do not appeal to the consumer preferences. In Baringo, fish processing and marketing is highly unorganized. Most retail fish traders process and sell their fish by the roadside without maintenance of quality or hygiene and without access to portable water, shelter and fish dressing platforms. These unorganized markets not only attract poor market prices but also compromise the consumers healthy.

Kenya has become a middle class economy and the buying power of the consumers has increased. In the recent past, most middle class consumers have become highly healthy conscious and insist on the quality of what they consume. Most of these consumers accord more emphasis to freshness of the product they purchase than to the price. It is worth noting that most of these consumers prefer to buy packaged foods as opposed to those openly aired.

Lake water has a lot of floride which tint their teeth and harden borns, Jemps live in the islands , there are Turkaanas , Tugens and Pokots in the region but each having a different fish landing point. The lake has clay fish, cut fish and mud fish. Fishermen are licenced by the county. Fishermen bring the fish at landing bay at about 1 pm and sell to the women who remove the internal organs , wash the fish in the lake which is infested with crocodiles and hippos . The fish is then dried and smoked for preservatio before selling locally or to other markets.

The overall goal of this proposed project will be to avail a one stop outlet for fresh fish, frozen and processed fish products. Most fish consumers use sensory evaluation parameters such as crispiness, colour and texture to rank food. The Aqua shop will provide an opportunity to improve the quality of the fish products; odour, taste and appearance hence make it more appealing to the customers.

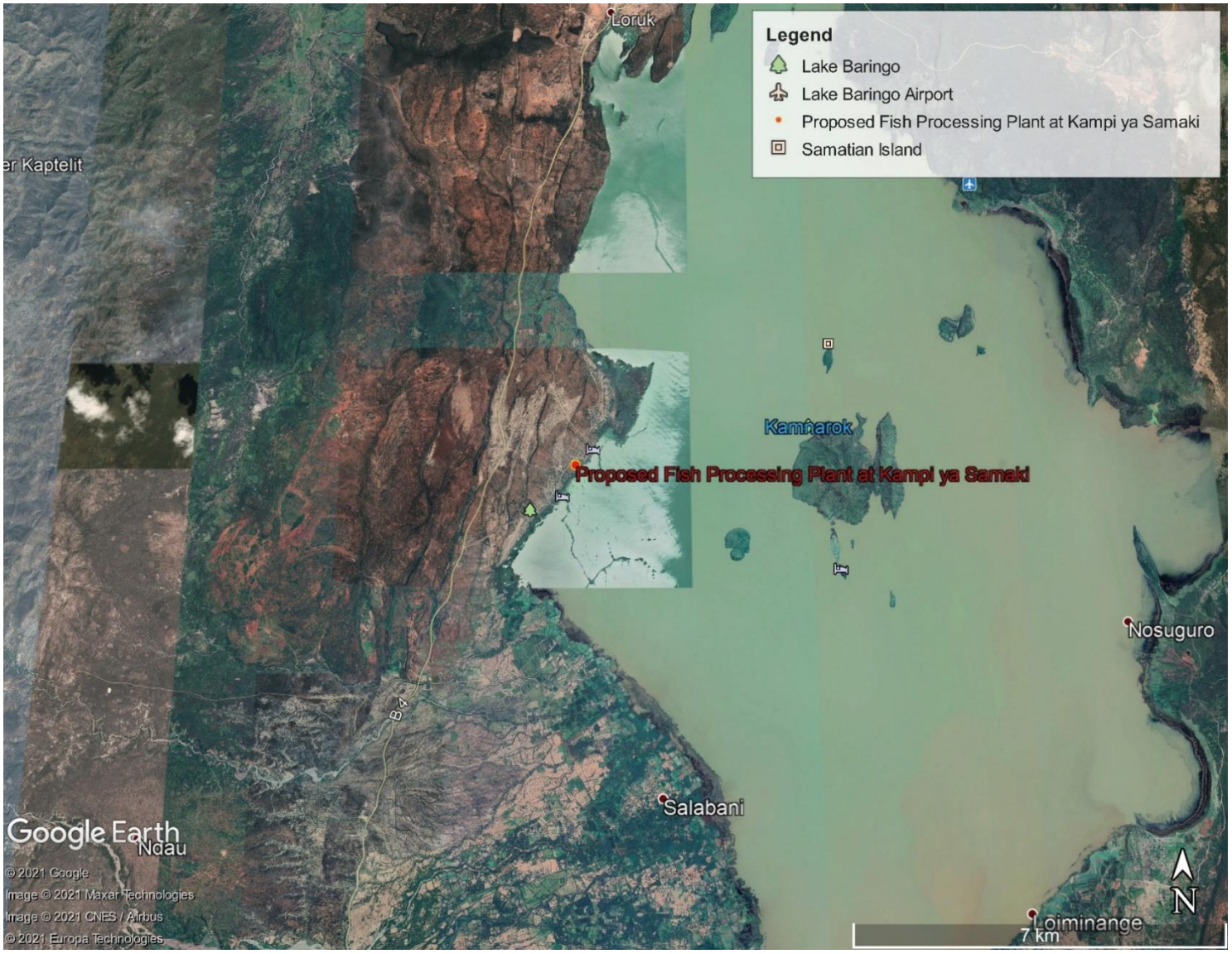

Figure 15-2: Google Earth Satellite Map of the Proposed Fish Processing Plant at Kampi ya Samaki Baringo

Proposed Interventions

- Construction of a one-stop modern fish processing plant at Kampi Ya Samaki
- A mini Hatchery attached to the aqua shop
- Installation Water treatment system
- Installation of Fish Processers and coolers to preserve fish
- Construction boat landing bays to protect crocodiles from attacking fishermens and fish traders
- Supply of motorised boat to collect fish inside the lake so that it arrives earier than having to wait until 1 pm. The boats can be given to mens groups.
- Since the project directly benefit fish mongers , the larger community and especially women and children who do not engange in fishing should be helped to meet their livelihood .
- Clean and safe water should be provided to the jemps in the island and other communities living arround the lake.
- Also intervention programs such as bee keeping, milk goat and improved chicken.

Probable and unintended Socio-Economic Impacts of Proposed Interventions

- With improved technology and mechanization of fish processing and preservation, Men are likely to take over sending women home
- Fish might become very expensive for women to afford and thus rendered jobless

Intervention

- Women to partner with men
- Motorized boats for men
- Allocation of requisite technology like cold storages o Women groups rather than individuals
- Capacity Training

D. Proposed Emsos Irrigation Project

Baseline Information

Background information

The area is disected by several small permanent streams following from the hills and empting their water in L. borogia. The land is very extensive and boarders L. Bogoria national park which is a habitat for snakes, buffallos , baboons and other primates. These animals poss danger to human and destroy their crops and properties. The wildlife conflict has resulted to the community giving up any form of farming because the primates feed on their crops . they also they live in fear of being attached. In as much as the community recommeded daming of an intake and piping the water to irragate their fields, it is necessary to first address this human and wildlife conflict.

The proposed Emsos scheme is to be partially gravity and partially Pumping fed piped system with drip and prinkler application methods. The scheme will abstract water from permanent collection boxes constructed across the Emsos springs. The scheme has about 70 farmers who will irrigate an area of 100 acres. The crops grown will be mainly horticultural. Currently the farmers in Emsos

Proposed project area grow rely on rain fed agriculture to grow their crops. A few farmers do dry land farming which often results in total crop failure in 3 out of 5 years.

Location

The scheme area is situated in Kisanana Ward, Koitummet locations. It is about 85Km from Nakuru town and about 45km East of Mogotio Town.

Topography and soils.

The area targeted has red soils with arid characteristics but has a lot of organic matter. When rains are sufficient farmers are able to harvest even after planting their crops without any fertilizers. The Kenya soil survey indicates that the soils are generally suitable for irrigated agriculture.

Climate and Hydrology.

Emsos experiences dry and wet alternate seasons throughout the year. The rainy seasons come twice in a year namely the long and the short rains. The long rains are experienced between March and August while the short rains come between October and December. However, the rain pattern has been changing and now the area sometimes receives very little rain or no rain at all. The area experiences very long periods of dry spell. The temperature varies between 20°C and 32°C at different periods of the year, July and August being the coolest months while January, February and March being the hottest months respectively. The climate is very much favourable for most crops and animal farming. Average monthly rainfall is approximately 700mm.

The scheme is supplied water from the Emsos springs. The base flow of the springs cumulatively has been estimated at **155 l/s.**

Present Agricultural Production

The crops grown in the project area are maize, beans, sorghum, finger millet, sweet potatoes and sugarcane. The average family size is 6 people per household, and the average arable farm size per household is 3acres in the project area. Nearly every household has livestock.

Water Sources and Uses

Emsos Springs passes in the middle of the first section of the irrigation cluster farms, and the rest of the farms are on a raised ground. It has more than 6 spring eyes but 3 are proposed for protection and use for irrigation while the others will flow naturally. Pumping will be required to lift water to the upper farms while those in the low areas will be served by gravity. The source has several springs within the area which will be developed, protected and interconnected to one point for gravity distribution or pumping to upper farms.

The availability of irrigation water to all members will intensify crop and animal production. This area can then supply food and animal products to Nakuru, Baringo, and Nairobi. The sales will earn the farmers income and hence reduce poverty. With irrigation, tomatoes, vegetables and beans will be grown during the dry seasons, when the temperatures will be quite ideal and the demand is high.

Administration

Emsos irrigation cluster farms are administered from Mogotio Town, and have a chief and an assistant chief based in Maji Moto area. Also within the town there is a police post and a post office. The area has one primary schools namely Emsos and one nursery schools. Most issues are handled by the chief's office, elders and farmer's representatives (IWUA) once formed.

Farmers organization

Currently a water management committee is in place for general water issues in the area and is being used to mobilization and sensitization of the proposed irrigation project. There is no Irrigation water user's Association (IWUA). Farmers are planning to form IWUA and register with the Ministry of Culture and Social Services. Once formed it will be strengthened through training.

Land tenure

The land tenure system is individual ownership with registered titles. The farmer therefore dictates the use of his farm. He could decide to put only crops without livestock or vice-versa.

Proposed Interventions

The proposed measures include;

- Kenya wildlife service to elect electric fence round the park to keep animals away
- Construction of a permanent Spring box across 3 no Emsos springs, Water for Irrigation be conveyed into a
  and converge them at a sump approximately 1 km downstream where pumping to the upper farms or gravity flow to farms adjacent to the sump will be done.
- Excavation and laying pipeline for both gravity main and rising main 2.5Km of various sizes.
  - At the end of the gravity main 8 households will be able to irrigate while the rest will use the pumped system.
- Installation of solar power and the entire pumping system.
- Setting up of sprinkler and drip irrigation systems.
- Farmers participatory training on irrigation water management

Women specific projects

- Since there is very little bee keeping yet, the vegatation and climate is coducive for bee keeping, it should be introduced and hives given to women
- Women should also be trained on havesting ,proceesing and packing of honey
- Meat Goats
- Green grams , vegateable and fruits to be introduced in the irragation scheme.
- Training on food value addition and gender trasformation issues

E. Kinene Growers Irrigation Scheme

Baseline Information

Summary

Kinene irrigation scheme is situated in Baringo County. The soils are fertile of predominantly red cotton soils, suitable for irrigation. The crops currently grown are under rain fed, which occasionally fails due to inadequate rains. The project is targeting to promote horticultural crops production which includes water melons, onions, tomatoes, fruits etc. The scheme area will be 100 ha to facilitate 200 farmers to irrigate preferably through sprinkler irrigation. Therefore, this project targets to increase land productivity by ensuring sufficient, regular supply of irrigation water in the scheme through improved water conveyance efficiency and capacity development. The scheme

will abstract irrigation water from Molo River through closed system. The scheme is estimated to cost about Kshs **150,000,000.**

The project is proposed to start with 200 Households who will each irrigate 1.5 ha totaling to **300ha.** Irrigation Infrastructure will consist of the following:

- **Diversion intake works:** This will be constructed at Molo river so as to abstract, control and measure water from the river into the farms through a closed conveyance system.
- Conveyance **system:** The main conveyance system comprises of a pipeline running from the intake to the point head of the scheme 3.8 Km near Mogotio town. The sub mains will be done to individual farmers.

The proposed measures include;

- Construction of an Intake chamber at the existing weir at Choka area of Molo River.
- Excavation and laying pipeline.
- Fixing Sprinkler systems.
- Farmer's participatory training on irrigation water management.

In order to operate the irrigation infrastructure properly, an active Water Users Association is necessary. The irrigation water users' association is expected to mobilize members during the operation and maintenance phase to perform various assigned tasks to promote equitable distribution of water and pipe, sprinklers and drip lines maintenance. The group through sound by-laws will collect levies to maintain structures.

Justification

The proposed Kinene Irrigation scheme supports Kenya's Vision 2030 and current development strategies that focuses on growth and poverty reduction mainly the Sustainable Development Goal. The project also empowers farmers to own and manage the scheme hence improving land productivity through irrigated agriculture that makes it possible to grow high value crops. Farmers will also fetch good prices from crops grown during dry spell when the area suffers from food shortage

Site Location

The proposed Kinene Irrigation Project is located in Mogotio Ward, Mogotio Sub-location, Mogotio Location, Mogotio Sub-county Mogotio constituency, Baringo County

Topography and Soils

The soils are fertile with a lot of organic matter. The Kenya soil survey indicates that the soils are generally suitable for irrigated agriculture. However, adequate drainage of excess water should be provided especially in the areas where the river occasionally bursts its banks and where natural drains gather excess water and empties it within the scheme. The micro relief is rather irregular while a few gullies crossing the area.

Climate and Hydrology

Mogotio farms experiences dry and wet alternative seasons throughout the year. The rainy seasons come twice a year; the long and short rains. The long rains are experienced between March and August while the short rains come between October and December. The rain pattern has been

changing and now the area sometimes receives very little or no rainfall at all. The area experiences very long periods of dry spell. The temperature varies between 20°C and 32°C at different periods of the year. July and August being the coolest months while January, February and March being the hottest months. The climate is very much favourable for most crops and animal farming. Average rainfall for selected station is shown in the table below:

Average monthly rainfall (mm)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
5	15	57	105	95	95	50	50	80	50	50	40	692

Water Source

The scheme is supplied with water from Molo River. The farmers have the intention of constructing water pans that store water when it is raining and use it during dry season. Once the project is completed, farmers will draw flood water from Molo River for storage and eventual use during the dry season.

Population and farming system

A total of 200 farmers shall each irrigate 1.5ha of his land under irrigation and thus irrigating a total of 300ha initially but expected to grow when the benefits are realized. The farmers keep livestock mainly cattle and goats. They also practice agriculture by growing maize and beans as food crops. The family size has an average number of 6 members. The farmers in this area mainly grow maize, beans and main animals kept are cattle, goats, donkeys and sheep. The average acreage per household is 10 acre (4Ha).

Market outlets

Mogotio Town will be the local market for the produce from the irrigation scheme. Surplus horticultural crops will also have a ready market in the neighbouring Towns at Nakuru, Eldama Ravine, Marigat and in Kabarnet.

Farmers organization and involvement

The farmers have formed a self-help group known as Kinene Growers Irrigation scheme. The group has by-laws which guide them in the day to day running of the organization.

Their contribution in the gravity scheme will be bush clearing during survey, excavation for the infield pipelines, preparing seedbeds and carrying out farming activities. They will also be responsible for operation and maintenance of irrigation infrastructure once implementation is completed. To acquire the skills, training of the management committees and farmers will be done, as well as involving them in decision making in all phases of project.

Gender issues

The group consists of a good mix of both men and women including the youths who are group leaders. Traditionally the growing of crops is the work of women. Although increase of irrigated agriculture will increase the workload on women, the increase in production will give women as well as the entire community an increased income. With irrigated agriculture, young men will be attracted by the improved profits from the farms.

Extension Services

The introduction of irrigation farming to the community will be a challenge and extension services will be provided by the Sub-County Agricultural Office (SCAO) and the Sub-County Irrigation offices. The farmers will have to be trained on irrigation and crop husbandry practices, management of the scheme and organization, operation and maintenance. Financial contribution towards the operation and maintenance of the major irrigation works will ensure sustainability of the scheme.

15.1.3 Some Pictorial on Public Participation and site photos

Plate 15.10: Public Consultation at Adurkoit – Prinda Market Center

Plate 15.9: Public Consultation at Orwa

Plate 15.12 : Site Visit at Proposed Water Intake Site in Chesta

Plate 15.11: Public Consultation at Sitek Village

Plate 15.14: Key Informant Interviews with West Pokot County Staff in the Agriculture Department

Plate 15.13: Site Visit at the Proposed water Pan in Baringo

Plate 15.16: Public Consultation at Proposed Emsos Irrigation Scheme

Plate 15.15: Site Visit at Maguyuni Irrigation Scheme

15.2.3 Summary Report on Field Visit to Marsabit and Isiolo Counties – 11th to 17th July 2021

Marsabit County

Marsabit is one of the vastest counties in Kenya. Being an arid county and relatively underserved with infrastructure, social life in the county is relatively challenging. Majority of the community are pastoralist, though there is agriculture undertaken through rain fed as well as irrigation in a few places across the county. Availability of water was stated as the main intervention that can anchor social economic development and improve the social welfare of communities.

Proposed projects included:

1. Water development projects – Boreholes, water pans, shallow wells, sub-surface dams
2. Irrigation projects – Arrogon and Obbu
3. Pasture development
4. Rural access roads
5. Livestock market structures

Comments on feasibility:

Day 1- Visit to borehole sites in Saku Sub County –

Day 2 - Moyale Sub- county – Proposed meg-dam at Arrogon

Day 3 – Sub-Surface dams at Laisamis

Observations:

1. Boreholes – the county has proposed 12 boreholes. The specific sites were said to be subject to hydrogeological survey. In Saku, areas visited included Baldesa and Parakishoni areas, areas with upwards of 500 households each. The chiefs of these areas indicated they have several areas boreholes could be developed. The risk were huge depths, low yield and salinity.
   They were however seen as an immediate solution and not sustainable. Most of them are very deep, do not yield water for a long time and are very saline. Thus the challenge of access to portable water for human and livestock use remains a problem. Women still have to walk for long distances in search of water. For security reasons they have to be accompanied by young men – all this diverts energies that could be used in other socio-economic development interventions. The long hours spent by women in search of water means they are left with little time to pursue any other economic or economic development activities.

   Note - Boreholes were seen as not sustainable as they were not cost effective for irrigated agriculture.

2. Sub-surface dames – while they hold water that can be used for multiple purposes, they are heavy maintenance structures because of siltation.
3. Rural access roads have been done and opened up the county and made movement of goods and people very easy. This has facilitated sale of agricultural produce further enhancing economic empowerment of communities
4. Pasture development – more demonstration sites needed so as to encourage adoption of the same by the community so as to have feed for animals during adverse seasons

Anticipated socio-economic benefits if water interventions are successful:

1. Ending hunger by ensuring food security for the people of Marsabit – a county with
2. Reduce distances covered by women in search of water, currently they cover upwards of an average of five kilometres (one way) in search water – and this leaves them little time for any other socio-economic engagements.
3. Facilitate engagement in alternative livelihood sources – sell of vegetables and fruits from irrigated agriculture
4. Enhance employment opportunities as more socio-economic activities will be undertaken out of the
5. Make women more economically empowered and more so give them voice by making them involved in decision making
6. Enhance activities of organized groups of women and youth that are already involved in micro-enterprises
7. Reduce movement of animals while also enhancing the yield of the livestock normally left around settlements for meeting needs of the elderly mothers with children and those other members of households who cannot migrate
8. Enhanced peace (less conflict) due to availability of pasture, water and better incomes from their livestock and agricultural crops

Alternatives: participants in the consultations held were of the view that interventions should be integrated – and more so identify projects with the greatest potential for success in transforming the lives of communities. Suggestion was:

1. Mega dams which would avail water for domestic use, livestock as well as irrigation – for agricultural activities. One participant by observing that small pans are not feasible – sated *"these small children pans are not helpful"*
2. Projects involving the youth should be prioritized. The aim is to give them sources of income with which they can support themselves by especially starting microenterprises

Socio-cultural risk – informants in Laisamis cautioned:

1. Siting of projects have to be done in consultation with community leaders as there are sacred sited where projects should not be sited. These include certain mountain areas as well as certain places where they normally meet for sacred ceremonies
2. Communities are also averse to development of water points which bring in large congregation of people and animals – their view is that a water point should not be done to become a point of aggregating people as this will lead to – large flocks of animals (finish pasture_ and lead to diseases and ultimately conflict.
3. Moranism – lead to cattle rustling – as morans after circumcision need to build their own herd. This runs counter to the whole effort of livestock production!

Isiolo County

This is an arid county with less than 450mm of rainfall. The county while largely pastoralists, has also potential for irrigated agriculture.

Proposed projects

1. Irrigation schemes – to serve more than 2000 people and their livestock in each site
    a. Mega dam for irrigation scheme at Ngaremara
    b. Extension of Leparua Irrigation scheme
    c. Guba Dida Irrigation scheme at Kina Sub county

2. Rehabilitation of cattle market – especially Ngaremara

Anticipated socio-economic outcomes

1. More incomes for farmers and thus better capacity to address their socio0conomic needs
2. Diversification of livelihoods and especially away from livestock keeping – by engaging in irrigated agriculture – where yields are better from high value crops such as citrus, pawpaw, kales
3. Increased employment opportunities especially for youth
4. Enhanced food security – as more food and of different varieties will be available
5. Less conflict when water is available and communities have more incomes

Alternatives

There are limited alternatives to the proposed projects as the communities perceive them as their lifeline

15.3 Gender and Anthropology Field Report for phase 2 Interventions

Field visit to West Pokot, Baringo, Marsabit and Isiolo counties was done in the month of July from 5 to 9th / 2021. This was to evaluate status of IDDRIS projects the gender and socio-economic impact they have had on men and women. Challenges faced, and suggestions for mitigation will be discussed

15.3.1 Overarching policy documents on gender

POLICIES	RELEVANCE
The Constitution of Kenya, 2010: Article 39 which requires activities and policies to ensure they secure equal rights for men and women to adequate means of livelihood.	The projects should gender responsive to ensure that they curter needs of men and women to accord them means of livelihood
The Big Four Agenda (GOK, 2017): The areas of focus set out are -food security, affordable housing, manufacturing and universal healthcare.	IDDRIS project contribute to the food security and manufacturing agenda
National policy for prevention and response to gender based violence This policy emphasises the need to ensure that both genders are not subjected to GBV and gender discrimination.	The project will have effective strategies to response to GBV such as gender violence recovery centres in dispensaries
The Kenya National Policy on Gender and Development, 2000 States that policy and projects be gender mainstreamed for women empowerment and ensure the rights of women, men, girls and boys to participate in and benefit equitably from the development process	The projects take cognises of the KNPG ,2000 policy to include men, women, boys and girls in the activities and decision making
The Constitution of Kenya, 2010: article 27 and 30 Promote gender equality and describes the equal rights for men and women to equal treatment and opportunities in political, cultural, and social spheres. Article 30: states that every member of the community has the right to equal benefit from community land	The projects ensure gender inclusivity in all programs and reinforce on communities the need to accord men and women equitable access to and control over means of production
The National Gender and Equality Act, 2011 NGEC derives its mandate from Articles 27, 43, and Chapter Fifteen of the Constitution; and section 8 of NGEC Act (Cap. 15) of 2011, with the objectives of promoting gender equality and freedom from discrimination.	The projects adopt need social inclusion and gender equality principles in all activities.

15.4 Annex 3: DRSLP Phase 1 Projects

15.4.1 Component 1:- Natural Resources Management –

A. Water Supply Development and Management

Water Pans/Earth Dams

Table 15.3: Implemented Water Pans and Dams Projects

			Beneficiaries						Livestock						
	Target	Achieved	HHs	M	F	Y	Indirect	Total	Cattle	shoats	Donkeys	Camels	Chicken	Totals	Remarks
Baringo	4	4	395	471	781	362	1101	2715	7800	13845	0	0	0	21645	All in use
Turkana	3	3	750	427	354	0	3870	4651	1500	20500	1250	600	0	23850	All in use
West Pokot	4	4	898	940	1415	555	0	2910	6865	12600	550	110	0	20125	All in use
Samburu	3	3	2410	6823	6647	0	16158	29628	7000	20690	800	406	4192	33088	2 in use, 1 on-going
Isiolo	2	2	400	1230	680	150	0	2060	6000	21500	600	2780	0	30880	All in Use
Marsabit	4	4	1244	2930	3405	1349	0	7684	5400	69525	1596	3690	0	80211	3 in use, 1 needs repairs
Total	20	20,	6,097	12,821	13,282	2,416	21,129	49,648	34,565	158,660	4,796	7,586	4,192	209,799	18 in use, 1 on-going, 1 needs repairs.

Boreholes

Table 15.4: Implemented Boreholes Projects

Boreholes			Beneficiaries						Livestock						
	Target	Achieved	HHs	M	F	Y	Indirect	Total	Cattle	shoats	Donkeys	Camels	Chicken	Totals	Remarks
Baringo	5	4	983	849	1,437	710	2,818	5,814	6,520	14,025	130	-	-	20,675	1 ongoing
Turkana	8	1	10500	3781	3953	4340	5190	17264	2500	11000	1000	1100	0	15600	7 on-going
West Pokot	4	2	1680	875	800	310	450	2435	4190	8260	470	0	1800	14720	2 on-going
Samburu	15	11	2567	8720	9014	0	7945	25679	15015	40061	2226	1234	6141	64677	3 on-going, 1 dry
Isiolo	8	2	3063	3459	2011	2439	1643	9552	11806	44180	1747	3097	0	60830	6 on-going
Marsabit	5	2	932	2175	2519	894	0	5588	13438	194600	4526	22260	0	234824	3 on-going
Total	45	22	19,725	19,859	19,734	8,693	18,046	66,332	53,469	312,126	10,099	27,691	7,941	411,326	22 on-going, 1 dry

Shallow Wells

Table 15.5: Implemented Shallow Wells Projects

Shallow Wells			Beneficiaries						Livestock						
	Target	Achieved	HHs	Male	Female	Youth	Indirect	Total	Cattle	shoats	Donkeys	Camels	Chicken	Totals	Remarks
Turkana	3	1	5000	2280	2956	2830	696	8762	1025	17215	1128	187	3406	22961	2 ongoing
West Pokot	3	1	642	165	210	450	127	952	850	2690	350	0	2130	6020	2 ongoing
Samburu	1	-	80	67	72	240	35	414	690	1450	125	34	243	2542	1 on-going but substantially complete and in use
Isiolo	2	-	1040	1020	600	599	322	2541	1440	5225	709	375	1990	9739	2 on-going, but 1 in use
Marsabit	3		300	590	705	420	154	1869	1825	4550	589	730	2700	10394	3 ongoing but in use
Total	12	2	7,062	4,122	4,543	4,539	1,334	14,538	5,830	31,130	2,901	1,326	10,469	51,656	10 on-going, but 6 in use

Sub-Surface Dams

Table 15.6: Implemented Sub-Surface Dams Projects

			Beneficiaries						Livestock						
	Target	Achieved	HHs	Male	Female	Youth	Indirect	Total	Cattle	shoats	Donkeys	Camels	Chicken	Totals	Remarks
Turkana	2	2	160	78	91	118	30	317	375	2025	371	110	0	2881	All in use
West Pokot	2	2	298	165	140	198	75	578	612	2199	455	0	0	3266	All in use
Isiolo	1	1	65	38	32	45	12	127	240	560	125	80	0	1005	In use
Total	5	5	523	281	263	361	117	1,022	1,227	4,784	951	190	-	7,152	All in use

Water structures

Table 15.7: Implemented Water Structures Projects

					Beneficiaries						Livestock					
	Target	Rev target	Complete.	Running	HHs	Male	Female	Youth	Indirect	Total	Cattle	shoats	Donkeys	Camels	Chicken	Totals
WPs/EDs	24	20	19	1	6,097	12,821	13,282	2,416	21,129	49,648	34,565	158,660	4,796	7,586	4,192	209,799
BHs	24	45	18	27	19725	19859	19734	8693	18046	66332	53469	312126	10099	27691	7941	411326
SWs	18	12	1	11	7062	4122	4543	4539	1334	14538	5830	31130	2901	1326	10469	51656
SSDs	12	5	5	0	523	281	263	361	117	1022	1227	4784	951	190	0	7152
Total	78	83	43	39	33,407	37,083	37,822	16,009	40,626	131,540	95,091	506,700	18,747	36,793	22,602	679,933

B. Sub Component II - Irrigation Infrastructure Development

Table 15.8: Implemented Irrigation Infrastructure Development Projects

NAME OF IRRIGATION SCHEME	COUNTY	DESIGN AREA	NO. OF BENEFICIARIES HHs	COMPLETION STATUS	CONTRACT SUM Kshs	AMOUNTS PAID	CONTRACT START DATES & OLD COMPLETION DATES	NEW/REVISED COMPLETION DATE
Songa	Marsabit	130Ha	333	38%	84,158,901	23,581,842.37 (28%)	Handed over July 2017, Completion – July 2018	Termination & auditing for re-tendering in progress
Kalacha	Marsabit	80Ha	200	100%	76,389,282	74,792,299.65 (98%)	Handed over July 2017, Completion – July 2018	March 2019 (Commissioning Jan 2020)
Kilimani Game Galana	Isiolo	60Ha	443	80%	161,105,450	104,891,032.19 (65%)	Handed over July 2017, Completion – July 2018	December 2019, defects liability for 6 Months thereafter
Kiboi	Baringo	180Ha	167	100%	81,401,563	71,733,165.85 (88.12%)	Handed over Sept 2017, Completion – Sept 2018	March 2019 (Commissioning- Jan 2020)
Kaminia	West Pokot	300Ha	485	90%	247,391,993	129,243,688.57 (52.24%)	Handed over Sept 2017, Completion – Sept 2018	30th Oct. 2019, then defects period. But intake, SB and part of the conveyance pipeline destroyed/swept away by floods and Landslides on 22-23/11/2019.
Simailele	Turkana	180Ha	423	84%	213,748,219.91	158,257,696.76 (74%)	Handed over Nov 2017, Completion – Nov 2018	End of December 2019, then defects period
Konoo	Turkana	120Ha	290	30%	190,955,003.90	55,427,733.80 (29%)	Handed over June 2018, Completion – May 2019	30th November 2019, A notice of contract termination has been served.

Dams to Support Irrigation Schemes

Table 15.9:: Implemented Dams for Support Irrigation Schemes Projects

Kilimani	Isiolo			90%	127,565,306.00	111,379,838.03 (87.31%)	Handed over in November 2017, completion December 2018	December 2019, then Defects Liability Period
Kaptyoni-Kiboi dam	Baringo			25%	324,563,155.20	32,456,315.52 (10%)	Handed over June 2019, Completion date – July 2020	Handed over June 2019, Completion date – July 2020
Total		1050 Ha	2341					

15.4.2 Component 2: Livestock Infrastructure Development:

A. Livestock sale yards

Table 15.10: Implemented Livestock sale yards Projects

County	Livestock sale yards		Beneficiaries				No. of Livestock Sold					
	Target	Ach	HHs	Male	Female	Total	Cattle	shoats	Donkeys	Camels	chicken	Totals
Baringo	4	4	621	2606	1117	3723	7370	14580	170	0	15000	37,120
Isiolo	4	4	3080	10400	7400	17800	21734	33981	142	479	1208	57,544
Samburu	4	4	2004	6750	5278	12026	34674	47872	143	51	3700	86,440
Turkana	4	4	1264	4290	3280	7579	7100	14560	152	22	1730	23,564
West Pokot	4	4	545	3767	3270	7037	18230	37590	672	0	37200	93,692
TOTAL	20	20	7,514	27,813	20,345	48,165	89,108	148,583	1,279	552	58,838	298,360

B. Commercial pasture demo plots

Table 15.11: Implemented Commercial pasture Demo Plots Projects

County	**Pasture Demo Plots**		**Beneficiaries**				**Livestock**			
	Target-Ha	**Ach-Ha**	**HHs**	**Male**	**Female**	**Total**	**Cattle**	**shoats**	**Donkeys**	**Camels**
Baringo	100	104	800	696	316	1021	2456	13800	10	0
Isiolo	100	100	375	789	336	1125	5625	12480	61	832
Marsabit	100	116	700	1470	630	2100	10500	14000	27	14000
Samburu	100	100	820	1722	738	2460	12300	16400	25	2
Turkana	100	0	0	0	0	0	0	0	0	0
West Pokot	100	99	1440	1296	1296	2592	14400	36000	35	0
TOTAL	600	519	4135	5973	3316	9298	45281	92680	158	14834

C. Component two summary

Table 15.12: Summary of Component Two Projects Implemented

Structure	**Target at Appraisal**	**Rev. target**	**Completed.**	**Running**	**Remarks**
Livestock Sale yards	24	20	20	0	Most sale yards are operational handling an average of 200 cattle and 1000 shoats per market day
Hay sheds	18	18	15	3	15 completed, 3 contracts on-going for Turkana structures
Pasture demo plots (Ha)	600	600	519	175	519 ha established to date; 175 ha contracts running,
Diag. Vet Lab Eqpt	6	6	6	0	Over 120,000 samples have been collected & screened
Quar. Stn	1	1	0	1	Seqel -70% complete (Contractor requesting for variation)
Cattle Dips	0	4	0	4	4 contracts on-going

15.4.3 COMPONENT 3: Project Management and Capacity Building – 3- Capacity Building

A. Training of Resource Persons

Table 15.13: Staff Trainings Conducted

Type of Training	No. of trainings		Gender		Total	Remarks
	Tar	Ach	M	F		
Staff TOT on Peace Building and conflict resolution	3	3	173	153	326	
Training staff and WUA leaders on conflict management and peace building- Baringo & west Pokot	6	2	41	22	63	8 staff and 55 farmer officials.
Staff TOT on Group Dynamics and Community Mobilization	1	1	1428	838	2266	Includes part achievement by the Counties and the PCU
Gender & anthropology for PCU	1	1	6	4	10	PCU
Gender and anthropology for County staff	6	6	64	7	71	10 staff per county in 4 counties, 16 in Baringo and 15 in Marsabit
Staff TOT on Gender mainstreaming and cross cutting issues	2	2	31	21	52	PCU
Staff training on IWUA formation	9	9	34	2	36	Carried out during mobilization for IWUA formation
Staff TOT on Livelihood Improvement Approach to development	1	1	14	12	26	24 staff from counties and 2 from PCU were trained
Irrigation Agronomy	1	1	22	2	24	TOTs were for field staff in the 7 ongoing schemes
Staff TOT Production and Marketing	1	1	18	6	24	County staff & PCU
Data Management Training	1	1	9	3	12	County Staff
Financial Management for 5 County Accountants and 5 desk Officers	1	1	9	1	10	County Staff
Vet Lab technicians- lab procedures, sample collection, analysis - twice	2	2	26	11	37	County Staff
Livelihood improvement approach to development (County staff)	1	1	14	12	26	County Staff
Tick control, Dipping and Dipping Management	1	1	21	5	26	County Staff
Food and nutrition theory and practice	1	1	6	25	31	County Staff & Farmer TOTs
Food processing and value addition	1	1	2	30	32	County Staff & Farmer TOTS
Total			1849	1134	2983	

B. Farmer Trainings

Table 15.14: Farmers Trainings Conducted

Type of Training	No. of trainings		Gender		Total
	Tar	Ach	M	F	
Training on Peace Building and conflict resolution	12	14	865	918	1783
WUA leaders on conflict management and peace building- Baringo & west Pokot	2	2	86	126	212
Training on Group Dynamics and Community Mobilization	12	13	1725	1459	3184
Training on Gender mainstreaming and cross cutting issues	12	11	1321	1583	2904
Training on IWUA formation	9	9	367	494	861
Training on Livelihood Improvement Approach to development	6	4	624	785	1409
Training on Irrigation Agronomy	10	8	161	237	398
Training on Production and Marketing	10	8	238	394	632
Financial Management for IWUA officials	9	7	68	84	152
Tick control, Dipping and Dipping Management	4	1	64	21	85
Food and nutrition theory and practice	12	6	138	264	402
Food processing and value addition	12	6	119	175	294
Total			5,776	6,540	12,316